

CAMBERWELL COLLEGE OF ARTS
UNIVERSITY OF THE ARTS LONDON

**Limp, laced-case binding in parchment
on sixteenth-century Mexican printed books**

2 Volumes

Volume 1

by

Martha Elena Romero Ramírez

Thesis for the degree of Doctor of Philosophy

June, 2013

ABSTRACT

With the arrival of the Spaniards in the New World, the way of living of the indigenous population who habited Mesoamerica was blended with the traditions and customs of the European settlers who arrived as conquerors, and the emigrants from Europe that arrived later searching for fortune or a better kind of life from the one they had left behind in their land of origin. This encounter of cultures gave rise also to a technical and cultural exchange, and in the case of Mexico, this clash of cultures and techniques is well represented by the printing press, which was established in 1539 with the specific aim of accelerating the evangelisation and education of the Indians. As a consequence of this development, Mexico was turned into a centre of innovation, with the first printing press using movable metal type to be set up outside Europe, and other trades that support printing, such as bookbinding, were also developed.

This thesis investigates the influence of the Spanish and other European bookbinding practices on sixteenth-century Mexican limp, laced-case parchment bindings by the analysis of the features of the bindings of Mexican printed books from that period. In addition, by the analysis of the materials and techniques used to bind these books, as well as the specific structural characteristics of the bindings, the patterns of work that could be described as typically Mexican in the sixteenth-century, are also identified.

The research is divided into two parts: the first, theoretical, explains the historical context of Mexico during the sixteenth century when the printing press and bookbinding were developed. The second part concerns the archaeological study of the books as artefacts. For this purpose, thirty-nine sixteenth-century Mexican printed books bound in limp, laced-case parchment covers were analysed. The analysis of the features of these bindings, which form the majority of the whole sample, made possible the identification of Mexican patterns of work in the sixteenth century.

Given the lack of information and of complete studies of the craft of bookbinding in Mexico in the sixteenth century, this thesis aims to enhance our current knowledge of the history of bookbinding as well as of the booktrade and the market for books in Mexico.

A Luis Enríquez

*Sabes a todos los sueños
que a nadie le confesé
(Alfonso Reyes)*

ACKNOWLEDGEMENTS

I would like to take this opportunity to thank the following people for their help and support throughout this project:

Prof. Nicholas Pickwood, my project supervisor, for so many hours of valuable discussion, his comments, suggestions, and his infinite patience. Especially for sharing his knowledge and experience in the history of bookbinding with me.

Prof. Oriana Baddeley, my co-supervisor, for her meaningful contribution and advice.

Dra. Rosa María Fernández de Zamora, my Mexican advisor, y mi Gurú, whose work inspired me to do this research. For her valuable help mainly in the field of sixteenth century Mexican printed books and for encouraging me to carry out this work.

I am especially grateful to my sponsor, **CONACyT**, for their financial support, which has made it possible for me to complete this research project.

I would like to express special gratitude to all staff at the following institutions and libraries where the fieldwork for this study was conducted, for providing me with access and facilities to accomplish my research: University of the Arts London-Camberwell College of Arts, ENCRyM, UNAM, Biblioteca Nacional de México, Biblioteca Francisco Xavier Clavijero, Biblioteca Eusebio Francisco Kino, Biblioteca Cervantina, Biblioteca Pública del Estado de Jalisco, Biblioteca Franciscana, Biblioteca José María Lafragua, Biblioteca Armando Olivares, Biblioteca Francisco Burgoa, Benson Library, Huntington Library, British Library, Bodleian Library, John Carter Brown Library, New York Public Library and Hispanic Society of America.

I would like to acknowledge the special intellectual contribution of my fellow colleagues, whose specialist knowledge was fully appreciated. They are:

MSc. Gabriela Cruz: Manager of the Laboratory of Biology, ENCRyM, Mexico.

Dr. Daniel de Lira: History of book in Mexico, UNAM, Mexico.

Mr. Luis Enríquez: Book and leather conservator, ENCRyM, Mexico.

Dr. Marina Garone: Historian of typography, IIB-UNAM, Mexico.

Dr. Oscar Mazín: History of Mexico, COLMEX, Mexico.

MA. Isabel Medina: Archaeology, ENCRyM, Mexico.

MA. Chela Metzger: History of bookbinding, Winterthur Museum, USA.

MA. Pilar Tapia: Metal conservator and lecturer, ENCRyM, Mexico.

Mrs. Lorena Román: Textile conservator and lecturer, ENCRyM, Mexico.

Mr. Javier Tacón: Book conservator, Universidad Complutense de Madrid, Spain.

Mrs. Carmen Tejada: Textile artist and textile lecturer, UIA, Mexico.

Dr. Hilda Valdés: Classical philology

MA. Marie Vander Meeren: Paper conservator and amateur paper specialist,
INAH, Mexico.

Mr. Liborio Villagómez: Librarian of the Academia Mexicana de la Lengua, Mexico.

Thank you Patricia de la Garza, Cintia González, Felicitas González, Sofía Larrinúa, Rodolfo Martínez, Laura Milán and Paula Yiannika for all your help and professional hard work.

My special gratitude to: todos y cada uno de los miembros de mi familia (los Enriquez y los Romero), Asmaa Bouhrass, Jocelyn Cuming, Guadalupe Curiel, Oliver Craxton, Daniel de Lira, Manuel de Santiago, Teresita Díaz, Adriana Gómez, Lourdes González, María E. González, Mónica Espinosa, Rosa Ma. Gasca, Abigail González, Teresa González, Carolusa González, Lorena González, Lorena Gutiérrez, Alexa y Alejandro Peña, César A. Ramírez, Ma Ester Rivera, Leticia Ruiz, Elizabeth Sánchez, Helen Turner, Maru y Miguel Velez, Ewelina Warner, Matthew White, Sofía Vera and Mónica Zacarías.

TABLE OF CONTENTS

VOLUME 1

	Page
INTRODUCTION	1
CHAPTER ONE	
MEXICO IN THE SIXTEENTH CENTURY	12
1.1 The new Mexican society	13
1.2 Cultural context of New Spain and the craft of bookbinding (1524-1600)	18
1.2.1 Education and craft development	19
1.2.2 Guilds and confraternities	25
1.2.3 Commerce	26
1.2.4 Books and the printing press	28
CHAPTER TWO	
BOOKBINDING CRAFT IN MEXICO DURING THE SIXTEENTH CENTURY	32
2.1 Tutors and pupils	32
2.2 Tools	35
2.3 Paper and paper board	37
2.4 Textile fibres	40
2.5 Adhesive	42
2.6 Wood	43
2.7 Leather and parchment	44
2.8 Metal	48
2.9 Dyes and inks	49
CHAPTER THREE	
THE SIXTEENTH CENTURY MEXICAN PRINTED BOOK AND ITS BINDING	52
LIMP, LACED-CASE PARCHMENT BINDING	58
3.1 Endleaves	59
3.2 Structure	76
3.2.1 Sewing	89
3.2.2 Thread	98
3.2.3 Treatment of the sewing-support slips	101
3.3 Edges	105
3.4 Spine and Lining	112
3.4.1 Adhesive	114
3.4.2 Linings	115
3.4.2.1 Transverse linings	116
3.4.2.2 Panel linings	127

TABLE OF CONTENTS

	Page
3.5 Endbands	132
3.5.1 Sewing	137
3.5.2 Thread	146
3.5.3 Treatment of the endband-core slips	148
3.6 Cover	150
3.6.1 Group A	153
3.6.2 Group B	170
3.6.3 Group C	172
3.7 Cover attachment	182
3.7.1 Attachment by means of the endband-core slips only	184
3.7.2 Attachment by means of the sewing-support slips only	190
3.7.3 Attachment by means of the endband-core slips and sewing-support slips	195
3.8 Fastening	216
3.9 Titling	222
3.10 Brands	231
CONCLUSIONS	236
BIBLIOGRAPHY	243

VOLUME 2

	Page
Appendix 1. Sixteenth-century Mexican printed books analysed in this thesis	263
Appendix 2. Location of sixteenth-century Mexican printed books analysed in this thesis	272
Appendix 3. Spanish and other European books used as a comparative sample	273
Appendix 4. Descriptions of bindings on books printed in Mexico in the sixteenth century and analysed in this thesis	287
a) Books in limp, laced-case covers	288
b) Books bound in boards	327
c) Books without covers	335
Appendix 5. Descriptions of bindings on Spanish and other European books used as a comparative sample	336
a) Books in limp, laced-case covers	336
b) Books bound in boards	373
c) Books without covers	386
Appendix 6. Watermarks	387
a) Watermarks identified in the sixteenth-century Mexican printed books analysed in this thesis	387
b) Watermarks identified in the books in the comparative sample	395
Appendix 7. Endleaf formation	400
Appendix 8. Identification of textile fibres	401

TABLE OF CONTENTS

	Page
Appendix 9. Identification of the animal skins used for parchment and leather	405
Appendix 10. Lacing patterns	407
Appendix 11. Types of tie-lacing	408
a) Type of tie-lacing identified in the sixteenth-century Mexican printed books analysed in this thesis	408
b) Type of tie-lacing identified in the books in the comparative sample	409
Appendix 12. Brands	410
a) Brands identified in the sixteenth-century Mexican printed books analysed in this thesis	410
b) Brands identified in the comparative sample	414
Appendix 13. Maps	419
Map 1. Vice-royalty of New Spain	419
Map 2. Trade routes to/from New Spain	420
Map 3. Modern Mexico	421
Appendix 14. Description of the record form	422
Glossary of bookbinding terms	441

TABLE OF FIGURES

Permission has been given to reproduce the photographs in this thesis for the sole purpose of illustrating the text. Their further reproduction, including digital copies of this thesis, must be authorized by the institutions that own the books.

VOLUME 1

		Page
Fig. 1	Presence of the watermarks identified in the textblocks in the Mexican books	57
Fig. 2	Pastedown adhered overall (a) around its perimeter and (b) to the inside of the cover	61
Fig. 3	Endleaves of type 1	62
Fig. 4	Right endleaf of type 4 in B-7	63
Fig. 5	Endleaves in CB-29	64
Fig. 6	Right endleaves in B-35	65
Fig. 7	Left endleaves of type 7 in CB-9	65
Fig. 8	Left endleaves of type 16 in CB-43	66
Fig. 9	Half of the original spine fold, which still retains some animal-based adhesive, can be seen at the head-edge of the right endleaves in B-2	67
Fig. 10	Endleaves made of re-used paper	68

TABLE OF FIGURES

		Page
Fig. 11	Endleaf with deckle edges at the tail of CB-17	69
Fig. 12	Left endleaves of type 9 in B-32	70
Fig. 13	Left endleaves in book CB-6	73
Fig. 14	Replacement endleaves made of different papers glued together in CB-26 and CB-45	74
Fig. 15	Structure in B-2	77
Fig. 16	Sewing on single (a) and double (b) supports in the main sample	79
Fig. 17	Double supports made of cord in B-31	81
Fig. 18	Materials used to make the sewing supports identified in the comparative sample	82
Fig. 19	Combination of tanned leather used to make the sewing supports and alum-tawed skin used for the endband cores on CB-12	83
Fig. 20	The structure of CB-29	84
Fig. 21	Distribution of supports along the spines of the books in both sets of samples	86
Fig. 22	Arrangement of sewing supports and change-over stations in both sets of samples	89
Fig. 23	Sewing on two supports of B-38	90
Fig. 24	The structure of B-7	91
Fig. 25	All-along packed sewing of CB-43	92
Fig. 26	Linked-sewing in B-31 and B-41	94
Fig. 27	Linked-sewing on tanned leather supports in CB-12 and CB-25	95
Fig. 28	a) By-pass sewing, linked on two supports in book B-31, and b) By-pass sewing, linked on four supports in book CB-36	96
Fig. 29	Two-on sewing on four supports in book B-24	97
Fig. 30	Direction of the sewing determined by the kettlestitch (a) and by the linked sewing (b)	98
Fig. 31	Blue thread used for the sewing and the endbands of CB-41	100
Fig. 32	Treatment of the sewing-support slips	102
Fig. 33	Knife marks on edges	105
Fig. 34	Plough-marks on CB-23	106
Fig. 35	Cut to show proof (fore-edge in B-20)	107
Fig. 36	Techniques of decoration identified on the edges in both sets of samples	110
Fig. 37	Decorated edges in CB-43	109
Fig. 38	Decoration of the edges in relation to the endbands	111
Fig. 39	Spine shapes: flat, slight round and round	113
Fig. 40	Spine shapes identified in both sets of samples	113
Fig. 41	Adhesives used in both sets of samples	115
Fig. 42	Spine with no linings in CB-29	116
Fig. 43	Length of the spine-linings joints referred to the width of the textblock: a) long, b) medium and c) short	117

TABLE OF FIGURES

		Page
Fig. 44	Outer edges of the spine-lining joints trimmed in different shapes: a) square, b) oblique and c) irregular cut suggesting a square shape	118
Fig. 45	Evidence of and animal-based adhesive which was used to secure the joints of the lining in the central panel to the inside of the left cover of B-22	119
Fig. 46	The lining-joints adhered to the outermost endleaf in CB-18	119
Fig. 47	Heights of the linings within the panels formed by sewing supports	121
Fig. 48	Linings cut flush with the edges with the edge-colour on the outer edge of the linings	121
Fig. 49	Narrow linings in book B-41 and CB-18	122
Fig. 50	Transverse linings of plain and manuscript parchment in B-41	123
Fig. 51	Transverse linings of manuscript paper in B-13	123
Fig. 52	Lining of indigenous paper in B-34	125
Fig. 53	Attachment in CB-15	126
Fig. 54	Transverse linings on B-37	127
Fig. 55	Parchment lining at the head of the spine with the tiedowns worked through the lining in B-20	128
Fig. 56	Offsets in black and red letters in panels 2, 3, and 5 in B-2	128
Fig. 57	Combinations of parchment and paper for panel linings in B-38	129
Fig. 58	Spine linings and linked-sewing in CB-31	130
Fig. 59	Evidence of missing endbands in CB-13	132
Fig. 60	Materials used to make the cores of the endbands in the main sample	134
Fig. 61	The slips on the outside of the cover of B-33 and B-37	135
Fig. 62	Pack-sewn endband in B-32	137
Fig. 63	Single and double thread used to work the endbands.	138
Fig. 64	Back bead in the endbands in CB-7	139
Fig. 65	Endband with a secondary sewing in CB-8	139
Fig. 66	Tiedowns preserved of earlier tiedowns in B-2	141
Fig. 67	Tiedowns emerge immediately below the lining in B-38	141
Fig. 68	Tiedowns worked below the sewing supports nearest to the head-edge and to the tail-edge of the spine in B-2	144
Fig. 69	Tiedowns at the head in CB-22	144
Fig. 70	Each of the first and last tiedowns were secured with a knot at the bottom of the tiedown of the exit hole on the spine. Endband at the head-edge in B-31	145
Fig. 71	Endbands worked in two colours of thread in CB-9 and CB-43	148
Fig. 72	Treatment of the outer end of the endband-core slips on the inside of the cover	149
Fig. 73	Working of the endbands relative to the decoration of the edges	149
Fig. 74	Cover-extensions of books in the main sample that almost meet when folded over the fore-edge	153

