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Creation of a Method to Diagnose the Conservation Status of Archival Documents. Practical Case: Documents of the Real Audiencia in Chile

Ir a la versión en español

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ABSTRACT

Exposition about the methodology and results of an approach to diagnose the conservation status of one of the emblematic collections of the Archivo Nacional (AN) de Chile: the Real Audiencia funds. In the absence of a systematic procedure to determine the status of this funds, we had to formulate and develop trials for a new methodology to learn about, and identify, hazards to the collection. This initiative made it possible to forecast appropriate decisions regarding conservation. Also, it can be disseminated and replicated in other archives of similar institutional characteristics in other countries of the region. Archive conservation should be established as a permanent area of technical support, while maintaining archival science, history, legal value and serving the citizens as a core purpose.

KEY WORDS

conservation; archives; preservation; Real audiencia; documents; diagnosis

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BACKGROUND OF THE DIAGNOSED DOCUMENTATION

Documents produced by colonial institutions from 1544 until the end of the colonial period[1] were kept by their successors, the republican institutions, until 1861, the year when the manuscripts section of the Biblioteca Nacional de Chile[2]; (Biblioteca Nacional de Chile, s. f.), was created for the purpose of collecting all documentary production in Chilean territory between the Conquest and 1861. In 1887, the Archivo General de Gobierno (general government archive in English; Archivo Nacional [AN], s. f.), assigned to the Departamento de Justicia e Instrucción Pública del Gobierno de Chile, was founded with the mission to receive documentary transfers from the State ministries and departments in the country. The Archivo Histórico Nacional ([ANH], National History Archive in English) was created on 30 May 1925 for the purpose of collecting the documents produced by colonial institutions and republican documents generated between 1810 and 1865 (AN, s. f.).

Thus, there were two archives that stored different periods of the documentary production of administrative institutions in Chilean territory: the General de Gobierno and Histórico Nacional archives. During the government of President Carlos Ibáñez del Campo, it was decided that both entities would be merged into a single institution, henceforth named the "Archivo Nacional (national archive in English)" (DFL 7.217, 1927). Both of the previously mentioned archives were indeed united, although the documentation was kept separately. That same decree (DFL 7.217, 1927) established the sections that would constitute the Archive: an Historic and an Administrative section. The first, also called "Archivo Nacional Histórico", to date holds the documents pertaining to colonial administration, and even documents produced by the State of Chile throughout the 19th Century. In total, it contains 111,384 document units that include volumes, binders and boxes, which have been estimated to represent 8,665.1 linear meters of documentation (AN, 2014).

Towards the end of 2015, the Unidad de Conservación of the Archivo Nacional de Chile (UCAN) was instructed to apply restoration treatments to the Real Audiencia collection.[3] The problem, howe-

[1] The first attempt to abolish colonial institutions occurred in 1811, at the time of the first efforts to gain independence. Such institutions were reinstated between 1814 and 1817, a period in the history of Chile known as the "Reconquest", which ended with the country's definitive declaration of independence.
[2] Institution founded on 19 August 1813, during the period in Chilean historiography known as "Patria Vieja" (loosely, old homeland).
[3] The Reales Audiencias (royal law courts) were the colonial institution in charge of ensuring compliance with legal obligations and imparting justice on behalf of the king of Spain. The first Real Audiencia in Chilean territory was active between 1567 and 1575. Its main purpose was to exert direct and efficient control over the local government's financial collections, independently from the Audiencia of the Viceroyalty of Perú.

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ver, was that nobody knew how many documents were deteriorated nor the kind of deterioration the documents had sustained. Therefore, it became necessary to diagnose the conservation status of the funds in order to quantify and identify such documents.

CONSIDERATIONS TO DIAGNOSE CONSERVATION CONDITION

A diagnosis, "Identifies the condition of a person, object, or structure" (Getty Research Institute, s.f.)[4], whereas conservation status has to do with evaluating the physical condition and the present characteristics of the materials on which the documents are supported. According to the Getty Research Institute (s.f.), this makes it possible, under the same variables at the time of the evaluation, to forecast the risk of losing information in the future. Therefore, the methodology proposed in this specific case sought to identify the physical conditions of the support materials and their deterioration so as to build a data base considering the funds as a whole, and not merely one of its parts. At the same time, a standardized procedure to execute a diagnosis would be established in a manner that could be replicated in other documentary collections and archives.[5]

Before devising a specific method to characterize the conservation status of the funds and its documents, we decided to propose a general definition to model our methodology initiative. The final methodology selected had to meet the following requirements:

- Collect quantitative and qualitative data about the physical conditions of the documents;
- forecast applicability to other documentary funds;
- perform an analysis solely based on observations of the object, avoiding any personal criteria, and
- be easy to execute without requiring too much time.

APPLICATION OF THE "CHOOSING BY ADVANTAGES" METHOD

Before the creation of this methodology to diagnose conservation status, four diagnostic methods had already been used at UCAN, so we had to evaluate which of them had the necessary and sufficient characteristics to make it an optimal choice for the Real Audiencia

[4] Editorial translation. This and subsequent quotes originally in Spanish are also editorial translations.
[5] Defining treatments, storage conditions and other decisions based on the kinds of deterioration detected exceeded the scope of this article.

