An International Journal on
Grey Literature

'POLICY AND LEGAL ISSUES IMPACTING GREY LITERATURE'

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The Grey Journal

An International Journal on Grey Literature

—— COLOPHON ——

About TGJ

The Grey Journal is a flagship journal for the international grey literature community. It crosses continents, disciplines, and sectors both public and private.
The Grey Journal not only deals with the topic of grey literature but is itself a document type classified as grey literature. It is akin to other grey serial publications, such as conference proceedings, reports, working papers, etc.

The Grey Journal is geared to Colleges and Schools of Library and Information Studies, as well as, information professionals, who produce, publish, process, manage, disseminate, and use grey literature e.g. researchers, editors, librarians, documentalists, archivists, journalists, intermediaries, etc.

About GreyNet

The Grey Literature Network Services was established in order to facilitate dialog, research, and communication between persons and organizations in the field of grey literature. GreyNet further seeks to identify and distribute information on and about grey literature in networked environments. Its main activities include the International Conference Series on Grey Literature, the creation and maintenance of web-based resources, a Global Distribution List and Social Media, and The Grey Journal. GreyNet is also engaged in the development of distance learning courses for graduate and post-graduate students, as well as workshops and seminars for practitioners.

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EDITOR'S NOTE

With over a quarter century of research on grey literature carried out by diverse communities of practice in this field of information, a collective challenge emerges. Researchers and authors in sectors of government, non-government, academics, and business spanning manifold disciplines in science, technology, and the humanities are called to action. Their years of work dealing with the production, processing, digital publication, open access, and preservation of research outputs in multiple formats is called upon in confronting climate change.

At this point in time, with the advancements in information technology available to grey literature and in accordance with FAIR data principles, researchers, authors, librarians, and other information professionals and practitioners are tasked to ensure that research outputs are findable, accessible, interoperable, and render potential reuse in furthering research and education in their respective disciplines and sectors of information.

GL25 seeks to accept this challenge. To this end, grey literature communities worldwide are called upon to direct their attention in responding to climate change for the benefit of our vulnerable planet.

Dominic Farace
Journal Editor

Using the Overton policy to academic citation network:
How does the policy grey literature and scholarly record connect?[*]

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Abstract

As part of the broader impact agenda at universities in knowledge economies (and the UK, Australia and Netherlands in particular) there is growing interest in linking academic research outputs to the policy documents – government guidelines, policy briefs, white papers, impact assessments and so on – that cite them. Using Overton, a novel grey literature database of 6.9M+ full text policy documents from governments and think tanks around the world, we find while in scholarly literature the sciences tend to be highly cited, and the social sciences less so, the opposite is true in the policy literature. We discuss how accessing and organizing the policy grey literature could help universities, funders and governments better understand the impact their outputs are having on the wider world.

Introduction

Evidence-based policy is an approach to policymaking that emphasizes a more systematic use of data, research, and scientific evidence in the policymaking process, in an effort to ensure that policies are based on the best available evidence and guided by the principles of scientific rigor and objectivity (Baron, 2018) (European Parliamentary Research Service, 2021).

Its growth since the end of the late 20th century is partially behind what is sometimes called the "impact agenda" in modern research institutions, especially those in the UK, Australia and the Netherlands (Smith, 2020). The impact agenda aims to recognize and reward the impact beyond academia, to encourage research that demonstrably contributes to society and the economy (UKRI, 2022).

One way that research can achieve this is to be used by policymakers who help to enact change through legislation and guidelines. For example, climate change research used by groups like the IPCC contribute to findings that go on to have a direct effect on greener policies and climate change legislation worldwide (Intergovenmental Panel of Climate Change, 2013).

Finding and recognizing what research has been used in policy is difficult (Newson, 2018). Previous approaches have looked for academic style references in policy documents harvested from a relatively small number of websites (Altmetric, 2021) (Wellcome Trust, 2020), but policy documents are frequently transient (e.g. government departments change name, agencies redesign their website), use unorthodox citation styles and are spread across a large number of websites.

Overton

To overcome some of these challenges we have created a large, continuously updated database of policy related grey literature, named Overton. Available at www.overton.io, as on January 2023 this database contained 6.9M+ documents collected from 180 different countries. Using the database and associated web interface requires a commercial subscription to be used for researcher assessment purposes, but is free for use in academic research.
Users can search the metadata and full text of policy documents or filter them by year, topic, author, source and more.
Overton differs from previous policy related systems in how it defines and collects documents, finds references and connects other publicly available datasets of scholarly and institutional metadata.

Defining what a "policy document" is

The simplest definition of a policy document might be "documents written by a policymaker", encompassing a broad swathe of governmental outputs.

However, Overton's primary use case involves finding all of the links between research and policy, and this definition doesn't allow us to do that.

Typically these links are not direct: that is, policymakers do not often find and cite research directly. More often research reaches policy via a third party knowledge broker who sits between the worlds of academia and policy (MacKillop, 2019).

Examples of these brokers include think tanks, intergovernmental organizations like the World Health Organization, policy orientated non-governmental organizations and charities like Greenpeace or the ACLU and technical agencies inside government.

The job these brokers do is to collect and assess evidence on a topic and then synthesize it for an often time poor, generalist policymaker audience.

As such in order to trace the pathway from research to policy for any given scholarly book or article Overton must know about outputs from any knowledge brokers as well as the government sources responsible for driving the actual legislation.

Therefore the definition we use is not "documents written by policymakers" but "documents written primarily for or by policymakers", and the sources we collect from include the categories of organization listed above.

Collecting documents at scale

Overton collects documents at a larger scale than similar systems, fetching from 1,600+ distinct websites that host data from around 31,000 organizations – some websites being aggregators for multiple agencies, groups or departments (Overton, 2023).

A combination of web scraping, data feeds and APIs are used. Overton only collects public documents, that is documents that aren't behind a paywall or that otherwise require a login. Only documents hosted online are collected: the database has no facility to import paper documents or documents that aren't accessible through the public world wide web.

Though Overton only hosts document metadata and doesn't serve full text – users of the system are referred back to the original source if they want to download PDFs or view the full text of pages – the collection system picks up license information where available for use by researchers who may later want to analyse or download the data in bulk.

Unfortunately, it is difficult to assess how complete Overton's coverage is as there is no existing gold standard to compare against. In some countries with a centralized government document repository – like the UK and Canada – we can be satisfied that we are collecting the majority of available documents by comparing what is available in the system with what is available on those repositories, but in others there is no way to know what is being missed.

Finding references

Overton parses each document it collects to look for references – either explicit links or in text - to scholarly books & articles (defined as anything that registered with CrossRef or DataCite, the DOI registration agencies used by the vast majority of scholarly publishers) as well as to other policy documents (defined as other documents in the Overton database).

By necessity Overton's definition of what a reference might look like has to be broad. A scholarly reference may contain page, volume and issue numbers, a journal name or abbreviation and follow a known format specified by the document's publisher. They are typically grouped in a bibliography at the end of a chapter or article.

References in policy documents don't follow these patterns. Citations of other policy documents may include as little as just an organization name and title.

Furthermore, context is very important: for example, a policy document in the US may reference a document from the "Department of Transportation" that may be referring to the local

department (at either state or federal level) or in extremis the department of transportation in some other country entirely. Referenced titles may be in their original language, or have been translated into the language of the citing policy document.

Though some policy documents do have a bibliography, more often references can be found in footnotes, table captions and in the body of the actual document.

As such Overton looks for a wider range of reference types in more sections of the document, and then includes context specific heuristics to deal with ambiguous organization names and titles.

Analysis of the research / policy citation network

The current Overton database contains ~ 6.9M documents, from which we have extracted 16.3M references to 4.4M distinct scholarly books and articles, and 6M further references to other policy documents collected by Overton. A detailed, bibliometric centred analysis can be found in Szomszor et al. (Szomszor, 2022).

The ten scholarly articles most cited by policy documents in Overton are presented in Table 1.

Title of article	Journal	Date	Citations
The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity	Econometrica	Nov 2003	2358
Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations	The Review of Economic Studies	Apr 1991	2277
Initial conditions and moment restrictions in dynamic panel data models	Journal of Econometrics	Nov 1998	1633
The Skill Content of Recent Technological Change: An Empirical Exploration	The Quarterly Journal of Economics	Nov 2003	1577
Sample Selection Bias as a Specification Error	Econometrica	Jan 1979	1501
Measuring inconsistency in meta-analyses	BMJ	Sep 2003	1459
The Colonial Origins of Comparative Development: An Empirical Investigation	American Economic Review	Dec 2001	1431
Endogenous Technological Change	Journal of Political Economy	Oct 1990	1395
Staggered prices in a utility-maximizing framework	Journal of Monetary Economics	Sep 1983	1383
On the mechanics of economic development	Journal of Monetary Economics	Jul 1988	1328

Table 1. The ten scholarly articles cited most often in the Overton policy document database.

The ten articles in Table 1 are for the most part related to economics: the most cited paper, "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity" is heavily cited in scholarly literature too (Google Scholar reports 17,865 citations) and establishes a link between trade liberalization and productivity.

Several are methodological papers – including the single paper from medicine ("Measuring inconsistency in meta-analyses" from the British Medical Journal).

To explore which fields were represented in the full set of papers cited by policy we mapped the journal in which each one was published to the All Science Journal Classification Codes (ASJC) as used by Elsevier's Scopus platform (Scopus, 2023).

The top 15 subject areas are presented in Table 2, and shows that while economics papers are heavily cited, other subjects are equally well represented, with public health having the highest number of unique articles cited at least once by policy in the database.

One surprising difference to what is typically seen in the scholarly literature – where typically the sciences and especially the "hard" sciences are heavily cited, and social sciences much less so (Patience, 2017) - is that sociology, psychiatry and education are all represented in Table 2.

In fact to some extent the converse is also true: public health and ecology are represented in the top policy cited subject areas, but notable by their absence are the hard sciences: physics, chemistry and electrical engineering don't appear. Intuitively this makes sense: policy

documents aren't usually about high energy physics, and so don't cite high energy physics papers.

Subject area	Unique articles cited in policy
Public Health, Environmental and Occupational Health	201,639
Economics and Econometrics	197,704
Sociology and Political Science	155,841
Ecology, Evolution, Behavior and Systematics	143,753
Psychiatry and Mental Health	130,566
Medicine (all)	119,639
Infectious Diseases	115,873
Ecology	105,643
Aquatic Science	101,443
Geography, Planning and Development	97,551
Education	95,028
Oncology	94,243
Pediatrics, Perinatology and Child Health	89,964
Neurology (clinical)	81,352
Management, Monitoring, Policy and Law	81,105

Table 2. Top 15 subject areas by the number of unique articles cited in policy.

Conclusions and future work

Overton allows users a quick and easy way to search the policy related grey literature from governments and knowledge brokers. By automatically identifying and extracting links between research and policy it also opens up new avenues of investigation into how evidence is sourced and used by policymakers and their intermediaries.

Many challenges remain. Ideally it would be possible to determine how much of the policy literature Overton actually contains, perhaps by looking for references in the collected set that haven't been matched to anything else already in the database, or by performing manual spot checks in different countries and topic areas.

Even without this the database can be used in both qualitatively and quantitively to support assessments of the "policy impact" that a body of research has had.

One use is discovery: many institutions and funders are not aware of where the research they support is cited in policy, or if it is at all. Overton allows these users to quickly identify where they might want to focus their attention when looking for candidates for further, qualitative analysis and case studies.

Another is more quantitative: enough scholarly articles are cited in policy and picked up by Overton to allow for "like for like" queries that can control for article age and subject area.

In simple terms this involves checking a large list of "target" articles against the set cited in policy, and then comparing it to a number of "comparand" control sets made of up articles published in the same journal and in a similar timeframe. If the %age of target articles cited in policy is higher than the average %age of comparand articles cited in policy then one can make a case that they are being cited more than expected: though of course further analysis is required to determine exactly why.

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Legal Implications of the CASE Act on
Grey Libraries and Grey Literature Authors [*]

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Abstract

The United States Congress enacted the Copyright Alternative in Small Claims Enforcement (CASE) Act at the end of 2020. The Act created a new Copyright Claims Board (CCB) to hear cases involving smaller claims of infringement as well as noninfringement, in addition to claims of misrepresentation under subsection 512(f) of Title 17, United States Code. The CCB commenced operations in early Summer of 2022. This study investigates the potential impact of the CASE act on library practices with respect to collections of grey literature including the potential for claims to be brought against the library by grey authors. The impact of the CASE Act on the removal and disabling features of Section 512 are examined with the result that libraries may become more engaged in Section 512 processes including the receipt of removal and disabling requests and the halting of restoration mechanisms. The relative infancy of the Copyright Claims Board creates an evolving and uncertain environment in the coming years for the Grey community. Will the CASE Act empower authors of grey content to bring libraries into unwanted CCB proceedings? What protections exist for libraries and their employees in the copyright law and in the CASE Act in specific? Are libraries and patrons exposed to greater legal risk from CASE Act processes and CCB proceedings? What level of resource consumption can be expected in libraries when responding to claims? By examining the mechanisms of the CASE Act, this research can help in understanding where library policies could be strengthened or instigated. Likewise, education resources for both library patrons and grey authors can be formulated.
Keywords: Copyright, Copyright Claims Board (CCB), Section 512 Takedown and Disabling, Grey Literature, Library and Archive Policy

Introduction

In 2011 Congress requested the United States Copyright Office conduct a study exploring how an administrative process might be instituted to resolve smaller copyright claims; those not exceeding $30,000.00. The 2013 report "recommended that Congress consider the creation of an alternative forum that will enable copyright owners to pursue small infringement matters and related claims arising under the Copyright Act" (United States Copyright Office, 2013, 3). Since that time, "[t]he record that was developed shows that the concerns that sparked this process more than 15 year years ago remain valid, and that the need for this legislation has increased rather than abated."[1] The H.R. Report indicated that the mechanism is "intended to be a forum for lower-value copyright disputes in which participation is voluntary for both claimants and respondents… accessible especially for pro se parties and those with little prior formal exposure to copyright laws who cannot otherwise afford to have their claims and defenses heard in federal court."[2] While litigation against educational entities, libraries and archives is uncommon it does occur. One example is the ongoing litigation involving the course management practices at Georgia State University.[3] A nonprofit library was also the target of litigation in *Hotaling vs. Church of Latter Day Saints*.[4] The case involving infringing reproductions of a literary work in church branch libraries. As the CASE Act is designed for pro se and less well positioned parties, i.e., those with limited financial resources or expertise, is the risk higher that an educational institution or its library or archive might be "sued" under the CASE Act? Yes and no. While it may be easier and less costly to bring a claim using the new process, there may be less incentive to do so as explained below.

CASE Act: Basics

The CASE Act is a complex process-oriented piece of legislation, constituting ten new substantive sections of the United States Code.[5] The implementing regulations are extensive.[6]

Who

Three Copyright Claims Officers (CCO) constitute the Copyright Claims Board (CCB).[7] Each member must be an attorney with seven years of experience. Two of which have "substantial experience" with copyright infringement claims. Between the two, the substantial experience must consist of representations of both copyright holders and users. The third member must have "substantial familiarity" with copyright law and "experience in the field of alternative dispute resolution" processes.[8] In addition to the CCO there are at least two Copyright Claims Attorneys (CCA) with three years of "substantial experience in copyright law."[9] Two of the duties of the CCA are to assist the "public with respect to the procedures and requirements of the CCB" and "provide information to potential claimants" regarding obtaining a 17 U.S.C. § 512(h) subpoena relating to the takedown and disabling provisions of section 512 "for the sole purpose of identifying a potential respondent."[10] These two provisions work in tandem to assist a claimant when an entity is also a service provider under section 512. That entity could be an educational institution, library or archive. Provodong assistance to potential claimants may encourage those unfamiliar with court federal court proceedings to pursue remedy throught the CCB. The purpose of the subpoena is to identify a student or patron ("subscriber") that the claimant believes is infringing copyright through posting or linking to their content on the entity's online platform. When the service provider is a library, issues of patron privacy are also implicated. Many states have statute protecting patron privacy by prohibiting the release of patron records, however most states also have an exception for a court order. A section 512 subpoena issued via 17 U.S.C. § 1503(a)(2)(C) would satisfy the court order exception.

What

There are four claims that can be brought before the CCB. First, copyright holders ("claimant") can bring an infringement claim.[11] Second, users ("claimant" or "respondent") can seek a declaration of non-infringement.[12] This may be useful to libraries and archives seeking massive digitization projects involving grey collections seeking to have the project deemed lawful under the copyright law. Third, a party can make a claim of misrepresentation under section 512(f).[13] This might occur when a respondent (your patron, student, subscriber, etc.), who is the target of a takedown and disabling notice believes that there is a good faith belief the initial claim contains a misrepresentation relating to the alleged infringing activity. Likewise, a claimant, the sender of a takedown and disabling notice that is in receipt of a counter notification (restoration request) made by your patron, student, subscriber, etc. may believe that request contains a misrepresentation. Finally, a counterclaim seeking damages against a claimant and arising from either 17 U.S.C. § 106 (infringement of an exclusive rights) or 17 U.S.C. § 512(f) (misrepresentation with respect to a claim or restoration/counter notification request) can be filed.[14]

What Not

A claim or counterclaim that is not one of the four elucidated claims in section 1504(c)(1)(4) is not permissible.[15] In addition, a claim that has been fully adjudicated or is pending in a court of competent jurisdiction, may not proceed before the CCB unless that court has granted a stay allowing the claimant to proceed to the CCB.[16] Any claim by or against a state or federal governmental entity is also prohibited.[17] This would exclude claims against a state college or university, its library or archive. A claim against a person or entity residing outside of the U.S is also excluded unless that person or entity initiated the proceeding before the Copyright Claims Board, and remains subject to counterclaims under this CASE Act.[18]

The Impact of the CASE Act on Foreign Parties

A foreign entity may be subject to CCB jurisdiction if service of process can be established. The individual or entity may be a foreign national but must have a business presence here in the United States. This would be the same for a copyright claim brought in federal district court. However, under the CASE Act one of the four excluded claims include a "claim or counterclaim asserted against a person or entity residing outside of the United States."[19] In the 231 claims filed through 11/6/2022, all but one misrepresentation case (22-CCB-0020) was dismissed due to non-compliant claims that (a) failed to be amended or (b) addressed a foreign party, or both (22-CCB-0030). An exception is made for those instances where "the person or entity initiated the proceeding before the Copyright Claims Board and is subject to counterclaims under this chapter." In other words, if a claim is made to the CCB by a person or entity residing outside of the United States and a counterclaim is made by a respondent against the foreign person or entity the claim and counterclaim will be allowed: "A claim or counterclaim asserted against a person or entity residing outside of the United States, except in a case in which the person or entity initiated the proceeding before the Copyright Claims Board and is subject to counterclaims under this chapter."[20] A library or archive with grey content in its collection located in another country that did not instigate a proceeding under the CASE Act would not be subject to jurisdiction of the CCB under the CASE Act but a library or achive with grey content in its collection that instituted a claim against a U.S. party would be subject to the jurisdiction of the CCB.

Methodology

In addition to reviewing the 2011 U.S. Copyright Report, the statutory text, codified at 17 U.S.C. §§ 1501-1511 was reviewed. To date there have been numerous regulations implementing the statutory text were also reviewed, 37 C.F.R. §§ 220.1 - 234.2. The first claim was filed June 16, 2022.[21]

The CASE Act in Operation

When a claim is filed, the CCA reviews it to determine if it is compliant claim with the statute and applicable regulations. If the claim is determined to be compliant the claimant must file against respondent within 90 days.[22] If claimant fails to then serve the respondent, the CCB dismisses the claim without prejudice. The CCB also notifies the respondent. Either party can request dismissal before the other party responds. If not compliant, the claimant is notified and provided 30 days to perfect the claim. If no filing made within that period CCB dismisses without prejudice. If the claim is refiled but still not compliant; a second notification is given with another 30 days to rectify. If the claim is still not compliant then CCB dismisses without prejudice. If at any time a claim is compliant; the claimant is instructed to proceed. The evidentiary standard used in the review and ultimate determination by the BBC is a preponderance, i.e., the fact asserted is more likely than not to be true. All CCB proceedings qualify as alternative dispute resolution for the purposes of the federal rules of civil procedure.[23]

General Opt-out

Once the claimant notifies a respondent, the respondent has sixty days to decide whether to opt out of the CCB proceedings. All respondents possess this right as the CCB proceedings are voluntary. The CCB can extend the sixty-day period "in the interests of justice."[24] If a respondent opts out, the CCB dismisses the complaint without prejudice. However, if the respondent fails to opt out, the respondent cannot later seek remedy in federal court.[25] In other words, failing to exercise the opt out right obligates the respondent to participate in the CCB proceedoings. If a case is pending in federal district court and a pending or active proceeding is before CCB involving the parties, the district court "shall issue a stay of proceedings or such other relief as the court determines appropriate."[26]

Specific Library and Archive Opt Out

While a library or archive with grey content in its collections may take advantage of the voluntary nature of CCB proceedings, a qualifying library or archive may also take advantage of a preemptory optout mechanism.[27] The CCB "maintains on its website a public list of libraries and archives that have preemptively opted out."[28] The Opt Out Registry (the "public list") for Libraries and Archives is available on the CCB website.[29] As of December 3, 2022, 932 libraries and archives have opted out. To be placed on the "public list" a library or archive must file a certification under penalty of perjury that the library or archive qualifies inclusion.[30] A library or archive that qualifies for the limitations on exclusive rights under 17 U.S.C. § 108(a)(1)-(3) is permitted to be included in the registry if it so desires.[31] The certification should include "any factual statements in support" thereof of its qualication.[32] The certification must be signed by person with "authority."[33] Here, authority means that the person can take "legally binding action on behalf [of the library or archive] ... in connection with litigation."[34] This person serves as a point of contact for future correspondence ("including" current phone number, mailing address and email address.[35] For example, if the Register of Copyright determines per section 223.2(a)(3) that a library or archive does not qualify, the point of contact (the person with authority) can "provide evidence supporting its qualification for the exemption within 30 days."[36] A party may also claim the library or archive does not qualify for the public list (registry). If entity fails to respond or Register determines it does not qualify, then library or archive is either not added to or is removed from the public list. The U.S. Copyright Office may "request additional information…"[37] In reviewing the certification, the CCB accepts facts unless "implausible or [in] conflict with sources … known to CCB or general public."[38] If a federal court determines the library or archive does not qualify by meeting the requirements of 17 U.S.C. § 108(a)(1)-(3), the library or archive must notify CCB and provide a copy of the order or opinion within 14 days after determination.[39] A claimant may assert in its claim per 17 U.S.C. § 506(e) and applicable regulations that it believes the library or archive "is improperly included" but the claimant "must include material facts…sufficient to support" that assertion.[40] If CCB determines the "alleged facts sufficient," the party is instructed to proceed with "service of claim" against the library or archive.[41] Multiple libraries and archives can be included in the same submission.[42]

The Register of Copyright may not charge a fee to preemptively opt out or to require renewal of that designation.[43] A determination for registry qualification "does not constitute a legal conclusion for any other purpose."[44] Moreover, qualification extends to "employee [of the library or archive] acting within the scope of their employment."[45] In other words, tibrary and archive employees share in the preemptive opt-out of their library employer. A library or archive "may rescind its preemptive opt-out election" but "may submit no more than one such rescission notification per calendar year.[46] In spite of the availability of the opt out registry, it may be desirable in a particular case for the library or archive to participate. Participating in the Registry forecloses that choice unless a rescission request is filed but that change in status (removing its name from the public list) can only be made once a year.