TABLE OF FIGURES

		Page
Fig. 75	Cover-extensions of the books in the comparative sample that almost meet when folded over the fore-edge	154
Fig. 76	Turn-in edge trimming	155
Fig. 77	Turn-ins of approximately the same width in B-26	156
Fig. 78	The fore-edge turn-in wider than the head and tail-edges turn-ins in CB-12	157
Fig. 79	The fore-edge turn-in folded over the head and tail turn-ins in B-38	158
Fig. 80	Corner mitering types	159
Fig. 81	Open mitres at the corners	160
Fig. 82	Use of joint-creases on the covers of both sets of samples	161
Fig. 83	Reversed parchment used with the hairside of the inside of the cover	163
Fig. 84	Dark leather straps across the spine parchment covers secured by the slips laced-in through them in B-3 and B-20	165
Fig. 85	The parchment cover on CB-25	166
Fig. 86	The parchment cover on CB-23	167
Fig. 87	Second-use parchment used for the cover of B-42	167
Fig. 88	Second-use parchment used for the cover of CB-27	168
Fig. 89	The flayhole in the left cover of B-26	169
Fig. 90	Flayholes in the turn-ins in B-6 and CB-15	169
Fig. 91	Spine of the cover reinforced on the inside of the cover by a piece of parchment	170
Fig. 92	Marks left by the use of a parchment-maker's crescent-shaped or circular knife during the preparation of the skin	171
Fig. 93	Parchment attached to the herse during the drying process	174
Fig. 94	The combination of different types of trimming of the edges of the turn-ins	175
Fig. 95	Italian-type corner	176
Fig. 96	Cover on B-34	177
Fig. 97	Replacement cover on CB-13	178
Fig. 98	Secondary full leather cover given over a limp, laced-case primary cover of parchment on B-25	179
Fig. 99	Linings of paper adhered to the inside of each cover in CB-1	181
Fig. 100	Types of lacing used to attach the cover to the bookblock in the main sample	183
Fig. 101	The lacing angle of enband-core slips.	185
Fig. 102	The lacing of the endband-core slips in relation to the joint-creases in the comparative sample	186
Fig. 103	Attachment of CB-5	188
Fig. 104	Attachment of CB-16	189
Fig. 105	Added endband-core slips at the tail on CB-43	190
Fig. 106	Attachment of B-7	192

TABLE OF FIGURES

		Page
Fig. 107	Attachment of CB-13	194
Fig. 108	The attachment of CB-29 on the right cover	195
Fig. 109	Attachment by means of both the endband-core and all of the sewing-support slips in books in the main sample	196
Fig. 110	Split-lacing through the right cover of CB-25	197
Fig. 111	Attachment by means of endband-core slips and sewing-support slips of B-30, arranged at right-angles to the spine	198
Fig. 112	Attachment by means of both the endband-core and all of the sewing-support slips in books in the comparative sample	199
Fig. 113	Appearance of the attachment by means of alum-tawed skin endband cores (a) and tanned-leather sewing-support (b) slips on the outside of the cover in CB-10	199
Fig. 114	Attachment of the cover of B-17	200
Fig. 115	Attachment at the outside of the right cover of CB-21	201
Fig. 116	Attachment of the cover by means of split-lacing of B-41	202
Fig. 117	Attachment of the cover by means of split-lacing in CB-23 and CB-41	203
Fig. 118	Attachment of the cover by means of endband slips and added sewing-support slips of B-32 and B-35	204
Fig. 119	Attachment of the cover by means of endband slips and added sewing-support slips of B-36	205
Fig.120	Attachment by means of added sewing-support and endband-core slips of CB-9	206
Fig. 121	Attachment of the cover of CB-22	207
Fig. 122	Attachment of the cover by means of endband slips and added sewing-support slips of CB-6	208
Fig. 123	Attachment of the cover of B-33.	209
Fig. 124	Attachment of the cover by means of endband slips and stabbed slips of B-37	210
Fig. 125	Added slip in B-46	211
Fig. 126	The appearance outside the covers of CB-30	212
Fig. 127	Attachment of the cover by means of endband slips and false sewing support slips of CB-45	213
Fig. 128	Lacing pattern in B-25	215
Fig. 129	Tanned-leather ties (a) and endband cores and sewing support of alum-tawed skin (b) in B-17	217
Fig. 130	Fastening type 1 pattern in B-1 and CB-3	218
Fig. 131	Fastening type 2 pattern in B-7	219
Fig. 132	Fastening type 4 pattern in B-41	220
Fig. 133	Replacement ties in B-34	220
Fig. 134	Fastening type 5 and type 6 patterns	221

TABLE OF FIGURES

		Page
Fig. 135	Examples of the direction of the titling in both sets of samples. a) from head to tail, b) tail to head and c) from left to right across the spine	223
Fig. 136	Titling on the fore-edges in the books in the comparative sample	224
Fig. 137	Lettering in B-17	226
Fig. 138	Styles of lettering used in the titling of the books in both sets of samples	227
Fig. 139	Gothica rotunda lettering in B-33, B-35 and B-37	227
Fig. 140	Titling in CB-17 and CB-19	228
Fig. 141	Titling written across the left cover from the spine to the fore-edge on B-20 and CB-5	229
Fig. 142	Titling written from left to right across the spine on B-2	230
Fig. 143	Colours of ink used for the titling	230
Fig. 144	Branded edges in B-15, B-18 and B-31	232
Fig. 145	Brands of the Convento de San Miguel de Tacuba, Mexico City, on the head- and tail-edges of B-2	232
Fig. 146	Brands on the head- and tail- edges of B-15	233
Fig. 147	Two different brands of Convento Grande de San Francisco de México, Mexico City on the edges of CB-33 and CB-13	234
Fig. 148	Two different brands of the Convento de Nuestra Señora de la Consolación de San Cosme, Mexico City on CB-31	234

VOLUME 2

		Page
Fig. 149	Left cover of B-14	334
Fig. 150	Left cover of B-16	334
Fig. 151	Left cover of B-21	334
Fig. 152	Left cover of B-40	334
Fig. 153	Right cover on CB-14	374
Fig. 154	Left cover on CB-20	374
Fig. 155	Left cover on CB-24	374
Fig. 156	Left cover on CB-34	374
Fig. 157	Right cover on CB-37	380
Fig. 158	Right cover on CB-38	380
Fig. 159	Left cover on CB-40	380
Fig. 160	Right cover on CB-42	380
Fig. 161	Left cover on CB-48	383
Fig. 162	Thread ply a) S-ply b) Z- ply	404
Fig. 163	Thread twist a) tight, b) medium, c) loose	404
Fig. 164	Lacing patterns	407

LIST OF TABLES

VOLUME 1

		Page
Table 1	Sewing thread characteristics identified in the books in the main sample	99
Table 2	Sewing thread characteristics identified in the books in the comparative sample	101
Table 3	Characteristics of endband thread in the main sample	146
Table 4	Characteristics of endband thread in the comparative sample	147
Table 5	Groups of books according to their status	152
Table 6	Monasteries, colleges and seminars identified by brand	235

VOLUME 2

Table 7	Fibres characteristics under the microscope	402
Table 8	Identified textile fibres and their physical qualities	403
Table 9	Type of materials and animal species identified in the bookbinding components	406

ABBREVIATIONS

The following abbreviations have been used in this thesis

AGI: Archivo General de Indias, Spain.

AGN: Archivo General de la Nación, Mexico.

BNM: Biblioteca Nacional de México, Mexico.

BUAP: Benemérita Universidad de Puebla, Mexico.

ENCRyM: Escuela Nacional de Conservación, Restauración y Museografía, INAH-SEP, México.

HEB 1500-1800: Course *The History of European Bookbinding 1500-1800*, Volos, Greece, 11-15 September, 2006.

Tutor: Professor Nicholas Pickwold.

INAH: Instituto Nacional de Antropología e Historia, Mexico.

ITESM: Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico.

UABJO: Universidad Autónoma Benito Juárez de Oaxaca, Mexico.

UIA: Universidad Iberoamericana, Mexico

IIB-UNAM: Instituto de Investigaciones Bibliográficas

UNAM: Universidad Nacional Autónoma de México, Mexico.

UT: University of Texas, United States

NOTES TO THE READER

Given the lack of information about women working in Mexico as bookbinders during the sixteenth century, in this thesis, the male gender is, for convenience, used throughout, though this should not be taken to mean that no women worked in the trade of bookbinding.

Places

New World: is used to refer to the American continent. In the sixteenth century the New World was the name given to the Americas in order to distinguish the recently discovered land from that of the Old World which included Africa, Asia and Europe.

New Spain: refers to the *Reino de la Nueva España*.¹ After the conquest, the new Spanish territories in the American continent were divided into vice-royalties, one of which was New Spain; given the similarities between Spain and the American land recently discovered, Hernán Cortés gave them this name in 1520 and it was used until the nineteenth century, when Mexico became independent. The vice-royalty territory included the modern central and south west of the United States, the north of the Isthmus of Panama and all modern Mexico. It also included the Caribbean Spanish possessions and Philippines. Its capital was established in Mexico City by Hernán Cortés, over the ruins of what was once the Aztec capital (Benítez, 1991; Mazín, 2007).

Mexico: refers to the modern political border of the country of Mexico, that was within the territory that was originally New Spain.²

Mexico City: refers to modern Mexico City, capital of Mexico. In the sixteenth century, Mexico City was surrounded by small towns and villages, some of which have now been incorporated as neighbourhoods and/or boroughs within the modern political borders of Mexico City.

To orient the reader, when a reference to a monastery, college, city or village is made, it is followed, in brackets, by the name of the modern Mexican state in which the place is now located, for example: *Convento de San Pedro Alcántara de Guanajuato* (Guanajuato).

Translation of the quotes in Spanish

The original quotes in Spanish used in the text are followed, in square brackets, by the translation into English. The translations were made by the author.

¹ See Appendix 13, Map 1.

² See Appendix 13. Map 3

INTRODUCTION

The 16th century in Mexico was the time and the place of the encounter of two cultures: the native peoples who populated Mesoamerica, and the Europeans, represented by the Spaniards, who led the conquering expeditions. With the arrival of the Spaniards in the American continent, the way of life of the indigenous inhabitants was changed. In addition, the great territories that belonged to the Spanish Empire during the sixteenth century (and until 1640) favoured the mobility and circulation of ideas, goods and people among the Spanish colonies around the world, including Mexican territory (Mazín, 2007; Thomas, 2009). As a result, in the case of New Spain, and therefore of Mexico, European traditions and customs blended in with those of the indigenous, transforming existing ways of living and giving rise to a clash of cultures and technical exchange that were reflected in all aspects of daily life and work.

Most of the anthropological studies undertaken on this subject have been written mainly from a social, cultural and racial point of view.¹ This clash of cultures, however, is also evident in other areas, such as the manufacturing techniques used to make many objects, as well as from the processes of the use of raw materials (Florescano, 2004). The use of indigenous raw materials co-existed with the use of materials of European and Oriental origin; also the use of tools of European origin together with the use of indigenous labour to execute certain types of work, reflected the shaping of the technical and economic development of the American colonies, and the craft of bookbinding was not an exception, as is shown in this work.²

In the case of Mexico, this technical and cultural development was represented by the establishment of the first printing press in the American continent in 1539, initiating therefore the introduction of first use of printing from movable metal types outside Europe. At the beginning, the press accelerated the process of evangelisation and education of the indigenous, but in a short time, it took a preponderant role in the spread of the law, culture and ideas of the time. In addition, the newly introduced craft of bookbinding was driven to respond to the increasing demand for bound books; as a result, some of the bookbinding

¹ The following are examples of some of these studies: Gonzalbo Aizpuru, P. (2000) *Historia de la educación en la época colonial: El mundo indígena*. Mexico City: El Colegio de México; Esteva Fábregat, C. (1988) *El mestizaje en Iberoamérica*. Madrid: Alambra.; Gibson, Ch. (1977) *España en América*. Barcelona: Grijalbo.; Rosenbalt, A. (1951) *El mestizaje y las castas coloniales*. Buenos Aires: Editorial Nova.; Ochoa, L. (ed.) (1995) *Conquista, transculturación y mestizaje: Raíz y origen de México*. Mexico City: UNAM-Instituto de Investigaciones Antropológicas.

² It should be understood that, within Mexican culture this blend of cultures and traditions between the indigenous who populated the New World with those of European origin is known as *mestizaje*. This term was first used to describe the offspring of a indigenous mother and an Spanish father; it has, however, taken on more complex meanings over time to a point where it has acquired more complex social and cultural connotations. (See footnotes 38 and 137).

practices used not only in Spain but also in other countries in which the printing press was already established, were adopted in Mexico, as will be shown in this thesis.

Extensive research into the history of the printing press in Mexico has touched mainly on events which concluded with the establishment of the printing press. The documentary value of these editions has been established thanks to the bibliographical investigations that have been conducted into them. Amongst these bibliographical studies, Joaquín García Icazbalceta's work from 1886 entitled *Bibliografía Mexicana del Siglo XVI*, marks a new era in the study of printed books during the first years of the colony.³ This work describes with precision printed books from the sixteenth century, and also includes a study of the history of the printing press in Mexico. Although the author states that the majority of these works were bound in parchment,⁴ a detailed description of the binding of each book that he described is not included in his work.

Following in the steps of this prominent scholar, some authors developed bibliographical lists which included titles kept in individual libraries. An example of this is the work of Thomas (1944) *Short-title Catalogue of Spanish-American Books Printed before 1601, now in the British Museum*; which gives a brief history of the collection which today is kept in the British Library as well as a bibliographical description of the various editions, following the methods described by García Icazbalceta (1886).⁵ The description of the bindings is not included in this work.

Romero de Terreros (1943)⁶ undertook a study from a more aesthetic point of view, in which he briefly described Mexican bindings ranging from the sixteenth century to the early years of the twentieth century. As a result, the emphasis of his work is placed more on bindings in boards⁷ with decorated leather. With regard to sixteenth century Mexican bindings, he states that in Mexico the books in this period were bound after the German style,⁸ with boards of wood or paper,⁹ covered with tanned leather¹⁰ of calf or sheep. In comparing Mexican bindings from the sixteenth to the eighteenth century with those of the

³ Colonial times in Mexico is considered from the sixteenth century, when the Spaniards arrived and until the first decades of the nineteenth century, when Mexico became independent.

⁴ See Glossary.

⁵ Other authors who have done similar work are Yhmooff Cabrera, J. (1990) *Los impresos mexicanos del siglo XVI en la Biblioteca Nacional de México*. Mexico City: UNAM-Instituto de Investigaciones Bibliográficas.; Carmona, C. and Julián, V. (2008) *Repertorio de impresos mexicanos en la Biblioteca Nacional de España, siglos XVI-XVII*. Mexico City: Colegio de México.; Valton, E. (1935) *Impresos mexicanos del siglo XVI (Incunables americanos) en la Biblioteca Nacional de México, el Museo Nacional y el Archivo General de la Nación*. Mexico City: UNAM.

⁶ The first edition of this work is dated 1932. The difference between the two editions is that in the first edition the work includes a small catalogue of 44 decorated bindings from the sixteenth to the twelfth century, of which one image is of a leather limp-binding, gold-tooled that belongs to the AGN (Romero de Terreros, 1932, Lámina 1). This book also includes images of labels of nineteenth century Mexican binders.

⁷ See Glossary.

⁸ The author does not describe what is meant by the term German style.

⁹ See Glossary.

¹⁰ See Glossary.

books that arrived already bound from Europe printed in the same period, the author concludes that in Mexico the majority of the books were bound in parchment, in contrast to the books that arrived from Europe already bound in full covers¹¹ of calf leather which were in the majority. He adds that in this period, parchment was used in Mexico for books bound in limp bindings¹² either with or without boards, frequently with fastening-ties¹³ made of leather,¹⁴ with the titling written along the spine of the cover in ink, using gothica lettering. The present research is different, therefore, from that of Romero de Terreros in two main aspects: firstly, this work is about the laced-case parchment bindings that would appear to have been the most common bindings, in contrast to those with boards covered with leather. The latter were more likely to have been made in response to specific requirements and might not, therefore, conform to a typical pattern of work. Secondly, this work investigates the details of the laced-case parchment bindings, including the components of the bindings and the materials from which they were made, an aspect that is not covered by Romero de Terreros. Finally, Romero de Terreros refers to the works of García Icazbalceta, printed in 1892, and Nicolás León, printed in 1902, to cover the period of the sixteenth century in his own study, both of them were used as source of information for my own work.

Another work about Mexican bookbinding that includes sixteenth-century bindings is that of Velasco Castelán (2004). The author analyses three hundred and eighty archival bindings¹⁵ made in the colonial times which are kept in the Archivo General de la Nación (AGN), in Mexico City. The bindings were selected at random by means of a statistical method. The aim of her study was to identify the features of archival bindings in order to determine whether the textblocks were bound as blankbooks or the textblocks were bound once the manuscript text was finished. In comparing the present research with that of Velasco Castelán (2004), two main differences were identified: firstly, she used a quantitative method for her study, in contrast with the qualitative method applied in this work (Maniaci and Ornato, 1993). Secondly, her work concerns archival bindings from the sixteenth to the first decades of the nineteenth century, whereas my work is about Mexican printed books of the sixteenth century only. In addition, although she reported that there are limp, laced-case bindings on the manuscripts in her study, the use of each type of book (manuscript and printed) was different in the sixteenth century and, therefore, the functions which the bindings were intended to serve were also different.