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funds. We used the *Choosing by Advantages (CBA)* technique in our evaluation.

It's important to consider that the method to make a decision defines the decision itself and impacts subsequent actions and results. This selection technique in particular is based on the *Lean Project Management* philosophy that focuses on choosing an alternative based on its advantages, after a compared analysis of other alternatives (Mossman, 2012), without neglecting the principle that even though every decision is subjective, it has to be grounded on objective and proven facts (Jones & Womack, 2005.)

This technique facilitates the task of selecting an alternative by weighing the attributes to be analyzed and the advantages of each alternative with respect to those attributes. This is truly relevant in order to make the most objective decision possible and means, as proposed by Jones and Womack (2005), putting what interests us as value on the balance. Some of the main characteristics of this technique are:

- It makes it possible to visualize the differentiating factors of each alternative.
- Its practical use can be confirmed when there are few alternatives available to make a decision.
- It facilitates eliminating attributes that do not contribute the values required, so it is possible to discern what is truly important to make the decision.
- It allows one to focus on the decision and its context.
- It provides an objective justification to decide.

In order for this technique to work properly, we recommend not deciding over advantages or disadvantages because this would target our choice: the decision is not about what factor under evaluation is more important, but which one reveals important differences among the attributes of the alternatives. As set forth by Mossman (2012, p. 1) the advantages of the alternatives are objective, whereas how these advantages are valued is subjective.

The CBA technique involves a series of sequential steps. The ones used here consisted in identifying the alternatives, defining factors, defining desired or required criteria for each factor, and comparing alternatives.

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Identifying alternatives

In order to learn what alternatives are available, the first step in the CBA technique is to identify them. In our case, we had all four alternatives for diagnostic models in effect at the time of execution. These are compared in the following table (Figure 1).[6]

Name of the Diagnostic Model	Security Project - Execution	Project to Preserve the Notary and Conservator Funds. 2015 Formulation	Funds of the Ministerio de Obras Públicas	For Records Transfers - Version 2016
Effective Period of the Model	2011-2015	2015	2016	2016
Purpose of the Model	Define the feasibility of installing an anti-theft sensor.	Obtain conservation status data making a distinction between documents and bindings.	Define the need to replace binding.	Support the definition of the conservation status, before transfer the records to the Archivo Nacional.
Difficulties detected	The success of the project was evaluated in terms of the number of sensors installed, this way the diagnosis served as a mere instrument for this purpose and therefore, did not ensure that the conservation status consigned for each documents unit was indeed correct from a conservation perspective.	Instead of a conservation status diagnosis, the conservation consisted in a preliminary guideline regarding pending treatments; for example, disinfection, restoration or binding, although without giving a justification for those treatments and without providing damage percentages, or whether treatments were total or partial, and so on.	Insufficient to delve into other deterioration or other physical characteristics of the volumes, which would allow to study in depth the entire perspective of the physical conservation of the fund.	Scant variety in percentage distribution and excessive qualitative data.

FIGURE 1. Identification of alternative conservation status diagnostic models in effect at the time of this approach to build a new methodology (Table: Natalia Ríos, 2021).

Defining factors

A factor is that which will be evaluated in an alternative. Selection of the factor or factors is based on which ones will allow us to notice the greatest differences among the alternatives, as pointed out by Mossman (2012).

In this investigation, the most important factors we needed to evaluate so as to identify the major differences among the alternatives were: application time (factor A), level of difficulty of the application (factor B), quality of the data obtained (factor C), and amount of data obtained (factor D).

[6] All figures are editorial translations from the Spanish versions.

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Defining desired or required criteria for every factor

Defining a criterion means specifying the value one wishes to derive from every factor established; in other words arrive at the criterion in a certain factor that will provide the highest score, as stated in the book by Jones and Womack (2005). Factors in step 2 were associated with their respective criteria as follows: criterion required for factor A, least application time; for B, least difficulty to apply; for C, greatest quality in the data obtained in terms of cause and effect of the deterioration, and for D, largest amount of data obtained.

Comparing alternatives

As indicated by Jones & Womack (2005), identifying each alternative makes it possible to summarize the attributes of each one. Thus, we were able to recognize and visualize the attributes of each diagnostic model, how they performed and their characteristics. Once the attributes are summarized, criteria can be used to assess which of the attributes offers advantages in the different factors. Once the advantages of the diagnostic models are clear; i.e., once the perspective is broader, a decision has to be made regarding which is the most important advantage, both for the case in point as well as for the final decision (Figure 2).