Damages

Is addition to posing a more simplified claims and counterclaims process than pursuing litigation in federal district court another significant contrast is the range of remedies available. In federal district court the plaintiff can chose between actual damages, such as a loss of profits, including "any profits of the infringer that are attributable to the infringement and are not taken into account in computing the actual damages" or statutory damages.[47] Statutory damages are set by court within a range provided in the statute, $750.00 up to $30,000.00 awarded per infringing work infringed, not per infringing copy. In a CCB proceeding an award of actual damages and lost profits in accordance with section 504(b) are allowed subject to CCB award limits. Statutory damages are allowed but are limited to a maximum of $15,000.00 per work for timely registered works. And $7,500.00 per work for those works infringed but not timely registered but not to exceed $15,000.00 in any single proceeding.[48] Regardless of the number claims or counterclaims brought statutory damages are limited to a total of $30,000.00 "in any single proceeding"

exclusive of attorney's fees and costs, if applicable.[49] The federal district court can also award injunctive relief such as the issuing of cease and desist orders, the seizure and destruction of infringing material, orders disabling access to infringing content. The CCB can order the cessation of infringing conduct, removing, disabling access to or destruction of infringing content.[50] The CCB can also order a party to cease sending notices under section 512, either by the copyright holder to remove or disable content or by a user to restore removed or disabled content, a counter notification.[51] The filing fee in federal district court is $402.00 that includes a $52.00 processing fee, whereas it only costs $100.00 to file with the CCB.[52] The federal district court can award court costs and attorney fees to a prevailing party as well as penalty enhancement for willful violations of $150,000 per worked in fringed. There is no damage cap on the total damages in a particular proceeding in federal district court. In contrast, unless the claim, counterclaim or defense is brought in bad faith the CCB cannot award costs and attorneys' fees.[53] If bad faith is present, costs and attorneys' fees are capped at $5,000.00 for a party represented by counsel and $2,500.00 if the arty appeared pro se.[54] In "extraordinary circumstances, such as where a party has demonstrated a pattern or practice of bad faith" the CCB may "award costs and attorneys' fees in excess" of these amounts.[55] Claims of willful infringement are not allowed. The lower monetary recovery allowance may dissuade copyright holders from bringing claims under the CASE Act.

Decisions and Appeals

The CCB will issue a written published decision including the factual and legal basis of determination (including any terms for future conduct).[56] Determination is by majority vote, but the dissenting CCB member can also file written opinion.[57] CCB decisions are published and made available on a "publicly accessible website."[58] Other than CCB reconsideration or Register review, a final determination precludes re-litigation by any court, tribunal or the CCB.[59] A submission or statement of a party or witness to a CCB proceeding may not be cited before any court, tribunal or the CCB.[60] A determination by the CCB precludes relitigation before any court or tribunal or the CCB and "may be relied upon for such purpose in a future action or proceeding arising from the same specific activity" in order to halt relitigation or re-dtermination by the CCB, except in the following circumstances.[61] First, a CCB decision does not preclude those "claims or counterclaims not asserted or not finally determined by the CCB" even if between the same parties or same issues.[62] Second, a determination of ownership decided by the CCB may not be relied upon and have no precedential value before a court, tribunal or the CCB.[63] Finally, except for federal district court review any CCB determination may not be cited as "legal precedent" before any court, tribunal or the CCB.[64]

A party may request reconsideration by the CCB within thirty days of a decision.[65] The standard of review is either "a clear error of law or fact or a technical mistake."[66] This a relatively narrow door of review. If the CCB denies request for reconsideration, the party has 30 days to appeal to the Register of Copyrights.[67] The standard of review used by the register is whether CCB denial was an abuse of discretion by the CCB in denying the reconsideration.[68] Likely, even more narrow a door of review. The Register either denies or remands to CCB with instructions. The amended final determination by the CCB is not subject to further review, except by federal district court. Within ninety days after a CCB final, amended final determination or Register reconsideration, the party may seek order from federal district court vacating, modifying or amending the reconsideration.[69] However, the federal district court intervention is limited to circumstances of "fraud, corruption, misrepresentation or other misconduct" in the determination or where the CCB "exceeded its authority or failed to render a final determination" or where a default determination or determination based on a failure to prosecute was due to "excusable neglect."[70] Finally, one year after the later of either a CCB final, amended final determination or Register reconsideration, the party can apply to federal district court seeking to reduce the award to judgment. The federal district court can impose "reasonable expenses" including attorneys' fees incurred by the aggrieved party.[71]

Copyright Trolls and Bad Faith

When the concept of a streamlined alternative to copyright litigation in federal district court was first discussed there was concern that an opportunist copyright holder or entities would abuse the process. Fears of copyright tolls loomed large. Several mechanisms within the CASE Act prevent the over-zealous individual copyright holder, lawyers and law firms or trolling entities from turning CCB filings into a cottage industry. First the U.S. Copyright Office issued a regulation placing limits on the number of filings a party can make in any 12-month period. A claimant is limited to 30 filings, a lawyer is limited to 40 and a law firm is limited to 80 filings in a twelve month period.[72] Moreover, a "proceeding shall count toward the numerical limitation as soon as it is filed, regardless of how the proceeding is resolved, whether it is found to be noncompliant under § 224.1 or unsuitable under § 224.2 of this subchapter, voluntarily dismissed, or fails to become active due to a respondent's opt-out."[73] Therefore, a proceeding counts towards the cap as soon as filed regardless of its outcome. No such limitation exists for federal district court filings. If a claim is filed and the respondent opts-out, and the claimant is a troll, the claimant-troll loses the $100.00 filing fee as the fee is not refundable. Moreover, this filing counts again the 12-month cap on the total number of filings allowable. This is one reason a library or archive may want to forego using the preemptory opt out process and registry of 17 U.S.C. § 1506(aa). Opting out on a case-by-case basis forces the claimant to lose the filing fee plus the filing counts as a strike against the 12-month filing cap. A library or archive that has preemptively opted out does not have the ability impact the claimant in this way. While it may be a nuisance to opt out on a case-by-case basis, nonetheless the library or archive can send a "message" to over-zealous claimants or their representatives. Second, the damage cap limitation applicable to the CCBs prevents the claimant from threatening the exorbitant statutory damages available in 17 U.S.C. § 504(c)(1) or the willful damages in 17 U.S.C. § 504(c)(2) to extort settlements, as would be the case in federal district court. Finally, the CCB may determine in a particular instance that a party acted in bad faith. If bad faith is determined, the CCB can award costs and attorneys' fees. The CCB will determine conduct is bad faith when the claim, counterclaim or defense is made "for a harassing or other improper purpose, or without a reasonable basis in law or fact."[74] If this occurs the CCB "shall" unless "inconsistent with the interests of justice, award reasonable costs and attorneys' fees to the adversely affected party." The award can be up to $5,000.00, or if pro se up to $2,500.00.[75] In extraordinary circumstances, e.g., bad faith "pattern or practice" CCB may "in the interests of justice" make an award in excess of these limits.[76] Likewise, if the claimant is a troll, the troll cannot recover costs or attorneys' fees even if the troll is the prevailing party. Other pejorative consequences also result. If more than one instance of bad faith is determined in a twelve-month period, the CCB "shall" bar the bad faith actor from filing a claim for next twelve months, plus dismiss all pending cases filed by the bad faith actor. Where the filing is an active proceeding, the respondent must consent in writing to the dismissal, i.e., the respondent library or archive for example may want its right vindicated by the CCB and so would rather proceed with the CCB process.[77] In counting the occurrences of bad faith, the "award of attorneys' fees or costs against an accused participant, pursuant to §232.3, within the prior 12 months shall establish an instance of bad-faith conduct within the requisite time period. The Board may consider other evidence of bad-faith conduct by the accused participant that did not result in an award of attorneys' fees or costs pursuant to § 232.3, including but not limited to, claims that did not proceed because they were reviewed by a Copyright Claims Attorney and found to be noncompliant or where proceedings were initiated but the respondent opted out."[78] The 12-month bar applies to "a legal counsel or authorized representative from participating on a party's behalf."[79] If this occurs, "the Board will consider requests from that party asking the Board to amend the scheduling order or issue a stay of the pending action to allow that party to find other representation."[80]

Impact on Service Provider: Unintended Consequences and Takedown and Disabling Requests

A library or archive with grey content in its collections may qualify for the service provider protections of 17 U.S.C. § 512. Educational entities also qualify for the service provider protections of Section 512. "The new subsection (j)(1)(B) definition of service provider, for

example, includes universities and schools to the extent that they perform the functions identified in new subsection (j)(1)(B)."[81] Section 512 is voluntary, but many education entities, libraries and archives chose to participate in its processes. Section 512 operates as a safe harbor so that an educational institution, library or archive service provider is shielded from consequences (secondary liability) of the infringing conduct of its students or patrons when those students and patrons post or link to alleged infringing content. Such status as a service provider precludes an award of any monetary damages: "damages, costs, attorneys' fees, and any other form of monetary payment" should the copyright holder pursue legal remedy in federal district court.[82] The safe harbor damage remission is a powerful incentive. In return, a service provider is obligated after receiving a conforming notice to "expeditiously [] remove, or disable access to, the material that is claimed to be infringing or to be the subject of infringing activity."[83]   To facilitate this process the educational institution, library or archive service provider must name a Designated Agent to receive these notices.[84]

An additional protection in Section 512 offers immunity to the service provider that removes or disables access to content in response to a takedown or disabling request. The immunity is apart from the remission of monetary award for claims of copyright infringement but would shield the service provider from harms where a "subscriber" patron or student claims harm in having their content removed or access to it disabled. A service provider "shall ***not be liable*** to any person for any claim based on the service provider's good faith disabling of access to, or removal of…" in response to receipt of a takedown or disabling request under Section 512(c)(1)(C).[85] However, the immunity applies only if the service provider "takes reasonable steps promptly to notify the subscriber that it has removed or disabled access to the material."[86] If this occurs the service provider educational entity, library or archive should also send a copy of the notice to the subscriber and inform the subscriber of the counter notification process. A service provider could also consider including a form letter conforming to the requirements for the counter notification under 17 U.S.C. §512(g)(3). This encourages the subscriber student or patron to fill in and return the form to the service provider which in turn this may trigger a successful restoration request by the subscriber, patron or student. Upon receipt of a conforming counter notification to restore content or cease disabling of access to it, the service provider must "promptly" informs the sender of the takedown or disabling notice that service provider will restore the material or access to it within 10 business days. The service provider then restores material or access to it within 10-14 days, unless the service provider receives notice that sender of the takedown or disabling notice is filing an "action seeking a court order to restrain the subscriber from engaging in infringing activity…"[87] The CASE Act alters this process in two ways. First, a claim filed against a service provider is not considered compliant if the claim does not also affirm that the claimant first notified the service provider per 17 U.S.C. § 512(b)(2)(E), (c)(3) or (d)(3) to remove or disable access to the alleged infringing content, and the service provider failed to remove or disable access to the material expeditiously upon the provision of such notice.[88] This may increase the sending of takedown and disabling notices to grey libraries and archives that have named a Designated Agent to receive such notices. Moreover, in instances where the complaint is not compliant, the CCB will provide the claimant information on serving a proper notice under section 512.[89] This may also increase the filing of takedown and disabling notices against the library or archive service provider.

The second impact of the CASE Act process is that a "claim or counterclaim before the Copyright Claims Board that is brought under subsection (c)(1) or (c)(4) of section 1504, or brought under subsection (c)(6) of section 1504 and that relates to a claim under subsection (c)(1) or (c)(4) of such section, ***qualifies as an action seeking an order to restrain a subscriber from engaging in infringing activity*** under section 512(g)(2)(C) if (1) notice of the commencement of the Copyright Claims Board proceeding is provided by the claimant to the service provider's Designated Agent ***before the service provider replaces*** the material following receipt of a counter notification under section 512(g); and (2) the claim brought alleges infringement of the material identified in the notification of claimed infringement under section 512(c)(1)(C)," i.e., the alleged infringing conduct resulted from the posting of the content by a "subscriber" student

or patron.[90] Under the CASE Act then, a second way to halt a restoration of content or access to it would be to file a complaint with the CCB. A far less costly and simpler process than filing an "action seeking a court order to restrain the subscriber from engaging in infringing activity" under 17 U.S.C. § 512(g)(2)(A)-(C) in federal district court. If notice is provided to the service provider's Designated Agent of the CCB filing before restoration occurs and the notice alleges infringement under subsection 512(c)(1)(C), i.e., posting infringing content, the restoration process is halted.[91] An unintended consequence might be that a claimant files a claim with CCB to halt restoration under subsection 512(g), then having prevented restoration seeks voluntary dismissal, never having intended to seek CCB determination of the matter in the first instance. An unanswered question would be whether this sequence, of filing, halting restoration followed by a dismissal request under 17 U.S.C. § 1506(q)(1) constitutes bad faith conduct under 17 U.S.C. § 1506(y). Recall, the claimant by seek voluntary dismissal anytime before the "respondent files a response.[92]

CASE Act in Operation: 276 Filings to date; December 26, 2022

Dismissals

The extant dismissed cases from the CCB are early indicators of how the tribunal behaves and may continue to behave. By gathering this data, we can see what types of cases are being brought before the CCB, who are the claimants, characteristics of respondents, the reason for dismissal, as well as how the CASE Act impacts foreign parties and interacts globally. This data can inform how grey authors, libraries and archives could function within the small claims landscape. This research was performed in two phases. The first phase of full case analysis was completed November 6th, 2022, and was updated over a month later, December 25th, 2022, to account for new dismissals (Phase 2). By addressing these dismissed cases in a two-step format, the data was comparable. While both open and closed filings were evaluated, though this study focuses on data from closed dockets.

Methodology

The Case Search Portal on the Copyright Claims Board was utilized to search between open and closed dockets, to navigate individual cases.[93] Each docket number represents an individual case filing, not all cases brought by a claimant, as claimants may re-file or file against multiple respondents. By taking the action of [View] on the Row associated with an individual filing, all documents related to that filing are displayed. In nearly all cases, the initial claim is visible, as well as a clear description of Parties. In the few filings in which the initial claim was not visible, the type of claim was inferred from the Order to Amend Claim, or the Order Dismissing Claim. If a case is dismissed, the Order Dismissing Claim is always public. In most cases, the requests to link parties, as well as the Service Packets and their waivers are restricted to protect the privacy of respondents. The collection of data began by starting with case 22-CCB-0001 and working upward to Case 22-CCB-0276, at first by looking at closed dockets only. Each case was evaluated to learn (a) Type of Claim: Infringement, Misrepresentation, or Claim for a Declaration of Non-Infringement; (b) Date of Dismissal; (c) Foreign or Domestic Claimant or Respondent; (d) Reason for Dismissal; (e) If the case was dismissed due to "Failure to Amend Claim," the reason for the instruction to amend was evaluated. Some cases had features that made them unique, which we will address in the Breakdown of Claims section; (f) If a dismissed case was filed under misrepresentation under 17 U.S.C 512(f), the Service Provider was notated. (g) Type of Claimant or Respondent; individuals, organizations, brands, or state agencies. These cases were organized into two batches, (1) Nov. 6, 2022 and (2) Dec. 25, 2022; then were merged to generate themes and conclusions about the CCB as of December 25, 2022.

Breakdown of Claims

The following reasons were given for case dismissals in the year 2022. No amended claim was filed in the time allowed. These cases were dismissed because the claim was not amended to accommodate the Copyright Claims Board's instruction within the time frame. Some examples of these ordered corrections would be issues such as Copyright Registration, Foreign

Respondents, Unrelated Respondents, Clarity, Permissible Remedies, Permissible Claims, Legal or Beneficial Ownership, Relief Sought, among many others. Whenever the CCB orders a claim to be amended, they outline exactly what the claimant must fix, using citations from the claimants filing, to make their claim permissible. For some filings there is only one, where others may have many. As discussed, a claimant has two opportunities to file an amended claim successfully, after which the claim will be dismissed if the claim is still found to be non-compliant. The respondent submitted an opt-out notice for this claim within the 60 day opt-out period.[94] These cases were all deemed permissible by the CCB and the respondents were served according to CASE Act procedure. The respondent then chose to opt out. For the filings which had this outcome, there was not an explicit explanation provided by the claimant, and the claim can refile in the future. The claim and amended claim filed in this proceeding, respectively did not comply with the applicable statutory and regulatory requirements for filings before the board. In these instances the CCB then outlines when the claimant amended the claim twice, plus when it was reviewed, and that it was reviewed by a CCB Attorney and passed to the CCB Officer. The Claimant did not file a Proof of Service or Waiver of Service form regarding either respondent within 90 days.[95] These claimants are permitted to refile. The Board did not receive the respondents address by the deadline. Claimants whose cases are dismissed due to this reason may also refile. This makes it possible for claimants to file without the respondents address initially, however the address required within the designated time frame. In this way no claimant is hindered from filing with the CCB. In some instances all parties have agreed in a written stipulation that the claim be dismissed with prejudice and the CCB dismisses the claim with prejudice. The single settlement among the dismissals as of December 25, 2022 is unique, in that the Claimant and Respondent settled, and the regulations state that the board should dismiss *without* prejudice, however the claimant requested that the case be dismissed with prejudice.

Phase 1

As of November 6, 2022, 51 cases were dismissed out of 231 (22.08%). 20 of these 51 cases were closed because the claim was not amended in the time allowed under U.S.C § 1506 (f)(1)(B). Four of these cases were brought against foreign claimants. In 9 out of 51 cases, the Respondent opted out, ending the CCB case per 17 U.S.C § 1506(i). Six (out of 51) cases were deemed non-compliant, though the copyright holder had amended their claim twice in each filing. These specific claimants are unable to refile with the CCB per U.S.C § 1506(f)(3). In four cases, the CCB did not receive the respondents address by the deadline and were permitted to re-file. Four additional cases were dismissed because the Claimant failed to provide proof of service within 90 days per U.S.C § 1506(v)(1). Those claimants too, were permitted to refile. A singular claimant withdrew their claim with prejudice per 17 U.S.C. 1506(r)(1). 45 of the 51 cases (as of November 6, 2022) were for Infringement under 17 U.S.C. § 1504(c)(1). Two cases were brought before the CCB for both Infringement and Misrepresentation. Five cases were solely for misrepresentation under 17 U.S.C. § 512(f). All but one misrepresentation case (22-CCB-0020) was dismissed due to non-compliant claims that (a) failed to be amended, or (b) addressed a foreign party, or both; as seen in the case 22-CCB-0030. The CCB outlines to the claimant what constitutes a claim of 512 misrepresentation in the "Order to Amend Non-Compliant Claim" document. In the cases of misrepresentation which addressed foreign parties, and that were dismissed because of failure to amend, they had domestic Service Providers, like Google, or YouTube. This trend maintains in Phase two of our study leading into December. In five of these cases, the copyright was not yet registered. Among these misrepresentation cases, there were two instances of persistent copyright holders. This describes claimants who uploaded repeated documents and files after being ordered to cease. In one case they were suspended while the board conducted its compliance review of the claim.

Phase 2

As of December 25, 2022, 78 additional cases had been dismissed since November 6. 46 of these were dismissed because the claim failed to be amended in the time allotted. 10 cases were dismissed as no Proof of Service waiver was filed within the 90 day period. 9 cases were closed because the respondent opted out, and 3 additional cases were closed due to the respondent's

address not being provided by the claimant within the time frame. There were some unique cases. For example, one case was closed because the sound recordings in question were made in 1965, the CCB does not have jurisdiction over pre-1972 Sound Recordings according to 17 U.S.C. 1401 and 17 U.S.C. 301(c). Additionally, in case 220-CCB-0055, the claim of infringement was dismissed because the claimant's case had already been seen and dismissed by the Federal District Court. In another case *Richards v. Hasbro, Inc.,*[96] the Claimant's copyright had been refused. In 22-CCB-0092, the Claimant failed to amend their claim to provide evidence that their representation was eligible to represent them before the CCB. These are some examples of unique filings seen by the CCB thus far. 12 cases of the 78 were claims of misrepresentation. Of these cases, two were for both infringement and misrepresentation. One case was for infringement, misrepresentation, and a declaration of noninfringement. The cases which included a claim of misrepresentation were dismissed for a variety of reasons, with the highest amount of reasons for dismissal (7/12) that the mlaim was not amended. Two of the cases were dismissed because the claim was found to be non-compliant. One case was dismissed because of failure to provide a Proof of Service waiver by the claimant. A case was dismissed because the Respondent's address was not provided, and an additional, singular misrepresentation case was dismissed because the respondent opted out. This case, 22-CCB-0256, is the most recent case to date.

Trends

When Phase 1 and 2 are combined, several trends are apparent. When the CCB began in June of 2022, there was a higher rate of Rrspondents opting out; in fact, out of the first fifteen cases the CCB ruled in June and July, six of these were opt outs. This is over 25% of cases being dismissed for this reason. In contrast, of the most recent fifteen cases dismissed as of December 25, 2022, only one case was due to the respondent opting out of proceedings. The rest of the cases were because the claim was not amended. This reason (claim not amended) is still the leading reason for case dismissals, however the percentage goes up from 39% of dismissals in Phase 1, to 58% in Phase 2. Of all the cases seen by the CCB, most misrepresentation cases seen by the CCB had foriegn respondents. These are situations in which either party, or both, are outside of the United States; in which the infringement occurred via a domestic service provider. The misrepresentation was claimed in the response to the service provider's answer to the take down notice. In isolated cases, the work was registered in the United States, even though both were foreign parties. Some countries which are cited in claims are Ukraine, Kazakhstan, Russia, China, Germany, Ireland, and the United Kingdom.

The cases seen by the CCB vary in scale. Most dismissals are individuals filing against other individuals or smaller companies, in many cases, web-based platforms or music recording/distribution entities. There were several cases featuring larger corporations such as Paramount Pictures, Wells Fargo, and Hasbro. Some platforms were also named in filings such as YouTube or Amazon. There were increased filings regarding social media in the Phase two portion of this study. Assessing these dismissals is relevant because it allows us to look comparably at open dockets. After becoming familiar with the closed dockets and their contents, many parties are recognizable. It appears that the feature of the CCB which permits claimants to refile is being utilized. A notable number of individuals who did not amend their claim in an earlier filing or did not provide proof of service within the 90 day opt out period refiled, and these cases are again active proceedings before the CCB. There have been no monetary awards or damages awarded by the CCB as of December 26, 2022. This indicates that to date all dismissals are caused from legal processes verses the verdict of the case itself. As of December 26, 2022, there are no cases involving libraries or archives. While the name of one claimant has "Archive" in the title, it is a photography business platform v. an institutional entity.

Dismissals: Implications for Libraries and Grey Authors

Implications for grey authors will become clearer in the coming months, as the CCB platform becomes more well known. Because the cases which have been dismissed so far have been due to legal thresholds within the CCB process, it is important that grey authors and grey libraries are aware of procedure and boundaries of the CCB. An important notation for grey authors,

especially for foreign parties, is to ensure the infringed work has a copyright in the U.S., or is in the process of registration for one. Additionally, if instructed to amend an existing claim, ensure this is done within the designated time, and that the recommendations by the CCB are followed. They instruct the claimant how to properly amend their claim in their "Order to Amend Non-Compliant Claim," and uses direct examples and citations from the filing itself to guide the claimant. Due to the volume of cases being seen by the CCB, it is likely that libraries and archives will be brought into proceedings in the future. The process by which the CCB is streamlining their dismissals indicates that these proceedings will likely be worked out using the respondent opt out option or through the progression of the CCB processes before ever reaching a final ruling. The coming year will indicate how many cases make it to the final stages in the CCB Claims Board processes.