The most recent study of Mexican printed works from the sixteenth century was made by Fernández de Zamora (2009), in which she analysed these works as part of the national

¹¹ See Glossary.

¹² See Glossary.

¹³ See Glossary.

¹⁴ It is not clear when the author uses the term *leather*, whether he means tanned or alum-tawed skin.

¹⁵ See Glossary.

cultural heritage, pointing out the singularity and importance of this legacy for Mexican culture and the history of the book. This study, however, does not include the bindings found on such works.

It can be concluded from the works mentioned above that information on the manufacturing techniques and the use of materials in Mexican printed books in the sixteenth century has not been the result of a systematic investigation, but rather a series of conclusions arrived at by those who have studied the content of these texts or their aesthetic aspects, and who, through contact with these books, have become familiar with their bindings. Although the work by Velasco Castelán (2004) could be seen as the first attempt to study the Mexican book as an artefact, it is focused on archival bindings and leaves open possible further avenues for research that could provide information to complement what has already been recorded about this bibliographical heritage.

It was the lack of information and of complete studies of bookbinding, and its associated techniques and materials, that form an integral part of the Mexican printed book of the sixteenth century that provided the starting point of this research. Its objective was to study the book as an artefact by applying to it the methodology of archaeology, with the aim of analysing the materials and techniques used in the manufacture of Mexican bindings on the sixteenth-century printed books in Mexico, in order to determine whether the features identified could identify typical patterns of Mexican work of that period. Similarly, a further objective was to determine the relation between the features of the bindings of these books and the book trade, book market and the social function of these works in Mexico during the sixteenth century. A further objective was to analyse and identify the influence of Spanish traditions of binding that arrived in Mexico with the bound books that came from Europe during the sixteenth century.

In this research, the concept of *archaeology* refers to the studies of 'past societies primarily through their material remains...that constitute what is known as the material culture left over from former societies' (Renfrew, 1991, p. 9). With this principle, the book is analysed as an artefact, in other words as 'humanly made or modified portable objects' (Renfrew, 1991, p. 307), that is able to give information about the date of its manufacture, its place of origin and who manufactured it, as well as the social, cultural and economic circumstances of the place in which the artefact was made. In the case of the books, it is possible to obtain information about the booktrade, the book market and the use of books within a specific society in a particular period.

The identification of a reliable sample of books that were certainly bound in Mexico during the sixteenth century was a primary requirement for this research, in order to determine

whether any patterns could be identified as representing typical Mexican practices in this period. This could only be achieved by identifying books printed in Mexico in the sixteenth century which retained early bindings, either wholly or in part. As these books were produced and sold in the Mexican market during that period, and had, at least in the cases of books in Mexican libraries, never left Mexico, it could be known for certain that they must be in early Mexican bindings or, at least, might have surviving original elements of their sixteenth century bindings, that could offer a reliable basis for this research.

Fernandez de Zamora's work (2009) records the titles of works printed in Mexico during the sixteenth century and their current location in the various libraries around the world which preserve the largest collections of these books. This study was the guide for the location of the books used in this research and their subsequent analysis. The libraries that I visited in order to find the books for this study were selected according to certain criteria. Based on the work of Fernández de Zamora, the libraries, Mexican and foreign, reported as holding larger numbers of titles were included in the first selection (that did not necessarily mean that all of the books were in their first bindings, but that there was a greater probability of finding a larger number of sixteenth-century Mexican bindings in such collections); from this first selection, the libraries that were accessible by virtue of distance (and therefore, my own economic possibilities) were included in a shortlist. Finally, from this shortlist, only the libraries where it was possible to get access to the books were selected. This final list contained fourteen libraries in Mexico, five in the United States, two in the United Kingdom, one in Spain and one in France. However, of the fourteen libraries selected in Mexico, three proved to be inaccessible or not useful for my research. In The Biblioteca Nacional de Antropología e Historia, for instance, all the books had been rebound, the reading room in the AGN was in the process of being remodelled and was closed to readers, and in the Biblioteca Palafoxiana, the bureaucratic process to get access to the books proved to be too complex to allow for their inclusion in my research. The New York Public Library, the Hispanic Society of America and the John Carter Brown Library have a significant number of sixteenth-century Mexican printed books that appear to be in first or early bindings, but unfortunately a trip to New York and Rhode Island proved to be too expensive.¹⁶ Finally, in both the National Library of France and the Bodleian Library the relevant books had all been rebound, whilst in the Biblioteca Nacional de España, no information about the status of the bindings on the books was available.

¹⁶ After contacting the librarians at these libraries, I have been informed that of the sixteenth-century Mexican printed books held in them, the numbers of possible surviving early bindings are as follows: of the forty-six titles preserved at the New York Public library, apparently, twelve or fifteen are in early bindings. In the John Carter Brown library, which holds sixty-three titles, four are possibly in their first bindings and finally, in the Hispanic Society of America Library, with thirty-six titles in its collection, also four of them, apparently, are still in their first bindings.

As a result, the final shortlist of libraries to visit was reduced to ten in Mexico, two in the United States and one in the UK, in which the books used for this study were identified.¹⁷

The electronic catalogues provided by these libraries were consulted, but this was not of much help, as the bindings on the books are not described in them. This made an examination of each book essential, so that those that were not going to be considered in this study could then be eliminated.

Three hundred books were examined, during which process those with bindings that it was immediately evident were of a much later date than that of the publication of the book were eliminated from the study. Unfortunately for the objectives of this work, the kinds of books that were printed in Mexico in the sixteenth century had been subjected to heavy use and, as a consequence, some of the structural components of the bindings had been repaired or replaced and, in some cases, the books had been rebound. It should also be pointed out that the rebinding of these books happened not only because of heavy use, but also because they were much valued by book collectors in the nineteenth century, and it was usual, in México as elsewhere, to rebind valuable books in the French style of the period. Many sixteenth-century Mexican printed books were therefore rebound in the French style in the nineteenth century.¹⁸ In the end, forty-seven books that appear to have preserved either their first bindings or some of their original components were identified for the study.¹⁹

In order to analyse their bindings, the forty-seven books were divided into three groups, according to their type of binding. The first group consisted of thirty-nine books (78.7%) in limp, laced-case parchment bindings, seven books (14.9%) bound in boards in full leather covers constituted the second group and, finally, there is one book (2.12%) without a cover that constituted the third group.²⁰ Given the numbers in the sample, the thirty-nine books in limp, laced-case parchment bindings were taken as the main sample for this research, as they formed a clear majority within the total. The larger number of parchment covered bindings therefore allowed a greater possibility of identifying patterns of work, whereas the books bound in boards, being much fewer in number and not showing any consistent patterns in their construction, could not be used to draw general conclusions. However, their descriptions are included in Appendix 4b. Finally, in addition to the accessibility of the books and the budget available for this research, the size of the main sample was also limited by the time available, as any further searches would have required more time.

¹⁷ See Appendix 2.

¹⁸ See Chapter 3, page 54.

¹⁹ The list of the Mexican printed books analysed in this thesis can be found in Appendix 1.

²⁰ See Appendix 4.

Although the relatively small size of the main sample made it impossible to draw firm conclusions about the frequency of the use of certain materials or techniques that could be defined as typical Mexican practice of the sixteenth century, it was large enough to establish relationships between the different features of the bindings, whether of material or technique, and compare them with the information reported in published sources about the cultural, social and economic situation, as well as the booktrade and book market, in Mexico in that period. Even though the conclusions obtained from the details of the bindings may not have been complete, the data collected was still able to raise some important questions about bookbinding practices in use from the time that the printing press was established in Mexico to the end of the sixteenth century, and to suggest new avenues for research in this subject.²¹

In addition, a selection of Spanish-made books which were to be used as a comparative sample was made from books in the Biblioteca Nacional de México; this selection was based on the bibliography made by Yhmooff Cabrera in 1996,²² from which those books that still have their first bindings and that could therefore have provided a model to be followed by Mexican binders, were selected. The number of books analysed was the same as that of the Mexican printed books that are the subject of this study. This means that forty-seven European editions that were possibly bound in Europe during the sixteenth century were also analysed.²³ Although at the beginning of the research only Spanish editions were to be included in the comparative sample, at the time of the selection of books, the collection of sixteenth-century European printed books in the Biblioteca Nacional de México was in the process of being catalogued. As a consequence, it was only possible to include twenty-nine books that had been printed in Spain in the comparative sample. In order to complete the forty-seven books required to make up the comparative sample, it was decided to include books from other European countries that could have been part of the library at the *Colegio Imperial de Santa Cruz de Tlatelolco* (Mexico City), because it was the only monastery in which it is known that there was a bookbinding workshop during the sixteenth century²⁴ and whose imported books, therefore, could have served as models for the binders who worked there. In the end, the comparative sample, in addition to the twenty-nine Spanish editions, contains twelve

²¹ See Conclusions.

²² Yhmooff Cabrera, J. (1996) *Catálogo de los impresos europeos del siglo XVI que custodia la Biblioteca Nacional de México*. Mexico City: UNAM. The author made this catalogue based on the books contained in the *Colección del Fondo de Origen* from the Biblioteca Nacional de México. This *Fondo* was created in 1867 by decree from the then President of Mexico, Benito Juárez and it comprised bibliographical collections from the various monasteries, the Cathedral of Mexico and from the *Real y Pontificia Universidad* in Mexico. (*Biblioteca Nacional de México*, 2013).

²³ The list of the Spanish and other European books used as a comparative sample can be found in Appendix 3.

²⁴ See section 1.2.1 Education and craft development.

French editions, three from the Low Countries, two from Italy and one from Germany.²⁵ In order to work with a comparative sample as similar as possible to those books in the main sample, the criteria for the selection of the books in the comparative sample were the same as those considered for the books in the main sample, that is to say, only books printed in the sixteenth century which retain their first bindings, either wholly or in part (including bindings may have suffered some kind of repair or the replacement of some of their components), and which belonged to a Mexican library in the sixteenth century, were incorporated in the comparative sample.

Two main difficulties were quickly identified in trying to draw conclusions from the analysis of the books in the main sample. The first was to determine when the covers of the books were made. It must be understood that limp, lace-case parchment covers were in common use in Mexico until the end of the eighteenth century and these practices were therefore in use over a long period. The second one was the lack of any published evidence about traditional bookbinding practices in Spain in the sixteenth century that could help either to identify their influence on Mexican practices or to understand various features of Mexican bindings; furthermore, Italian and Spanish bookbinding practices in the sixteenth century are often so similar to each other, that it is difficult to determine in which country some bindings were made.²⁶

With regard to the comparative sample, it is likely to be that some of the books in it arrived from Europe already bound, whereas others, most probably as a result of trade practices, may have arrived as sewn textblocks without covers.²⁷ Features of the bindings in the comparative sample are often shared with those shown in the Mexican sample, something that makes it difficult to determine whether these books were covered in Mexico or Europe. Firm conclusions could, therefore, not always be drawn from comparisons between the books in the main and the comparative samples.²⁸

Archaeological techniques used by Pickwoad (2004) and Szirmai (2000) to study books as artefacts were used for this analysis of the books in both sets of samples. A detailed analysis of the material and structural features of each book was made using a record form, based on the glossary developed by the *Ligatus Research Centre* of the *University of the Arts, London*. The *Ligatus* database is designed around a hierarchical structure which follows the process of the construction of the book, in other words, the description begins with the textblock, followed by the endleaves, the sewing, the endbands, the spine, the linings, the boards, the covers, the fastenings and the decoration. Once the

²⁵ See Appendix 3.

²⁶ Information obtained from the course: *HEB 1500-1800*

²⁷ See sections 1.2.3 Commerce, 3.2 Structure (page 80).

²⁸ See Conclusions.

development of the record form was completed, it was printed and filled in by hand.²⁹ The collected data was transferred to a database, using the software program FileMaker Pro10, so that it could be analysed.

Each of the books analysed in both the main and the comparative sample, was given a consecutive number following the order in which they were located and analysed. This same number was used for the binding record forms, the photographic records and in the record form of the materials from which the bindings were made. The books in the main sample are identified by B- , whereas those marked as CB-, belong to the comparative sample.

The photographic record of each book in both sets of sample was limited by different factors as a result both of the policies of each library and the budget for this research. In seven libraries photography was permitted, in four there was a charge for each photograph taken and in two, no photography at all was permitted. As a result, there are photographs of thirty-two out of the forty-seven books (including those books bound in boards), but no photographs of fifteen books.³⁰ There are photographs of all the books in the comparative sample, as these were all in the same library, where photography was permitted. In addition, it should be understood that, although it was possible to take photographs, some parts of the bindings, such as spine linings,³¹ sewing supports³² and tiedowns,³³ among others, are hidden, where the books are in good condition, by other components such as the pastedowns³⁴ or covers³⁵ . It was, therefore, not possible to get photographs of each element of each book. The best and most useful photographs only were therefore used to illustrate the different features of the bindings that are discussed in Chapter 3. The drawings, based on my own sketches, were made by Patricia de la Garza, a graphic designer and book conservator, using Adobe Illustrator CS5© software, in order to make them clearer for the reader.

The removal of material for analysis raises complex questions concerning the circumstances under which this procedure was considered appropriate or not, and the selection of locations from which usable samples were obtained involved detailed discussions with the relevant curators.³⁶

²⁹ See Appendix 14.

³⁰ There are photographs of books: B-1, B-2, B-3, B-5, B-6, B-7, B-10, B-13, B-14, B-15, B-16, B-17, B-18, B-20, B-21, B-22, B-25, B-26, B-29, B-30, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-39, B-40, B-41 and B-42. There are no photographs of books: B-4, B-8, B-9, B-11, B-12, B-19, B-23, B-24, B-27, B-28, B-43, B-44, B-45, B-46 and B-47.

³¹ See Glossary.

³² See Glossary.

³³ See Glossary.

³⁴ See Glossary.

³⁵ See Glossary.

³⁶ See Appendix 8.

The study is divided into two clearly-defined parts: the first part has a theoretical character based on the information found in bibliographical and documentary sources from archives and libraries. The second part concerns the archaeological study of the book as an artefact. The bibliographical study is also divided into two parts: first there is a review of the origin of the society that was created in New Spain as a consequence of the arrival of the Europeans, giving a historical and cultural framework for the thesis. This is followed by the compilation of information about the raw materials, tools, techniques and characteristics of the bindings found on Mexican printed books and on the Spanish and other European printed books used as a comparative sample, that may have had an influence on bookbinding in Mexico in the sixteenth century.

The thesis was divided into three chapters. The first chapter explores the historical context in New Spain during the sixteenth century, with the aim of understanding both the political, social, religious and cultural environments in which the western book arrived in New Spain, and the craft of bookbinding was first introduced and as it was practised in the New World.

The second chapter examines who could have taught and carried out the craft of bookbinding, as well as the materials used in the bindings. To this end, the writings of the chroniclers were used for the description of the environment in New Spain, because they had direct contact with the indigenous and their customs. Those whose works were consulted include Bernardino de Sahagún, Toribio de Benavente, also known as Motolinía, and subsequently Francisco Javier Clavijero.

The third and final chapter describes in a general manner the uses to which Mexican printed works from the sixteenth century, were put in the colony, what subjects were covered by them, who the authors were and who the readers were. It also explores briefly the reason why today these works are preserved in various libraries around the world, and also why so few of them retain their first bindings. The qualities of each one of the components of the binding found on each of the books studied are also described in this chapter, as well as those aspects that can be shown to have resulted from a European influence and those that can be identified as Mexican. The identification of the raw materials used in their manufacture and their possible origins are also discussed.