Factor (criterion)	Security Project D.M.	D.M. for the Project to Preserve the Notary and Conservator Funds – 2015 Formulation	D.M. of the Funds of the Ministerio de Obras Públicas - Execution 2016	D.M. for Document Transfers 2016
a) **Time (less time is better)**	Attribute: 4 minutes per volume	Attribute: 3 minutes per volume	Attribute: 2 minutes per volume	Attribute: 4 minutes per volume
			Advantage: quicker 2	
b) **Difficulty level (less difficulty is better)**	Attribute: medium difficulty	Attribute: little difficulty	Attribute: very little difficulty	Attribute: medium difficulty
			Advantage: very easy 1	
c) **Data Quality (greater quality is better)**	Attribute: high subjectivity	Attribute: low subjectivity	Attribute: very high subjectivity	Attribute: low subjectivity
				Advantage: less subjective 4
d) **Data amount (a larger amount is better)**	Attribute: large amount	Attribute: small amount	Attribute: very small amount	Attribute: large amount
	Advantage: more data 3			Advantage: more data 3
Total	3	0	3	7

FIGURE 2. CBA table comparing prior diagnostic models (Table: Natalia Ríos, 2018).

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The following table shows the scale of importance granted to each of the advantages. The value of the importance should reflect the order of the priorities established for the evaluation (Figure 3).

FIGURE 3. Scale of importance for each advantage (Table: Natalia Ríos, 2019).

Scale of importance	
Importance	**Advantage**
4	High quality data
3	Large amount of data
2	Less application time
1	Low difficulty to apply

With these results it can be said that the diagnostic model for 2016 Documentary Transfers (Figure 4) has the highest score (7 points), thereby displaying advantages in the two most important criteria:

- greatest quality in the data provided in terms of correlating the causes and effects of deterioration, and
- largest amount of data provided by applying the model.

Conservation status	Nivel	Binding	Record	Requirements for transfer
Very good	1	I.It do not present abrasion or wear of any kind. 2. Easy to handle. (Figure 1)	I. It does not present deterioration. 2. Easy to handle. (Figure 13)	Suitable for transfer.
Good	2	I. Minor abrasion that does not compromise the binding (rubed corners and edges, abrasion). 2. Easy to handle (Figures 2 & 3).	I. Minor deterioration that does not compromise the information. 2.Easy to handle. (Figure 14)	Suitable for transfer.
Regular	3	I. Intact or partially broken sewings. 2. Cover loose but not completely separated from the body (Figure 4) 3. Flyleaf (endleaves) torn in the union of the cover (Figure	I. Loose pages or signatures. (Figure 15) 2. Stains due to moisture or other causes that do not compromise information. (Figure 16) Minor tearing areas in relation to the total record. (Figure 17)	Bind before transfer.

FIGURE 4. 2016 Document Transfer Diagnostic Model (Table: Natalia Ríos, 2016).

Meanwhile, the Fondo Ministerio de Obras Públicas ejecución 2016 (Figure 5), diagnostic model obtained 3 points in all, thereby showing greater advantages in less important criteria like:

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- shorter execution time and
- less difficulty to apply.

Fund	Volume	Good	Sheets	Loose	Restoration	Fungus	Condition	Observations
MOP	1316	OK						
MOP	1317		X					
MOP	1318	OK						
MOP	1319	OK						
MOP	1320	OK						
MOP	1321	OK						
MOP	1322	OK						
MOP	1323					X	X	
MOP	1324			X				
MOP	1325	OK						
MOP	1326	OK						
MOP	1327	OK						
MOP	1328	OK						
MOP	1329	OK						
MOP	1330		X	X				
MOP	1331	OK						
MOP	1332	OK						
MOP	1333							up side down
MOP	1334	OK						
MOP	1335	OK						
MOP	1336	OK						

FIGURE 5. Public Works Diagnostic Model (Source: Bravo, M., & Tapia, Y., 2016).

The Security Project diagnostic model (Figure 6) had an advantage only for the criterion, amount of data obtained, with a 3-point score, whereas the Proyecto Conservación Fondos Notarios y Conservadores, formulación 2015 Conservation Project Notaries Funds and Conservators, formulation 2015, in English) diagnostic model (Figure 7) did not show an advantage for any criterion.

These diagnostic methodologies applied previously did not respond to the specific needs of the colonial documents. Thanks to CBA analysis, however, we decided to use the Transferencias Documentales 2016 (2016 Documentary Transfers in English) diagnostic model as a basis, because it incorporated characteristics assigned according to degree of deterioration and other data trending toward an evaluation of the object and not just personal criteria, thereby providing more and better-quality data.