Recommendations

As of December 26, 2022, one third of the preemptive opt out list is comprised of public libraries. The majority of libraries and archives that select this this opt out option are academic in nature. This indicates that public libraries are less likely to be using the pre-emptive opt out list, making them vulnerable to unwanted CCB proceedings by grey authors. The preemptive opt out option can help prevent libraries from being pulled into initial proceedings and prevent the entity from being involved in repeated filings before the CCB. The CASE ACT as implemented by the CCB makes it simple to file an initial claim; in this way it does expose libraries and patrons to increased legal risk. However, the maintenance of these filings is such that the likelihood of sustained involvement with the CCB is lowered. If libraries and archives are brought into proceedings, and they do not Opt-out, there would be a risk of increased resource consumption; libraries might need to seek legal counsel or make changes to current procedures, or perhaps seek a Declararation of Non-Infringement. With the presence of streaming platforms increasing in library environments (both public and academic), it is increasingly important that libraries and librarians are aware of the CASE Act and its accessibility, as well as threats to patron privacy through increased use of the Section 512(h) subpoena to identify the subscriber-patron. Having a designated employee responsible for handling interactions with copyright is one way that libraries can prepare for these challenges. Increasing efforts to maximize patron privacy through tech based solutions, beefing up cybersecurity efforts and taking proactive measures to protect patron data is key. Some libraries may find it in their best interests to hold programming events to inform their community about how they can protect themselves as well. This could be especially useful in environments which support grey authors. Many of the cases which cited a section 512 misrepresentation, did so in response to the claimants receiving an section 512(c) takedown or disabling notice. Libraries, service providers and rightsholders can attempt to work together when handling takedown notices and restoration services. This can help in furthering the efficacy of the CASE Act by supporting functionality.

Grey authors are at increased risk of being pulled into CCB proceedings. This is partly due to the ability to easily file a claim. The chance that grey authors will be able to preemptively opt out of proceedings is low, and opting-out of proceedings after the claim is initiated puts them at risk for being involved in the Federal District Court proceedings later, which may not be auspicious for independent authors and smaller grey organizations. It is important that grey authors have a comprehensive understanding of copyright procedures, as well as the structure of the CASE Act.

Educational Resources for Libraries and For Grey Authors.

A direct resource for Libraries and Grey Authors needing information about the CCB, can go directly to their Handbook.[97] The Copyright.gov website is also invaluable for both Libraries and Grey Authors. Not only does it outline the laws in place, but it also details changes and updates relevant to the Copyright Claims Board. The American Library Association (ALA) website is also home to valuable resources for library administration, librarians, and patrons.[98] ALA provides

comprehensive resource guides to valuable physical and digital resources. The Association of College and Research Libraries,[99] and the Association of Research Libraries[100] are home to valuable libguides and resources for librarians.

Conclusion: Benefits

While the CASE Act allows any respondent to opt-out and for a library or archive to preemptively opt-out there are depending on circumstances benefits to participating in CCB processes. First, a library or archive may seek a declaration of noninfringement that can include a determination of fair use or other lawful uses such as Section 108 (library and archives) or Section 110 (educational entity). For the nominal $100.00 filing fee, a use can be deemed a fair use or otherwise non-infringing by the CCB. As the CCB must consider other provisions of the copyright law ("this title"), i.e., copyright statutes and regulations and existing judicial precedent. The CCB must follow the law in federal jurisdiction where copyright holder could have filed in federal district court. If more than one jurisdiction possible, CCB determines which venue provides the connection to the parties and alleging infringing conduct. It is unclear whether this precludes CCB from consulting persuasive precedent; persuasive precedent that may favor a use by the library or archive? The CCB proceedings are designed with the untrained claimant in mind as lawyers, in-person appearances are not necessary, nor is formal motion practice allowed. The CASE Act provides a less formal and costly procedure to secure a determination of noninfringement as parties can proceed pro se or be represented by law student pro bono. On the other hand, attorneys' fees and costs are awarded only in the presence of bad faith. But this may prove useful when the use is likely to be found infringing by the library or archive. If the library or archive is the prevailing party and the other party fails "to pay damages or otherwise comply with the relief, the federal district court "shall impose…reasonable expenses required to secure such order including attorneys' fees that were incurred by aggrieved party" in an application to reduce an award to judgment.[101] Moreover, statutory damages are capped at $15,000.00 per work for registered works and for untimely registered works: $7,500.00 per work but not more than $15,000.00 in a proceeding. If the work is timely registered the damages in a single proceeding are limited to $30,000.00, exclusive of attorney's fees and costs. Finally, misrepresentation claims under 17 U.S.C. § 512(f) can be brought before the CCB to combat overly aggressive copyright holders and copyright trolls.

Future Report to Congress

There may be changes to the CASE Act as within three years after first decision of the CCB, Congress requested that the Register of Copyrights ("shall") submit a report addressing the following: the use and efficacy of the CCB, including the number of proceedings the CCB could reasonably administer; whether any adjustments to CCB authority (expansion or limitations of its scope); increasing the eligible claims that could be filed, e.g., 17 U.S.C. § 1202 (removal of copyright management information); adjustments to the "works and applicable damages limitations"; whether greater allowance (or limitations) of attorneys' fees and costs should be made; adding mechanisms to assists copyright holders to identify and locate online infringers, hopefully including the impact of increased use of 17 U.S.C. § 512(h) (subpoena powers); whether CCB duties should be expanded to offer mediation or alternative dispute resolution services; and any other matter pertinent to the CCB.[102] In addition, the CCB within 3 years of its first determination may "conduct a rulemaking to adjust the limits on monetary recovery or attorneys' fees and costs."[103] This rulemaking is likely to include opportunity for public comments. As this element is one of the aspects of the three-year report to Congress it is unclear whether the Register will seek public comment on the other aspects of the required report.

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Notes

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[1] H.R. Rep. No. 116-252, at 19 (2019).

[2] H.R. Rep. No. 116-252, at 17 (2019).

[3] *Cambridge University Press v. Albert*, 906 F.3d 1290 (11th Cir. 2018).

[4] *Hotaling vs. Church of Latter Day Saints*, 118 F.3d 199 (4th Cir. 1999),

[5] 17 U.S.C. §§ 1501-1510.

[6] 37 C.F.R. §§ 220.1 – 234.2.

[7] 17 U.S.C. § 1502(b)(1).

[8] 17 U.S.C. § 1502(b)(3)(A)(i)-(iii).

[9] 17 U.S.C. § 1502(b)(3)(B).

[10] 17 U.S.C. § 1503(a)(2)(B) and (C).

[11] 17 U.S.C. § 1504(c)(1).

[12] 17 U.S.C. § 1504(c)(2).

[13] 17 U.S.C. § 1504(c)(3).

[14] 17 U.S.C. § 1504(c)(4)

[15] 17 U.S.C. § 1504(d)(1).

[16] 17 U.S.C. § 1504(d)(2).

[17] 17 U.S.C. § 1504(d)(3).

[18] 17 U.S.C. § 1504(d)(4).

[19] 17 U.S.C. § 1504(d)(4).

[20] 17 U.S.C. § 1504(d)(4).

[21] Docket 22-CCB-0004.

[22] 17 U.S.C. § 1504(g).

[23] 17 U.S.C. § 1509(b).

[24] 17 U.S.C. § 1506(i).

[25] 17 U.S.C. § 1504(g)(1).

[26] 17 U.S.C. § 1509(a).

[27] 17 U.S.C. § 1506(aa).

[28] 37 C.F.R. § 223.2(b)(1).

[29] See, https://ccb.gov/libraries-archives-opt-out/

[30] 37 C.F.R. § 223.2(a)(1).

[31] 17 U.S.C. § 1506(aa)(4).

[32] 37 C.F.R. § 223.2(b)(2).

[33] 37 C.F.R. § 223.2(a)(2).

[34] 37 C.F.R. § 223.2(c).

[35] 37 C.F.R. § 223.2(a)(2).

[36] 37 C.F.R. § 223.2(b)(1).

[37] 37 C.F.R. § 223.2(b)(1).

[38] 37 C.F.R. § 223.2(a)(3).

[39] 37 C.F.R. § 223.2(a)(4).

[40] 37 C.F.R. § 223.2(b)(2).

[41] 37 C.F.R. § 223.2(b)(2).

[42] 37 C.F.R. § 223.2(b)(2).

[43] 17 U.S.C. § 1506(aa)(3)(A) and (B).

[44] 37 C.F.R. § 223.2(b)(1).

[45] 37 C.F.R. § 223.2(a)(5).

[46] 37 C.F.R. § 223.2(a)(7).

[47] 17 U.S.C. § 504(b) and (C).

[48] 17 U.S.C. § 1504(e)(1)(A).

[49] 17 U.S.C. § 1504(e)(1)(D).

[50] 17 U.S.C. § 1504(e)(2)(A)(i).

[51] 17 U.S.C. § 1504(e)(2)(A)(ii).

[52] 37 C.F.R. § 201.3(g)(1)(i) and (ii).

[53] 17 U.S.C. § 1504(e)(3).

[54] 17 U.S.C. § 1506(y)(2).

[55] 17 U.S.C. § 1504(y)(2)(B).

[56] 17 U.S.C. § 1506(t)(1)(B) and (C).

[57] 17 U.S.C. § 1506(t)(1)(A) and (2).

[58] 17 U.S.C. § 1506(t)(3).

[59] 17 U.S.C. § 1507(a).

[60] 17 U.S.C. § 1507(c).

[61] 17 U.S.C. § 1507(a).

[62] 17 U.S.C. § 1507(a)(1).

[63] 17 U.S.C. § 1507(a)(2).

[64] 17 U.S.C. § 1507(a)(3).

[65] 17 U.S.C. § 1506(w).

[66] 17 U.S.C. § 1506(w).

[67] 17 U.S.C. § 1506(x).

[68] 17 U.S.C. § 1506(x).

[69] 17 U.S.C. § 1508(c).

[70] 17 U.S.C. § 1508(c)(1)(A)-(C).

[71] 17 U.S.C. § 1508(a).

[72] 37 C.F.R. § 233.2(a)(1)-(3).

[73] 37 C.F.R. § 233.2(a).

[74] 17 U.S.C. § 1506(y)(2).

[75] 17 U.S.C. § 1506(y)(2)(A).

[76] 17 U.S.C. § 1506(y)(2)(B).

[77] 17 U.S.C. § 1506(y)(3).

[78] 37 C.F.R. § 232.4(c).

[79] 37 C.F.R. § 232.4(d)(1).

[80] 37 C.F.R. § 232.4(d)(3).

[81] H.R. Rep. 105-551, pt. 2, at 64 (1998); Sen. Rep. 105-190, at 54-55 (1998).

[82] 17 U.S.C.A. § 512(k)(2).

[83] 17 U.S.C.A. § 512(c)(1)(C).

[84] 17 U.S.C.A. § 512(c)(2).

[85] 17 U.S.C. § 512(g).

[86] 17 U.S.C. § 512(g)(2)(A).

[87] 17 U.S.C. § 512(g)(2)(A)-(C).

[88] 17 U.S.C. § 1506(f)(1)(C)(i).

[89] 17 U.S.C. § 1506(f)(1)(C)(ii).

[90] 17 U.S.C. § 1507(d).

[91] 17 U.S.C. § 1507(d).

[92] 17 U.S.C. § 1506(q)(1).

[93] See, https://dockets.ccb.gov/search/cases.

[94] 17 U.S.C § 1506(i).

[95] 17 U.S.C. § 1506(v)(1).

[96] Docket 22-CCB-0084.

[97] See, www.CCB.gov/handbook

[98] See, https://libguides.ala.org/copyright

[99] See, https://acrl.libguides.com/scholcomm/toolkit/copyright

[100] See, https://www.arl.org/know-your-copyrights/

[101] 17 U.S.C. § 1508(a).

[102] Pub. L. 116–260 (CASE Act), § 212(e)(1)-(6) (2020).

[103] 17 U.S.C. § 1510(a)(2)(A).

Data Science as a Research Support Service and the Role of the Libraries: UF's CNI Executive Roundtable Experience[*]

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Abstract

Design: The author used a stakeholder approach to address ten (10) questions set by the program sponsor, Coalition for Networked Information (CNI), for institutional participation in a CNI executive roundtable.

Purpose: The goal of the CNI Executive Roundtable was to gain insight into how data science expertise is being provided to the university community in the broader context of research support services at key CNI member institutions. This case study shares insights from a large R1 institution in the southeast United States of America.

Methodology: The author used a participatory action research method approach.

Findings: Participation in the CNI Executive Roundtable discussion revealed the need for interdisciplinary, socio-technical collaborations of key stakeholders within and across the university community and campus units to further develop, maintain, and sustain the developing data science ecosystem as a research support service and the role of libraries.

Research implications: Data science support requires collaborations across many units.

Practical implications: Collaborations across campus units support interdisciplinary research which is necessary for developing data science as a research support service.

Originality/value: The libraries collaborated with information technology research computing and clinical and translational science information technology units to answer roundtable questions which were shared with CNI after the March 16, 2022 meeting.

Introduction

The Dean of the Libraries sometimes shares professional development opportunities received through list serves affiliated with key senior administrators' communities of practice. On February 14, 2022, the CNI-MEMBER-REPS list serve received a notification titled REMINDER: Data Science Research Support & Libraries CNI Exec. Roundtable. The Dean forwarded the notification to the Data Management Librarian for consideration of participation. After reviewing the notification, the Data Management Librarian informed the Dean of Libraries on February 15, 2022 that the Libraries should express an interest to participate in the roundtable.

The deadline to express interest in the CNI Executive Roundtable Data Science as a Research Support Service and the Role of Libraries was February 21, 2022. Any CNI member affiliate could apply to participate in the Roundtable either as one individual or a team of up to three individuals who have different roles (e.g. a library director, a CIO, a head of research computing, a chief research officer or a faculty officer or a faculty data science leader) to represent the institution. The team representing the author's institution included the Library Director, Director of Information Technology Research Computing, and the Data Management Librarian.

The express of interest application form included submission of a brief (2-3 sentences) of the institution's primary interest in the Roundtable and following questions: What is the scope of data science research support services at your institution? Within the library? How much demand is there for research support services and how are you managing it? An expression of interest to participate in the Roundtable was submitted on February 19, 2022. The request to participate was accepted on February 24, 2022. The author's team attended the Roundtable on March 16, 2022.

The author used a participatory action research approach. Participatory action research is "a type of research in which the researcher involves some organizational members as active participants throughout the process of studying an organization; the goal is making changes in the organization." (Schutt, 2006, p. I-26).

"The Coalition for Networked Information (CNI) is dedicated to supporting the transformative promise of digital information technology for the advancement of scholarly communication and the enrichment of intellectual productivity. Over 200 institutions representing higher education, publishing, information technology, scholarly and professional organizations, foundations, and libraries and library organizations make up CNI's members; CNI is entirely funded through membership dues. Semi-annual membership meetings bring together representatives of CNI's constituencies to discuss ongoing and new projects and to plan for future initiatives [1]." The goal of the Executive Roundtable was to gain insight into how data science expertise is being provided to the university community in the broader context of research support services at key CNI member institutions. CNI is particularly interested in what roles, if any, the university library is playing in data science as a research support service. Each participating institutional team were informed to be prepared to speak to at least most of the research support questions. Out of the thirteen teams that participated, this article articulates responses from the author's institution. "The goal of the Executive Roundtable was to gain insight into how data science expertise is being provided to the university community in the broader context of research support services at key CNI member institutions. CNI was particularly interested in what roles, if any, the university library is playing in research support. To enable Roundtable participants to fully understand the context at each institution, participating institutional teams prepared to speak to at least most of the following issues[2]" covered in the ten (10) questions provided to the participating institutions in the roundtable discussion. The University of Florida was one of 13 key CNI member institutions selected to participate in this executive roundtable discussion.

Literature Review

The National Institutes of Health Office of Data Science Strategy (https://datascience.nih.gov) includes several data science themes. The data science themes are data infrastructure, data ecosystem, tools and analytics, community engagement, and workforce development. The Committee on Data International Science Council (CODATA) includes a CODATA-RDA (Research Data Alliance) Schools of Research Data Science to address the need for foundational data science skills in all disciplines (https://codata.org/initiatives/data-skills/research-data-science-summer-schools/). "According to CODATA-RDA, research data science requires a range of skills relating to data in order to address some contemporary research challenges. "Contemporary research – particularly when addressing the most significant, inter-disciplinary research challenges –cannot effectively be done without a range of skills relating to data, including the principles and practice of Open Science and research data management and curation, the use of a range of data platforms and infrastructures, large scale analysis, statistics, visualization and modelling techniques, software development and annotation, etc., etc." (CODATA, 2022). Thus, data science as a research support service and the role of the libraries will require broad collaborations with stakeholders to develop capacity, infrastructures, and resources.

What is data science?

Data science can be described as "a set of fundamental principles that support and guide the principled extraction of information and knowledge from data" (Provost and Fawcett, 2013). The **CR**oss **I**ndustry **S**tandard **P**rocess for **D**ata **M**ining (CRISP-DM)[3] "enable organizations to learn in concert with data (Shafique and Qaiser, 2014; Sharma, Osei-Bryson and Kasper, 2012)" (van der Voort et al., 2021, 1). The CRISP-DM "is a process model that serves as the base for a data science process" (Hotz, 2022). The CRISP-DM Life Cycle by Hotz (Figure 1) illustrates key data science phases.

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[1] About CNI https://www.cni.org/about-cn.

[2] CNI Executive Roundtable Call for Expressions of Interest, March 16, 2022, 2:00-4:30pm ET.

[3] Hotz, N. (2022). What is CRISP DM? https://www.datascience-pm.com/crisp-dm-2/.

The key six sequential phases include:

1. Business understanding – What does the business need?
2. Data understanding – What do we have / need? Is it clean?
3. Data preparation – How do we organize the data for modelling?
4. Modelling – What modelling techniques should we apply?
5. Evaluation – Which model best meets the business objectives?
6. Deployment – How do stakeholders access the results?
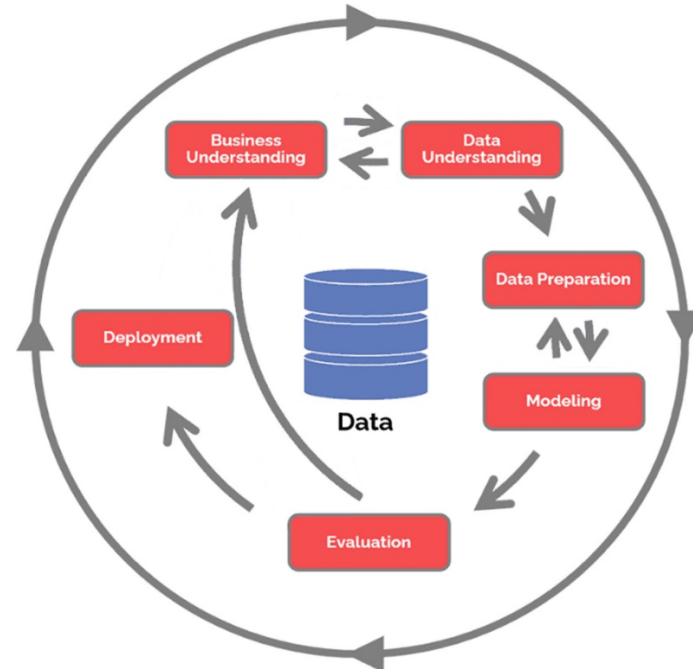
CRISP-DM Diagram. Inspired by Wikipedia

Figure 1.   CRoss Industry Standard Process for Data Mining (CRISP-DM) Diagram (Hotz, 2022)

Developing research data science as a support services

The National Institutes of Health National Library of Medicine Network of the National Library of Medicine (NNLM) priority areas include: Citizen Science and Crowdsourcing, Data Science, Student Engagement, and Substance Use Disorders[4]. The NNLM data science priority area supports the goals of the National Library of Medicine Strategic Plan 2017-2027: A Platform for Biomedical Discovery and Data-Powered Health[5]. The three goals of strategic plan include: accelerate discovery and advance health through data-driven research, reach more people in more ways through enhanced dissemination and engagement, and build a workforce for data-driven research and health. Developing data science as a research support services and the roles of the libraries as collaborators, resource brokers, and stakeholders at Coalition for Networked Information (CNI) member institutions can support the NLM in meeting the evolving needs of the research and clinical communities via institutional support for resources, software, and tools. For example, Emerald Cloud Lab (ECL), developed by two Carnegie Mellon University alumni, is "the world's first Academic Cloud that allows you to remotely control a complete life sciences laboratory from your compute.[6]" ECL was referenced during keynote address by Clifford Lynch on Program Day 1 of the 42nd International Association of University Libraries (IATUL) on June 13, 2022. Electronic research notebooks (ERNs) also known as electronic lab notebooks (ELNs) are emerging as potential core resources for developing research data science as support services.

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[4] NNLM. (2022). Network of the National Library of Medicine Initiatives. https://nnlm.gov/initiatives.
[5] NLM. (2019). https://www.nlm.nih.gov/pubs/plan/lrp17/NLM_StrategicReport2017_2027.html.
[6] CMU. (2022). Carnegie Mellon University (CMU) Cloud Lab. https://cloudlab.mcs.cmu.edu/.

The emerging role of ELN/ERN in RDM as part of data science support

On June 16, 2022, an international Research Notebooks Community Discussion meeting led by University of Glasgow and Jisc representatives introduced four case studies. The use cases were from the University of Oxford, Max Delbrück Center for Molecular Medicine in the Helmholtz Association (MDC), University College London, and The Clausthal University of Technology. Despite the differences in approaches to exploring electronic lab notebook (ELN) at the four institutions along with their current level of developments, all articulated the fact that ELNs are becoming important in the development of research support services for their researchers with one institution articulating there are "rumours that some of funding councils may ask for ELNs to be published as the end of research grant." ELN[7] are also known as electronic research notebooks (ERNs) to denote use beyond traditional wet labs/lab environments.

The University College London (UCL) Research Data Lifecycle (see Figure 2) include eleven data management components which also represent the research data management and curation foundational skills that contribute to research data science. The eleven components illustrated in the UCL research data lifecycle are: Idea, Planning, Funding bid, Data collection, Data storage, Data analysis, Data deposit, Data production, Preservation & Curation, Discovery, and Access. Figure 1 describes the key processes in the research data lifecycle at UCL aligned with maturity of services corresponding to each research data lifecycle activity. The color-coded legend describes the level of maturity from green representing Mature on scale to red representing Immature. The greenish-yellow arrow represents the maturity of the DMPTool support service at the University of Florida (UF) whereas the red arrow represents the immaturity of ERNs support service at UF.