One of the results of this investigation has been to show that there is still much more information to be obtained from the craft of bookbinding in Mexico from the time it was first introduced by the Spanish in the sixteenth century and afterwards. My research also shows that in order to understand better the evolution of the craft in this country it will be necessary to continue the analysis of the structural elements of bindings that can be

identified as Mexican, as these have much to offer in terms of historical, economic and cultural information. Although this research raises many questions that, to date, remain open, their answers may encourage further research in this field, including the analysis of the bindings in boards covered with leather, the binding of choral books and the bindings made for the archives, none of which were included in this research, as each could form a study on its own, but all of which were also made in Mexico in the sixteenth century. Modern research into the book as an artefact has demonstrated that the analysis of bindings and the individual structural components and materials used in their construction can provide information about the booktrade and the market for books. As has been shown, there is good evidence that there were several bookbinders working in New Spain in the sixteenth century, something that indicates that there was a demand for bound books, both printed in Mexico and abroad, that was large enough to support a local trade that could provide work for a number of binders. The bookbinders who were working in New Spain in the sixteenth century, where the printing press was established under special circumstances and the first printed works had specific aims, left in the bindings of these books the evidence of the beginnings of a distinctly Mexican pattern of bookbinding. Through their analysis, this investigation has made a significant contribution to existing knowledge of the binding of Mexican printed works in the sixteenth century, as a result of which, it is hoped, these bindings will be better valued as an integral part of these printed works and as a significant source of information about the booktrade and market for books in Mexico and beyond during this period.

CHAPTER ONE

MEXICO IN THE SIXTEEN CENTURY

With the arrival of the Spaniards in the New World (the Americas) and the discovery of territories which would later become Spanish possessions, a process began that would include the discovery of the peoples and cultures with which the Spaniards would co-exist for the next three hundred years.

The Aztec city of *Tenochtitlán*, founded in 1325, was a highly developed urban centre. Its area was increased by the construction of *chinampas*, which were floating islands within the lake on which the city was originally built. Its domain grew thanks to the tradition of sacred wars in which conquered peoples were forced to pay tributes in the form of obedience, service, recognition and material goods to the triumphant emperor. The city was connected to dry land by four causeways and it had a large central square. From this square, streets were built on an imprecise grid, due to the large number of surrounding canals, some of which delineated the various quarters. It was by means of these canals that the city was supplied with goods (Cortés, 2007).

Aztec society had an established political organisation, a well-planned educational system and an economy that was based on the tributes given by conquered peoples and by the goods sold at local markets otherwise known as *tianguis*. The indigenous were renowned as artisans, and they made textiles, shoes, and baskets and worked with local materials such as stones, metals and feathers (Sahagún, 1999; Motolinía, 2007).

In spite of the Aztec empire being a well organised militarist state, the peoples from the neighbouring states of Tlaxcala and from Michoacán were never conquered. This fact was crucial in the eventual fall of the city of *Tenochtitlán*, as these old existing enemies of the Aztecs allied themselves with the Spanish conquistadors and the capital of the empire was captured on the 13th of August 1521 (Cortés, 2007). By 1524 the conquest of *Tenochtitlán* was fully consolidated and new societies emerged as a result of the inevitable mix of contrasting cultures, which eventually defined the character of the Spanish colonies in the New World. These new societies would be completely subordinated to the Spanish Crown (Mazín, 2007).

Once the conquest of Mexico was over, the Spanish Crown sent civil servants and clergymen to organise and direct life in the New World. In order to populate the new lands, people of Spanish origin who wanted to start a new life received a tax-relief incentive once

they were established in the New World (Martínez, 1983; Haring, 1984). However, the colonies also saw the arrival of people of other races, such as Africans, who came as imported slaves. Asians and other Europeans arrived as sailors from the various expeditions or as fortune-seekers and adventurers (Esteva Fábregat, 1988).

The various combinations between the European, Asian and African races and the indigenous gave rise to new terms for the classification and definition of the various groups of people, among the most prominent being: Spaniards, indigenous, mulattoes (offspring of Spanish and African parents) and mestizos (the offspring of Spanish and indigenous parents) (Mazín, 2007).

Representatives of the various ethnic groups³⁷ that populated New Spain brought with them their own customs, ways of life, religious traditions, social and economic systems, languages and their own inherent culture, all of which mixed inextricably with the pre-existing indigenous cultures in the New World. This complex mix of races and ways of living included the adoption of models of Spanish origin, or at least those that were different from the cultural norms of the indigenous, and, conversely, the acceptance and incorporation of indigenous models of life by migrant Europeans.³⁸ Although a successful war of conquest inevitably results in both a victorious and a vanquished side, the encounter of these cultures transformed and gave rise to new organisational, social and cultural systems that in turn gave a unique character to the society of New Spain (Cerdeña Farías, 2005).

1.1 THE NEW MEXICAN SOCIETY

After the conquest, the Aztec emperor disappeared and with him the political and religious organisations of this great culture. The new Spanish territories were divided into vice-

³⁷ The term 'ethnic group' is taken to mean 'Comunidad humana definida por afinidades raciales, lingüísticas, culturales, etc' [(*Diccionario de la lengua española*, 2001) [human community defined by affinities of racial, linguistic, cultural and other orders] and by the *Oxford English Dictionary* (2013) as those 'relating to a group of people having a common national or cultural tradition...'].

³⁸ This blend of European and indigenous cultures gave rise to *mestizaje* which is known as *mestizo* culture. To this day there is no English word that can accurately and literally translate the word *mestizaje* and its connotations; this is perhaps because the Spanish term has taken on a more complex meaning over time. It was first used to name the offspring of a Spanish father and an indigenous mother, though this word also includes the mixing of other European and African races with those of the indigenous, but its use has been transformed over time to a point where it has acquired more complex social and cultural connotations. In addition to Esteva Fábregat's work (1988), the following books deal with the concept of *mestizaje*: Salas, A. M. (1960) *Crónica florida del mestizaje en las Indias*. Buenos Aires: Losada.; Gruzinski (2002) *The Mestizo Mind: The Intellectual Dynamics of Colonization and Globalization*. New York: Routledge.; Rosenbalt, Ch. (1977) *España en América*. Barcelona: Grijalbo.; Ochoa, L. (ed.) (1995) *Conquista, transculturación y mestizaje: Raíz y origen de México*. Mexico City: UNAM-Instituto de Investigaciones Antropológicas; Cerdeña Farías, I. (2005) *En el pueblo de Tiripetío, en la provincia de Michoacán: La Edad Dorada...el siglo XVI*. Morelia: Universidad Michoacana de San Nicolás de Hidalgo.; Florescano, E. (2004) Introduction. In: E. Florescano (ed.), *Mestizajes tecnológicos y cambios culturales en México*. Mexico City: Centro de Investigaciones y Estudios Superiores en Antropología Social.

royalties, one of which was New Spain,³⁹ whose capital was established in Mexico City by Hernán Cortés, over the ruins of what was once the Aztec capital. The indigenous urban landscape was transformed with the building of churches, convents, fountains, avenues and houses in a European style. Existing governmental structures were replaced by a town or city council or *cabildo*,⁴⁰ the *audiencias*⁴¹ and a Viceroy (Benítez, 1991; Mazín, 2007).

Differences of opinion in respect of the nature of the indigenous and therefore the ways in which they should be treated, gave rise to various arguments about the rules under which New Spain should be governed. On the one hand, there were those who affirmed that the indigenous, because they were uncivilised and infidels, should be slaves and, on the other, those who defended them and argued that they should be treated like any other subject of the Spanish Crown. Although the latter view was more generally held, the indigenous as well as the Creoles (offspring of Iberian subjects) had a social and judiciary disadvantage in comparison with Europeans. The *Nuevas Leyes de Indias*⁴² issued in 1542, clearly laid out what were the rights and duties of the indigenous and they also guaranteed their protection from abuse and exploitation by Spaniards (Kobayashi, 1985; García Martínez, 2001).

Religion was one of the areas which was most affected by the arrival of the Spaniards. Indigenous traditions included polytheistic beliefs which included the adoration of idols, and rituals that included human sacrifice. Hernán Cortés was a religious man and believed that the recently conquered lands were populated by infidels. As a result he felt he had an obligation to convert them to Catholicism as was required by the Crown in all its colonies (Kobayashi, 1985). In view of such a large enterprise, Cortés requested that missionaries should be sent so that they would take over this task. The king sent twelve Franciscan friars who arrived in the New World in 1524 (Morales & Mazín, 2001).

The missionary tasks of the mendicant orders (Franciscans, Dominicans and Augustinians), and later Jesuits, not only involved the conversion of the indigenous to

³⁹ See Appendix 13, Map 1.

⁴⁰ The *cabildo* consisted of the grouping of indigenous peoples under the command of a governor and other government employees, as well as other peoples who were in charge of various jobs of a general nature. They were chosen by the neighbourhood (Mazín, 2007).

⁴¹ The *audiencia* was called by the Council of the Indies and its powers were of an administrative, fiscal and military order and it limited the power of the Viceroy in that it could accept or reject his decisions. At the same time, the Viceroy '...reunía la representación de la persona real, el mando supremo, la jefatura militar, y la precedencia en asuntos de justicia; también era vicepatrono de la iglesia' (García Martínez, 2001, p. 35). [...encompassed the representation of the royal presence, the supreme rule of government, rule of the military and precedence in items of justice; he was also vicepatron of the church]. For further information on these subjects, see: *Gran Historia de México Ilustrada*. (2001) Mexico City: Planeta / CONACULTA / INAH.

⁴² The *Nuevas Leyes de Indias*, translated as the *New Laws of the Indies* were a revision of the already existing ones. They covered subjects such as the abolition of slavery, the removal of the power of the *encomendero*, the person who had a number of indigenous "entrusted" to him in exchange for tribute and rules for the service and tribute payment from the indigenous (Fernández de Zamora, 2009).

Catholicism, but also involved the education and training of the indigenous for their subsequent incorporation into everyday life, under European influence, that was being imposed across New Spain (Duverger, 1987; Motolinía, 2007). The prime objective of the process of evangelism was not an easy task as the friars found a diversity of languages spread over a large territory. This led them to develop a series of strategies, which would aid them to reach most of the inhabitants. The spiritual conquest, therefore, made use of the production of catechisms in the indigenous languages, as well as manuals of confession, the foundation of missions, parish churches, monasteries and convents. These strategies involved indigenous workers and the use of the printing press (Moreno Toscano, 1994; Mazín, 2007).

Bishops were appointed and they became the representatives of ecclesiastical power in New Spain. Fray Juan de Zumárraga became the first bishop of Mexico designated by Charles V, and he devoted himself to the study of indigenous cultures and became a guardian of the indigenous. He engaged in a vast campaign of cultural and educational work, opening schools and, together with the first viceroy, Antonio de Mendoza, bringing about the introduction of the first printing press in the American continent. The social work of Vasco de Quiroga, bishop of Michoacán was of the same type; he was a man influenced by the ideas and writings of Thomas More, and he opened hospitals in the towns and promoted the various arts and crafts of the indigenous (Rubial García, 1999).

To further the spiritual conquest of the indigenous and also in order to impose a new culture, the first missionaries and conquistadors took on the job of destroying any kind of cultural and religious representations that they considered idolatrous, superstitious, magical or diabolic (García Icazbalceta, 1947). In spite of this, old beliefs and traditions remained strongly rooted in the indigenous cultures with the result that the implantation of new Spanish ideas was not easily achieved. The various friars had to admit that 'en sus ceremonias [católicas] mezclas, rituales con danzas, ofrendas, carnavales, máscaras y bautizos de animales de franca imagen y tendencias paganas...' (Márquez Rodiles, 2001, p.82) ['in their [Catholic] ceremonies, the mixed dancing rituals, offerings, carnivals, masks and baptisms of animals with pagan tendencies...'] continued to flourish. Step by step various representations and Christian figures that were similar in number and hierarchical range to those that were venerated by the indigenous, were incorporated in order to eliminate the indigenous tradition, resulting in a vast artistic and cultural production, which was influenced by both ideological currents (Rubial García, 1999; Rubial García, 2001).

Spanish chroniclers recovered indigenous history and recorded the conquest, facts that they subsequently described in their printed books; the same task was undertaken by the missionaries with regard to the history of the provinces that were under their care. There

were also authors of *mestizo* origin as well as indigenous poets. The production of texts also covered topics such as science, law and, of course, religion. With the arrival of the printing press in 1539, these works could enjoy a greatly increased distribution in a local market (Rubial García, 2001; Mazín, 2007).

The linguistic difference between victorious and defeated was at first a barrier to mutual understanding. The missionaries took the initiative of learning indigenous languages because it was necessary to understand the indigenous and to communicate with them in order to achieve evangelisation. The proficiency of the indigenous in learning Spanish and Latin facilitated the dialogue between both cultures. This cultural revolution was reflected in the drafting of works and documents in Nahuatl,⁴³ Spanish and as bilingual texts⁴⁴ (Solano, 1991b; Hill & Hill, 1995).

In common with most aspects of everyday life, the various languages were mixed and reinvented and the indigenous languages were alphabetised. Before the arrival of the Spaniards, indigenous texts could only be written down by means of pictographic representations. Iberian languages borrowed indigenous words to describe items that were local to the New World. Indigenous incorporated terms which were used by the Spaniards and Portuguese, transforming their own indigenous languages. Spanish people who were established in Mexico City included Nahuatl words and the indigenous did the same with words of Spanish origin that were learnt from mestizos and Africans (Mazín, 2007).

Although the colonial authorities insisted on teaching and spreading the Spanish language,⁴⁵ the religious teachers decided to give priority to the teaching of the faith and 'no distraer a sus discípulos con otras enseñanzas' (Solano, 1991a, p. LXII) [not to distract their disciples with other teachings]. The official documents such as indigenous wills, public notices and registry books continued to be written in Nahuatl by professional indigenous scribes. In the courts, during work-related activities and in any area of life related to indigenous society, the Spaniards had, in many instances, to hire an interpreter (Gibson, 2003). Solano (1991a) and Mazín (2007) assert that the Spanish language was for the elites, because it was promoted amongst the children of the nobility. The use and teaching of the Spanish language was not made universal until the eighteenth century.

⁴³ The term *Nahuatl* to describe the language of the former peoples from Mexico, appeared on a regular basis in academic texts at the end of the 19th century (Hill and Hill, 1995).

⁴⁴ Amongst the most common autochthonous languages there were: Nahuatl, Purepecha, Otomi, Mixtec, Zapotec and Mayan languages which were all alphabetised and included with Spanish in bilingual works (Solano, 1991c).

⁴⁵ Solano mentions the instructions received in 1503 by the governor of the Indies in which he was commanded to install schools where to teach Castilian to the Indians (Solano, 1991c). Subsequently in the Royal chart issued in 1550, Charles V ordered civil and ecclesiastical authorities to teach Spanish to all the indigenous (Solano, 1991b). This order was reiterated in 1596 and 1599 by different authorities (Fernández de Zamora, 2009).

At the University in Mexico City, founded in 1551,⁴⁶ subjects such as law, theology, medicine, astronomy, mathematics and the arts were taught. Here 'clérigos y laicos criollos dándoles las herramientas con las que crearían sus obras literarias, filosóficas y científicas.' (Rubial García, 2001, p. 369) [clerics and secular Creoles were educated, and they were given the tools with which they would create their own literary, philosophical and scholarly and scientific works].

The walls of the new buildings were decorated with murals, whilst at the same time the various churches were dressed with altarpieces, polychrome sculptures and paintings which reflected religious events and everyday scenes inherited from the Iberian peninsula which were being adopted in New Spain. Many of the artists who were involved in these creations were Creoles who showed through their work that they were not a "lazy race" and unable to live in a civilised way, as some peninsular Spanish would have liked it to be believed (Rubial García, 1999).

The Holy Office, or Spanish Inquisition, like many other institutions inherited from Spaniards, was established in New Spain under the orders of Philip II in 1571. This tribunal had as an objective 'ayudar a la labor evangelizadora persiguiendo "idolatrías"...' (García Martínez, 2001, p. 20) [to aid with the evangelical work by prosecuting "idolatry"...]. However this law did not include those indigenous who were starting to know and recognise Christianity as the only religion allowed in the New World (Santos Zertuche, 2000; Mazín, 2007). This Institution had the task, amongst others, of checking that the immigrants to the New World followed the Catholic faith and also of checking that the artistic and literary works they brought with them were not opposite to Catholicism or likely to encourage doubts about it (Rubial García, 1999; Mazín, 2007).