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FUNDS	N° V	Sheets / Thickness (cm)	Conservation status				Treatment proposal	Observations Conservation	First aid restoration	Perform	Recomendation installing device	Restoration first aid began	Returned to storage	Conditioning
			Binding		Records									
			Nivel	Most significant damage	Nivel	Most significant damage								
Real audiencia	304	5.8	3	loose pages	4	tears and missing parts	RD75	ink ran through, stains from adhesive, handle carefully, interleaved		no	w/o device			
Real audiencia	382	4.2	2	loose pages	2	deteriorated edges	-		return to shelves		w/o device			
Real audiencia	483	4.8	3	loose pages	4	deteriorated edges, tears and missing parts	RD100-RE	fungus, handle carefully interleaved, some pages restored (a large amount of water fell on it)	disinfected at the ARNAD, dried at the AH	yes	w/o device	07-04-2014 drying - 11-07-2014 disinfection	19/11/2014	
Real audiencia	923	4.8	3		4	tears and missing parts	RD75	fungus, handle carefully interleaved, faded ink	Disinfect at the ARNAD	no				
Real audiencia	983	4	1	loose pages	4	deteriorated edges, tears and missing parts	RD75	fungus, handle carefully, interleaved	Disinfect at the ARNAD	no	w/o device			
Real audiencia	1090	5.2	4	-	4	deteriorated edges, tears and missing parts	RD50-E	fungus, ink ran through, faded ink	Disinfect at the ARNAD	no	w/o device			
Real audiencia	1335	4.9	4	loose cover, damaged spine, damaged sewing	4	tears and missing parts	RD75-RE	fungus, handle carefully, interleaved	Disinfected at the ARNAD	yes	w/o device	28-08-2014 disinfection	19/11/2014	
Real audiencia	1622	4.3	2	loose pages, detached spine	4	tears and missing parts	RD75	fungus, handle carefully, interleaved	Disinfected at the ARNAD	yes	w/o device	24-07-2014 disinfection	19/11/2014	
Real audiencia	1689	5.6	4	minor wear	4	tears and missing parts	RD75-RE	fungus	Disinfect at the ARNAD	no	w/o device			
Real audiencia	1700	4.7	2	loose sewing, detached covers, loose pages	4	tears and missing parts	RD100	fungus, handle carefully, interleaved	Disinfected at the ARNAD	yes	w/o device	22-082014 disinfection	19/11/2014	
Real audiencia	1702	4.7	2	minor wear	5	ink oxidation	RD100	handle with extreme care	laminate	no	w/o device			
Real audiencia	1715	5.4	2	minor wear	4	tears and missing parts	RD100	fungus, handle carefully, interleaved	Disinfect at the ARNAD	no	w/o device			
Real audiencia	1812	4.5	3	minor wear	5	tears and missing parts	E-RD75	fungus, handle carefully, loose pages in an envelope, vol. might be incomplete	disinfect at the ARNAD	no	w/o device			
Real audiencia	1958	5.9	4	loose pages, detached spine, damaged sewing	4	tears and missing parts	RD75-RE	fungus, handle carefully, interleaved	Disinfected at the ARNAD	no	w/o device	04-09-2014 disinfection	19/11/2014	
Real audiencia	1959	5.5	4	loose pages, damaged sewing	4	tears and missing parts	RD75-RE	fungus, handle carefully, interleaved	Disinfected at the ARNAD	no	w/o device			

FIGURE 6. Security Project Diagnostic Model (Source: Díaz, P., 2011).

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No.	FUNDS	Volume No.	Diagnosis Level	Conservation Status: Documents			
				Conservation Status Level		Approximate No. of sheets to restore	Observations
				Binding	Documents		
1	Antofagasta	1	3	2	2		In good condition
2	Antofagasta	2	3	3	2		Binding
3	Antofagasta	3	3	2	2		In good condition
4	Antofagasta	4	3	2	2		In good condition
5	Antofagasta	5	3	2	2		In good condition
6	Antofagasta	6	3	2	2		In good condition
7	Antofagasta	7	3	2	2		In good condition
8	Antofagasta	8	3	2	2		In good condition
9	Antofagasta	9	3	2	3		Restoration
10	Antofagasta	10	3	2	2		In good condition
11	Antofagasta	11	3	3	2		Long-term repair. May need intervention later
12	Antofagasta	12	3	2	2		Long-term repair
13	Antofagasta	13	3	2	2		In good condition
14	Antofagasta	14	3	3	3		Binding/restoration
15	Antofagasta	15					Not in storage
16	Antofagasta	16					Not in storage
17	Antofagasta	17	3	2	2		In good condition
18	Antofagasta	18	3	2	2		Long-term repair.

FIGURE 7. Notary and Conservator Diagnostic Model (Source: Arias, K., 2015).

DIAGNOSIS OF THE CONSERVATION CONDITION OF THE REAL AUDIENCIA FUNDS

Considering the noteworthy aspects of the 2016 Documentary Transfers diagnostic model, which obtained the highest score in the alternatives comparison, we began to structure a new proposal. We incorporated acronyms to avoid flooding the data sheet with concepts and information, we distributed percentages, reorganized the data coherently, and made other improvements (Figure 8).

STANDARDIZED FIELDS IN THE DIAGNOSIS OF CONSERVATION CONDITION

The data sheet has been organized into four groups of fields: general information, deterioration in bokbinding, deterioration in documents, and observations.