Figure 3 represents an ERN, RSpace (https://www.researchspace.com), mapped to UCL's Research Data Cycle directly addressing the Planning, Data collection, Data Storage, Data deposit, Article/Data Publication, Preservation & Curation, Discovery, and Access activities. Figure 3 represents the data preparation, active research, and archiving, storage & reuse categories of RSpace capabilities illustrating an ecosystem supporting reproducibility and FAIR data. The UCL Research Data Lifecycle, mapping to RSpace electronic lab notebook/ERN, and RSpace infographic of features articulates the many facets of research data management and curation processes which are required in data science as part of support services and the role of libraries.

In order to comprehensively address the data science ecosystem at scale across the institution and all affiliates, partnerships with key stakeholders such as Office of Research, Research Compliance Office, Academic Units, Faculty, IT, Deans, Directors and more are recommended. Institutional-wide research data management policy and ERN solution are highly recommended. Additionally, structuring research through the use of standardize protocols software applications such as protocols.io (https://www.protocols.io) with integration of CRediT (Contributor Roles Taxonomy) author statement (https://www.elsevier.com/authors/policies-and-guidelines/credit-author-statement) can improve reproducibility, replicability, and FAIR principles in data science.

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[7] Smith II, P. L. (2022). Exploring electronic lab notebooks (ELNs) at a R1 institution in the Southeast USA. https://www.emerald.com/insight/content/doi/10.1108/DLP-02-2022-0013/full/html.
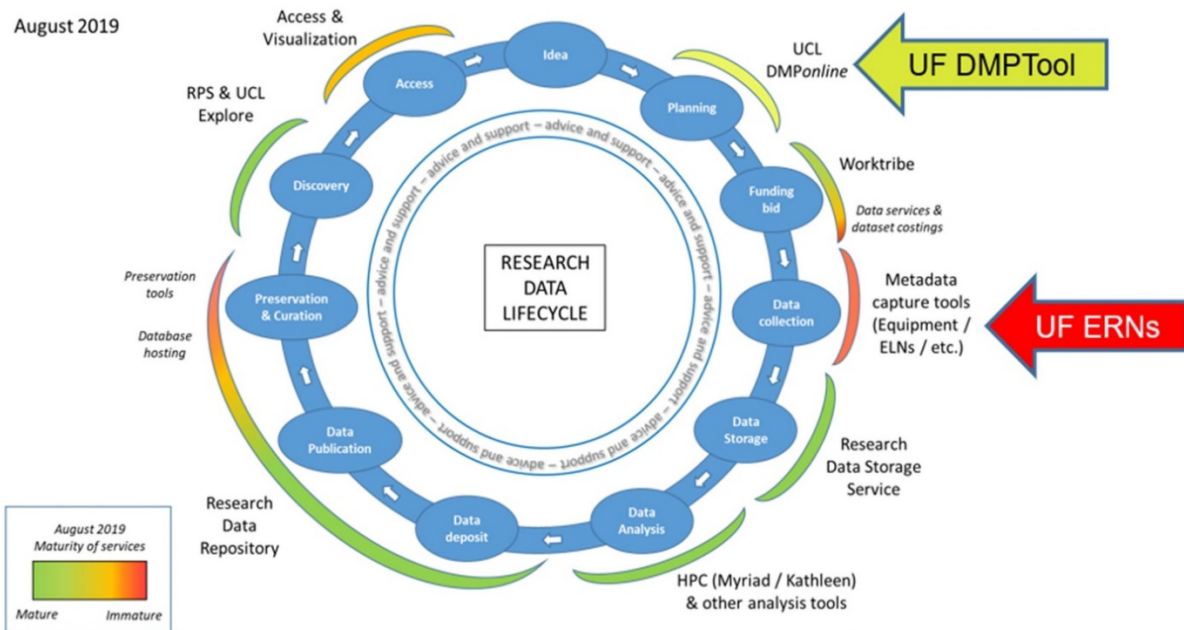
Figure 2.   University College London (UCL) Research Data Lifecycle (Wilson, 2022)
(used with permission)
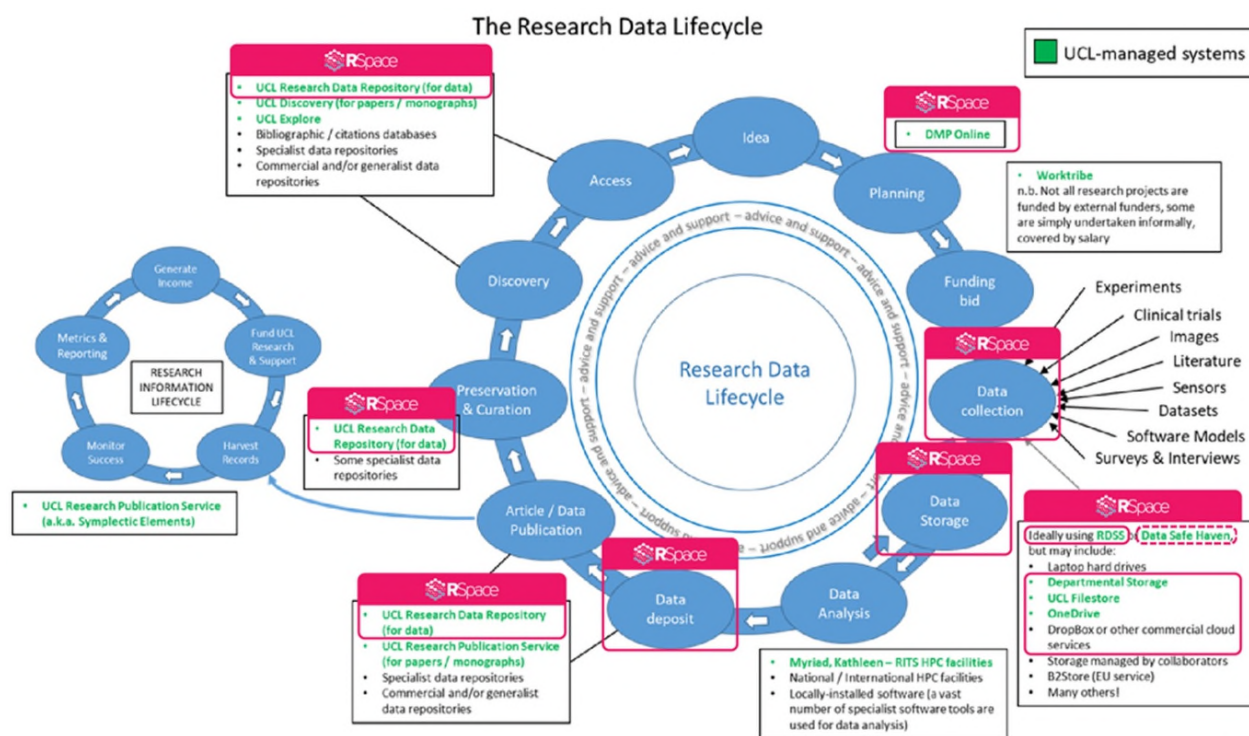
Figure 3. UCL Research Data Lifecycle mapped to RSpace electronic research notebook (ERN) (used with permission - image courtesy of Rory MacNeil, RSpace)

The University College London Research Data Lifecycle (Figure 2) corresponding to maturity level of services aligned with implementation of an institutional ELN solution (Figure 3) illustrates the significance of an ELN capability to address some key research data management (RDM) processes based on selected ELN features and integrations (Figure 3) enabling researchers to meet funders' evolving RDM demands and data sharing requirements for funded research.
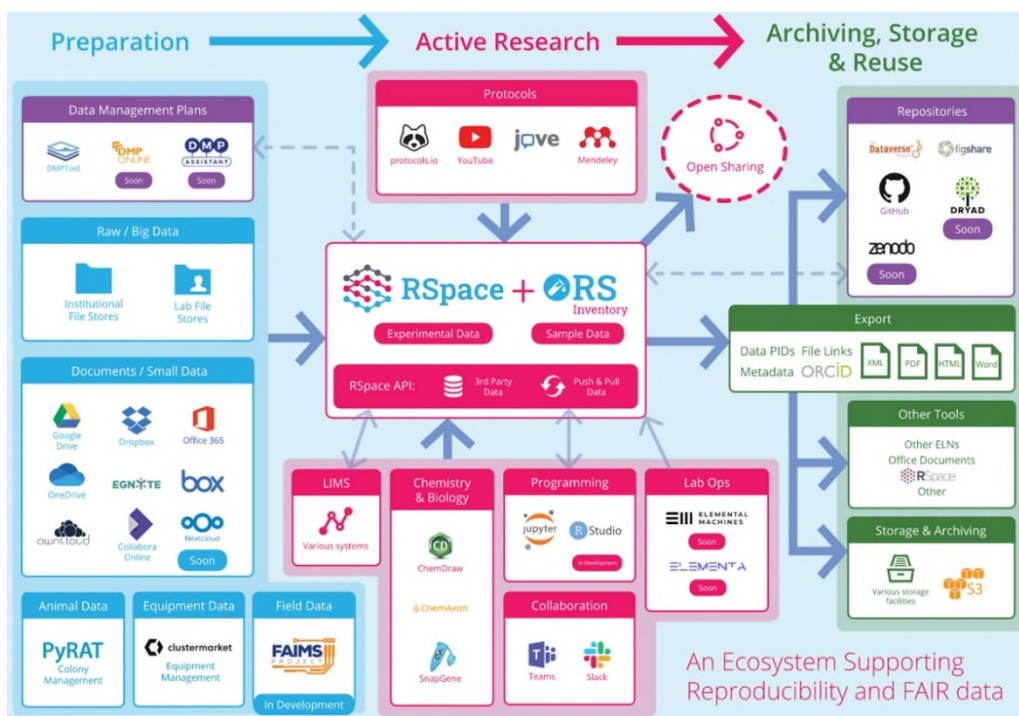
Diagram 1. RSpace Ecosystem Supporting Reproducibility and FAIR data

CNI Executive Roundtable – Call of Expressions of Interest: Data Science as a Research Support Service and the Role of Libraries

The Libraries led development of the team, expression of interest, and answers to the ten questions for the CNI Executive Roundtable. The majority of the content contribution was from IT Research Computing and Clinical and Translational Science IT Directors. Below are the questions and responses from the authors' institution:

1. **How are research support services organized, staffed, supported and funded at your institution?**
    i. The university provides subsidy in the form of funding for facilities, electrical power, staff salaries. In addition, some services and staff time are charged in a fee for service model where hourly rates are charged as part of a service center model to recover costs and allow for scaling.
    ii. Some infrastructure is available to all: Dropbox, Google Drive, Microsoft 365 OneDrive
    iii. Large scale computing and data storage infrastructure costs are covered by start-up funds and grants
    iv. Some software licenses are provided for everyone, specialized software must be funded by departments and researchers

    What is included in the portfolio of research support services?
    i. Access to infrastructure, including infrastructure for regulated research
    ii. Training at various levels of expertise for use of infrastructure, software
    iii. Consulting about writing proposals, data management plans, research workflows and tools

    How is support services funding related to grant proposals and other sources of funding that directly support researchers?
    i. Basic training is supported by the university
    ii. Grants and start-up packages provide funding for in-depth and advanced consulting and service activities
    iii. University subsidy is spent in devoting time to help develop proposals in collaboration with researchers at no cost to researchers.

Are costs for institutional support services written into grant budgets?

    i.   The cost for access to research infrastructure and advanced consulting is written into grant budgets

    ii.   The cost to execute the implementation and ongoing support of any non-subsidized systems, tools, workflows, data management or statistical support efforts that would directly support a grant is written into a grant budget.

2. **What is the scope of data science research support services?**

    i.   All faculty, students and staff and collaborators are supported by the services

    ii.   Multidisciplinary teams are supported across colleges and disciplines.

    iii.   Multisite and multi university teams are supported.

        1)   For example, a clinical research study may have 5000 participants at 20 sites at 20 universities around the US with the main data collection and research systems housed at UF and supported by research support teams at UF providing remote support to all 20 site teams.

3. **What is the library's role in research support service provision?**

    i.   They provide consulting and training support for students and staff

    ii.   There is close collaboration between the libraries and IT for research computing and data management

    Which services does it provide or support? Who are the players?

    i.   Within the library, data science research support services include but are not limited to Academic Research Consulting & Services (ARCS) (https://arcs.uflib.ufl.edu/). ARCS research support services include Artificial Intelligence (new/developing), Copyright & Fair Use, Data Management, Data Science & Statistics, Digital Humanities, Publishing & Archiving, Reproducibility, Research Integrity, Research Metrics & Impact, Spatial Information Services, Student HiPerGator Access, Systematic Reviews, and Visualization.

    ii.   Students HiPerGator Access ARCS member include: Reproducibility Librarian, Artificial Intelligence Librarian, Bioinformatics Librarian, Geospatial Librarian, and Data Management Librarian (https://arcs.uflib.ufl.edu/services/student-hipergator-access/)

4. **How are you staffing this support function?**

    What are the qualifications, backgrounds, and training for support providers?

    i.   In IT research computing the "research facilitators" have scientific and technical backgrounds, often master and PhD degrees

    How much disciplinary expertise (and in which disciplines) is expected along with generalized data science expertise?

    i.   Disciplinary expertise is welcome but not specified, most research facilitators have some strong area, but after a few years on the job, they become generally competent on a broad range of topics

    How large is the staff and how are they organized?

    i.   In IT research computing there are 23 staff organized in teams: DevOps, Training, Services and Support, AI support added last year

5. **How do you define the boundaries, differences, and relationships between research data management and research data science support at your institution?** Note that at some organizations data science and research data management are treated together and considered as a continuum of activities; in others they are very distinct.

The boundaries, differences, and relationships between research data management and research data science support at the institution originally started as a very distinct separation. However, as research challenges become more interdisciplinary along with research data management requirements for funding agencies such as the NIH SRP P42 data management and analysis core requirement in 2018, research data management is considered as a continuum of activities before, during, and post award throughout the lifecycle of research (https://research.ufl.edu/research-lifecycle.html).

6. **Who are the primary users of these research support services? Faculty only? Graduate students? Undergraduates?**
   a) IT research computing support is organized through faculty, either to their research groups or through their teaching of courses
   b) The libraries do offer direct services to postdocs, graduate students, and undergraduates
   c) Clinical and Translational Science Informatics and Technology Service Center offers services to the Health Science community typically.

7. **How much demand is there for these research support services and how are you managing or rationing this demand?**
   i. There is now more demand than capacity to serve

   What are the limits on institutional general purpose research support services in this area? In other words, when do research programs need to shift to dedicated, self-funded data science support staff or collaborators?
   i. Within the libraries, the limits on institutional general purpose research support services is within the job responsibilities of librarians and staff. However, when the demand for research support services exceed standard job responsibilities, then librarians and staff percentage of time can be included in the budget of grants for institutional support. Faculty librarians are encouraged to seek funding for research support services.
   ii. Key stakeholders (e.g. IT research computing) are trying to develop a business model that will scale to the current demand

8. **What disciplines are making use of, perhaps relying upon, these research support services?**
   i. All 16 colleges make use of these, life sciences (medicine, veterinary medicine, agriculture and food sciences), engineering, liberal arts and sciences are the top users

   Are there other areas (life sciences, for example) where these functions are being handled through funded research collaborations outside the scope of institutional research support services?
   i. All colleges provide part of the funding through funded research and faculty start-up packages

9. **How are academic programs at the institution organized, how do they relate to research support services (for example, participants in academic programs might supply expertise to research support services capstone projects, clinics, or other mechanisms)?**
   ii. Programs are organized by colleges and institutes
   iii. Programs all use the services in the same way

10. **What training or education in data science is being offered as part of research support services (other than formal academic program courses), and who is offering it?**
    i. The libraries and IT offer special short training opportunities that complement semester-long courses taught by the colleges
    ii. These include: Training videos, training sessions, workshops, multi-session certificate programs, birds-of-a-feather sessions

The libraries will need to continue to develop collaboratively positive and strong working relationships with key stakeholders such as IT research computing, clinical and translation science IT and others to develop research data management and research data science support as a robust sustainable service at scale.

Developing socio-technical collaborations with multiple stakeholders

The development of data science as research support services, particularly the data management and curation components, require social and technical systems collaboration beyond simply addressing software, technology, and tools. A socio-technical systems theory approach address some of the complex, interdependent, and interrelated systems which include technology. Socio-technical systems approach includes "the interrelated nature of technological

and social aspects of the workplace" (Davis et al., 2014, p. 171; Trist and Bamforth, 1951; Trist et al., 1963). A good socio-technical systems approach includes the interrelated nature of goals, people, buildings/infrastructure, technology, culture, and processes/procedures embedded within an external environment of financial/economic circumstances, regulatory frameworks, and stakeholders (Davis et a., 2014, p.173). A socio-technical systems approach enables collaboration.

The Data Management Librarian develops research data management and curation working relationships with multiple stakeholders across diverse and disperse research communities of practice. Three recent international conference presentations all discussed the common theme of developing collaborations with stakeholders across multiple communities of practice on campus. The following three international conference presentations articulates developing collaborations.

- Developing socio-technical collaborations to support researchers at the University of Florida. 42nd International Association of University Libraries (IATUL), Miami, USA. Zenodo. https://doi.org/10.5281/zenodo.6652219. (2022, June 16).
- Research Support Services and the Role of Libraries in the Lone Cabbage Oyster Reef Restoration Project. 17th International Digital Curation Conference (IDCC22), Virtual. Zenodo. https://doi.org/10.5281/zenodo.6632036. (2022, June 10).
- Developing data management support partnerships and collaborations at the University of Florida. 47th International Association for Social Science Information Service and Technology (IASSIST 2022), Gothenburg, Sweden/Virtual. Zenodo. https://doi.org/10.5281/zenodo.6618148. (2022, June 6).

The following non-exhaustive list of stakeholders have collaborated with the libraries on select research support services including data management, sharing, and more.

1. **Office of Research** – collaborated on development and implementation of ORCID API feature integration to enable sharing of award information at UF with ORCID in 2022
2. **Information Technology Research Computing** – collaborated on several projects such as data collection for Association of American Universities and the Association of Public and Land-grant Universities Accelerating Public Access to Research Data meeting in 2020, 2.) Compiled Public Comments on a Draft National Institutes of Health (NIH) Policy for Data Management and Sharing and Supplemental DRAFT Guidance in 2020, 3.)and Office of Science and Technology Policy Request for the Public Comment on DRAFT Desirable Characteristics of Repositories for Managing and Sharing Data Resulting from Federally Funded Research in 2020, and 4.) CNI Executive Roundtable meeting on Data Science as a Research Support Service and the Role of Libraries in 2022).
3. **Informatics Institute** – collaborated on marketing, promotion, and venue for numerous data management training workshops from 2016 to present
4. **Clinical and Translation Science Information Technology** – collaborated on several projects such as those listed under #2 for Information Technology Research Computing
5. Academic Units (select)
   i. **Department of Anesthesiology** – provided Zenodo data repository training for a lab
   ii. **Department of Biology** – consulted, recommended, and suggested ELN for faculty
   iii. **College of Engineering** – consulted on multiple data management plans for faculty
   iv. **Department of Infectious Diseases and Global Medicine** – provided domain-specific data repository consultation and NIH BMIC Data Sharing Resources[8] training that led to discovery, identification, and selection of NIAID TB Portals[9] for scientist
   v. **Department of Molecular Genetics & Microbiology** – provided data repository and electronic lab notebook consultations, recommendations, and solutions for faculty
   vi. **Division of Pediatric Hematology Oncology** – provided data management plan consultation that led to a successful American Brain Tumor Association award

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[8] NIH. Trans-NIH Biomedical Informatics Coordinating Committee (BMIC). https://www.nlm.nih.gov/NIHbmic/nih_data_sharing_repositories.html.
[9] NIH. National Institute of Allergy and Infectious Diseases TB Portals. https://tbportals.niaid.nih.gov/.

6. Institute of Food and Agricultural Sciences (select)
    i.   **Nature Coast Biological Station** – provided data management plan consultations that led to successful awards leading to development of a new wet-lab in Cedar Keys, FL
    ii. **Space Life Sciences Lab** – provided numerous reference research articles support
    iii. **Tropical Research Education Center** – developed an internal successful grant award that funded digitization of research data for development of a digital library resource resulting in development of data archive leveraging Zenodo general data repository (https://zenodo.org/communities/uf_ifas-trec_dig_lib/)
7. **Marston Science Library** – collaborated on the Libraries' 1st Data Symposium in 2018 resulting in select presentations archived leveraging Zenodo general data repository (https://zenodo.org/communities/uf-data-symposium/)
8. **Center for Environmental & Human Toxicology** – collaborated on developing NIH SRP P42 Data Management and Analysis Core proposals ($13m; $12m) in 2018 and 2021
9. **Health Science Center Library** – collaborated on a university-wide ELN survey in 2020 resulting in an ELN Report and Recommendation
10. **UF Scripps Biomedical Research** – provided electronic lab notebook consultations and recommendations in addition to connecting researchers and vendor in 2022
11. **UF Innovate | The Hub** – collaborated with external stakeholders on funding the Libraries' 1st data symposium evening reception in 2018

Research support drivers (training future researchers)

The is a continuous need to develop data science support training for distinct different group of learners for undergraduate, graduate/master's, and Ph.D./postdoc. The American Geosciences Institute (AGI) developed a series of career compasses[10] for specialties within geosciences relevant to other disciplines. **"**Career Compass provides options, tips, suggestions, and strategies for how students can obtain critical skills, experiences, and competencies in order to launch their geoscience career [particularly data sciences]".

Research data management support services (RDMS) are important across all discipline for good data lifecycle management before, during, and after funded research. Key RDMS components include but are not limited to: Data Management Planning, Managing active data, Data selection and handover, Data repositories, Data catalogues, Guidance, training and support, RDM policy and strategy and Business plans and sustainability (Jones et al., 2013.

Future projects related to data support services initiated and led by the libraries at the University of Florida include 1.) Data Services Continuing Professional Education (DSCPE)[11] Capstone Project Partners[12] (Fall 2022) and 2.) Ithaka S+R Coordinating Research Data Support Across Campus[13] (2023-2025). Both projects aim to further develop data management and services support and the role of the libraries.

Conclusion and Recommendations

The libraries must collaborate with partners to offer research computing, Kaggle styled, and Carpentry training courses to help teach and develop foundational coding and data science skills to researchers rather than having librarians and staff develop Carpentry training courses within the libraries. For example, the UF Informatics Institute host the UF Carpentry Club which are organizers of Software and Data Carpentry workshops at the University of Florida (https://www.uf-carpentries.org/). Since the organizers are mostly doctoral students in various disciplines with domain expertise, development of courses with actual real world data and use cases is essential in developing relevancy in teaching. However, the turnover of students can produce challenges in teaching sustainability. Thus, collaborative partnerships across campus stakeholders are necessary to share the load of developing new data science workshops,

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[10] AGI Career Compasses. https://www.americangeosciences.org/workforce/compass.

[11] https://dscpe.github.io/

[12] https://dscpe.github.io/capstone/

[13] https://sr.ithaka.org/blog/coordinating-research-data-support-services-across-campus/

including Library Carpentry (Baker et al., 2016), consistently and effectively across semesters, time, and years despite staff turnover.

"One challenge that remains for the success of data management is the slow adoption of the ELN by research staff, partly because the ELN is still a work in progress, partly because old working habits are slow to change" (Foster et al., 2022; Argento, 2020) [journal article] Foster, E. D., Whipple, E. C., & Rios, G. R. (2022). Implementing an institution-wide electronic lab notebook initiative. Journal of Medical Library Association, 110(April), 222-227.