The economic order of New Spain was based on the pre Hispanic system of tributes that the Spaniards preserved and maintained as they had originally found it. Later they adapted this system to the particular economic needs of the new society that was developing in the New World. The fiscal regime was represented by the *Real Hacienda*, whose job was to collect the tributes and later on the various taxes imposed by the crown.⁴⁷ During the early years of the colony, tributes provided raw materials and

⁴⁶ The Royal and Pontifical University of Mexico was founded in 1551, but it was not until 1553 that it opened its doors.

⁴⁷ **Direct taxes:** were paid by non-Europeans, mainly indigenous. **Indirect taxes:** imposed on commerce and these were the *alcabala*: 'a duty formerly charged in Spain and its colonies on all transfers of property, whether public or private.' (*The Encyclopedia Britannica*, 1911, p. 518); the *diezmo*: charged to Christians for the church and for religious aims (Miranda, 1952; Mazín, 2007) and those of municipal consumption, used for the improvement of the city (Miranda, 1952).

manpower for the *encomenderos*,⁴⁸ something crucial to the organisation of their enterprises and which contributed to economic and currency development in the New World (Miranda, 1952; Mazín, 2007).

On the other hand, those Europeans who established themselves in the New World missed the everyday objects and raw materials that existed in the land of their birth; articles which were non-existent in the "new" lands. As a result, a successful attempt was made to develop agriculture and animal husbandry in order to acclimatise plants and animals of European origin. Most of the objects of everyday use that were imported from Spain were sold in the New World at high prices. This was both because of the high demand for such goods after long periods of scarcity and because the price had to include taxes both on the import and the sale itself (Mazín, 2007).⁴⁹ Although the Spanish Crown maintained in its colonies a policy of economic dependency, in the end they were unable to prevent the manufacture in the New World of those articles that the colonials had been used to having in their native Spain, with the result that they subsequently became easily available in local markets (Matesanz, 1995). Various other types of trade flourished, such as the silk industry, the textile industry and the mining industry; the last of these became one of the most important sources of wealth for the Spanish Crown.

1.2 CULTURAL CONTEXT OF NEW SPAIN AND THE CRAFT OF BOOKBINDING (1524-1600)

The transformations which both cultures underwent were reflected in all aspects of life. The shock of the confrontation of ideas and traditions influenced not only aspects such as religion, government, art and economics, but was also reflected in the use of raw materials and the application of techniques to develop certain types of work and in the production of the manufactured goods needed in the daily lives of the Europeans who were trying to adapt to new social circumstances.

It has to be considered how the implementation and the development of the various crafts from the Spanish tradition that took root in New Spain were influenced by different factors.

⁴⁸ An *encomendero* was a person of Spanish or European origin, who was in charge of the education and religious conversion of an indigenous group in exchange for the acquisition of tributes (Rubial García, 1999).

⁴⁹ For the commerce between Spain and the New World, the unit of measurement that was used to establish the shipping costs and corresponding taxes for the import, export and selling of merchandise, was the *tonne*. This measurement was equivalent in space to a little more than fifty six cubic feet (1.58 cubic meters) and in weight to twenty quintals (or hundredweight) or 2,000 Kg. The weight and volume of each merchandise that corresponded to a tonne, was registered in the Ordinance from 1543 (Carrera Estampa, 1949; Haring, 1984). On these goods, a sales tax (known as *alcabala*) and an export tax (known as *almojarifazgo*) were paid, which by 1566 made up a total of 17.5% of the total cost of the articles. Also, 4 or 5 percent of the total cost of what was transported was paid as an *avería*: a contribution given to the cost of convoys or other fleets required to guard and defend the ships in the Treasure Fleet (Haring, 1984).

These would include: the availability of raw materials and tools, who taught them and therefore the techniques needed to make them, the organisation and the legislation that would enable them to be carried out, and, finally, the need for any particular service or product. In the case of bookbinding, this was dictated by the existence of books that came from Europe both bound and unbound, the generation of official and personal documents, such as archival material, the production of teaching materials for the education of the indigenous, the creation of personal libraries and those of the monasteries (with or without schools) and in addition the introduction of the printing press. The craft of bookbinding, therefore, as it was carried out in the Europe, arrived in New Spain before the printing press.

1.2.1 Education and Craft Development

The process of evangelisation of the indigenous population justified the conquest and the main objective was to complete it in the shortest period of time. At the same time, the Catholic King and Queen accepted the responsibilities of the conversion of those ignorant of the Catholic faith and to give them the knowledge and means by which they could be incorporated as vassals into the new colonial society. To accomplish this, the Spanish Crown took upon itself the education of the indigenous, because it considered that in this way they would not only get the indigenous to accept a new religion, but that it would also facilitate the government of the recently conquered lands (Kobayashi, 1985).

The twelve Franciscans who arrived in New Spain as missionaries were in charge of this early attempt to educate the indigenous population. Later in the century, other orders helped with this matter, such as the Dominicans, who arrived in 1526, and the Augustinians, who arrived in 1533.⁵⁰ It was, however, particularly the Franciscans who took upon themselves the task of understanding the ways of life, social hierarchies, beliefs and the educational systems that the great indigenous cultures had enjoyed before the arrival of the Europeans (Kobayashi, 1985).

In order to achieve their social and religious objectives, the different friars designed and produced written teaching material (Gonzalbo Aizpuru, 2000; Endean Gamboa, 2008). At the beginning they made use of indigenous pictograms painted on indigenous paper to convey ideas; little by little, they introduced signs and comments in indigenous languages as well as in Spanish and Latin. The copies that were in circulation were handmade in the monasteries by the indigenous who used western techniques to make the textblocks of these books. The indigenous leather strips folded as a concertina therefore gave way to

⁵⁰ The Jesuits arrived in New Spain in 1572 and they were charged with ensuring the education of the Creoles (American born descendants of Iberian nationals) it was to be the equivalent to the education they would have got in Europe (Benitez, 1991).

European formats, formed by folded leaves or gatherings, held together by being sewn through the fold (León Portilla, 2003; Mohar Betancurt & Fernández Díaz, 2006).

With the arrival of the printing press in 1539, this process gathered speed as a larger number of copies could be produced in less time. The indigenous already knew some of the bookbinding techniques used by the Spaniards and the latter had, at the same time, already learned how to use indigenous raw materials and to make the most of the talent of the indigenous.

Taking into account the existing organisational model for education that the indigenous were already familiar with,⁵¹ the various missionaries established schools inside monasteries to teach basic reading, writing and spelling, as well as educating pupils beyond the basic level. They ‘tuvieron cuidado de educar a los hijos de los caciques y principales de un modo especial, distinguiéndose de los hijos de la gente plebeya’ (Kobayashi, 1985, p. 211) [were careful to educate the children of the various chieftains in a special way, distinguishing them from the offspring of commoners]. The children from the lower classes received the catechism on the patios of the monasteries, with the use of the interior of the school building assigned to the children of the upper classes (Gómez Canedo, 1993).

Apart from receiving religious education and learning to read and write, the schools required that the indigenous learn a craft by which they would be able to earn a living. Mendieta (1997, p. 65), in a missionary chronicle, stated that ‘... los religiosos, además de enseñar a los indios a leer y escribir y cantar, y algunas cosas de la iglesia, pusieron también diligencia y cuidado en que aprendiesen los oficios mecánicos y las demás artes que la industria humana tiene inventada...’ [...the priests, apart from teaching the indigenous to read, write, sing and some religious matters, were diligent and ensured that the indigenous would learn mechanical trades and other forms of art that human industry had invented...]. Even though the Franciscans were pioneers and were the first to teach the various trades, the later arrivals such as the Augustinians and Dominicans, also included the teaching of trades in the curriculum for the indigenous (Gómez Canedo, 1982; Gonzalbo Aizpuru, 2000). As a result of this programme, the indigenous were taught different artistic disciplines and various arts and crafts as well; this happened in a number of schools that were opened for such purposes. Amongst the most important ones

⁵¹ The inhabitants of *Anahuac* had a well-organised educational system in which education was given according to the social status of the various students. In the schools known as *calmecac* students learned, amongst other sacred areas of knowledge, subjects such as religion, singing, music and astrology. Young students were taken from their parents and they lived as boarders at the schools under a strict disciplinary regime; this included having to work inside the *calmecac* in order to benefit the community. As far as the education of girls was concerned, those with a noble background were educated at home by their mothers. Sometimes these young women were given to the temples so that they could be educated as priestesses (Kobayashi, 1985; Wright Carr, 1998).

were the *Colegio de San José de los Naturales*, the *Colegio Imperial de Santa Cruz de Tlaltelolco* and the *Convento Agustino de Tiripetío* in Michoacán.⁵²

The *Colegio de San José de los Naturales* was founded in 1527 by Fray Pedro de Gante, next to the *Convento de San Francisco* in Mexico City. Apart from the boarding school and the chapels, this college had classrooms where ‘...procuró que los mozos más grandecillos se aplicasen a aprender los oficios y las artes de los españoles...les hacía ejercitar los oficios más comunes, como sastres, zapateros, carpinteros y otros semejantes, y después, los de mayor sutileza’ (Chávez, 1934, pp. 32-33) [the older pupils applied themselves to learning various arts and crafts from the Spanish...they were encouraged to develop the most popular of trades such as tailoring, shoemaking, carpentry and other similar ones; afterwards they would learn the more sophisticated subjects]. Trueba (1959, p. 37) asserts that it was in this college where ‘se inicia el florecimiento del arte religioso mexicano, en todas sus expresiones: arquitectura, pintura, orfebrería, escultura’ [the flourishing of Mexican religious art took place in all its different manifestations such as in architecture, painting, metal work and sculpture], and ‘fue el primer centro educativo de esta clase que hubo en la Nueva España’ (Gómez Canedo, 1982, p. 79) [it became the first educational centre of its sort in New Spain]. Some of the students were children of indigenous chiefs, and they did not attend the school of crafts because it was considered that such work was suitable for students of a lower social class. As a consequence of this, the manual arts and crafts were only taught to those children of lower class who did not live in the College (Gómez Canedo, 1982).

The *Colegio Imperial de Santa Cruz de Tlaltelolco*⁵³ opened its doors on the 6th of January 1536 ‘en un modesto local, cercano al recién construido convento de Santiago Tlaltelolco’ (León Portilla, 2003, p. 101) [in modest premises, close to the recently-built monastery of Santiago Tlaltelolco]. The main purpose of this college was to create an indigenous clergy through the intellectual and moral education of the offspring of indigenous chieftains (Borgia Steck, 1944; Vargas Lugo, 1987). However, *Santa Cruz* was also a centre for the production of books. As originally suggested by Bernardino de Sahagún and ordered by him, the indigenous disciples worked alongside him in rescuing the indigenous history that the conquistadors and the first religious orders that arrived in the New World were so intent on destroying.⁵⁴

This college had a *scriptorium* in the same style as medieval European monasteries, which ‘era un recinto en donde se escribían y copiaban diversos textos y libros ricamente

⁵² In Mexico City other schools were opened such as *El Colegio de San Juan de Letrán*, *El Colegio de Santa María de Todos los Santos*, *El Colegio de San Pedro y San Pablo*, *El Seminario de San Pablo* and *El Seminario de Cristo* amongst many others (Becerra López, 1963).

⁵³ This name corresponds to the fact that it was under the custody of Charles V (León Portilla, 2003).

⁵⁴ With the aim of implanting the new religion, the conquistadors and the first priests to arrive, took on the task of destroying all kinds of cultural material because it was considered idolatrous, superstitious, magical or diabolical (García Icazbalceta, 1947).

ilustrados' (León Portilla, 2003, p.104) [was a room where they used to write and copy a number of texts and books which were richly illustrated]. Whether they were written with images, glyphic signs with comments in indigenous languages, Spanish or Latin, the knowledge of ancient pre-Hispanic cultures was transcribed (Pérez Carrillo, 1989; Arellano Hoffman, 2002).⁵⁵

Also, during the twenty years that followed its establishment 'las obras más importantes sobre medicina, etnografía, historia y lingüística' (Osorio Romero, 1986, p. 33) [the most important works on medicine, ethnography, history and linguistics] were produced at the *Colegio Imperial de Tlaltelolco*; from here came vocabularies, religious sermons, catechisms and other books of similar character written in Nahuatl and used for evangelisation. Therefore 'el convento era un centro importante para la producción de manuscritos, archivos y un centro de conocimiento' (Ramírez Castañeda, 2006, p. 6) [the monastery was an important centre for the production of manuscripts, archival material and a centre of knowledge].

The logical outcome of this great cultural, intellectual and educational work on the part of the Franciscans was that within the walls of the college they should have access to a working printing press (Borgia Steck, 1944). The owner was the widow of Pedro Ocharte, María de Sansoric, who took this printing press to *Tlaltelolco* in 1597 and started the business that was run by her son Melchor from 1599. This location had an advantage in that the Dutch printer Cornelio Adriano César lived in the *Convento de Santa Cruz* as a prisoner of the Spanish Inquisition, and collaborated with Ocharte in the work of the printing press (Stols, 1990). Amongst the outstanding students at the college there were those who helped with the actual works of the printing press and they 'fueron hábiles impresores y encuadernadores al servicio de los franciscanos' (Gonzalbo Aizpuru, 2000, p. 120) [were skilled printers and bookbinders in the service of the Franciscans].

The existence of a bookbinding workshop inside the monastery is detailed through an inventory compiled on the 13th of December 1584, on the instructions of the judge to make sure that these items were received by the new steward of the college, Diego Ruíz (García Icazbalceta, 1892). In this document the tools used for the purpose of bookbinding are itemised:

Una cuchilla grande. Dos prensas de madera. Un martillo de aplanar grande, de hierro. Un cepillo de hierro. Dos punzones de hierro. Un punzón de golpe. Una gubia. Dos pares de tijeras pequeñas. Tres cosedores. Un compás. Una caja de cuchillos carniceros. Un cepillo de

⁵⁵ Amongst the colonial codicexes written at the *Colegio de Santiago Tlaltelolco*, we can mention the *Códice de la Cruz-Badiano*, the *Mapa de Upsala* and the *Códice Florentino* (McAfee and Barlow, 1948; Escalante Gonzalbo, 2008).

madera. Unas tijeras de zapatero. Un martillo de hierro pequeño. Tres hierros para pintar la encuadernación. Una sierra. Una piedra de batir (García Icazbalceta, 1892, p. 262).

[A large knife. Two wooden presses. A large iron hammer used for beating. An iron brush. Two iron awls. A punch. A gouge. Two pairs of small scissors. Three sewing frames. A divider. One box of butcher's knives. One wooden brush. A pair of shoe-maker's scissors. A small iron hammer. Three iron tools to paint the bookbinding.⁵⁶ A saw. A beating stone].

At the same time, Stols (1990, p. 26) affirms that 'junto con la enseñanza moral, los alumnos aprendían algunas materias prácticas, como por ejemplo la encuadernación' [together with the moral teachings, the students also learnt some practical subjects such as bookbinding]. In the face of all the cultural activity of the monastery, the existence of the printing press, where large numbers of books were produced and with the library collection that the college already had, the teaching and the practice of bookbinding were activities that were fully justified.

The college library enjoyed a good name: Fray Juan de Zumárraga gave some of the books he brought from Europe to begin the creation of a collection, one which grew with the passing of time, housing works on subjects such as the humanities, history, theology and music amongst others. Zumárraga, not content with the books he had brought, undertook the task of 'conseguir otros libros nuevos en México' (McAfee & Barlow, 1948, p. 272) [getting other new books in Mexico City]. In 1574, Diego Rufo, who was in charge of the library, reported the existence of 70 books in the collection (Osorio Romero, 1986). Mathes (1982, p. 9) asserts that this was the first academic library in New Spain, in which:

Los libros traídos de España, con la herencia de Grecia, Israel y Roma, se hallaron juntos en la Biblioteca del Colegio con los impresos en México, varios en náhuatl...Colegio y biblioteca fueron así por varios años verdaderos semilleros, gracias al cual se recogieron frutos, resultados muchas veces del injerto de las ramas de dos culturas tan distintas.