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Diagnostic Data Sheet: Binding and Records																																						
General data				ISSN 2448-5934 Binding															Records																Observations	
				Status 1 SCD	Status 2 SCD	Status 3 PCD			Status 4 PCD						Status 5 TCD			Status 1 SCI	Status 2 SCI	Status 3 PCI				Status 4 PCI						Status 5 TCI							
Funds	Vol	Thickness (cm)	Final Folio	Without deterioration	Slight deterioration, only esthetic	Partially detached spine	Covers partially separated from body	Partially destroyed sewing 1-10%	Missing areas in covers 1-50%	Missing areas in spine 1-100%	Covers totally separated from body	Partially damaged sewing 11-40%	Biodeterioration 1-50%	Moisture 1-100%	Completely lost 50-100% w/o binding	Completely damaged sewing 41-100%	Biodeterioration 50-100%	Without deterioration	Slight deterioration	Stains SCDI 0-100%	Tears 1-50%	Deteriorated edges 1-100%	Prior non-technical intervention 1-100%	Loose/detached pages 1-100%	Stains CCDI 50-100%	Tears 50-100%	Missing parts 50-100%	Ink-related deterioration 1- 50%	Biodeterioration 1-50%	Stains CCDI 50-100%	Missing parts 50-100%	Ink-related deterioration 50-100%	Biodeterioration 50-100%	ITA	Other
RA	1	7 cm	440	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	X	X	-	X	X	-	X	-	-	-	-	-	-	X	prior tape
RA	2	4.8 cm	277	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	X	X	-	X	X	-	-	-	-	-	-	-	-
RA	3	5 cm	346	--	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-
RA	4	5.5 cm	370	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	X	X	X	X	-	-	-	-	-	-	-	File tape
RA	5	5 cm	321	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-
RA	6	4.7 cm	268	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	X	-	-	X	X	X	-	-	-	-	-	-	-	-
RA	7	3.5 cm	199	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	-	X	-	X	-	-	-	-	-	-	-	-	-
RA	8	5.1 cm	308	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	X	X	X	X	-	-	-	-	-	-	-	-
RA	9	4.7 cm	290	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	x	x	x	-	x	-	x	-	-	-	-	-	-	-	-
RA	10	4.4 cm	291	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	-	-	x	x	-	-	-	-	-	-	-	-

FIGURE 8. Diagnosis of the conservation status of the Real Audiencia document collection (Table: Natalia Ríos, 2017).

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The conservation condition of groups 2 and 3 was organized into 5 ranges, from range 1 to range 5 that focus on specific kinds of deterioration associated with the risk of compromising information in the case of documents, and the risk of compromising documents in the case of bookbinding. Expressed according to associated risks, conservation status would look as follows: status 1, very low risk; status 2, low risk; status 3, moderate risk; status 4, high risk, and status 5, very high risk (Figure 9).

FIGURE 9. Detail of the fields considered in the diagnosis to standardize execution (Table: Natalia Ríos, 2021).

FIELD	DEVELOPMENT
DATA SHEET: DIAGNOSIS OF BOUND MATERIALS AND DOCUMENTS	Title used to create data file.
GENERAL INFORMATION	First field grouping. Non-technical identification data
Funds	Funds to be diagnosed. Abbreviations will be used as: Real Audiencia (RA). Escribanos de Santiago (ES). Capitanía General: (CG). Contaduría Mayor: (CM).
Vol	Volume number will be assigned in correlational order.
Thickness (cm)	Thickness of the front text block, reported in centimeters, consider documents only. Information to be linked to foliation and estimate number of pages. Non-conclusive.
Final folio	Incorporate as per last folio assigned. Information to be linked to thickness and estimate the number of pages. Non-conclusive.
BINDING	Second field grouping. Diagnosis for bindings. Considers the entire structure (covers, fly-leaves, sewing).
Status 1 SCD	First status or level for binding. No documents are compromised (SCD). Based on observations of the supporting material.
No deterioration	Binding without visible deterioration of any kind.
Status 2 SCD	Second status or level for bindings. No documents are compromised (SCD). Based on observations of the supporting material.
Slight, only esthetic deterioration	Binding with visible esthetic deterioration (changes in color, wear/abrasion, etc.), that does not compromise the material integrity of the documents.
Status 3 PCD	Third status or level for bindings. Documents partially compromised (PCD). Based on observations of the supporting material.
Spine: partial detachment	Detachment of any area of the spine without material loss.
Covers: partially separated from the body	Incomplete separation of the binding from the body of the volume. At least one part remains attached.
Partially damaged sewing, 1-10%	Partially damaged sewing. At least 90% or more of the documents are still sewn together and risk-free. In order to estimate the number of unsewn documents consider only those with perfectly preserved needle perforations.
Estado 4 PCD	Fourth status or level for binding, partially compromised documents (PCD), Based on observations of the supporting material.