Program evaluation is imperative in the development, growth, and sustainability of research support services. Program evaluation assessment domains include but are not limited to: The need for the program, the design of the program, program implementation and service delivery, program impact or outcomes, and program efficiency Rossi et al., 2004, p.29). Program evaluation assessment of support services include one or more of the five program domains.

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Czech National Repository of Grey Literature

NU¶
· SL

NUSL is

a digital
repository
for grey
literature

Free

online
access

Features

Provider:
National Library of Technology
Prague, Czech Republic

Records:
over 500,000 records

Collection provenance:
Czech Republic

Partners:
over 150 organizations (Academy of Science,
Public Research Institutions, Universities, State
Offices, Libraries, NGOs etc.)

International Cooperation:
OpenGrey, OpenAire, ROAR, OpenDOAR, BASE,
WorldWideScience

Goals

- Central access to grey literature
  and the results of research and
  development in the Czech Republic

- Support of science, research and
  education

- Systematic collection of metadata
  and digital documents

- Long-term archiving and preservation

- Cooperation with foreign repositories

What else?

**Conference on Grey Literature and
Repositories**
https://nusl.techlib.cz/en/conference

Informative Webpages
https://nusl.techlib.cz/en/

www.nusl.cz

NTK
25° 90° 105°
Národní technická knihovna
National Library of Technology

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czech
national
repository
of grey
literature

Open Science as an Opportunity for Academic Grey Literature – A Systematic Review[*]

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Abstract
What is the future of grey literature? Is open science an opportunity for grey literature (more grey literature, more visibility and impact of grey literature), just another challenge (issues that need awareness and further action) or even a threat (less grey documents, less impact)? The following paper presents findings from a systematic review of recent studies on grey literature and open science; it includes recent reports and initiatives, and builds on our own former empirical research work.
The findings of the review are presented in four sections: the concept of bibliodiversity (production); the development of open repositories (dissemination); the transformation of research assessment (evaluation); the application of FAIR principles (processing). Some leading questions: Which is the common part of the concepts of bibliodiversity (Jussieu Call) and grey literature, and what does this mean for the future of grey literature? Which are the issues of grey literature in open repositories, and how do repositories impact the dissemination of grey literature? How do the recent initiatives for a new system of research assessment affect the grey literature (San Francisco Declaration DORA, European Commission Scoping report, OSEC Call of Paris)? Are the FAIR principles relevant for the processing of grey literature, and if so, which ones and in which way?
The paper is a scientific contribution to the analysis of the development of grey literature in the academic research environment of the 21st century. It is a rejoinder of the 2021 panel discussion on the "Next Generation Grey"; it tries to sum up what is known about grey literature and open science, and it makes some recommendations for grey literature producers, service providers and repository managers.

Keywords: Open science, open access, open repositories, grey literature

Introduction

What is the future of academic grey literature? A couple of papers have made assumptions in the past about the perspectives of grey literature, for instance, regarding the impact of new technologies or of research policies. Some predicted an unprecedented increase of the volume of grey literature, with global and unrestricted accessibility (Mackenzie Owen, 1997), while others did not observe an unusual growth of grey documents (Artus, 2005) or projected a greater diversity of grey literature and convergence between grey and white (Schöpfel, 2006). In GreyNet's 2021 online survey on the future of grey literature, two-third of the respondents among GreyNet's own community of practice agreed that "*in academic institutions, the affirmation of open science and open access principles significantly favor the production, publication, and retrieval of grey literature*" (Schöpfel et al., 2022). It remains uncertain, however, what this exactly means, and if open science is an opportunity or a threat for grey literature, or just another challenge that needs awareness and further action, or all together (table 1).

Scenario	Examples
Opportunity	More grey documents More diversity Better visibility More impact
Challenge	Curation of metadata Persistent identifiers Openness
Threat	Less grey documents Less impact

Table 1. Scenarios for grey literature

As for grey literature in repositories, one respondent wondered "*(…) if it is still grey literature (because) published grey literature is no more grey*". The boundary between white and grey is still a matter of discussion, such as the distinction between data and documents. Probably it is the very concept of grey literature that is at stake, being often, especially in systematic reviews, described as "unpublished" and "non-reviewed research" (Schöpfel & Prost, 2021) which is not exactly its meaning in library and information sciences, where the focus is on dissemination and acquisition (Schöpfel & Farace, 2018).

Forecasting the future of grey literature may appear hazardous in an environment of constant and rapid change. Our paper takes a somewhat different approach, insofar we try to find out how (and if) some essential topics of the actual debate on open science have been linked to the field of grey literature. Based on a systematic review, we assessed the topics of bibliodiversity (production), of open repositories (dissemination), of research assessment (evaluation) and of FAIR principles (processing). Some results confirm what we already know; others are more surprising.

The paper is a contribution to the analysis of the development of grey literature in the academic research environment of the 21st century. It is also a rejoinder to GreyNet's panel discussion on the "Next Generation Grey" in 2021. We try to sum up what is known about grey literature and open science and to make clear what is questionable and what needs more insight.

Methodology
We conducted a systematic review on relevant studies published between 2018 and 2022 on grey literature and open science in two bibliographic databases (Web of Science, Scopus), in the Grey Guide repository and with two academic discovery tools (Dimensions, Google Scholar). The review was conducted on August 2, 2022. The retrieval strategies and filters are described in the appendix. Diagram 1 shows the results of the systematic review.
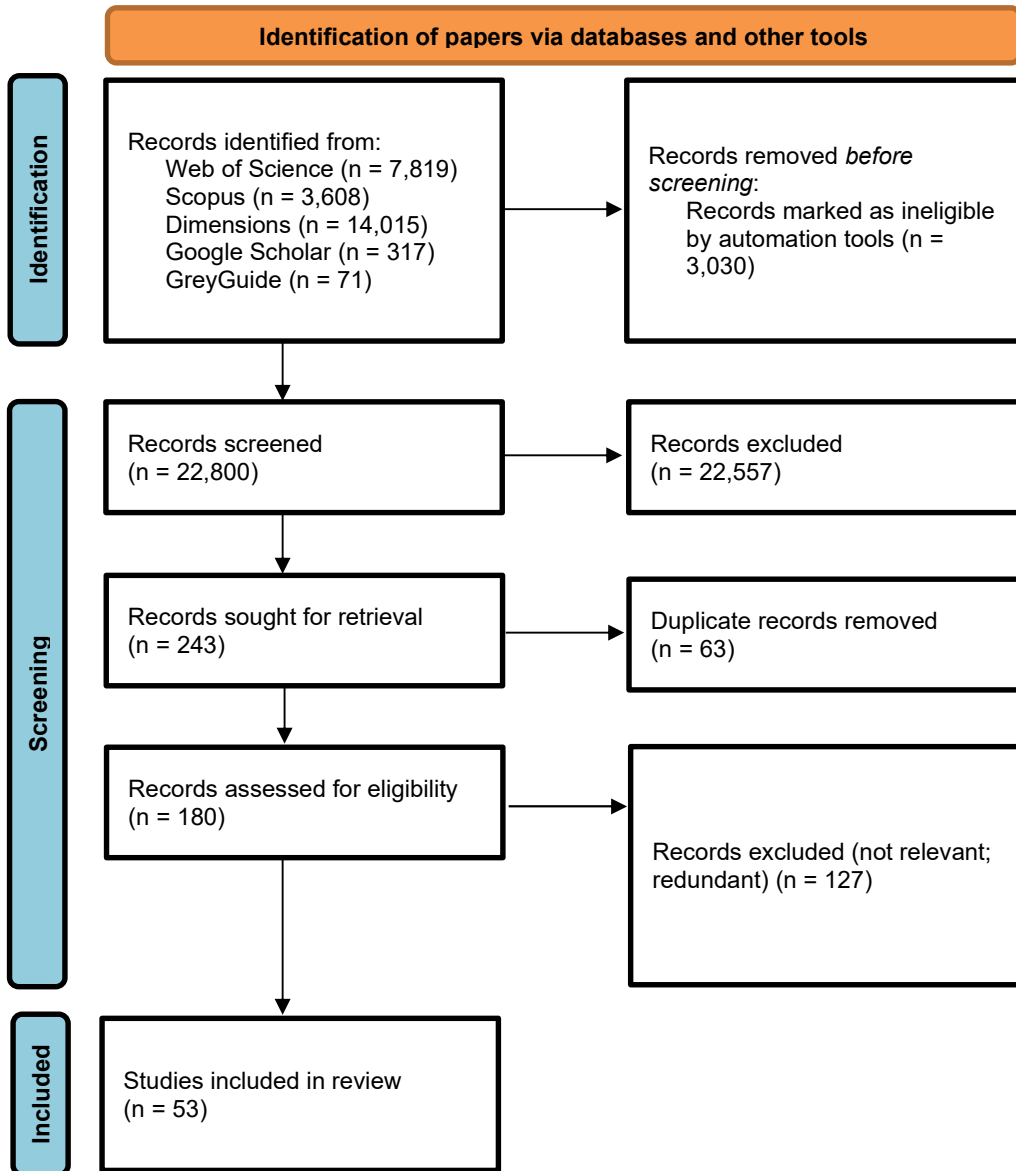
Diagram 1. PRISMA 2020 flow diagram of the systematic review on grey literature

We were looking on recent, original research work on the impact of open science on grey literature, with relevant insights on the production and dissemination of grey literature, on its role for research assessment and on the application of FAIR principles. Initially, we identified 25,580 records. Most records have been discarded because they mentioned grey literature only as part of systematic reviews; others have been excluded because they were not original research or not relevant for open science. Half of the 53 included studies are papers presented at the *International Conferences on Grey Literature* and/or published by GreyNet's *The Grey Journal,* i.e., products of the GreyNet's community of practice.

Results

The call for bibliodiversity (production)
Open access to scientific information is a main pillar of open science. There is no doubt that grey literature plays a significant role in the development of open access (OA), as many repositories contain grey literature (figure 1) where it represents up to 30% of the content (Schöpfel et al., 2020).
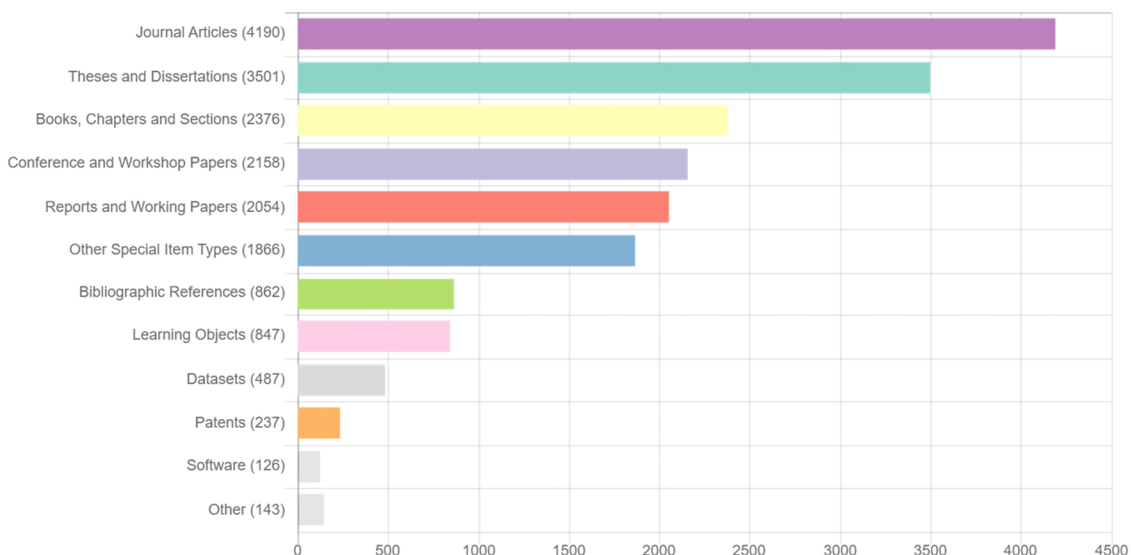
Figure 1. Content types overview in open repositories (N=5,971)
(source: OpenDOAR, October 23, 2022)

However, the academic and political debate on open access mainly concerns journals and seems to ignore grey literature, as the main challenge is the business model of OA journal publishing and its economic and political impact. In the usual conceptualization of OA publishing, grey literature is more or less invisible, somewhere in the small field of non-peer reviewed items, free for readers and for authors, protected by copyright, along with preprints (figure 2).
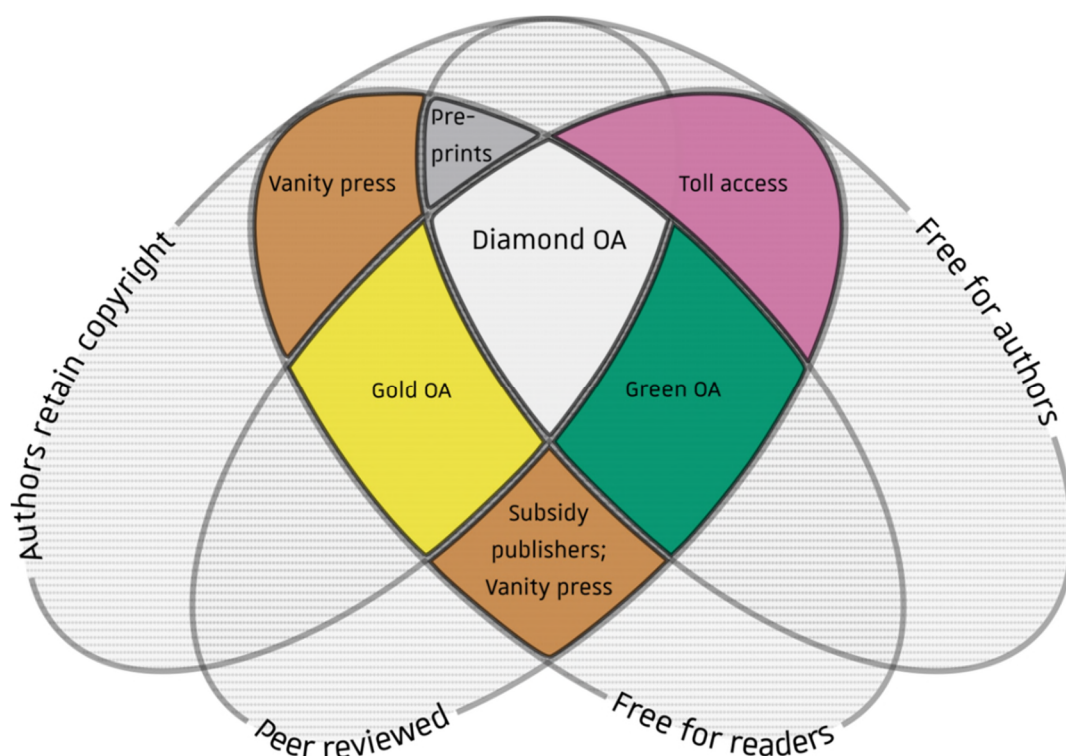
Figure 2. Different types of open access in scholarly publishing
(source: Wikipedia Open Access[†])

Recently, a couple of initiatives have been taken against the development of a dominant OA publishing model based on article processing charges (APC). While some focus on journals, such

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[†] By Jamie Farquharson - https://doi.org/10.6084/m9.figshare.6900566.v1, CC BY 4.0,
https://commons.wikimedia.org/w/index.php?curid=111532339)

as the *Action Plan for Diamond Open Access*[‡] promoted by Science Europe and the cOAlitionS, others are more open and inclusive, like the *Jussieu Call for Open Science and Bibliodiversity*[§] launched in 2017 by French scientists and professionals and promoting open access to scientific publications that encourages bibliodiversity and innovation and does not imply the exclusive transfer of subscriptions to APCs.

Even if the main concern of the *Jussieu Call* is journal and book publishing, its scope is larger as it explicitly invites for innovation and experimentation in the field of dissemination of research results and academic publishing. Our systematic review retrieved recent papers that highlight the richness and the diversity of unconventional academic literature, (partly) non reviewed and (partly) published outside of the usual commercial channels:

Preprints (non-reviewed, unpublished literature): Drawing on examples from the U.S. National Library of Medicine, Sheehan (2021) recommend the usage of elements of grey literature (preprints, study protocols, clinical trials…) to support open science as part of the response to the COVID-19 pandemic (figure 3). Even if some preprints will never become a published article, their dissemination via preprint servers and repositories contributes to the knowledge of the field, including deadlocks (Lombardi, 2021).
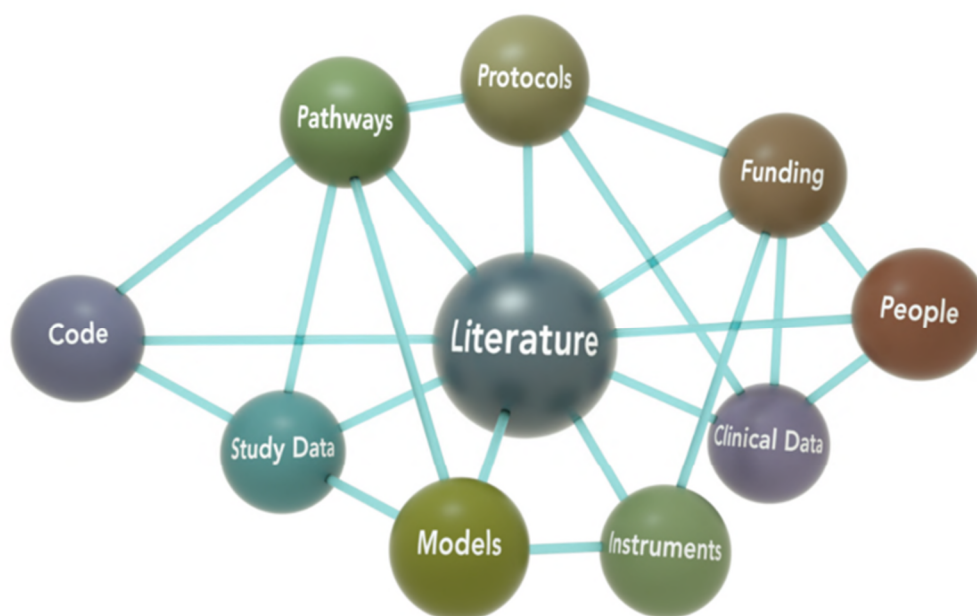
Figure 3. Network of interlinked research objects (source: Sheehan, 2021)

The Japan Atomic Energy Agency (JAEA) brings up the issues of long-term preservation and permanent access of conference proceedings and technical reports published in electronic media such as CD/DVD-ROM and flash memory (Kumazaki et al., 2019). Providing long-term preservation and improving discoverability of reports is also the purpose at Columbia University Libraries (Bielskas et al., 2022); in a similar approach, Cirkovic et al. (2019) argue for digitization, curation, preservation, and dissemination via open repositories of scientific heritage material, like older theses and dissertations.

Other categories and elements of grey literature have been put forward, in different domains:
- Law: Williams (2020) discusses the place of grey literature in the realm of legal materials (primary and secondary sources) and the challenges of discoverability of various types of grey legal materials.

[‡] Action Plan for Diamond Open Access https://www.scienceeurope.org/our-resources/action-plan-for-diamond-open-access/
[§] Jussieu call for Open Science and Bibliodiversity https://jussieucall.org/

- Linguistics: A study from the Italian CNR assesses the presence of a large variety of grey literature in the CLARIN Virtual Language Observatory, including translations, agreements, press releases, notebooks, and bulletins (Goggi et al., 2017)[**].
- Open educational resources (OER): Puccinelli et al. (2020) provide a framework for the management of OER characterized by "*openness, flexibility, innovative approaches, digital dimension, liquidity and high granularity*" and insist on the development of "*validated and certified platforms, for providing quality levels in shared contexts, and persistent identification systems, for guaranteeing resources integrity* (and) *traceability*".
- Another paper describes grey literature outside of academy, as extra-academic and/or professional documents, such as expert, CRM, R&D or corporate annual reports, market studies, executive directives, memoranda, white papers, and hearings, with examples in the fields of nuclear energy, aeronautics, archaeology and library and information sciences and four major challenges, i.e., monitoring, standardization, data, and preservation (Schöpfel, 2019).

Assuming that "*traditional publishing streams of books and journals capture just a fraction of the content (…) contextualized in open science*", Gelfand & Lin (2020) provide a taxonomy of new forms of scholarship including theses, preprints, lab manuals, interviews, and other multimedia materials, and demonstrate how, in the context of open science, the research process contribute to "*outputs, innovation and new forms of grey literature*". A similar, large range of resources has been identified by a scientometric study on systematic reviews and other articles making use of grey literature (Schöpfel & Prost, 2021).

Obviously, there is a common ground where both concepts, bibliodiversity and grey literature, overlap. As the *Jussieu Call* admits, the "*means to achieve the goal of Open Access are yet to be discussed*". Our suggestion is that the signing institutions - research organizations and scientific communities, scientific and technical information professional associations and organizations, learned societies, scientific journals and editors – explicitly consider grey literature when they refocus "*the issue of business models (...) in the broader perspective of the editorial processes and methods upon which research and innovation will rely in the future*", for the benefit of a "*very broad bibliodiversity*".

The GreyNet community of practice, on the other side, should seize the opportunity of the Open Science initiatives for bibliodiversity, such as the *Jussieu Call*, for advocacy and promotion of the richness and diversity of grey literature which are in constant need for attention, curation, funding, and innovation, in order to increase its findability and accessibility.

The development of open repositories (dissemination)
More than ten years ago, Daniela Luzi reviewed the development of institutional repositories and stated that "*grey literature is at home in open archives*" (Luzi, 2010). Which are the issues of grey literature in open repositories today, and how do repositories impact the dissemination of grey literature?

Like Daniela Luzi, most retrieved papers express the conviction, based on evidence, that repositories are good for grey literature and that grey literature, as an essential part of scientific output, should be part of repositories. "*Archiving in a repository is the way to let grey literature to become open*" (Lombardi, 2021). Based on a study on grey literature in repositories of Balkan countries, an invited paper of the 2018 UNESCO International Conference on Digital Presentation and Preservation of Cultural and Scientific Heritage recommends that universities and academic libraries "*should direct their efforts towards the creation of institutional repositories, allowing the preservation of and free access to the results of scientific studies performed at the institution, to its theses and dissertations, as well as to other kinds of grey literature*" (Pavlovska, 2018).

A survey at the University of Minnesota concludes that "*endorsing the depositing of materials into (institutional repositories) is a step in the direction of efficiency*". Because many researchers

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[**] This paper was retrieved because the communication was published in the conference proceedings in 2018.

are using Google and Google Scholar to locate grey literature, librarians should encourage the deposit grey literature into repositories in order to "*mitigate the web instability factor to which grey literature falls prey*" and to increase accessibility "*when Google crawls (institutional repositories)*" (Cooper et al., 2019). Based on many years of interdisciplinary research on grey marine literature, MacDonald et al. (2020) demonstrate how open practices can increase the impact of grey literature on political decision-making processes; yet, MacDonald and his colleagues also alert that this impact can be affected by (too) massive quantity, multiplicity of formats and content, and by (perceived) uncertain quality.