[The books brought from Spain with the heritage from Greece, Israel and Rome, were put together in the library of the College with the printed works from Mexico, some of them in Nahuatl...College and library were thus for many years real hotbeds, thanks to which fruits were harvested, many a time the result of the grafting of the branches of two very different cultures].

In 1538, bishop Vasco de Quiroga⁵⁷ opened the *Colegio de San Nicolás in Patzcuaro* (Michoacán). The main objective of this college was to help the indigenous to integrate

⁵⁶ The iron tools which are described here as being used to "paint" the bookbinding are more likely to refer to the tools used to decorate the bindings, that is to say for tooling, and the inventory was most probably made by someone who was not familiar either with the proper use of these tools or how to describe their use.

⁵⁷ Vasco de Quiroga arrived in New Spain with the job of *Oidor* of the Audience of Mexico and took possession of this post in 1531 (Márquez Rodiles, 2001).

into society by providing them with religious, scientific and scholarly knowledge and arranging for them to co-exist with Spaniards, with the aim of obtaining equality between the two races (Márquez Rodiles, 2001). It was there that the men who were later to instruct the indigenous in both modern techniques and new crafts were to be trained (Macías, 1960).

This college was founded using the same principles as those with which Vasco de Quiroga founded the *hospitales-pueblo* in Santa Fé,⁵⁸ which were centres for learning where indigenous children were instructed in Catholic teachings as well as learning the alphabet; adults also had the chance of learning how to work in the fields and how to work in the arts and crafts. They could be trained in a variety of mechanical trades to become knitters, masons, carpenters, bricklayers and blacksmiths amongst other trades that they learnt from their Spanish masters (Becerra López, 1963; Miranda Godínez, 1990). The interest of Don Vasco was not about ‘...desdeñar los viejos oficios y artes del indígena, sino aprovecharlos e incorporarlos a la civilización recién venida’ (Ramírez Castañeda, 2006, p. 29) [...disdaining [the] old arts and crafts of the indigenous, but about making the most of them and incorporating them into the newly arrived civilisation]. The system was a kind of cooperative where everybody worked together in agriculture to provide food and they also worked in particular jobs, which were distributed according to both the local habitat and the abilities of the locals, an example being the development of tanneries and of the shoemaking industry (Márquez Rodiles, 2001).

Also in Michoacán, there was a town known as *Tiripetío* where the Augustinian friars established an art and craft school, which started its activities in 1540; it was a school where they ‘enseñaban a los indios carpintería, tintorería, cantería y pintura’ (Miranda Godínez, 1990, p. 148) [taught the indigenous carpentry, dyeing, stone-cutting and painting]. This was a real centre for the arts and crafts where the variety of skills was so large and specialised that, once learnt, Spanish teachers and artisans were not needed anymore (Cerde Farías, 2005). Although it is difficult to know exactly where these crafts were taught, Cerde Farías (2005) supposes that these would have to be in large classrooms or huts that functioned as workshops. It is possible as well that ‘cada indio oficial tenía en su casa un pequeño taller’ (Cerde Farías, 2005, p. 92) [each indigenous artisan had in his house a small workshop]. *Tiripetío* became so famous that other nearby towns in turn requested that the artisans at *Tiripetío* might also be their trainers in the various available skills (Cerde Farías, 2005).

In order to solve the problem of the growth in the population of mestizos who had nowhere to be taught, the *Colegio de San Juan Letrán*, in Mexico City, was founded in 1529

⁵⁸ See Appendix 14, Map 1.

(Osores, 1929), although later on this college received anybody who needed an education in order to integrate them into productive life, regardless of their status, as long as they were not of indigenous origin, for whom there already existed schools to which only they had access. This college was a boarding school and all the students were instructed in the Christian faith, and were also taught to read and write. Later on, the boarders were divided in two groups: those who studied Latin and those who were destined to learn a particular craft (Gonzalbo Aizpuru, 2000). After a stipulated learning period of three years, the trained indigenous were placed in a number of workshops so that they would develop their skills and they could thus earn a living in an honest way (Becerra López, 1963; Gómez Canedo, 1982; Greenleaf, 1986).

1.2.2 Guilds and Confraternities

These organisations were inherited from models found in medieval Europe that the Spaniards brought with them. The guilds were organised by artisans and craftsmen of the same art or craft in order to protect themselves from abuse and pressures from the authorities. This type of organisation helped them to control prices, quality and manufacturing techniques for their various products which were established and described in detail in their ordinances. Once these ordinances were authorised by the Viceroy, they became compulsory and were set down in the *cabildos*. These documents also stipulated the time of study needed for the various crafts and the hierarchies in which each one of the various races would be able to work. The Spaniards were the most privileged, whilst the indigenous were forbidden to become teachers of certain crafts and native Africans were not allowed to be members of any guild (Santiago Cruz, 1960).

These guilds were structured in three different categories: apprentices, journeymen and masters. The first category was for children and young men who were taken by their parents to the teacher, who in turn was paid for the lessons, not only to learn a certain craft but also to be educated in religious doctrines and to learn etiquette. The journeymen were those who had passed an exam and were in the process of becoming masters. These in turn were those who after having developed experience in the period established by the ordinances, would have passed both theoretical and practical exams established by the *cabildo*. This qualification gave them the opportunity to establish their own workshops. The workshops in turn became places of residence in which the apprentices and journeymen lived with the master in a kind of family community, the head of which was of course the master (Santiago Cruz, 1960). The guilds were the only organisation that had the power to issue qualifications for the position of journeymen and they resulted in the eventual disappearance of the monastery workshops where the indigenous were able to acquire skills but not the required qualification to practice the trade they had been taught (Romero de Terreros, 1923).

In contrast to the guilds, confraternities were organisations with a religious character in which the brothers shared the trade, the faith and patron saint. These also had the function of acting as social groups that protected and looked after their members and colleagues. The hierarchical order of master, journeyman and apprentices did not apply because a *cofradía* worked on an egalitarian system (Victoria, 1986).

The various workshops that had been established by the Spanish masters,⁵⁹ became training centres for the indigenous, who showed great ability in learning and working in the various crafts brought from Europe (Santiago Cruz, 1960; Motolinía, 2007). The Spaniards worried that the indigenous could become better artisans than them and were also afraid that the indigenous would open workshops that might compete with their own. As a result the Spaniards refused to accept free indigenous personnel in their workshops. In spite of this, the authorities⁶⁰ protected the indigenous and the Spaniards were obliged to accept them as trainees. The abolition of indigenous slavery allowed the indigenous to establish their own workshops, and the Spaniards left the indigenous the work that they considered unattractive, but that needed to be done (Gonzalbo Aizpuru, 2000). The indigenous, at the same time, were able to preserve the making of some objects that belonged to their culture and which were alien for the Europeans, such as making clay pots and straw mats or *petates*; these were made in home-based workshops (Miranda, 1962).

As a consequence of the social, cultural and urban growth, new industries and arts were developed as well and, as they kept growing, they led to the development of new crafts, new guilds and new ordinances (Carrera Estampa, 1954).

1.2.3 Commerce

As with all aspects in a well-ordered society, pre Hispanic cultures had an established commercial system. In the case of Mexico City, merchants established their trade practically at the same time as the founding of the city. Their activities reached the shores of the lake and with time they expanded to include all the imperial territory. The business consisted of taking merchandise from one place to another where these goods were needed, resulting in an exchange of goods for profit (Clavijero, 2003).

⁵⁹ Amongst the conquistadors, there were some accomplished artisans who after the conquest, established themselves in New Spain and used their knowledge in order to begin a new life. There were conquistadors who, once settled in the New World, started in trades that were new and unknown to them until that moment. Some artisans arrived among the migrants who embarked on the adventure of travelling to New Spain in order to find a new and fruitful place to establish their own businesses (Carrera Estampa, 1954).

⁶⁰ Viceroy Antonio de Mendoza was in favour of the training indigenous in crafts and 'estableció para ellos normas similares a las que se registraba en las ordenanzas de los gremios castellanos' (Gonzalbo Aizpuru, 2000, p. 56) [established for them similar norms to the ones that were registered in the ordinances for the Castilian guilds].

The main centres for the development of such activities were the street markets or *tianguis* where a great variety of objects were sold or were exchanged and it was possible to find '...de cuanto había en el imperio mexicano y en las provincias y reinos vecinos que pudiese servir a las necesidades de la vida, la comodidad y regalo, a la vanidad y curiosidad de los hombres' (Clavijero, 2003, p. 332) [...whatever there was in the Mexican empire and in neighbouring provinces and kingdoms that could be used to satisfy everyday needs, for comfort and gifts, for vanity and for the curiosity of men and women]. These were centres of commerce that were organised through the grouping of similar merchandises in the same street to keep things in order (Cortés, 2007). The goods were transported by land on the shoulders of the indigenous and in small boats on rivers and lakes until they arrived at the consumer through a process of sale at the markets (Rojas González, 1945; Motolonia, 2007). The market of *Tlaltelolco* was famous for its size and for the diversity of wares offered and also contained a stadium that was used for dancing and for sport (Rojas González, 1945).

The markets and their organisation were kept after the arrival of the Spaniards, but the way of doing business changed: the roles of the indigenous merchants became limited and it was the Creoles and the mestizos who took charge of commercial activities. The sales of products that were in high demand were monopolised by the Spaniards, and the indigenous had to find other things to sell, which in turn meant that the products of family industries, such as pottery and feather crafts, became very popular, and thus became an important factor in the economic lives of the indigenous (Rojas González, 1945).

With the mercantile exchange along transatlantic trade routes known as *Carrera de Indias*, the markets were inundated by supplies and wares from Europe and Asia. The *naos*⁶¹ which set sail from Seville anchored in Veracruz, whilst the *Galeón de Manila*, also known as the *Nao de China*, travelled from Manila to Acapulco, carrying a great variety of oriental goods. In both cases, the products were transported on land either on carts, on animals or by the indigenous to Mexico City (Alfonso Mola & Martínez Shaw, 2000; Mazín, 2007; Motolinía, 2007). The Pacific and Atlantic oceans were thus united by the land route of Acapulco-Mexico-Veracruz and vice-versa,⁶² something that promoted commerce between Spain and the rest of Europe with the Orient, with the result that Mexico City became a commercial centre and emporium (Miranda, 1962; Martínez, 1983).

Facing the growth of commercial enterprises between Spain and the New World, the Crown was forced to establish a regulating body for these activities and in 1503 founded the *Casa de Contratación* with headquarters in Seville. This institution was responsible for

⁶¹ Translated as galleons or ships.

⁶² See Appendix 12, Map 2.

recording each and every item that entered and left the various ports involved, and this activity included migrants. It also verified the condition of the various ships and the skills of their crews. Transatlantic commerce was limited to Spanish merchants and the monopoly of this business was left to the Spanish Crown and to citizens of Seville (Haring, 1984; Mazín, 2007).

The products of New Spain's mining industry became the most coveted merchandise and were the ones mostly exported to Spain, as well as 'productos agrícolas o materias primas: cueros, azúcar, tabaco, cacao; productos para el tinte como la grana cochinilla, el índigo, el palo de Brasil y el palo de Campeche; las plantas medicinales.' (Mazín, 2007, p. 113) [agricultural products or raw materials such as leather, sugar, tobacco, cacao; dyes such as cochineal, indigo, and *Palo de Brasil* and *Palo de Campeche*; medicinal plants]. On the other hand, New World populations benefited from goods of European origin such as 'vinos y destilados de España y Francia, aceite de oliva, azafrán, papel de Génova y de Francia, hierro de Vizcaya, cajones de libros, cuadros y grabados. Y sobre todo textiles: telas de Rouen, Bretaña y Holanda, terciopelos de Italia' (Mazín, 2007, p. 113) [wines and spirits from Spain and France, olive oil, saffron, paper from Genoa and France, iron from Vizcaya, boxes of books, paintings and prints. Most of all textiles: fabrics from Rouen, Brittany and Holland, velvets from Italy]. At the same time, the *Nao de China*, brought many articles to the New World, amongst them 'especies moluqueñas, biombos y lacados japoneses, marfil, abanicos, porcelanas, papeles pintados y tejidos de seda chinos y muebles —sillas, arcones—, y materias primas filipinas como canela de Mindanao' (Alfonso Mola and Martínez Shaw, 2000, p. 18) [Moluccan spices, Japanese screens and lacquers, ivory, fans, porcelain, painted papers and Chinese silks and furniture such as chairs, chests; and raw materials from the Philippines such as cinnamon from Mindanao].

This splendid coming together of goods from various parts of the world satisfied the needs of those Europeans who were established in the New World. The indigenous learnt to use new raw materials as well as new tools for the development and performance of a number of trades both in the indigenous tradition as well as the Spanish; at the same time the Spaniards received the metals and precious stones that came from the New World, as well as having the opportunity to learn about their cultures through the various arts and crafts, books and maps that arrived in Spain from such distant lands (Alfonso Mola & Martínez Shaw, 2000).

1.2.4 Books and the Printing Press

The first printed books that arrived in the New World were those that followed the conquistadors in their travels across the Atlantic. Favourite subjects were those of

chivalry, ones that, according to Leonard (1996), urged on the adventure of the discovery of new lands. Missionaries at the same time came with bibles, missals and other liturgical books. Once the Spaniards settled, they found time to read, since they had slaves and indigenous to do much of the hard work. This readership increased at the same rate at which the New World became populated and merchants, whether they were booksellers or not, included in their stock new literary, scientific and scholarly works that were circulating in Spain and in the rest of Europe (Martínez, 1983).

The Crown, aware of the powerful influence of books, tried on various occasions to forbid the introduction and sale of popular literature in the New World, because it was considered inappropriate for the moral education of the indigenous. However, some forbidden books arrived illegally in 'barricas de vino y toneles de fruta seca' (Leonard, 1996, p. 153) [wine casks and barrels of dried fruit]. Once the Spanish Inquisition was established in New Spain, one of its tasks was to inspect and register all the books that arrived in the New World and to confiscate those that were on the lists of forbidden books. The owners of these were tried and convicted by the Holy Office (Reyes, 2000). Although the exact number of books that arrived in the New World is unknown, it is calculated that it amounted to many thousands of copies, some of the titles and authors of which were registered in the lists made by the *Casa de Contratación*. In many of these records, the simple way in which these books had been bound is mentioned. Thanks to this it is possible to know that there were books that arrived in parchment, in *badanas*, in *tablas*, or in *papelón*⁶³ (Fernández del Castillo, 1982; Leonard, 1996; Mazín, 2007). Since these books were the stock of New Spain's libraries and bookshops, and were within the reach of students, teachers and the literate public, it may be assumed that they provided examples to be followed by all those who learnt, taught and performed the art of bookbinding.

The libraries in New Spain were founded by the civil or secular and clerical personnel who arrived in the New World as designated by the Crown, and who brought with them their personal libraries, such as that of Antonio de Mendoza, first viceroy of New Spain, who 'trajo [a México] en sus efectos personales una caja con doscientos libros' (Leonard, 1996, p. 90) [brought [to Mexico] in his personal possessions a box with two hundred books]. In addition, with the establishment of monastery schools, the friars in charge, such as Bishop Fray Juan de Zumárraga, took on the task of accumulating the required texts for the evangelisation and education of the indigenous. Both notables requested the authorisation to establish a printing press in Mexico City, with the aim of expediting the process of evangelisation and the education of the indigenous. Charles V agreed to this in

⁶³ **Badana:** sheep skin (*Enciclopedia de la encuadernación*, 1998); **en tablas:** this refers to the books that had wooden boards; **papelón:** a thick paper made by hand. In the absence of any recorded example of Spanish binding in paper at this date, this suggests the importation of Italian books (Pickwood, 2010. pers. comm.).

1539, the date of the founding of the 'primera imprenta en México y en el continente americano, primera imprenta de tipos móviles fuera de Europa' (Fernández de Zamora, 2009, p. 38) [first printing press in Mexico and in the American continent, the first printing press using movable types outside Europe].