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Missing areas in the covers, 1-50%	Partially missing area in less than 50% of complete covers.
Missing areas in the spine, 1-100%	Partially or totally missing spine.
Covers completely separated from body	Binding completely separated from the body of the volume. Loose of the cover.
Partially damaged sewing, 11-40%	Incomplete damage of sewing. At least 60% or more of the documents are still sewn and not at risk. In order to estimate the number of unsewn documents consider only those with perfectly preserved needle perforations.
Biodeterioration, 1-100%	Visible presence of fungus or insects in any percentage.
Moisture, 1-100%	Moisture present (not just signs or stains) in any percentage.
Status 5 TCD	Fifth status or level for bindings, total document compromise (TCD), based on material observations of the supporting material.
Total loss, 50-100%, or without binding	More than 50% covers missing or no binding to be found.
Totally damaged sewing	Sewing of the binding completely damaged. At least 40% or more documents are considered stitch-less or at risk. In order to estimate the number of unsewn documents consider only those with perfectly preserved needle perforations.
RECORDS	Third field grouping. Document diagnosis: considers their entire structure (support, element sustained, complements).
Status 1 SCI	First status or level for documents, no information compromised (SCI). Based on observations of the contents of supporting material.
No deterioration	Documents have no visible deterioration of any kind.
Status 2 SCI	Second status or level for documents. No information is compromised (SCI). Based on observations of the supporting material.
Slight deterioration	Documents with visible esthetic deterioration due to pass of time (torn edges, color changes, etc.), but does not compromise the information.
Status 3 PCI	Third status or level for documents. Information partially compromised (PCI), Based on observations of the contents of supporting material.
Stains SCDI 0-100%	Documents with stains of any origin, except biodeterioration, that do not compromise the information.
Tears, 1-50%	Deep or internal tears, up to 50%.
Deterioration on edges, 1-100%	Deterioration on edges containing information.
Prior non-technical intervention, 1-100%	All interventions or elements added without following conservation criteria; for example: adhesive tape, loose container envelopes, etcetera.
Status 4 PCI	Fourth status or level for documents. Information partially compromised. (PCI). Based on observations of the contents of supporting material.
Detachment/ loose sheet, 1-100%	Any percentage of totally or partially loose of sheets, either alone or in a signature.
Stains CCDI 0-50%	Documents with stains of any origin, except biodeterioration, that compromise up to 50% of the information.
Ripped, 50-100%	Over 50% of deep or internal ripped areas.
Missing elements, 1-50%	Up to 50% of missing information.
ink-related deterioration, 1-50%	Support material pierced by ink in up to 50% of the total number of documents.

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Biodeterioration, 1-50%	Up to 50% of visible presence of fungus or insects.
Status 5 TCI	Fifth status or level for documents, information totally compromised (TCI). Based on observations of the contents of supporting materials.
Stains CCDI, 50-100%	Documents showing stains of any origin, except biodeterioration, that compromise around 50% of the information.
Missing elements, 50-100%	Around 50% missing information.
ink-related deterioration, 50-100%%	Support material pierced by ink in up to 50% of the total number of documents.
Biodeterioration, 50-100%	50% or more visible presence of fungus or insects.
OBSERVATIONS	Fourth field grouping. Data complementing the foregoing.
ITA	Prior technical interventions for example, repaired tears, grafts, contention tape, container, etc.; next specify in the Observations column.
Other	Every kind of additional information not considered in the file that impacts directly on restoration treatment decisions or conservation ones. Considering that this is a level 3 approach to the documentation, there is a later diagnostic level that provides greater accuracy. Use no more than two words and adjust observations to previously automated words. At this point, data can be defined; for example, include "insect prints", which would be information to complement established "biodeterioration" fields. It can also be used to incorporate data such as "tape and identification card" for volumes diagnosed with problems that required such provisional interventions.
Date of diagnosis	Date in which the volume was diagnosed.

STANDARDIZING DIAGNOSIS EXECUTION

The diagnostic operations team included five UCAN conservators. In every session there were teams of two, scheduled for a complete eight-hour work session, twice a week. The number of units diagnosed in each session increased with practice. In the ninth session, all the teams established the goal to diagnose 100 volumes. The diagnosis was done in a correlational manner beginning with volume 1 and progressing from there. The first stage consisted in identifying volumes according to their individually assigned number in the funds. Next, their thicknesses were measured to potentially determine an approximate relationship between the thickness of a unit and the number of documents it contained. Then came a technical analysis in which the documentary body (support materials and supported elements) was segregated from all the binding materials (covers, stitches, flyleaves, adhesive). The entire funds was analyzed by diagnosing every one of the volumes it contains, 3,272 pieces in all. The diagnosis of the Real Audiencia collection was concluded in early 2017, after 4 months of work.

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DIAGNOSTIC RESULTS OF THE CONSERVATION STATUS OF THE DOCUMENTS

In the case of documents, the diagnosis revealed the following data obtained from all 3,272 volumes of the Real Audiencia funds (Figure 10):