Similar results on the dissemination of grey literature via open repositories can be found in studies from Algeria (Babori & Aknouche, 2020), France (Schöpfel et al., 2019, 2020 and 2021), the United States (Lipinski & Kritikos, 2018; Mack, 2020), and from the BRICS countries (Bansal, 2020). Our own research in France shows that grey literature represents about 30% of the national repository's content. While Mack (2020) provides a model for the development of a campus-based open access program with a special focus on grey literature, Babori & Aknouche (2020) make recommendations how to improve the deposit, visibility, and usage of grey literature in institutional repositories. Lipinski & Kritikos (2018) assess the open access policies of 22 US iSchools, show how these policies can affect access to grey literature, and recommend best practices for grey literature in institutional repositories.
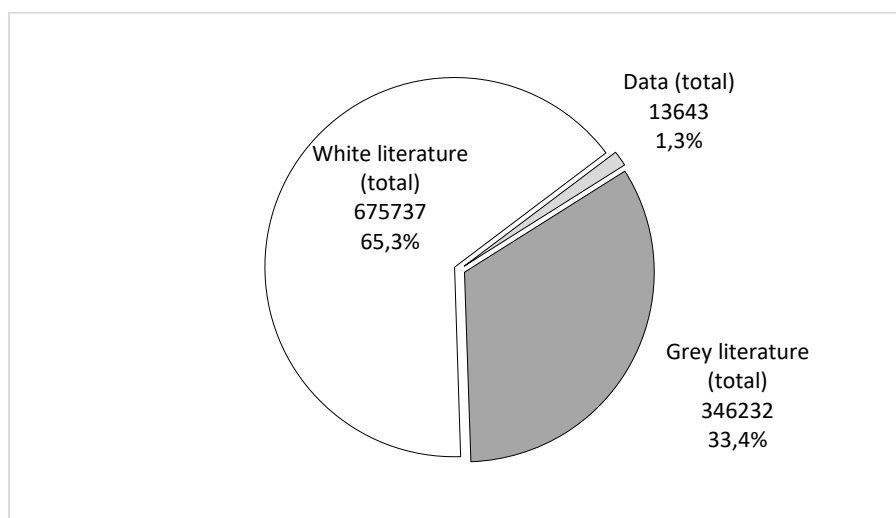
Figure 4. Part of grey literature in the HAL repository (source: Schöpfel et al., 2021)

Other papers describe the role of academic and national libraries (Richardson & Renner, 2018; Kingsley, 2020; Vandepontseele & Isbergue, 2020; Marsolek et al., 2021), with special attention on the need for identification, capture and deposit of grey literature into institutional repositories, for metadata curation, and for advocacy and awareness raising among the scientific communities. A comparison between institutional repositories and national aggregator systems insists on the need for advocacy and promotion on the institutional level: without the researchers' practice of self-archiving, the repositories will remain empty (Cernohlavkova & Vycitalova, 2018).

The main argument of Marsolek and her colleagues from the University of Minnesota is that grey literature increases the richness and the diversity of the libraries digital collections which is crucial for the quality of systematic reviews. Also, they conclude with a kind of pro-grey pleading: "*Librarians have done and continue to do the important work of collecting GL, preserving it, and providing access to it. For those who are collecting GL, in solidarity we thank you and ask you to please continue the work (…) We encourage those who are not collecting GL to begin talking with your colleagues about how collecting it could be an opportunity for your organizations (…)*" (Marsolek et al., 2021).

A final, general comment, based on two very different papers. The first paper, an introduction into the field and concept of grey literature, emphasizes its importance and dynamic nature and

concludes that "*technology has played a catalytic role in eradicating the issues and problems (of) grey literature*" (Gul et al., 2020), where technology means above all repositories (platforms) and search engines. A second paper presents results of a needs assessment for improving library support for dentistry researchers: 80% of participants use grey literature for their research (primarily, conference and seminar proceedings, and theses and dissertations), none of them consider it as "very important", and only 20% indicate that they found it somewhat easy to search for and access it. Also, the authors of the study conclude that more and better library support is needed (He et al., 2018).

Taken together, these recent papers on grey literature in open repositories seem to confirm what has already been observed more than ten years ago (Schöpfel et al., 2012): repositories are essential for the dissemination, visibility, and use of grey literature, and their technology has contributed to expand its impact; but repositories have not (with the words of Gul et al., 2020) "*eradicated the issues and problems of grey literature*", and they have not "white-washed" it. Open access or even accessibility is still not enough. More efforts and investment are required, to improve the curation of grey literature (metadata, including persistent identifiers) and to increase the assurance regarding quality and long-term archiving. The situation has not fundamentally changed since then; even if today, these questions are addressed (and reformulated) in terms of the FAIR principles (see below). One interesting example how the situation can be improved on the top of open repositories is presented by Vicary & Pettman (2020), capitalizing "*on the opportunities presented by Open Science and new technologies*".

The transformation of research assessment (evaluation)

How do the recent initiatives for a new system of research assessment affect the grey literature? Do they? Neither the San Francisco Declaration on Research Assessment (DORA)[††], nor the recent European Commission Scoping report *Towards a reform of the research assessment system*[‡‡], nor the UNESCO *Recommendation for Open Science*[§§], nor the *Paris Call on Research Assessment* presented at the *Open Science European Conference* (OSEC)[***], organized in the context of the French Presidency of the Council of the European Union, specifically mention grey literature. Does this mean that grey literature plays no (or only a marginal) role when it comes to transform the actual system dominated by journal-based metrics like the impact factor?

The reverse is true. All these declarations and reports have in common that they recommend diversity and inclusivity as fundamental criteria for research assessment. DORA (which has been signed by more than 22,000 institutions and individuals in 159 countries and is supported by the European Commission) recommends that funders and institutions consider, for the purposes of research assessment, "*the value and impact of all research outputs (including datasets and software) in addition to research publications*". The EC Scoping report asks that research assessment should acknowledge the "*diversity of research activities and practices, with a diversity of outputs*", while the Paris Call promotes the concept of bibliodiversity (see above), which means to consider "*all scientific productions*", including for instance, preprints.

The UNESCO paper is more precise; starting from the assumption that "*evaluation systems should take into account the wide breadth of missions within the knowledge creation environment (and that) these missions come with different forms of knowledge creation and communication, not limited to publishing in peer reviewed international journals*", the UNESCO recommends that research assessment should include all kind of scientific publications such as, among others, peer-reviewed journal articles and books, research reports and conference papers, disseminated by publishers and/or deposited in open repositories.

Our review retrieved only few papers that explicitly deal with this topic. The most relevant one is perhaps the case study by Giannini et al. (2017)[†††] who analyzed the Italian research assessment exercises 2004-2010 and 2011-2014 and concluded that

- Both exercises did not explicitly include or mention grey literature;
- Yet, a detailed and time-consuming assessment allows the identification of some types of grey literature among the cited references of research products (output);
- This identified grey literature represents less than 1% of all cited output;
- This percentage is slightly increasing, from 0.61% (2004-2010) to 0.74% (2010-2014);
- The relative importance of grey literature varies between disciplines.

These findings are not optimistic but appear realistic, and they are compliant with the general observation that grey literature is "*usually ignored in research evaluations*" (Bickley et al., 2020). However, without any other empirical evidence (we could not retrieve any other paper like this one), it is impossible to say if these findings are representative for the research assessment in large research organizations, and if there have been changes since then.

A recent paper by Reed et al. (2021) proposes a conceptual framework of research assessment exercises. Based on a systematic review, the authors identify five different approaches of research impact evaluation; but only one design explicitly includes grey literature, i.e., "*evidence synthesis approaches*" which provide summative evidence of research as a sufficient cause of impact (figure 5).
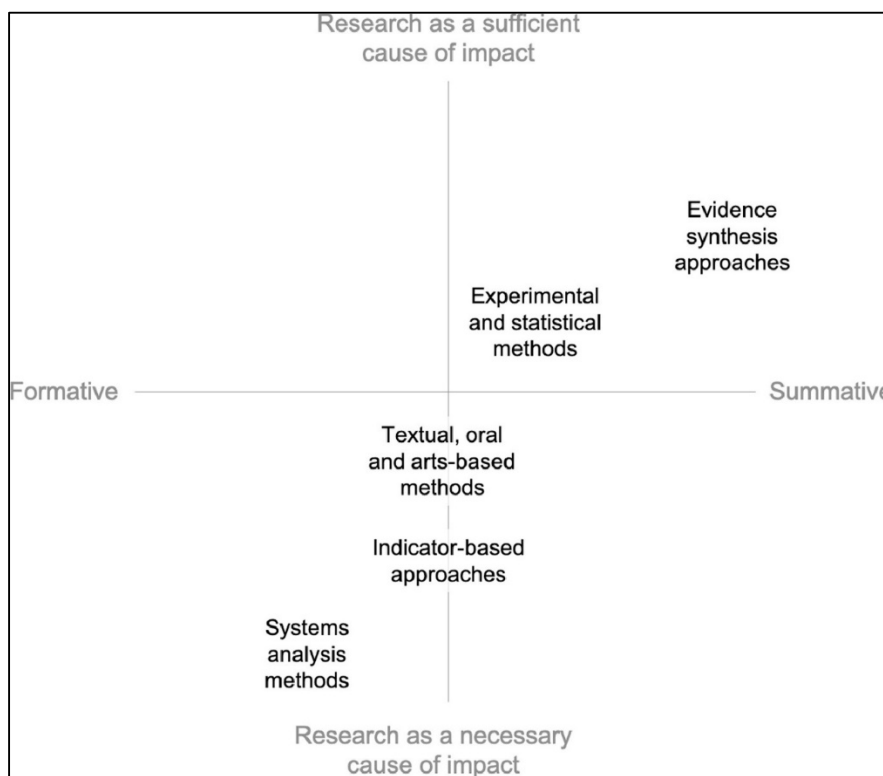
Figure 5. Five types of impact evaluation designs (Source: Reed et al., 2021)

Following Reed et al. (2021), such evidence synthesis "*typically takes place at the programme level and draws on bodies of work emerging from multiple projects*"; it is "*a process of carrying out a review of existing data, literature and other forms of evidence with pre-defined methodological approaches, to provide a transparent, rigorous and objective assessment of whether something arising from research is a sufficient cause of impactful outcomes (…)*". As systematic reviews generally include grey literature, they are (or should be) part of this kind of research assessment. However, the authors are aware of the potential issues of including grey literature into evidence synthesis: "*it is time and labour intensive as it requires considerable*

[†††] This paper was retrieved because the communication was published in the conference proceedings in 2018.

consultation with likely end-users and searching of unpublished and grey literature, often by hand and often at geographically disparate locations".

If the interest of grey literature for systematic reviews is largely accepted (Bonato, 2018; Hoffecker, 2020; Schöpfel & Prost, 2021), the related problems have been identified, like the lack of persistent identifiers and of rich metadata, reduced findability and accessibility, issues that limit the grey literature's usefulness for monitoring and altmetrics and make it still more difficult to conduct scientometric assessment with grey literature than with journal articles or books (Bickley et al., 2020; Roos Lindgreen et al., 2021; Schöpfel & Prost, 2020; Valles et al., 2020). Also, when Kenfield et al. (2019) tried to develop a framework for the reuse assessment of grey literature in institutional repositories, they observed different barriers, such as "*lack of best practices, documented workflows, assessment training, and staffing*". "*Improper indexing and bibliographic control*" are other barriers to the reuse (citation) and assessment of grey literature (Shrivastava & Mahajan, 2020).

Obviously, we can observe a kind of paradox: while the international initiatives to transform quantitative and journal-based research assessment explicitly call for more diversity of research outputs, the role and importance of grey literature for research assessment remain marginal, so far. Is this definitive and inherent to the characteristics of grey literature? Not sure. But without any doubt, advocacy and promotion of diversity will not be enough to raise awareness for the interest of grey literature for research assessment, if it is not (more) compliant with the fundamental values and principles of open science, including FAIR. The UNESCO recommendation is very clear: research assessment should make use of repositories and other platforms "*that are supported and maintained by an academic institution, scholarly society, government agency or other well-established not-for-profit organization devoted to common good that enables open access, unrestricted distribution, interoperability and long-term digital preservation and archiving*"; and it should ensure diversity in "*scholarly communications with adherence to the principles of open, transparent and equitable access and supporting non-commercial publishing models and collaborative publishing models with no article processing charges or book processing charges*". To increase its role for research assessment, grey literature must be open, accessible, and findable, and it must be disseminated on trustworthy platforms and with FAIR data and metadata.

The application of FAIR principles (processing)

Are the FAIR principles relevant for the processing of grey literature, and if so, which ones and in which way? Initially developed for research data repositories (Wilkinson et al., 2016), they have been progressively applied to all kind of infrastructures, procedures, and resources, including items belonging to grey literature[‡‡‡]. Our systematic review reveals that above all, two FAIR principles are an issue for grey literature, i.e., findability and accessibility.

Findability: Grey literature is relevant if not a must-have for systematic reviews (see for instance Whaley et al., 2020; also, Schöpfel & Prost, 2021); yet, the inclusion of grey literature in reviews is generally considered as more time-consuming and costly as for journal articles (Enticott et al., 2018), mainly because grey resources have less standardized publication formats (Landerdahl Stridsberg et al., 2022). A couple of papers make recommendations how to improve findability of grey literature, especially through the enrichment of metadata and indexing (Jamoulle et al., 2017; Marsolek et al., 2018) and the minting and usage of persistent identifiers, namely DOI but also ISSN, ORCID and ROR (Farace et al., 2019 and 2021; Price & Murtagh, 2020; Reynolds & Ross, 2020). Careful curation is required to improve the visibility and searchability of grey literature; or with the words of Marsolek et al. (2018), an "*increased level of collection development of grey literature in institutional repositories would facilitate preservation and increase the findability and reach of grey literature*".

[‡‡‡] See for instance the recent NDLTD conference on the FAIRness of electronic theses and dissertations at Novi Sad, Serbia https://etd2022.uns.ac.rs/

Accessibility: Open access with no or less restrictions remains an issue for grey literature, even if the deposit of theses and dissertations, conference proceedings, working papers and reports on open repositories improved their dissemination and impact. As said above, many repositories contain grey literature (figure 1) where it represents up to 30% of the content. However, other platforms are useful for different types of grey literature, such as PubMed Central and Clinicaltrials.gov from the US National Library of Medicine (Sheehan, 2021) or ConfIDent, the conference platform from the German National Library for Scientific and Technical Information (Hagemann-Wilholt et al., 2019). On the other hand, embargo periods can reduce the accessibility of grey resources on institutional repositories (Rasuli et al., 2022).

Who has an embargo policy?

Yes: 43
No: 57

43 (43.0%)

57 (57.0%)

● HEIs with accessible embargo policy   ● HEIs without accessible embargo policy
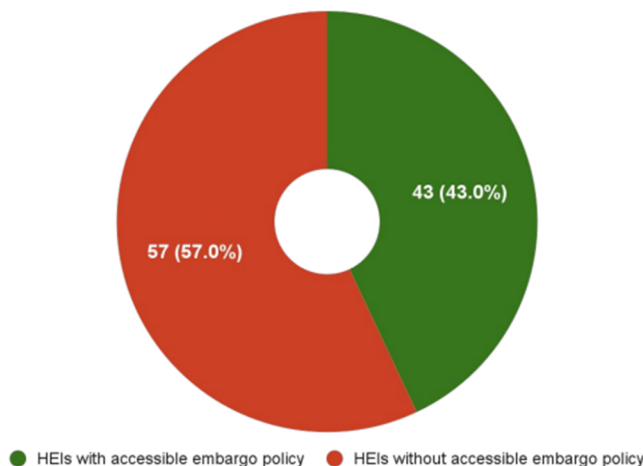
Figure 6. Embargo policies in universities (source: Rasuli et al., 2022)

We can make two recommendations, and they are not really new: The producers of academic grey literature (research organizations, universities…) and repository managers should systematically attribute persistent identifiers to grey literature (dissertations, reports, working papers, conference papers…), especially when these documents are deposited in institutional repositories. On the other hand, institutions and repositories should create a framework (= technical, political, social, and legal environment) that fosters openness and accessibility of grey literature

Perspectives

The findings of our review reflect a continuing scientific and professional interest in grey literature, in- and outside of the GreyNet community of practice, as reflected by special issues in academic journals (Dyas-Correia & Mering, 2021; Garousi et al., 2022), by handbooks (Bonato, 2018) and by a steadily growing number of systematic reviews (Schöpfel & Prost, 2021). The main issue of grey literature today is not typology but FAIRness.

Open science improves the openness of grey literature, its visibility, and its accessibility especially in open repositories. However, as our findings show, open science also emphasizes and exacerbates the usual shortfalls of grey literature, the lack of persistent identifiers, problems with the quality and the richness of metadata, and with the long-term conservation. According to some recent research, these issues are not specific to grey literature; inconsistent implementation of unique identifiers are key challenges for open access books (Laakso, 2022), and open access journals can simply vanish from the web (Laakso et al., 2021). But the lack of long-term conservation, of findability (i.e., non-efficient search and retrieval) and of standards are serious threats to the sustainability of grey literature (Savic, 2022).

Thus, open science is an opportunity as well as a challenge for grey literature. One way to face the challenge is the continuous work on the concept of grey literature: "*Taking into consideration the volume and speed of* (grey literature*) creation, there seems to be a need to*

*revisit the old definition of GL by refocusing on quality, intellectual property, curation, sustainability and usability (*so that*) proper attention can be focused on relevant (…) issues and solutions*" (Savic, 2018). This conceptual work is not simple, as there are contradictory arguments and perspectives; but as open science is here to stay, grey literature should be "*completely integrated in the emerging open science infrastructures, as open as possible (and just as closed as necessary), easily retrievable and accessible and largely reusable by (*machines*)*" (Schöpfel & Rasuli, 2018).

In the previous sections we made some recommendations for grey literature producers and services. Our final suggestion for the GreyNet community of practice would be a kind of grey literature observatory, a virtual place for information professionals, researchers and service provides, to analyze and discuss the impact of open science on grey literature and to contribute to its integration into this new landscape, with advocacy, information, and training.

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Appendix

We searched for publications in English, published between 2018 and 2022.

Web of Science: We searched in the WoS Core Collection for "grey literature" or "gray literature" in title, abstract and keywords. Review articles were excluded. We then filtered with the following terms in the full text: "open science", "repositories", "bibliodiversity", "assessment", "evaluation", "FAIR principles" or "DORA".

Scopus: We searched for "grey literature" or "gray literature" in title, abstract and keywords. Review articles were excluded. We then filtered with the following terms in the full text: "open science", "repositories", "bibliodiversity", "assessment", "evaluation", "FAIR principles" or "DORA".

GreyGuide: Manually selection of relevant conference papers.

Dimensions: We searched for "grey literature" or "gray literature" in title and abstract. We then filtered with the following terms in the full text: "open science", "repositories", "bibliodiversity", "assessment", "evaluation", "FAIR principles" or "DORA". We selected all documents in Library and Information Science.

Google Scholar: We searched for "grey literature" or "gray literature" in title. We excluded all citations. We then filtered with the following terms in the full text: "open science", "repositories", "bibliodiversity", "assessment", "evaluation", "FAIR principles" or "DORA"..

GreyGuide Portal and Repository
GreyNet's Flagship Project 2013-2022

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Welcome to the GreyGuide, Your Open Access to Grey Literature Resources   *http://greyguide.isti.cnr.it*

GreyNet International together with the Institute of Information Science and Technologies of the National Research Council of Italy, **ISTI-CNR** mark this year a decade of collaboration in the design, development, and open access of diverse resources in the field of grey literature.

In this capacity, GreyNet acts as content provider and ISTI-CNR as developer and system provider for the GreyGuide Repository registered in OpenDOAR.
Together they have compiled and published the complete collection of conference papers in the GL Conference Series from 1993-2022. Further included are the accompanying abstracts, data papers, and biographical notes of hundreds of authors and researchers, who have contributed to this field of information.

The GreyGuide Portal further extends GreyNet's publication trail by providing open access to conference proceedings, slides, and posters via its **Document Share** section. The GreyGuide Portal further facilitates access to **Repositories** in which GreyNet's conference videos and published research datasets are housed.

GreyNet's Publication Trail via the GreyGuide

GreyGuide Repository				GreyGuide Portal				
Proposals / Abstracts	Biographical Notes	Conference Papers	Data Papers	Conference Proceedings	Conference Slides	Conference Posters	Conference Videos	Published Datasets
GLA Collection	BIO Collection	GLP Collection	RGL Collection	Document Share	Document Share	Document Share	Repositories TIB AV Portal	Repositories DANS EASY Archive

In 2018, five years into this project, the GreyGuide came to include persistent digital identifiers (PIDS) namely the DOI, ORCiD, and ROR ID in its metadata records. This has allowed for the crosslinking of the research data published in the DANS EASY Archive and the video presentations published in the TIB AV-Portal with their accompanying full-text conference papers published in the GreyGuide Repository.

DataCite Commons provides these actionable persistent identifiers with a single search interface and in so doing contributes to the construction of the PID Graph. The PID Graph makes it easier to describe complex use cases and relationships. It opens to new and further research via digital interoperable hyperlinks. And, it is in this way that the GreyGuide has enabled GreyNet to carry out research projects dealing with topics such as leveraging grey literature, policy development, data papers as trusted resources, securing open access, digital persistent identifiers, and digital publishing. In turn, this has qualified GreyNet as a research organization with a curated ROR ID.

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Data Papers provide an Open and FAIR Way to publish Research Data: GreyNet's Use Case [*]

Dominic Farace, GreyNet International

Abstract

FAIR data principles first appeared published in 2016. These principles as they apply to research data have given further impulse to GreyNet's enhanced publications program launched in 2011. To this end, the data paper was introduced both as a means of implementing FAIR data principles and as a tool in publishing GreyNet's research data.

Introduction

In 2011, GreyNet International together with the DANS EASY Archive in the Netherlands entered upon an enhanced publications project entitled: Linking full-text grey literature to underlying research and post-publication data[1] . The project that is still ongoing and which has been integrated in GreyNet's shared workflow also sought to encompass retrospective research data from prior conferences in the GL-Series. While the types of research data that DANS accepts in its archive are quite numerous, GreyNet's collection of published research data focusses primarily on survey data, interviews, bibliographic data, and use statistics. Currently, GreyNet has 52 published datasets   in the DANS EASY archive[2] of which 20 are accompanied by a data paper.

FAIR Data Principles

In 2014, the FAIR data principles were formulated and first appeared published in 2016[3]. They refer to research data that is findable, accessible, interoperable and reusable. These principles as they apply to research data have given further impulse to GreyNet's enhanced publications project, which is now considered a sustained program embedded in GreyNet's shared workflow. The challenge then is to demonstrate how these four principles are implemented as they apply to GreyNet's published research data in the DANS EASY Archive.

In 2017, GreyNet introduced the data paper as a means of implementing FAIR data principles and as a tool in publishing its research data. In so doing, a new grey literature document type came to expand GreyNet's publication trail now both in textual and non-textual formats.

Metadata and Actionable Persistent Identifiers

While metadata is already assigned datasets that are archived and published in DANS EASY, the metadata included in the data paper is further detailed providing technical aspects that deal with the methods applied in capturing the data, the further description of the data(set) onto a statement as to its potential reuse for research, education, and training. Alongside standard metadata, the data paper seeks to include actionable, digital persistent identifiers (PID[4]). Emphasis here lies in the fact that the PIDS are linked metadata providing immediate access to resources. These are namely the DOI[5] assigned the dataset, the ORCiD acquired by the various types of contributors, and the ROR-ID[6] that identifies the research organizations of the contributors.