Juan Cromberger, a printer of German descent, who was established in Seville, accepted the commercial proposal to found the first printing press in Mexico City and sent his employee and representative, Juan Pablos⁶⁴ who would become the first printer in New Spain. Although the colophon in his early books state that they were printed in *Casa de Juan Cromberger*, from 1548 they were printed *En casa de Juan Pablos*.⁶⁵ Other printers followed in the sixteenth century, such as Antonio de Espinosa, Pedro Ocharte, Pedro Balli, Antonio Ricardo, Enrico Martínez and Melchor Ocharte, Gerónima Gutiérrez (widow of Juan Pablos), María Sansoric, (the widow of Pedro Ocharte), Cornelio Adrián César and Luis Ocharte Figueroa (Pompa y Pompa, 1988; Stols, 1990; Fernández de Zamora, 2009).

The books that were intended to be printed in Mexico⁶⁶ had first to be approved by the ecclesiastical and viceregal authorities. In addition, the raw materials for printing were scarce and therefore expensive. In spite of such difficulties, in the sixteenth century Mexico City produced 'el más antiguo patrimonio impreso fuera de Europa...los impresores novohispanos lograron producir importantes obras por su contenido y bellas por su aspecto exterior' (Fernández de Zamora, 2009, p. 50) [the most ancient legacy of printed heritage outside Europe...New Spain's printers were able to produce important works in terms of content and beautiful in their external appearance].

Many works on varied subjects emerged from the Mexican printing presses, as well as some with a precise aim, which was to impose a new culture in place of the existing one, and to achieve at the same time, a rapid conversion of the indigenous to the Catholic faith. The printing press was therefore used for the first time in history as a weapon of conquest (Fernández de Zamora, 2009), in this case the conquest of Mexico.

As has been described, the sixteenth century in Mexico was a time of the encounter of two cultures that would give rise to a new society under the framework laid down by the Crown. The introduction of the printing press made available a large number of copies of books for the evangelisation of the indigenous. It is therefore likely that, given the rapid production of books and the immediate need to put them in circulation, the work of

⁶⁴ Also known as Giovanni Paolis he worked as a printer from 1539 to 1560.

⁶⁵ The inscriptions mean that they have been printed by the firm of *Juan Cromberger* and *Juan Pablos* respectively (Griffin, 1991).

⁶⁶ Only in Mexico City as it was the only city with printing-press in New Spain during the sixteenth century.

bookbinders in Mexico in the sixteenth century must have increased considerably, as from a purely practical point of view, binding makes a book readable as well as giving it protection. Proof of this can be evidenced by the fact that all of the books that have survived that belonged to libraries in New Spain in the sixteenth century and that were produced in Mexico are bound. The raw materials used in the manufacture of these books and the people who bound them, are described in next chapter.

CHAPTER TWO

BOOKBINDING CRAFT IN MEXICO DURING THE SIXTEENTH CENTURY

As has already been mentioned, the desire to integrate indigenous people into the culture and traditions of those of Spanish origin who were defining the new society of New Spain not only included the conversion of the indigenous to Christianity, but also involved teaching the indigenous those crafts and skills with which they would be able to earn a living under the new economic order. To achieve this, teachers were imported to New Spain with knowledge of the crafts that they had already practised in their countries of origin. This meant that the indigenous were not only able to learn easily elementary skills such as the alphabet, basic mathematical operations and the catechism, but they also learnt a number of crafts that were taught by the Spaniards.

To prevent the colonies in the New World becoming self-sufficient, the provision of raw materials in New Spain was monopolised by the Spaniards. In order to achieve this, the Spaniards strictly controlled all goods that were shipped to the New World and kept an inventory of those goods that managed to arrive safely. However, the provision of goods from Europe was neither sufficient nor efficient and the high costs of transport and of added tariffs resulted in very high retail prices that only a small minority were able to afford. All of these circumstances had the result that the commerce in overseas products slowly ended up in the hands of smugglers who were able to sell the various merchandises at a lower price by avoiding charging the taxes levied by the Crown. The supply of these goods was, however, subject to the variable availability of the illegal goods and this meant that often the available products were not the ones that were needed at any particular time (Lenz,1990).

In the specific case of the materials and tools that could have been used in the manufacture of books, these were subject to the same circumstances of availability as other goods. However, the raw materials and indigenous tools that were used for the manufacture of indigenous arts and crafts were, in some cases, also used for the manufacture of the everyday objects that were required by the European settlers. Materials and tools of both indigenous and European origin were used without distinction until the point where those that proved to be more suited to the various crafts were finally chosen.

2.1 TUTORS AND PUPILS

According to Pettas (1995), Spanish bookshops from the sixteenth century were places that contained a warehouse where the books that were destined to be sold were

kept; they may also have had a printing and a bookbinding workshop and a retail space in which it was possible to purchase printed books, parchment and paper.

Madurell i Marimón (1955) states that during the sixteenth century, booksellers in Barcelona were merchants of stationery such as parchment, blank books, paper and writing materials, to which later on were added the selling of manuscripts and printed items.⁶⁷ This author affirms that, once the printing press was established in the city, some of these merchants ventured into the printing business. It is also mentioned that bookbinding was so tied to the job of selling books that in order to belong to the Guild of San Jerónimo (the booksellers' guild), it was also required that a bookseller should be able to bind books.

This description of the trade of bookseller is supported by Castañeda (1949, p. 313), who notices that:

en el siglo XVI, como en el inmediato posterior, tanto en España como en el extranjero, lo mismo significaba la denominación de librero que la de encuadernador. En los asientos de los contratos para aprendizaje de la librería, la mayor parte de las cláusulas se refiere a la obligación que contrae el maestro de enseñar al nuevo discípulo el arte de encuadernar.

[in the sixteenth century, as well as in the following one, both in Spain and abroad, the job of bookseller and that of bookbinder meant the same. In the articles of the contracts for learning the book trade, most of the clauses refer to the teacher's obligation to instruct his new disciple in the art of bookbinding].

According to Checa Cremades (1998), the introduction of the printing press led the booksellers or printers to distinguish their work from that of the bookbinders. This happened as a consequence of concentrating the processes of the distribution of, and trade in, books in places of high demand, such as universities. Further he suggests that because transportation costs were high, selling unbound books became a commercially useful option. This resulted in the establishment of bookbinding workshops in the literary or teaching centres themselves.

During this period many Europeans arrived in the New World looking for economic opportunity. In order to obtain migratory permits to travel to the New World, it was necessary to present documents that corroborated the nationality and the intentions of those who attempted to emigrate to the New World. As part of the process, a statement

⁶⁷ An example of this combination of crafts is shown in the documents: AGI/INDIFERENTE 425, L.24, F.39 (Madrid,1516) where it requests payment for Mateo Sánchez, bookseller, for one bookbinding; AGI/INDIFERENTE 425, L.24, F.366r (Madrid, 1567) where it demands that Antonio de Cartagena pays Pedro Ordóñez, bookseller, for two bound blank books that he sold and in the AGI/INDIFERENTE 424, L.22, F.523V. (Valladolid, 1553) where they request the payment to Francisco López, bookseller, for the bookbinding of nine volumes of ordinances.

was required from witnesses who could ratify the intentions of the interested party. In order to fulfil this requirement, Jaime Robles, a bookseller, originally from Valladolid, presented as witnesses Diego de Córdoba, printer of books, Pedro Pérez, bookbinder and Pedro de Osote, bookseller.⁶⁸ The identification of the occupations of these witnesses supports the statement by Checa Cremades (1998) given above, because it differentiates each of the activities that were involved in the book trade at that time.

The registers of the passengers to the New World show that there were booksellers who requested permits to travel to New Spain with the aim of establishing themselves and seeking their fortune. Such are the cases of Pedro Treviño and Antonio Vivas, who were authorised through Royal Charters that were sent to the officers of the *Casa de Contratación* dated the 3rd of March 1573 and 24th July 1576 respectively, binding themselves to perform their craft.⁶⁹

Another instance is that of Pedro Balli, originally of Salamanca, who arrived in Mexico as a bookseller in 1569 and worked as a printer in Mexico from 1574 to 1600. He was hired by the Holy Office to carry out the work of printer, bookbinder, bookseller, and ink supplier, activities designated as belonging to the job of bookseller in Barcelona during the sixteenth century (Madurell i Marimón, 1955; Fernández de Zamora, 2009).

Another printer of books who was active in Mexico from 1577 to 1579, was Antonio Ricardo. Originally from Italy, he established his workshop at the *Colegio de San Pedro y San Pablo*, which was administered by the Jesuits (Cid Carmona, 2006). His wife, Catalina Agudo, requested permission to travel to New Spain with the aim of joining her husband. In order to confirm her family data and the pureness of her blood, Pedro Hernández, bookseller, declared that he had known Señora Agudo and her husband Antonio Ricardo who had their house and shop in the town hall of Toledo, where he worked with them as a bookseller. He confirmed that Antonio Ricardo had a house and a shop in Mexico where he was a bookseller.⁷⁰

Considering the descriptions made by Castañeda (1949) and Madurell i Marimón (1955), cited above, of what was required for the job of bookseller in Spain, it is likely that the booksellers who arrived in New Spain in order to perform their craft had brought with them the bookbinding skills that were used in Spain at the time of their emigration and that it had been they who taught this trade in Mexico. However, as has been mentioned in Chapter one,⁷¹ bookbinding was one of the crafts that the religious

⁶⁸ AGI/ CONTRATACIÓN 5250, N.2, R.41 (1594, Valladolid).

⁶⁹ AGI/INDIFERENTE 1968, L.19, F.102v. (3 de marzo de 1573, Madrid) and AGI/INDIFERENTE 1968, L.21, F.73v. (24 de julio de 1576, San Lorenzo el Real).

⁷⁰ AGI/CONTRATACIÓN 5225A, N.2, R.19. (7 de junio de 1576).

⁷¹ See section 1.2.1. Education and craft development.

orders taught the indigenous at the *Colegio Imperial de Santa Cruz de Tlaltelolco*, whilst the involvement of the Spanish booksellers who had arrived in New Spain in teaching this craft is, for the time being, no more than a possibility.

As students, the indigenous had a natural capacity to be taught. The first Spanish chroniclers recognised the orderliness with which life was conducted before the arrival of the Spaniards, as well as the ability to reason possessed by the indigenous. Mendieta in a memorandum sent to father Fray Diego Valadés⁷² says that he considers 'que el talento y la capacidad de los indios comúnmente es como de mozuelos hasta diez o doce años...hallaos como una cera blanda, apto para imprimir en ellos cualquier buena doctrina' (García Icazbalceta, 1971, pp. 8, 11). [that the talent and capacity of the indigenous is commonly such as one of young men of ten or twelve years old...they are like soft wax open to instil in them any good doctrine]. Fray Bernardino de Sahagún (1999, p. 578) affirms that 'en los oficios mecánicos son hábiles para aprenderlos y usarlos, según que los españoles los saben y los usan...tienen habilidad para ello y lo aprenden y lo saben, y lo enseñan, y no hay arte ninguna que no tengan habilidad para aprenderla y usarla' [as regards mechanical crafts, they are skillful in learning them and using them, according to how the Spaniards know them and use them...they have skills for that and they learn them, and they master them and they teach them, and there is no art for which they have no skill to learn and to use]. The crafts that the indigenous performed in pre-Hispanic times required manual skills and technical abilities that were reflected in the ability of indigenous to learn and perform with ease the various crafts taught by the Europeans, amongst which was bookbinding.

The tools that were used for the practice of the indigenous forms of arts and crafts, were made by the indigenous themselves, from both organic materials and metals, and they were complemented or transformed by European influence (Acosta, 1985; Motolinía, 1971). While the diversity of tools and materials used for the different types of work is vast, this thesis will only look at those that might have been used in the craft of bookbinding during the sixteenth century in Mexico.

2.2 TOOLS⁷³

Sahagún (1999) points out the existence of knives made of obsidian, cut and shaped in a variety of forms according to the uses for which they were intended and he adds that, amongst other things, they were used to shave the fur of animals. Also, in the

⁷² Document from the sixteenth century (without an exact date) published for the first time in 1886 by Joaquín García Icazbalceta in *Nueva colección de documentos para la historia*.

⁷³ The tools listed on page 23 should be added to the list of tools described here.

description made of the various tools used by those who exercised feather art, he mentions metal knives. As with other metal utensils, the steel knife was introduced by the Spaniards during the sixteenth century and its use was quickly popularised because of its double purpose both as a tool and a weapon, as well as being more durable and resistant (Cortés, 1935).

The use of needles for sewing was common amongst indigenous artisans. The ends of the maguey cactus⁷⁴ leaves were used as needles, awls and nails (Motolinía, 1971; Clavijero, 2003). Some archaeological studies show the existence of needles and awls made from copper alloys (Hosler and Macfarlane, 1996). Sahagún (1999) confirms the manufacture of these tools, mentioning that the blacksmiths and needle-makers were those who made needles, axes and awls amongst other tools. It is possible that sharp instruments made out of stone, as well as the needles and awls made from maguey cactus, continued to be used until they were fully replaced by metal tools of European origin.

Despite the fact that New Spain was rich in iron deposits, they were only exploited after the Spaniards taught the indigenous how to do so. Up to that time the iron that was available in New Spain was imported from Spain (Cervantes, 1982; Márquez Rodiles, 2001). It was used to manufacture bolts, latches, keys and the necessary ironwork for securing doors and windows; it was also widely used for making weapons (Cervantes, 1933). As a consequence of the spread of the use of this metal, the indigenous began to manufacture tools of European origin, such as scissors, which arrived in New Spain during the sixteenth century. Once their use and mode of operation was understood, the artisans who were working in New Spain began to manufacture them by imitating European models (Cortés, 1935).

The hammer was another tool frequently used in various enterprises. The indigenous made them from a variety of volcanic stones and their size and form varied according to the use for which they were intended (Sánchez Montañés, 1990). With the arrival of the Spaniards, hammers began to be made out of metal and, according to Sahagún (1999), it was the blacksmiths who were in charge of their manufacture. The job of blacksmith was regulated by the *Ordenanza* of the 6th of April 1568, and the hammer was one of the instruments that was allowed to be manufactured according to this law (Barrio Lorenzot, 1921).

⁷⁴ *Agavaceae* is the family that includes approximately 310 species, 272 of which are found in Mexico; as a result, Mexico is recognised as the source of this type of genera. Amongst the plants included in this family and that are of relevance to this study are: **henequén** (*Agave fourcroydes*), **maguey cactus** (*Agave lurida*) and **ixtle** (*Agave lophantha* variety *poselgaeri* and *Agave heteracantha*). These are perennial plants, formed on stalks with fleshy, thick leaves that form a rosette at soil level and it is normally these leaves that have thorns at the edges which vary in colour depending on the species (Matthews, 1947; Granados Sánchez, 1993; Arroyo Ortiz, 2008).

Finally, Fray Bernardino de Sahagún (1999, p. 529) mentions that the artisans who specialised in feather art, used a 'plegadera de hueso' [bone folder] to secure the feathers in the desired places. This shows the existence of this ubiquitous bookbinding tool in New Spain.

2.3 PAPER AND PAPER BOARD

Paper was used to form the textblock.⁷⁵ It was also used for endleaves⁷⁶ and spine linings whilst paper board was used for book boards.

The indigenous made paper from vegetable fibres from plants such as the maguey cactus (also known as *metl*),⁷⁷ the amate (called *amatl* or *amaquauitl*)⁷⁸ and cotton (Sahagún, 1999; Clavijero, 2003; Motolinía, 2007). Clavijero (2003, p. 350) says of the indigenous paper that '...es bastante semejante al cartón de Europa, aunque mucho más blando y liso y se puede escribir cómodamente' [...it is quite similar to European paper board, although it is a lot softer and smooth and on which it is possible to write comfortably]. In some codices, the indigenous used this paper as a material for writing on (Motolinía, 1971; Lenz, 1973; León Portilla, 2003).

After the introduction of European paper to New Spain, the indigenous paper or *papel de la tierra* [paper of the earth] as it was called by the friars, continued to be used because the shipments from the Crown were not frequent enough or sufficient to satisfy the need for this material. The missionaries used it for the manufacture of the first catechisms, and it was also used for property deeds and the complaints that the indigenous made against the Spaniards, because the indigenous would be able to identify what was written on this material as their own and authentic (Vander Meeren, 2008. pers.comm.; Sánchez Bueno de Bonfil, 1993).