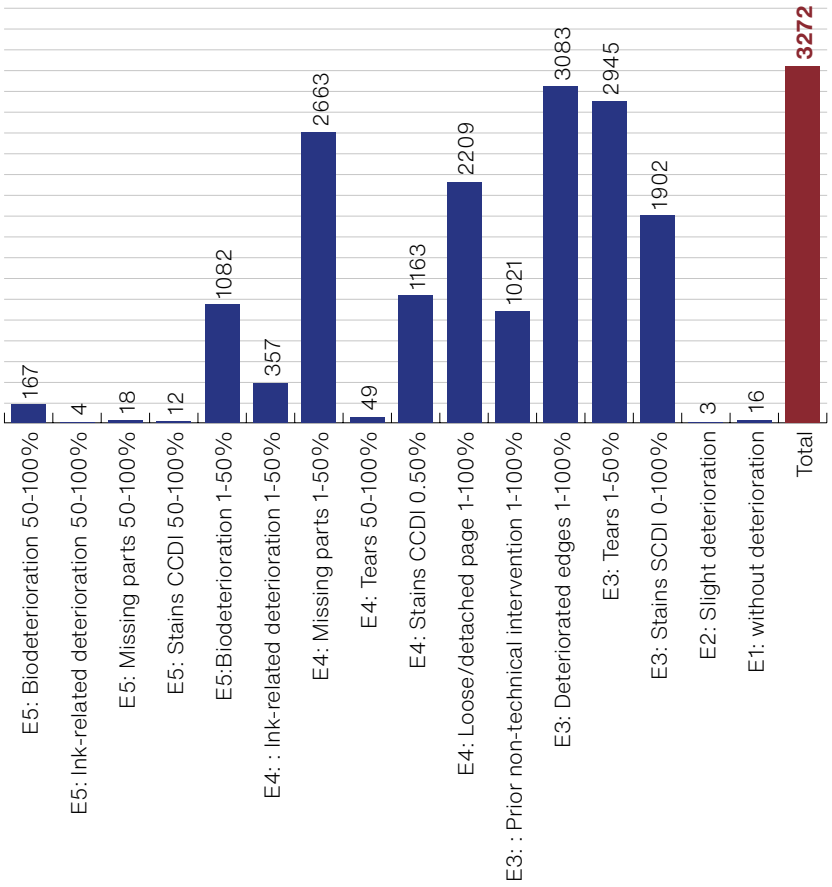

FIGURE 10. Deterioration in documents (Table: Natalia Ríos, 2017).

Most of the deterioration in varying degrees were status 4 and 3, which represent moderate to high risk conditions relative to the loss of information. The 3 most significant kinds of deterioration found were:

- Along the edges of the documents in 3,083 volumes, which represent 94,2% of the entire funds. This deterioration can be placed in conservation status range number 3, which indicates moderate risk.
- There were 1 to 50% tears. Relative to the total number of documents in each volume, tears were found in 2,945, which represent 90% of the total. As in the prior case, this kind of deterioration was range 3, or moderate risk.
- The percentage of missing elements varied from 1 to 50%. Relative to the total number of documents in each volume,

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this type of deterioration was detected in 2,663 of them and amounted to 81.3% of the total. In this case, the deterioration was deemed range 4; i.e., at serious risk of compromising the information.

Meanwhile, after analyzing data relative to deterioration posing a very serious risk of losing information we found:

- Between 50 to 100% biodeterioration with respect to the total number of documents in each volume, which amounts to a total of 167 filing units that represent 5.1% of the total funds.
- degradation of iron gall ink in 50 to 100% of the total number of documents in 4 volumes, equivalent to 0.1% of the total.
- The percentage of missing elements is between 50 to 100% relative to the total number of documents in each volume. We have 18 units, which represent 0.5% of the entire funds.
- Stains that compromise information. The proportion of this lies between 50 to 100% of the documents in a volume. We found 12 units in all, the value of which is equivalent to 0.3% of the total.

These data allow us to say that the number of documents affected by deterioration that poses a very high risk of losing information is low with respect to the total number of units that constitute the funds. In this status 5 range, the most wide-spread kind of deterioration is 50 to 100% biodeterioration. Although proportionally low, the risks in this range could result in the physical disappearance of the documents, so an action plan against this is a priority.

DIAGNOSTIC RESULTS FOR THE BOOKBINDING CONSERVATION CONDITION

From the total number of 3,272 volumes in the Real Audiencia funds, the data obtained from the diagnosis regarding bookbinding (Figure 11) were:

Most of the various kinds of deterioration are in status ranges 3 and 2 which represent moderate to low risk of compromising the documents due to deterioration in the binding of the volumes. The three most significant kinds of deterioration detected were:

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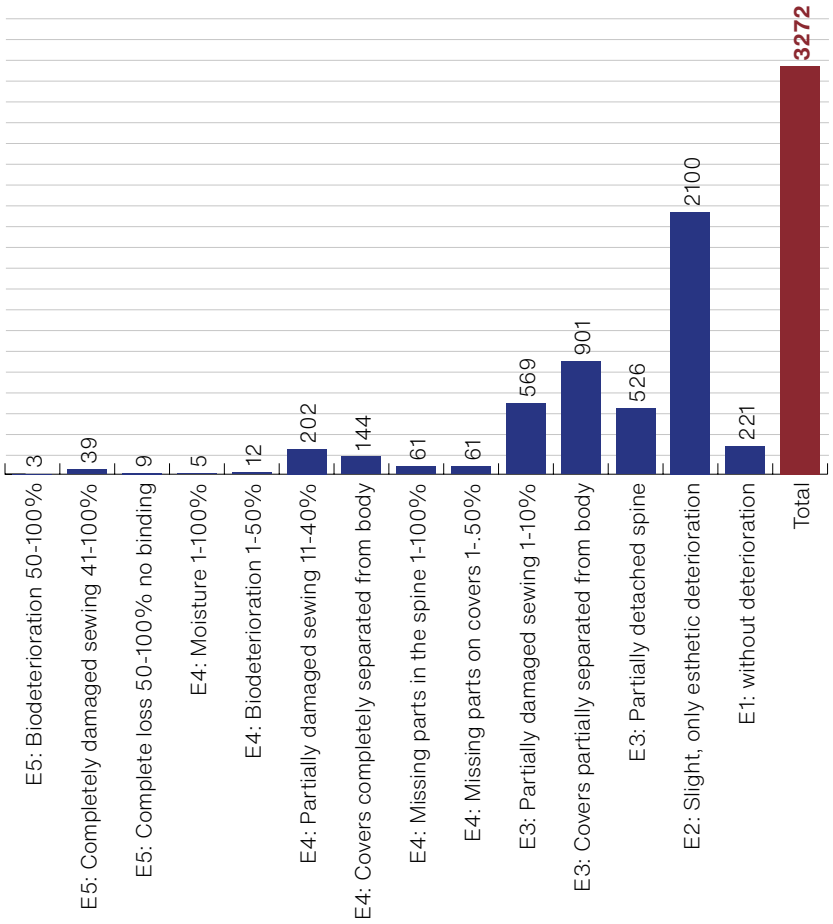

FIGURE 11. Deterioration in bookbinding volumes (Table: Natalia Ríos, 2017).

- Slight, or merely esthetic, deterioration in 2,100 bookbinding volumes representing 64,1% of the total funds. This deterioration is within conservation status range 2, which means low risk.
- Covers partially separated from the body. This was the case in 901 bookbinding volumes of the collection, which represent 27.5% of the total. In this case, the status range was 3, or moderate risk.
- Partially damaged stitching in 1 to 10% of the entire stitched binding of a volume. This was the case of 569 units representing 17.3% of the total. As in the previous case, this deterioration is range 3, or moderate risk.

This data analysis revealed deterioration posing a very serious risk of losing the following documents currently in conservation status range 5:

- 50 to 100% biodeterioration relative to the totality of bookbinding, which accounts for 3 filing units and amounts to 0.09% of the entire funds.

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- 41 to 100% completely damaged sewn binding relative to the totality of sewn binding. 39 pieces are in this condition, which is equal to 1.1% of the total.
- 50 to 100% (9 units) have completely lost their binding relative to the total number of bookbinding. The equivalent value is 0.2% of the total.

With these data, we can say that relative to the totality of the funds, the amount of bookbinding affected by deterioration representing a very high risk of losing documents is minor. In this status 5 range, the most widespread deterioration (around 41%) is sewn binding that has been completely lost. The risks in this range, albeit proportionally small, attempt against the conservation status of the documents, so an action plan should be a priority.

CONCLUSIONS

As indicated by the Getty Research Institute (s.f.), conservation status is determined from an evaluation of the physical conditions and characteristics of the supporting materials. When known variables are maintained during the evaluation, it is possible to forecast the risk of losing information in the future, when such information is the main capital of an archive. With this notion in mind, the methodology proposed in this article and the results obtained from it, allowed us to identify the physical conditions and deterioration of document support materials. This information has been stored in a data base that can potentially control the characteristics of every documentary unit individually, something that did not exist before applying this methodology.

Using this data base one might advance different conservation treatments at various levels of urgency (Antomarchi et al., 2016, p. 23), in which case treating biological deterioration would become the priority due to the variables it can bring about.

The most widespread deterioration encountered was of a physical nature and could be attributed to normal wear of the plant materials documents are made of, as well as to iron gall ink (Copedé, 2012, p. 60,) which constitutes the information contained.

Our diagnostic data base is useful as a permanent tool to control preservation (Allo, 1997, p. 267), because once individual incidents of deterioration have been identified, regular control over progress or interruption of such deterioration can be established.

It is also important to mention here that all technical efforts, for example applying a conservation status diagnosis, should be lever-

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aged into an institutional process transcending spur of the moment work teams so as to establish internally defined practices (Edmonson, 2002, p. 16). This is an advantage proposed by the methodology described here, because in addition to constituting a data base, we recorded ways to execute and understand our diagnostic tool. Such conditions allow it to be replicated and applied to other funds or archives.

Archive conservation actions should encompass both a broader context (region and climate) and the support media itself (Michalski, 2009, p. 35). Indirect conservation (Muñoz, 2014, p. 23) should also gain importance when planning work around an archive, because it enables covering a larger number of archival units instead of focusing on restoration tasks alone (Muñoz, 2010, p. 22). An archival approach that solely focuses on support media, deterioration, and treatment can easily lead to individual and specific interventions with poor quantitative reach, which is contrary to the enormous needs that exist.

General solutions that can massively satisfy archival needs (Sánchez, 2011, p. 22) such as this diagnosis, may reveal unknown details in the documentary collection even now, four centuries after these documents were first produced. This constitutes a way to control documents that contributes to their order and organization (Adcock, 2000, p. 15), in addition to affording them more time by prolonging their useful life as sources of live information for today and the future.

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