Owing to the inclusion of these various types of PIDS, the data paper contributes to the further construction of the PID Graph[7] that links PIDs together via relations in their shared metadata, which enables the discovery of connections at least two nodes away. Using the PID graph makes it easier to describe complex use cases and relationships. It opens to new and further research via digital interoperable hyperlinks.

Data Paper Template

GreyNet's data paper template[8] was first drafted in 2017 and later implemented in the Autumn of that year. The template was compiled from a number of existing templates and has since undergone two versions – each including minor revisions following upon developments in digital publishing.

The template is the tool used not only to facilitate in writing a data paper but also to guarantee a level of standardization and implementation of FAIR data principles. Its structure contains five main sections and serves researchers in their search and retrieval of relevant data(sets).

The first section of the template consists for the most part in providing descriptive metadata related to the authors and data(set). Sections two and three address the more technical aspects related to the data(set) including the method of approach in its creation as well as details regarding file formats, licensing, etc. The fourth section describes the potential reuse of the data as well as its limitations. The fifth and final section provides a listing of actionable linked references. Note fields are available in each of the five sections of the template providing details and explanation.

Data Paper Publication

GreyNet's use case relating to data papers focusses equally well on its publication. The completed data paper is first published as a preprint in the DANS EASY archive accompanying the published research data. The preprint is also entered in the GreyGuide, GreyNet's web access portal[9] and repository[10].

The data paper is then further scheduled for publication in The Grey Journal[11] (TGJ), which is licensed by EBSCO Publishing[12] and further abstracted and indexed by a number of A&I services including Elsevier's Scopus[13] and Clarivate[14].

This dual channel of publication via open access and via a licensing agent is not seen as a duplication but rather as a means of making research and resources in grey literature accessible beyond one's community of practice to wider audiences.

GreyNet's Journal Collection

Now five years on since the publication of GreyNet's first data paper, a commemorative issue of The Grey Journal[15], recently published in its Autumn 2022 edition contains GreyNet's complete collection of data papers.

The commemorative issue seeks to (re)publish its current collection in line with the latest version of the data paper template. This issue further provides a unique resource that serves in training and education in the field of grey literature. The collection of twenty data papers was submitted by authors from countries worldwide, covering a number of disciplines and diverse topics dealing with grey literature such as policy development, open access, leveraging grey resources, digital publishing, circular economy, etc.

This collection of data papers offers a variety of research methods used in creating the datasets. It addresses technical details specific to the datasets. And, as mentioned earlier, limitations of the data are explicitly stated – this being a characteristic of grey literature.

Use and Usage Statistics

As with any information product or service, it is important to acquire feedback regarding their use and usage quantitively or otherwise. Since GreyNet's data papers are published alongside their corresponding research data in DANS EASY, monthly statistics on the downloads of the data are available. Based on recent statistics, GreyNet's datasets housed in DANS EASY are downloaded on average up to three times as often as those datasets that do not have an accompanying data paper.

Data papers that are subsequently published in The Grey Journal are included in EBSCO's quarterly statistics and are likewise based on the number of downloads in that given period. It is important to mention that GreyNet's data papers are assigned the same DOI as the one DANS Easy assigns the dataset. While this is not the case with other content providers; GreyNet considers the combined dataset and data paper as an enhanced publication.

While use statistics are in some way an indication of the reuse of research data spelled out in the FAIR principles, it is by way of their actual usage through citation, referencing, and data sharing that reuse is demonstrated. Moreover, it is via education and training in the publication of research data and data papers that the awareness of their value for grey literature is raised.

In Closing

In an effort to communicate the benefits that data papers have brought to GreyNet and the potential they hold for other communities of practice in grey literature, a series of workshops were held both in the States and in Europe. The takeaway from these workshops and trainings are here briefly summarized.

Data papers ensure the implementation of FAIR data principles. While they rely on rich metadata, it is the actionable persistent identifiers (DOI, ORCiD, and ROR ID) together with the inclusion of other linked references that establishes their interoperability. This in turn contributes to the PID Graph. While the data paper template provides a much-needed tool in writing the data paper, of itself it is not the final published document. It is through the content contribution of the author(s), especially in regard to the potential reuse of the research data that the strength of the data paper is gained. While the data paper of itself allows for the findability and accessibility of the associated research data, it is by way of its publication that the promotion and subsequent feedback from references, citations, and downloads demonstrate how they come to further scientific communication and knowledge transfer.

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Business Survival Strategy during COVID-19 Pandemic:
A Case Study of Kopontren

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Abstract

The COVID-19 pandemic has drastically affected conditions and activities, including at the boarding school kopontren in West Java Province, Indonesia. Business activities carried out to meet daily needs had to be stopped. This study aims to determine the kopontren survival strategy used to survive during the pandemic. The case studies were conducted through in-depth interviews with the heads of the Kopontren business units, business actors, and academics who were directly or indirectly involved in the Kopontren business. This study refers to the theory of survival strategies in the context of Islamic boarding schools called kopontren during the COVID-19 pandemic. The results showed that the efforts made by Kopontren in surviving the pandemic were reducing production capacity, changing business models, exploiting natural resources, and being strengthened by working together.

Keywords: COVID-19, Pandemic, Survival Strategy, Kopontren, Business Unit

1. Introduction

The COVID-19 pandemic is expected to have long-term and global impacts (He & Harris, 2020) and become a catalyst for several long-term and short-term policies that require theoretical and empirical attention from researchers (Verma & Gustafsson, 2020). Several countries have activated business activity, and many companies have temporarily suspended their business. Meanwhile, several other areas have provided that prevent people from leaving their homes (Pantano et al., 2020) Many small businesses are financially fragile. They have limited cash reserves, financial assistance from the government, and minimal government (Cole & Sokolyk, 2018)), which means they have to alter dramatically, take on additional debt, or declare bankruptcy (Bartik et al., 2020). Bankruptcy and this economic downturn still occurred despite the assistance of the government (Krishnamurthy, 2020). Due to a lack of resources and strength to survive (He & Harris, 2020)

Islamic boarding school, a phenomenon due to its rapid development in Indonesia, is also directly affected. West Java Province, the province with the most populous population in Indonesia, has more than 9,000 Islamic Boarding Schools (West Java Province Cooperatives and SMEs Office, 2019), the most significant number of Islamic boarding schools in Indonesia. The pandemic has significantly impacted small and medium-sized businesses (Sharifi & Khavarian-Garmsir, 2020), including the business unit in Islamic boarding schools called *kopontren*. *Kopontren*, which was established to meet their daily needs, discontinued their business activities because it was challenging to adapt.

This topic is interesting because there has not been much research on business survival strategy in kopontren in West Java, especially during this pandemic. Fahham (2020) & Rustidja (2020) researched learning management behavior in Islamic boarding schools during the pandemic and new normal era, while Faradisi et al. (2020) discussed sharia business ethics and its impact during the COVID-19 pandemic. Another paper discusses the new normal activity in Islamic boarding school during the pandemic (Pranata et al., 2021). Rofiaty, (2019) examines entrepreneurship and the application of business strategies in the context of Islamic boarding schools but not during the pandemic. Sulaiman et al., (2018) describe the process of cooperative

boarding schools to improve the welfare of Islamic boarding school stakeholders and not during a pandemic. Research on business strategies during the pandemic was conducted by Abubakar (2020) but with a global context, not the context of Islamic boarding schools, and in the form of a systematic literature review. Pranata et al. (2021) discussed the new normal lifestyle in an Islamic boarding school in Sumbawa province. Mansir (2021), Fahham (2020), & Hana (2021) discussed learning activities at Islamic boarding schools during the pandemic. This study aims to determine what *kopontren* uses survival strategies to survive during the pandemic. The hope is to find a pattern shared by one *kopontren* that persists during the pandemic and duplicate that survival strategy by another *kopontren*. Interviews were conducted with business unit leaders from several *kopontren* in West Java, representatives from academia, business practitioners, and the government who are directly or indirectly involved in the *kopontren* business. This article describes how *kopontren* in West Java is trying to survive the COVID-19 pandemic. Research on critical factors carried out in *kopontren*: implementing strategies, utilizing potential resources in *kopontren* areas, and collaboration.

This paper is structured as follows: In Part 2, we conducted a brief bibliography on survival strategies, pandemics, *kopontren*, and Islamic boarding schools. In Section 3, we describe the research methodology by explaining the results of interviews and triangulation. In Section 4, we reveal our findings and their release in detail. From the data obtained, we compare how business units in *kopontren* can survive during a pandemic, what they do when an outbreak occurs, and what they will do in the future.

2. Literature Review

In answering the main research question, this study synthesizes some theoretical concepts from the literature on the survival of retail services (Pantano et al., 2020), a form of the cooperative Marsudi, (2011), a business unit leader concept from Sulaiman et al. (2018) and an excellent response to COVID-19 (Mazzucato & Kattel, 2020).

2.1. Coronavirus Pandemic

The worldwide COVID-19 pandemic has exacerbated the situation, increasing poverty, hunger, and sudden job losses (Altig et al., 2020). An effective strategy is needed to deal with the consequences of the spread of the virus (Arshed et al., 2020), which impacts public health and the global economy (Shakil et al., 2020). The impact is felt by the primary, secondary, and tertiary sectors, including the service provider industry (Nicola et al., 2020). There has been a change in consumer behavior and retail services trying to survive and compete during the pandemic (Pantano et al., 2020). The socio-economic hibernation period designed to contain COVID-19 slowed the recovery of sectors with a high degree of economic dependence (Tisdell, 2020). This pandemic raises questions about how industrial companies with global manufacturing and supply chains can survive the effects of lockdowns and social distancing (Sheth, 2020).

2.2 Islamic Boarding School

Islamic boarding school is the simplest and oldest educational institution in Indonesia (Kusnandi, 2017). It teaches basic knowledge about religion, morals, attitudes, independence, social relations, and other good habits to children at their golden age, namely from elementary school age. The Director-General of Islamic Education issued Decree Number 5877 of 2014, which regulates the requirements for Islamic boarding school administrators in the Licensing Guidelines. Islamic boarding school has a characteristic that distinguishes it from other educational institutions in Indonesia in general. The subjects studied in Islamic boarding schools include Islamic religious education, da'wah, social development, and similar issues. The students

called santri live in it. The decree mandates that every Islamic boarding school has a kyai as a school teacher, *kobong* or student residence, mosque, holy book, and students living in an Islamic boarding school environment. Kyai as a leader must meet the ideal leadership character. The perfect leadership character at Islamic boarding school has the entrepreneurial ability to run a business, such as developing the school's vision, compromising and winning, building cohesion, reaching out, and building collaboration (Raihani, 2017). When leaders become an integral part of their community, they bring a deep understanding of what is most needed and worth doing in their particular context (Folta, Seguin, Ackerman, & Nelson, 2012), such as Islamic boarding schools. An Islamic boarding school must also meet administrative requirements, such as permits and good management. In 2019, there were 28,194 Islamic boarding schools in Indonesia (Ministry of Religion of the Republic of Indonesia, 2019), concentrated in West Java Province. Education at Islamic boarding schools is now adopting general knowledge, social knowledge, and foreign languages from various fields (Ministry of Religion of the Republic of Indonesia, 2003). Many Islamic boarding schools do not charge tuition fees because of the poor economic conditions of the students. To meet their operational needs, Islamic boarding schools that registered with the Ministry of Religion of the Republic of Indonesia sometimes receive financial assistance from the government and several donors to cover operating costs but are not provided consistently. Therefore, Islamic boarding school Islam tries to survive by running a business in kopontren.

2.3 Business Unit - Kopontren
A strategic business unit (SBU) is an organizational subunit that acts as an independent business in significant respects, including formulating its strategic plan and marketing strategy. In Islamic boarding school, the business unit is a business unit in the form of a cooperative called a *kopontren* (Annisa, 2021; Marsudi, Usman Arief, 2011), a people's economic institution in a state of strategic cooperation. A *kopontren* contributes to educational activities and community empowerment for its students, Islamic boarding school communities, teachers, Kiai, Mamak, santri coaches, and the surrounding community (Rustidja, 2020). This form of cooperative business in *kopontren* is considered suitable because all members can actively participate in the system, and the main goal is the welfare of members (Marsudi, Usman Arief, 2011). What distinguishes a kopontren from other business units is that its orientation is not profit maximization, but social welfare orientation, for example, social welfare, the welfare of the students. A *kopontren* led by a business unit leader has enough capital to empower the economy (Sulaiman et al., 2018). Students who are also cooperatives can be involved as workers in managing businesses in *kopontren*. *Kopontren*, which has just started its business, is in the survival stage, namely the period for verification of its primary market and related calculations to ensure the required level of profitability and liquidity (Matejun & Mikoláš, 2017). Some research on *kopontren* that has been carried out by Sulaiman et al. (2018) which examines boarding school cooperatives can be used as a means of economic empowerment of students, Annisa (2021) discusses the halal style model through *kopontren* in Islamic boarding schools. Marsudi, Usman Arief, (2011) discusses the development of cooperative management in *kopontren*. There have not been many studies examining the condition of *kopontren* during the pandemic, where global economic conditions declined and disrupted all business activities, including business activities in *kopontren*. All business units are fighting against the impact of the pandemic that has occurred since the beginning of 2020.

2.4 Survival Strategy

COVID-19 can change the way we think, live, and even the way we see the world (He & Harris, 2020). This condition where there are no direct business transactions between sellers and buyers causes changes in consumer behavior who need products with retailer services that are trying to survive and compete during the pandemic (Pantano et al., 2020). Situations like this ultimately raise questions about the type of entrepreneurial behavior new business owners engage in times of crisis. (Cole & Sokolyk, 2018). Many companies try to formulate strategies that consider whether the business should take advantage of current opportunities, explore new options, or balance the two (Parnell, 2014). Many companies create the right product or service to get more consumers and market it (Sheth, 2020). This situation changes the core concept of marketing and its strategy (He & Harris, 2020). For example, some companies trying to adapt and survive, such as General Motors and Ford Motor Company, decided to change their business from producing cars to producing plastic shields and ventilators. They put off plans to buy back their shares in the future (Sheth, 2020). Several large companies have reconfigured their factories to produce medical clothing, hand sanitizers, ventilators, and other medical equipment for hospital patients and the general public who need them (Pantano et al., 2020). *Kopontren* in West Java is adapting by changing livelihood patterns to improve their standard of living and survival (Irwan, 2015). *Kopontren* tries to get additional income through other sources or cut spending by reducing the quantity and quality of goods or services (Irwan, 2015). An excellent response to COVID-19 demonstrates that rebuilding better, and preparing for future crises, means investing in core public sector capabilities and capabilities, including the ability to interact with other value creators in society (Mazzucato & Kattel, 2020).

3. Method

The research approach used is inductive (Creswell, 2014) with case studies as a research strategy. The inductive method was chosen because of the lack of literature on business survival strategies in boarding schools, especially during the COVID-19 pandemic. The research began by conducting initial data collection, categorizing the content based on the stage of business, tuition fees, number of students, and kind of product sold.
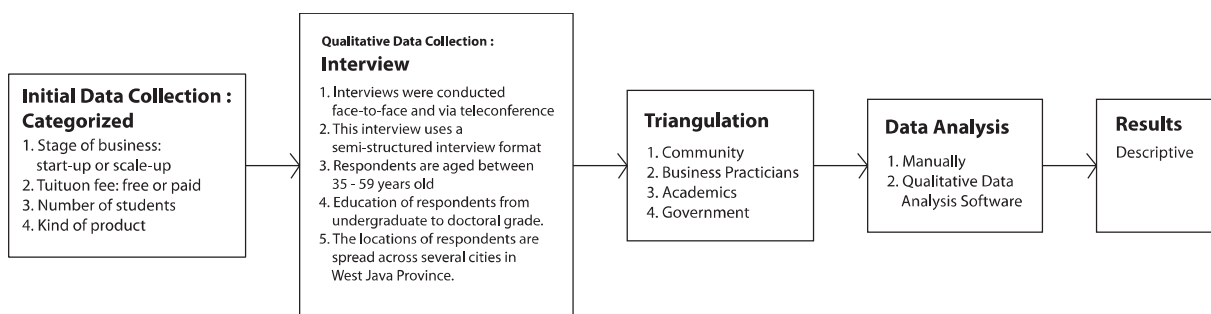

Initial Data Collection : Categorized
1. Stage of business: start-up or scale-up
2. Tuituon fee: free or paid
3. Number of students
4. Kind of product

Qualitative Data Collection : Interview
1. Interviews were conducted face-to-face and via teleconference
2. This interview uses a semi-structured interview format
3. Respondents are aged between 35 - 59 years old
4. Education of respondents from undergraduate to doctoral grade.
5. The locations of respondents are spread across several cities in West Java Province.

Triangulation
1. Community
2. Business Practicians
3. Academics
4. Government

Data Analysis
1. Manually
2. Qualitative Data Analysis Software

Results
Descriptive

Figure 1. Research Process Framework

Then we conducted interviews with about 21 kopontren and triangulated eight representatives from government, community, business practitioners, and academics. After the data is obtained, we analyze it in two ways, manually and using Qualitative Data Analysis Software called NVivo. The results are presented in the Results section. Qualitative data collection was carried out by conducting in-depth interviews with the following guidelines:

1. Interviews were conducted face-to-face and via teleconference due to limited distance and road access due to the COVID-19 pandemic.

2. This interview uses a semi-structured interview format, which allows us to dig deeper into the information needed by using a conversational style (Creswell, 2014)
3. Informants aged between 35 - 59 years.
4. Informant education from undergraduate to doctoral level.
5. The locations of participants are spread across several cities in West Java Province.

Interviews were conducted by following the interview protocol, starting with ice-breaking questions, stating the purpose of the discussion, recording audio, taking notes as necessary, and saying thank you after the interview (Creswell, 2014). The research sample is West Java, Bandung City, and West Bandung Regency. We chose these kopontren because they were considered capable of representing business activities with different product categories in the kopontren in West Java. The results of the interviews in the form of audio recordings were used verbatim as data for further analysis. To test the phenomenon, we can use various sources of evidence (Yin, 2018). Diverse data sources can result in different conclusions; therefore, using multiple data sources provides more robust support and more profound study findings. Consequently, we triangulated by taking different angles to increase the precision of empirical research and provide a broader picture (Runeson & Höst, 2009).

4. Result
4.1 Initial Data Collection
In the initial data collection, the researcher mapped and categorizes the kopontren based on: 1. Stage of business: emerging or surviving; 2. Tuition fees: free or paid; 3. Number of students; 4. Kind of product. The result is that the stage of business is divided into two stages, namely the emerging stage and the surviving stage. Based on tuition fees, Islamic boarding schools are divided into paid and free ones. The number of students is categorized as less than 100 students, 100-500 students, 500-5000 students, and more than 5000 students, while the product categories consist of food, fashion, craft, service, and others.
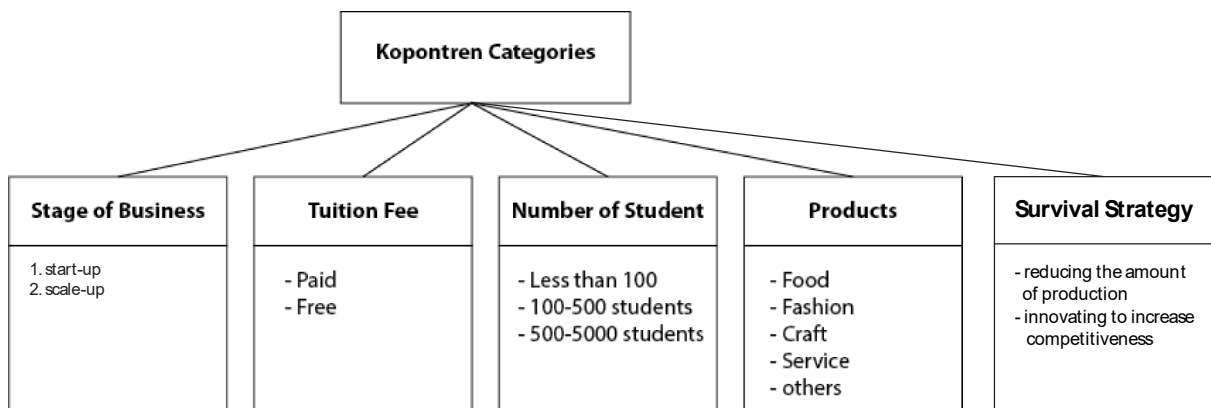

Figure 2. Kopontren Categories

The first stage of this research is to categorize Islamic boarding schools as represented by interviewed participants. Islamic boarding schools, which are in the start-up and scale-up categories, paid and free Tuition fees, Islamic boarding students with some students ranging from less than 100 students to more than 5000 students, to products sold in kopontren, namely food, fashion, craft, and products. Others have been represented in this interview. The terms start-up and scale-up company here refer to the terms used by the Department of Cooperatives and SMEs of West Java Province in the business development program at an Islamic boarding

school called OPOP (One Pesantren One Product). A start-up company is a company that has just started business activities, starting from concepts to trying to build and market products or services. A scale-up company is a start-up that has grown in scale and is ready to take the next step. A start-up company must successfully stabilize its business model, industrialize its offerings, and have proven viability. This study resulted in two primary exposures: business activities during the pandemic, and survival strategy during the pandemic. Some existing business activities have stopped, and some have changed the products sold into necessities. The survival strategy reduces production capacity, exploits natural resources, and collaborates with other kopontren.

4.2 Business Activities during the Pandemic

Almost all emerging categories of kopontren have stopped their business during the pandemic, at least reducing their production capacity. The main reason is that people's purchasing power has fallen sharply because the main priority is health and trying to avoid the tantrum of COVID-19. People only buy necessities during the pandemic and reduce spending on other, more consumptive needs and wants. Kopontren, classified as a start-up category, felt a considerable impact.

> *"Finally had to stop for a few months ago. Not out of business, just stopped operating"* – Participant L1.

> *"Until now, the activity has not started again. We use it to renovate a school building that is already fragile"* – Participant L2.

> *"Yes, it's also stopped because of the pandemic. Since the pandemic, there have been no activities at the pesantren"* – Participant L3.

> *"Due to this pandemic, all learning activities are carried out at home. Consumers of our products are decreasing, and finally, we stopped our business."* – Participant L2

As a result of declining purchasing power plus area lockdowns everywhere, all business areas in Kopontren have stopped. People have stopped buying clothes and prioritized daily necessities. This industry has also become more challenging. After all, local governments have issued regulations to close trading places except for hospitals, pharmacies, and mini markets that sell basic daily needs.

> *"All sectors are in bad shape; all sectors are heavily affected by this outbreak. Pesantren business units, cooperatives, businesses, clothing, clothing distributions are completely closed"* – Participant L4.

Some kopontren can survive the pandemic. On average, these surviving kopontren provide essential food products such as rice and vegetables or products that support virus protection such as hand sanitizers, portable sinks, or masks. The demand from the market is increasing as people avoid leaving their homes. Consumers are better off buying online than visiting mini markets to purchase daily necessities, even food.
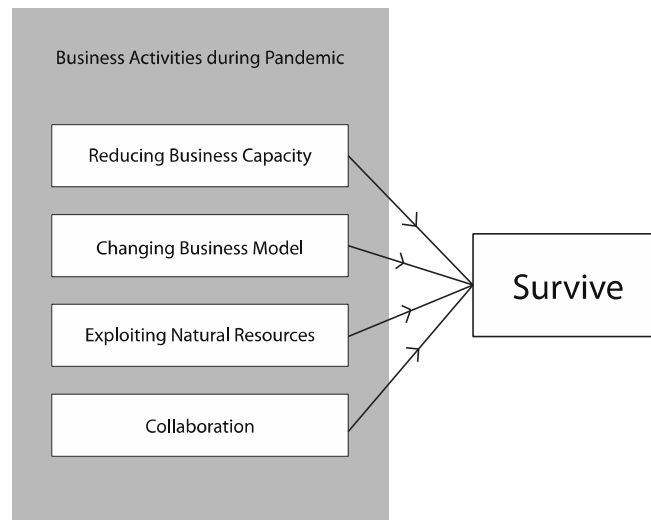
Figure 3. Business Activities during Pandemic

From the interviews, we got data on business activity during the pandemic, namely reducing business capacity, changing business models, exploiting natural resources, and collaborating. We will explain this in the next section.

4.3 Survival Strategy during a Pandemic

We conducted in-depth interviews with the *kopontren* in the start-up category who carry out business activities in their *kopontren*. This Kopontren represents a *kopontren* that has free and paid school tuition, has less than 100 students up to 500 people, has a business in the fields of processed food (vegetables and animals), drinks, fashion, and service. This interview produces data, namely the survival strategy carried out by this *kopontrens* is to reduce production capacity, add new products, exploit natural resources, and collaborate. Only one kopontren who participated in this research decided to stop its business activities.

No	Code	Type of Islamic Boarding School	Tuition Fee	Number of Students	Product	Survival Strategy
1	L1	Start Up	Paid	100-500	Processed Food (vegetables)	reduce production capacity, add new product
2	L2	Start Up	Paid	100-500	Drink	stop existing product, add new product, collaboaration with other kopontren
3	L3	Start Up	Free	100-500	Processed Food (vegetables)	stop the business activity
4	L4	Start Up	Paid	<100	Fashion	reduce production capacity
5	L5	Start Up	Free	<100	Processed Food (animal)	reduce production capacity, exploiting natural resource
6	L6	Start Up	Free	100-500	Service	reduce production capacity, add new product

Table 1. Interview Participants

4.3.1 Reducing Production Capacity

Several culinary businesses that produce snacks survive by reducing their production capacity and running their business as usual. By reducing production capacity, kopontren will reduce production capital, and the rest will be used as reserve funds to meet their basic needs, such as daily meals.

> "*To meet operational costs and student incentives, we use school cash and cooperative cash*" – Participant L4.

They hope not to close their business even though sales are declining. Some kopontren try to find other opportunities to generate income quickly so as not to interfere with the operations of the Islamic boarding school, including starting to plant seeds for their consumption and sale.

> "*The most important thing is that we save expenses. We save the results of our previous efforts, and we transfer some of them to buy plant seeds that we will plant,*" – Participant L5.

However, during the pandemic, conditions that occurred resulted in efforts to obtain additional payments in these business activities to stop because basic needs in the form of necessities were more needed. Like companies in general, kopontren must reduce costs in various activities.

4.3.2 Changing Business Model

Some kopontren make changes to their business model by changing the way they market it, to changing the products they sell. Because learning activities are carried out online at home, they reduce some existing learning activities, resulting in some school administrators and teachers reducing their actions. They have to adapt to replace their activities with other activities to meet school operations.

> "*Almost most of the employees in the school are forced to switch functions less but do not leave their main task*" – Participant L1.

> "*We changed the function of most of the staff in the cleaning department of dormitories and schools to produce food products to be sold. Furthermore, these products will be sold not by students but by school staff*" – Participant L1.

This job replacement allows the Islamic boarding school to survive through the pandemic. School operations must continue despite the difficult conditions.

> "*We have to be prepared for the worst. Each employee must be willing to be involved in saving the pesantren's operations. It's not easy.*" - Participant L1.

Many places of business are closed due to restrictions on activities outside the home. The easiest way to stay in business is to use internet technology. They carry out product marketing through social media, do the transactions online, and send goods using courier services.

> "*Perhaps this is the time to transact online during the pandemic. Previously, we carried out conventional transactions and never used online transactions, even though the online market is probably the most extensive.*" - Participant L4.

"Offline transactions are limited. Only close friends are our market. We try to do transactions on the marketplace and social media like Facebook." – Participant L2.

"Marketing is being intensified through online media. We make advertisements, and we repeat these advertisements through social media." – Participant L4

In addition to different marketing methods, Islamic boarding schools also try to sell their products by opening a small kiosk in front of the Islamic boarding school to attract consumers from the surrounding community who pass the booth during certain moments, such as religious holidays.

"We persist in that business, and during the Eid moment, we opened a kiosk in front of the school using a tent, and thank God consumers were passing by who bought our products" – Participant L4.

Some kopontren decide to change their products into products that can sell more quickly to the surrounding community. They do this action to get money to meet their operational needs rapidly.

"For businesses that are still running, we have another product in the form of dish soap. At the moment, thank God, it is still running even though we sold a few." – Participant L2

"We have made a product that is needed everywhere, namely hand sanitiser, so that we can sell that product everywhere during a pandemic." – Participant L6.

"We make products with liquid chemicals such as disinfectants and hand sanitisers. We don't make masks because many convections have made them, while not many produce hand sanitisers." – Participant L6.

4.3.3 Exploiting Natural Resources

West Java is a mountainous area with lush plants and trees. Its fertile soil makes it suitable for growing various vegetable and fruit crops. Some kopontren try to take advantage of natural resources that exist around kopontren. Some kopontren cultivate several crops that can be harvested and consumed quickly, such as kale and beans. They use capital from the sale of the previous product to buy vegetable seeds.

"The most important thing is that we save expenses. We save the results of our previous efforts, and we transfer some of them to buy plant seeds that we will plant," – Participant L5.

Consider growing vegetables as they are necessities that many people need, and growing them does not require time and complicated care.

Some Islamic boarding schools in the city center do not have the same natural resources but have other advantages, such as the location of the kopontren, which is close to various business activities, such as schools and offices. Kopontren exploits this potential by providing catering

services in the vicinity. In addition, they are trying to meet the market demand for cleaning equipment such as portable sinks using foot pedals.

> *"Yesterday, we tried to make a portable sink. The consideration was because at that time there were quite a lot of repeat orders compared to other products"* – Participant L1.

Even though the business has not been running for a long time, incoming orders can lighten the existing operational burden. People staying at home during the pandemic can place orders and deliveries online. This condition automatically becomes one of the advantages of a business. Some kopontren believe that the community's basic needs will still exist so that even if the pandemic continues, efforts to fulfill these basic needs will still exist. If the business unit does not provide basic needs, it is not easy to maintain them, especially during the pandemic. This strategy is quite successful, at least so far, and demand for necessities remains high.

> *"We returned to the old pattern, which was to survive with the conditions at that time. Because we had a garden, we went back to gardening, and we started planting in the first week of the pandemic"* – Participant L5.

> *"We did the easy thing first. The easiest vegetable to grow is the cassava tree. The cassava leaves can be made into vegetables, while for the fruit, we have to wait six to seven months for it to be harvested. Next, we plant beans which harvest relatively quickly, about thirty days"* - Participant L5.

4.3.4 Collaboration

Kopontren, which tries to open up its entire staff to move, tries whatever it takes to live in the pesantren. Kopontren, which usually involves students in their business activities, cannot do the same because they are sent back to their respective homes. Finally, all existing staff are engaged in business activities, from production to marketing.

> *"The marketing will involve all school staff to promote our products".* – Participant L1.

To adapt to these conditions, people involved in these business activities must upgrade themselves with the skills needed today. Many people who do things that are not their primary job need to learn new skills.

> *"I have to upgrade myself and start educating my other colleagues to be ready with the existing conditions, not just give up."* – Participant L1

Some kopontren try to communicate with other kopontren who are considered more successful and find out what they can do to meet the operational needs of the pesantren. They joined the kopontren community in West Java to develop real business potential. Kopontren can expand its business cooperation to all Kopontren in West Java.

> *"Currently, we are preparing programs to survive this pandemic with other Islamic boarding school friends".* – Participant L2

Some of the activities carried out by this community started from collecting data on the potentials in the West Java Kopontren and categorizing them. Each business category, such as a business that provides necessities, uses the producers of the same product with the same standards and then sells them to consumers who need large production capacity. They cooperate with fellow kopontren; besides that, they collaborate with government agencies such as Islamic banks to finance or procure business support tools and get benefits in entrepreneurship and management training.

> *"For business financing, we understand the BRI Syariah sharia finance unit". -* Participant L2.

4.4 Triangulation

We triangulation process of academics, communities, government, and business actors in Kopontren. They have succeeded in running their business to find out essential strategies and business activities carried out during the pandemic for survival. We also find out the framework of the crucial factors influencing businesses in kopontren to survive during the pandemic and identify the elements that made the business unsustainable.

The participant of the Triangulation process on the following :

1. Academics from three universities in Indonesia who are actively involved in activities and business observers in SMEs and Kopontren (Code A).
2. Director of Human Research at a multi-business kopontren managed by approximately 1,300 employees and business owners at the kopontren (Code B).
3. Government representatives carry out business assistance programs for kopontren in Islamic boarding schools (Code G).
4. Head of the West Java Economic Community Kopontren Community, a business owner in one of the significant kopontren in West Java, has successfully developed into 40 types of business units (Code C).

No.	Code	Participant Category	Position/Agency	Relationship with Islamic Boarding School
1	A1	Academicians	State University	Observer
2	A2	Academicians	State University	Observer
3	A3	Academicians	Private University	Observer
4	B1	Busines Practician	Business Owner	Companion
5	B2	Busines Practician	HR Director	Companion
6	G1	Government	Assistant Analysis	Companion
7	G2	Government	Head Division	Companion
8	C1	Community	Community Leader	Business Network

Table 2. Triangulation Respondent

The utilization of natural resources is essential and fundamental in life. They can support business within the kopontren even in a pandemic situation because natural resources can fulfill basic human needs.

"The most fundamental thing is resources, the source of all sources of knowledge relies on him, he is a faqih there, has a good understanding, has good morals, has a strong foundation, he wants to be built as high as anything, God willing, strong because the foundation is ready" - Participant B1.

"Maximizing our resources, our potential, internal boarding schools" - Participant C1.

In practice, a business is obliged to collaborate to meet broad demands with limited capabilities. Cooperation is something they must do because it is one of the religious orders.

"Cooperation - Wow, that's a religious order, sir. Syirkah is a religious order; it has become a priority" - Participant B1.

Something must come from an intention from all stakeholders to survive during a pandemic. The intention was not only seeking profit but also a social intention to help others by the teachings of Islam.

"What was the intention in the first place to make this business, social or profit? Usually, social entrepreneurs don't start with a good business idea, sir, but are made with noble social intentions" - Participant A3.

Entrepreneurial ability, including managerial ability, is an obligation that must exist in a kopontren. If there is no this skill, the pandemic will destroy the business running.

"So there are small Islamic boarding schools that don't have strong managerial skills in business management, don't have a strong network too, they collapse like that, they are not strong with COVID-19, like that" - Participant A1.

Kyai plays an essential role in all existing activities. In carrying out almost all of its activities, including business activities, an Islamic boarding school is very dependent on the kyai. Whatever the kyai says is an order the santri must obey.

"Tradition in Islamic boarding schools is indeed Samina wa athona. Obedience to Ulil Amri is the most basic thing among Islamic boarding schools. After Allah and His Messenger, we must obey our leaders and teachers" - Participant B1.

With an open mindset, kyai can bring Islamic boarding schools more progressive and open to technological advances. Many Kyai in West Java adhere to their ancestral traditions by not doing business and just waiting for help from outsiders. They believe that Islamic boarding school is a place to learn Islamic knowledge, not a place to do business. As a result, daily operational needs such as food are challenging to meet during this pandemic.

"Islamic boarding school can progress or not; that's the kyai" - Participant A3.

The leadership of a business leader can motivate stakeholders to make changes for active survival. kopontren administrators must have the ability to manage the most critical potential

of a kopontren, its students, and the surrounding community. They are working together on the possibility of existing resources around the Islamic boarding school.

> *"So the first factor in the discussion was the support from the leadership, for example, the support from Pak Kyai himself"* - Participant A1.

A business within a kopontren will thrive when there is a catalyst in government assistance, especially for small kopontren whose economic conditions are weak.

> *"Then what about the small Islamic boarding school, sir, because it is difficult for them to wake up, right? Government hands don't touch it."* - Participant A1.

In addition to this program, Bank Indonesia held a similar program. The difference is that Bank Indonesia does not give money to prospective kopontren. Still, it provides business training assistance, mentoring, workshops, and business support facilities according to the potential of each selected kopontren. Every year, this program looks for potential kopontren to develop their products and businesses up to the export stage. The government can open the door for cooperation with other large companies such as marketplaces to accommodate products from Islamic boarding schools and market them to a broader market.

> *"There is a collaboration between the West Java Provincial Government and blibli.com, right?"* - G5 participant.

5. Discussion

Changes in conditions in business activities around the world also impact business activities in kopontren in West Java. Islamic boarding school, which now teaches religion and as a social and economic institution (Sulaiman et al., 2018) through its business unit, namely kopontren, forces kopontren to adapt to survive. The results of this study indicate that, in essence, a kopontren when facing a pandemic is the same as other companies, which must adapt, look for opportunities, and take advantage of existing technology to survive. It may sound ordinary, but in an Islamic boarding school in Indonesia, its business is not a top priority. Why? For decades, traditional Islamic boarding schools have been accustomed to surviving by relying on help from donors or the government. During the pandemic, many Islamic boarding schools returned to the old habit of depending on outside help instead of strengthening their business units. This habit happens especially in Islamic boarding schools, which do not charge tuition fees to their students. What is very influential here is mainly because of the figure of the kyai as the leader and owner of the school, who is very dominant and respected. Many kyai think that an Islamic boarding school is only a place to study religion, not business activities. Finally, Kyai discontinued many businesses in Kopontren. The management at the kopontren could not dispute what the kyai ordered, and eventually, business activities stopped, and operational costs again depended on outside assistance. Operating expenses that rely on external aid that are not routine and remain large make an Islamic boarding school not financially independent. Worse, they cannot survive. As a result, poverty and hunger occur. Research conducted by Altig et al. (2020) is evident here.

Few of the kopontren that survived during the pandemic turned out to have adapted, as did General Motors and the Ford Motor Company. Some kopontren survive by changing the business model in their kopontren. They reduced their production capacity to a minimum and turned their main products into products needed during a pandemic, such as masks, hand

sanitizers, and portable washbasins. These products were hard to find at the start of the pandemic, and even if they did, their prices skyrocketed in the market. The more basic needs of the community, namely essential food items such as rice and vegetables, are also a top priority during the pandemic. The lack of supply due to the limited space for movement during the lockdown is an opportunity for Islamic boarding schools to empower kopontren to provide essential food ingredients for communities around the Islamic boarding school. We think providing these basic needs for society is an excellent step now and for the survival of the world in the future. West Java, which is rich in soil fertility, has great potential if it is used to grow rice, various vegetables, fruits, and livestock. Utilizing these natural resources is a win-win solution for Islamic boarding schools and the surrounding community, whose activities are limited due to the lockdown in many areas to avoid COVID-19. By providing these needs, the kopontren still earn income to make the Islamic boarding school survive to meet its operational costs. This statement explains one respondent who said that to stay a kopontren should provide essential food ingredients that people in Indonesia always need. Imagine if other Islamic boarding schools did the same. They would meet the school's operational costs and make a sizeable positive impact by helping the surrounding community.

Not only have products changed, but this kopontren in West Java has also started to use technology in social media, marketplaces, and online couriers to market and send their products to consumers. The use of technology is usually done, but it is extraordinary because Kopontren does it. After all, so many traditional Islamic boarding schools still produce, market, and conventionally deliver their products. The condition happens because of the geographical conditions of the kopontren, which are widely spread in the interior of West Java, and not all of them are registered and affordable by government assistance. Hence, the existing technology is not optimally obtained. The change that He & Harris (2020) describes states that this pandemic has changed the marketing concept, including the context and strategy, which is also evident here during the pandemic.

Zheng & Zhu (2022) discuss that trust between chairman and CEO drives firm performance and increases its value. In a kopontren, a kyai as the owner and leader of a boarding school who gives trust to a kopontren leader will make the leader's space more flexible in developing his business. Of course, this impacts business movements that are more agile and adaptive during the pandemic. Kyai in Islamic boarding schools has the main grip, namely the teachings of Islam. Because of his significant influence, the Kyai can influence the decisions of the stakeholders in his kopontren. A sub-business at an Islamic boarding school in the form of a kopontren can suddenly stop if the kyai does not trust the kopontren leader in running his business or does not believe that the business being carried out will go well. The trust of a kyai is expensive because the culture and conditions in an ordinary company are not the same as conditions in an Islamic boarding school, where the influence of a kyai as an individual is quite significant, significantly determining the direction of the pesantren movement, including the business activities in it. This kyai's involvement distinguishes an Islamic boarding school from other institutions, especially in conducting business activities.

Cooperating with Islamic financial institutions is excellent to strengthen the kopontren business, especially the monetary factor. Collaborating with Islamic financial institutions such as Islamic banks will indirectly enhance the image that the companies run in Kopontren are based on Islamic rules. The use of persuasion in Islamic finance and its techniques will convince potential customers about the religiosity of their products (Azmat et al., 2021) Collaboration is carried out in addition to banks for financing; it is also carried out with fellow kopontren to expand the network and product marketing. Opportunities can be obtained when communication between kopontren is smooth and can open up more significant opportunities if they collaborate. Since

2019 there has been a kopontren community in West Java called the "Serikat Ekonomi Pesantren." This community embraces kopontren in West Java to exchange information, work together, and have a goal for the welfare of its members. Less than a year later, when the pandemic hit, Conditions tested this community to collaborate between kopontren to survive. The way to do this is to collect the potential in the Kopontren and determine the target market. Communities like this should get more attention from the government.

Bank Indonesia also held an assistance program for concerns in West Java. Bank Indonesia assistance is not in the form of money to prospective kopontren but in the state of business training assistance, workshops, and business support facilities according to the potential of each selected kopontren. This program looks for potential partners to develop their products and businesses up to the export stage every year. The government can open the door for cooperation with other large companies such as marketplaces to accommodate products from Islamic boarding schools and market them to a broader market.

What to do next after we get this survival strategy? Of course, we can duplicate it, especially against the collapsing kopontren during this pandemic. Kopontren can implement all plans, from utilizing natural resources to reduce existing production capacity to changing business models that are strengthened by the use of technology in marketing their products. Kyai should be more open his mind to the changes that occur. Agile leadership from a Kyai has a high impact on the running of the business, starting from the manager's confidence, the smooth running of production to marketing to a broader market through collaboration with other parties. As a catalyst, the government can play more of a role in supporting businesses and strengthening the economy in West Java through this kopontren. When starting a business, the development that is carried out must be maintained continuously, as has been done by Bank Indonesia for the kopontren that are now growing. Entrepreneurs outside the Kopontren must also start to look at the great potential of this Kopontren because, in the future, this potential will explode into something big and have a high impact on society.

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Appendix

Interview's Questions (for Kopontren)

No	Questions (in Bahasa Indonesia)	Questions (English)
1	Bagaimana kondisi di pesantren anda saat pandemi berlangsung ?	How was the condition at your boarding school during the pandemic?
2	Bagaimana memenuhi kebutuhan sehari-hari saat kondisi lockdown di mana-mana ?	How to meet daily needs during lockdown conditions everywhere?
3	Apakah ada bantuan yang datang dari pemerinah atau donor ?	Is there any help coming from the government or donors?
4	Bagaimana kondisi usaha yang anda jalankan di kopontren ?	What is the condition of the business you run in Kopontren?
5	Apa yang akan anda lakukan terhadap aktivitas bisnis di kopontren anda selanjutnya ?	What will you do with your next business activity in your kopontren?

Interview's Questions (Triangulation)

No	Questions (in Bahasa Indonesia)	Questions (English)
1	Bagaimana kondisi usaha di pesantren Jawa Barat saat pandemi berlangsung ?	How was the business condition at the West Java Islamic boarding school during the pandemic?
2	Apakah kepemimpinan merupakan faktor pendukung sebuah usaha di kopontren ?	Is leadership a supporting factor for a business in Kopontren?
3	Apa upaya pemerintah untuk membantu mengembangkan bisnis di pesantren ini ?	What are the government's efforts to help develop the company in this pesantren?
4	Seberapa penting peran leader dalam jalannya sebuah usaha di pesantrennya ?	How important is the leader's role in running a business in his pesantren?
5	Model bisnis seperti apa yang cocok diterapkan di dalam sebuah kopontren ?	What kind of business model is suitable to be applied in a kopontren?
6	bentuk kolaborasi seperti apa yang cocok dilakukan oleh sebuah kopontren ?	What kind of collaboration is ideal for a kopontren?
7	apa yang sebaiknya dilakukan oleh sebuah kopontren untuk dapat bertahan di masa pandemi ini ?	What should a kopontren do to survive this pandemic?
8	bagaimana pendapat anda tentang pendapat bahwa sebuah kopontren dapat bertahan di masa pandemi jika mereka memiliki produk bahan makan pokok ?	What do you think about the opinion that a kopontren can stay during a pandemic if they have staple food products?

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Sample Records

CADTH Canadian Agency for Drugs and Technologies in Health

Sector of Information	Independent, not-for-profit organization
Document Types	Reports, Health Technology Assessments
Publication Formats	Online, PDF
Main Coverage	Health Care, Health Care Systems, Drugs, Pharmaceuticals, Medical Devices, Medical Diagnostics, Medical Procedures
Content Contributors	Internal only
Open Access Compliant	Yes
Homepage URL	https://cadth.ca/
Identifiers	Date founded 1989; https://ror.org/02fw4cc98; GRID grid.413289.5; http://isni.org/isni/0000000085833941; https://www.wikidata.org/wiki/Q5029662; https://twitter.com/CADTH_ACMTS; https://www.linkedin.com/company/cadth
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Sector of Information	Academics
Document Types	ETDs, grant proposals, datasets, reports, maps
Publication Formats	PDFs, datafiles, images
Main Coverage	Agriculture, Entomology, Caribbean studies, Children's literature, Book arts, Florida history
Content Contributors	Internal only (university affiliates)
Open Access Compliant	Yes
Homepage URL	https://ufdc.ufl.edu/
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Networked Digital Library of Theses and Dissertations (NDLTD)

Sector of Information	Academics
Document Types	Theses and Dissertations
Publication Formats	PDF plus metadata plus other formats as provided by authors
Main Coverage	All disciplines, topics, subjects covered in theses or dissertations
Content Contributors	We harvest metadata from all interested providers
Open Access Compliant	Free, open access
Homepage URL	http://ndltd.org
Identifiers	Incorporated 2003 NDLTD Awards https://ndltd.org/etd-journal/ http://theses.org http://dissertations.org Social Media
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International Nuclear Information System (INIS)

Sector of Information	International Organization
Document Types	Reports, Proceedings, Theses, Patents, Legislative Material, Standards, Videos
Publication Formats	PDF, Metadata, Online
Main Coverage	All areas of nuclear science and technology, including nuclear energy, nuclear medicine, radiation physics, soil remediation, etc.
Content Contributors	Internal and external
Open Access Compliant	Yes
Homepage URL	https://inis.iaea.org/search
Identifiers	Founded 1970 https://www.iaea.org/resources/databases/inis
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