European paper arrived in New Spain with the Spanish conquerors (Lenz and Gómez de Orozco, 1940). These men, as well as the senior officers in the ships, wrote registers, diaries and memoirs which made use of the paper that they brought from their places of origin. However, as New Spain was being formed, the need for paper increased. The bureaucracy of New Spain had to be supplied with large quantities of this product because it had to record meticulously all the activities and to send detailed

⁷⁵ See Glossary.

⁷⁶ See Glossary.

⁷⁷ See footnote 74.

⁷⁸ From the Nahuatl *amatl*, is a tree that belongs to the Moraceae family and it is abundant in the warm regions of Mexico (*Diccionario de la Real Academia Española*, 2001). The paper is obtained from the internal bark of the tree trunk.

reports to Spain. On the other hand, the conversion to Christianity, which was a primary objective of the Spaniards, happened slowly, due, amongst other reasons, to the scarcity of paper (Sánchez Bueno de Bonfil, 1993).

All these circumstances made it desirable to consider the possibility of establishing a paper mill in New Spain. Fray Juan de Zumárraga, in a document written between 1532 and 1534, tells the Council of the Indias that it would be of great use to have available a paper mill and a printing press in New Spain (Lenz and Gómez de Orozco, 1940). Although the result of this particular petition is unknown, it is understood that the first recorded mill established in New Spain is the one recorded in the *La Relación de Culhuacán* dated the 17th of January 1580, which stated that there was a paper mill in the local monastery of the village (Lenz and Gómez de Orozco, 1940). Lenz (1990) writes that the production from this mill must have been limited and that the number of sheets produced was insignificant compared to those produced and imported from Europe.⁷⁹

However, the Crown kept the monopoly of paper manufacture and its commerce in New Spain which hindered the development of this industry on both sides of the Atlantic with the result that this material had to be supplied by European mills and taxes would then be due (Lenz, 1990).

The situation of the paper industry in Spain had a direct effect on that of New Spain. The supply of cloth was not enough to satisfy the demand of the Spanish mills, for which reason the production of paper was small. Lenz (1990) states that New Spain became a source of cloth for Spain, where it was sent with the aim of being processed and then sent back as paper. If that was the case, it is possible that the time taken by, and the insecurity of, the transatlantic journey would not have allowed the raw materials to arrive on a regular basis in Spain. According to Fryer (2000), a series of unfortunate events such as the refusal on the part of Spanish monarchs to grant support to the Catalan paper producers, a devastating plague, and permission to export cloth to Italy on a duty-free basis, became factors that contributed to the domination of the industry by Italy. On the other hand, the constant wars in which Spain was involved meant that there was also an economic and human deficit for the Crown. The loss of men to the wars and at the same time the expulsion of the Moors and the Jews contributed to a reduction of manpower and lack of commerce; there was a considerable reduction in Spanish artisanal production, which included the manufacture of paper (Valls i Subirá, 1980).

⁷⁹ The author mentions a number of 10,000 sheets in a format of 35 x 45 cms, but he does not specify how long it took to make this quantity of paper (Lenz, 1990).

According to Lenz (1990), both the problem of the provision of cloth as well as that of constant wars, forced Spain to acquire paper from Italy and France.⁸⁰ This was done to fulfil the existing demands for such a raw material, not only in Spain but also in the New World. The paper that arrived from the various European nations would be loaded in Seville and then exported to the New World, as happened with all other merchandise and people who travelled to the New World (Valls i Subirá, 1980).

Once the paper arrived in New Spain, it could be purchased in the various markets. The paper could be acquired in a number of quantities (Carrera Estampa, 1949, p. 19):

1 balón [bale]= 20 resmas [reams]= 10,000 pliegos [sheets]
1 resma [ream] = 20 manos [hands]= 500 pliegos [sheets]
1 mano [hand] = 25 pliegos [sheets]
1 cuaderno [quire]= 5 hojas [leaves]

Although Carrera Estampa (1949) states that the indigenous were responsible for selling paper, not only indigenous paper, but also that from Spain, it is possible that this material was also sold by booksellers.⁸¹

Another type of paper that was available in the markets of New Spain was the paper that was already printed or had some kind of writing on it and was sold as 'waste' paper. Reyes (1948, p. 37) states that '...la carestía de papel hizo que en épocas de escasez, se echara mano de lo que había impreso, y se destruyeran muchas obras...' [...in times of scarcity, the shortage of paper brought about that people made use of what was already printed and many works were thus destroyed...]. This assertion suggests that books and paper that for any reason had become redundant might be re-used in the binding of other books.

With regard to boards, León (1902) states that indigenous paper was used to make the boards used on some books bound in Mexico during the sixteenth century. The author reports having found that the boards of a Mexican work printed in 1539 were formed by 'una superposición de hojas impresas de papel europeo, alternado con otras tantas de papel de maguey mexicano...' (León, 1902, p. 69) [layering and adhering together sheets of printed leaves on European paper, alternating with others of paper made out of Mexican maguey cactus...]. Lenz and Gómez de Orozco (1940, p. 34) also mentions possessing a Mexican manuscript from the sixteenth century, whose boards 'están formadas por sucesivas hojas de grueso papel de maguey..., abiertas estas hojas con

⁸⁰ The author also mentions England which is hard to believe because the paper industry in England during that time was not large enough to export paper to other countries. According to Middleton (1996), paper used to print books in England in the sixteenth century was imported. Furthermore, if this was the case, the paper must have been transported to Seville in order to be shipped to the New World. As a consequence, the cost of the paper should have been very high.

⁸¹ See pages 33 and 34.

cuidado, despegando unas de otras, encontré que las interiores contenían escritura...’ [are formed by successive sheets of thick maguey cactus paper...once I had carefully opened these and peeled them apart, I found the ones inside contained writing...]. Mendoza Díaz-Moroto (2002) mentions independently that during the process of the restoration of a Mexican printed book from the sixteenth century, they found that the paper boards consisted of printed sheets that had been pasted together.

2.4 TEXTILE FIBRES

In the books analysed it was possible to identify fibres of cotton, hemp, linen, silk, jute and agave, were used for sewing thread, sewing supports, endband cores⁸² and endband thread. As will be explained below, these fibres are both indigenous and imported.

Pre-Hispanic cultures had a strong tradition of making textiles, and they used to manufacture threads from cotton, maguey cactus and ixtle.⁸³ The crafts of the spinner and weaver were well established, they knew how to use the spindle and they formed hanks of thread to sell in markets (Sahagún, 1999; Cortés, 2007; Motolinía, 2007).

With the arrival of the Spaniards, the textile industry changed because new fibres such as silk and wool were introduced. With the introduction of scissors and iron needles, with the improvements in the use of the spindle and the spread of European manufacturing methods, the quality of thread improved. This artisanal industry was definitely altered as a consequence of the establishment of textile mills for wool and workshops for weaving cotton;⁸⁴ some of the indigenous, both men and women, who had family or larger workshops, became purveyors of thread (Florescano, 1981; Torres, 1989; Miño Grijalva, 1993a).

Cotton was one of the plants most commonly cultivated by the indigenous. Sahagún (1999) describes how the merchants sold it in the form of buds and that it was available in a range of grades and prices. Cotton-based textile activities were shared between the indigenous and the Spaniards during the sixteenth century: the former growing, de-seeding and spinning it, whilst the dyeing and weaving was the work of the Europeans (Florescano, 1981).

⁸² See Glossary.

⁸³ See footnote 74.

⁸⁴ An *obraje*, by definition is: ‘casa donde los indios hilan y tejen’ (Miño Grijalva, 1993a, p. 22) [a place where the indigenous spin and weave]. For the purposes of this thesis the word ‘mill’ is used, which is the English equivalent for the generic term.

Fray Juan de Zumárraga was concerned about the poverty in which the indigenous lived, thought that a remedy would be to provide the Spaniards with all kinds of goods that would be available in their European lands and to procure for the indigenous the means for the use of agriculture and animal husbandry. Zumárraga requested the Council of Indies to send large quantities of hemp and linen seeds, as well as people who could teach the indigenous how to cultivate, spin and weave them, because this would be useful, particularly on the coasts, where it was needed for the ships (García Icazbalceta, 1947). This information coincides with the Royal Charter sent to the officers of the *Casa de Contratación* of 1537, in which it is requested in the name of the King that linen and hemp seed be sent to the Viceroy and to the Bishop of New Spain, so that they can experiment with their use. It is also requested that a person should be sent to teach them everything related to such plants.⁸⁵

Although during the sixteenth century a number of attempts was made to grow linen and hemp in New Spain as it grew easily in that terrain, it was not until the end of the eighteenth century that its cultivation and use were finally recognised and production of these fibres became established in New Spain (Serrera Contreras, 1974; Urquiola Permisán, 2004).

With regard to silk, it can be said that its use and production had a similar history to that of linen and hemp. De Maria y Campos and Castelló Yturbe (1990) record that there are various versions of the history of the introduction of silk into New Spain, but it is a fact that by 1531, the industrial production of silk was completely established. According to Motolinia (2007), the rapid growth of the production of silk was due to the fact that both silk worms and the mulberry trees needed for their breeding grew well under local conditions.

The work of the harvesting and its processing was divided as: the indigenous were responsible for feeding the silkworm larvæ with mulberry leaves and looking after them until they formed their cocoons. Women were in charge of spinning so that the silk could be sold raw in hanks, whilst the dyeing and the weaving were activities reserved exclusively for the Spaniards (De Maria y Campos and Castelló Yturbide, 1990). The production was so large that by the second half of the sixteenth century, it was expanded to Guatemala, Peru and Nicaragua (Romandía, 1989).

Although the silk industry had all the elements of a prosperous business, with a favourable effect on the economy of New Spain, by 1576 it had fallen into decay. The indigenous labour that was so abundant at the beginning was drastically diminished

⁸⁵ AGI/ INDIFERENTE 1962, L.5, F.275r. (26 de octubre de 1537, Valladolid).

because of epidemics from 1575 to 1577 and from 1581 to 1592; this happened at the same time as the abolition of indigenous slavery in the mid-sixteenth century. Another important reason was the development of commerce with the Orient through the Manila Galleon, which brought amongst other merchandise, silk (mainly Chinese), in hanks of various colours, as well as embroidered and plain silk fabrics that were of lower quality and thus cheaper than those available in New Spain (Romandía, 1989; De Maria y Campos and Castelló Yturbide, 1990).

2.5 ADHESIVE

Adhesive was used either to attach one binding component to another or to reinforce others. This was the case in the attachment of the endleaves to the textblock, to attach the pastedowns to the cover and, in books bound in boards adhesive, was used to attach the cover to the boards and to secure the turn-ins⁸⁶ of a full leather cover. In the case of the spine,⁸⁷ adhesive was used to reinforce and consolidate it. In instances where linings are present, an adhesive was used to attach them to the spine-folds⁸⁸ of the textblock. Adhesive was also identified in laminated boards⁸⁹ where it was used to glue one sheet to the other. Finally adhesive was occasionally used to secure the ties⁹⁰ to the inside of the cover.

Sahagún (1999) describes that there were those who sold paste⁹¹ in New Spain and from the description of the product (one that contained dried and ground roots, maize and beans), it can be assumed that this refers to an adhesive of vegetable origin. Motolinía (1971) indicates that the indigenous applied paste-based adhesive to indigenous paper for the purpose of producing a surface on which they would be able to paint.

León points out that when he separated the leaves of a board in water from a binding on a Mexican printed book of the sixteenth century, he noticed that the sheets were stuck together with 'un pegamento de harina de trigo, groseramente triturado éste y mezclados todos sus productos (almidón, granillo, salvado)' (León, 1902, p. 69) [made out of wheat flour, that was coarsely ground, with various additional components mixed with it, such as starch, small grains and bran]. An explanation for this kind of paste may be found in Sahagún (1999), who discusses the selling of flour, the raw material for

⁸⁶ See Glossary.

⁸⁷ See Glossary.

⁸⁸ See Glossary.

⁸⁹ See *adhesive-laminated boards* in the Glossary.

⁹⁰ See Glossary.

⁹¹ See Glossary.

making paste, which could allegedly be found in a variety of qualities according to how finely it was ground.

It is clear from these accounts that the use of paste was common in New Spain and that it was used by the indigenous from before the arrival of the Spaniards. In a study undertaken by Martínez Cortés (1970) on pre Hispanic adhesives, he explains that the glues used by the indigenous, apart from the paste that has already been mentioned, were also of vegetable origin, mostly extracted from orchids.

2.6 WOOD

Wood was found to have been used for wooden boards.

As with many other aspects of the natural world, Sahagún (1999) described the trees that grew in the newly-discovered lands and the uses that the indigenous made of some of them. In his work he mentions two main groups: large trees, and medium-sized wild trees. In the first group, he included the cypress, the *oyametl*, pines, ash, cedars and oak. He placed willow, palms and some other trees that he did not know in the second group, as well as other trees that he did not know and hence refers to them in Nahuatl. Clavijero (2003) adds ebony, fir, poplar, elm, beech and walnut, that he recognised as species that also existed in Europe. He was aware of the existence of 'otras innumerables maderas apreciables por su incorruptibilidad, su peso y consistencia, por su docilidad, por la belleza de su color o por su fragancia' (Clavijero, 2003, p. 24). [other innumerable types of wood valued for their resistance to rot, for their weight and consistency, for the ease with which they can be worked, for the beauty of their colour or for their fragrance]. Motolinía (2007, p. 223) notes that in the hills and mountain ranges that surround Mexico '...hay pinares muy grandes, y la madera es en extremo buena, y tan hermosa que cuando la labran parece de naranjo de boj' [... there are very large pinewoods and the wood is extremely good and of such beauty that when they carve it, it looks like orange boxwood]. This author, like Clavijero (2003), also reported the existence of a large number of tree genera that were unknown to the Spaniards.

The indigenous knew the qualities of different woods very well and the use that they could make of each one of them. The indigenous who worked as carpenters, knew how to cut beams and other shapes, using axes and they used saws to cut the branches of the trees. They also had to have sufficient skill to square the planks that were used in construction and to joint the pieces of wood to make a variety of objects (Sahagún, 1999).

The wood could be bought from timber merchants who sold timber from cypress, cedar and pine, as well as selling the wood in planks, pillars and posts. This merchandise was for sale in the markets where there was a trade in logs or in any of the forms already mentioned (Díaz del Castillo, 1961; Sahagún, 1999; Cortés, 2007).

The Spaniards added to this the use of wood in other areas, such as sculpture, which was mainly for religious imagery and for altarpieces, and for domestic and church furniture, doors and windows and for musical instruments, as well as for some tools for other uses. This craft was ruled under the *Ordenanza de carpinteros, entalladores, ensambladores y violeros* [Ordinance of carpenters, carvers, assemblers and violin-makers], from 1568. It specifies the conditions for buying and selling wood as a raw material in beams and planks, as carved or un-carved small planks, as well as finished works, such as chairs, tables, boxes and desks (Barrio Lorenzot, 1921; Motolinía, 1971).

2.7 LEATHER AND PARCHMENT

In the books analysed, leather was found to have been used for covers, endband cores, sewing supports and for tie-fastenings, whilst parchment was found as covers and spine linings.

In the eleventh book of the Florentine Codex, Sahagún (1999) describes the animals that lived in New Spain, naming many of them in Nahuatl and comparing them to those existing in Spain. The skins of some of these animals were tanned in order to use them for various purposes. In Hernán Cortés's second letter (2007, p. 78), he relates that in the market they sold 'cueros de venado con pelo y sin él: teñidos, blancos y de diversos colores...' [skins of deer with and without hair: dyed, white and of various colours...]. This information coincides with what is described by Mendieta (1997). Díaz del Castillo (1961, p. 78) adds that in the market of Tlaltelolco it was possible to acquire '...cueros de tigres, leones y de nutrias, y de aves y venados y de otras alimañas, como tejones y gatos monteses, de ellos adobados, y otros sin adobar...' [...skins of tigers, lions, otters, birds and deer and of vermin, such as badgers and wild cats, some of these tanned and others untanned...]. Later on he adds that they also had canoes full of human excrement that they used to process salt or to tan the skins (Díaz del Castillo, 1961). Clavijero (2003, p. 365) says that the indigenous, from before the arrival of the Spaniards, 'curtían y adobaban muy bien las pieles de los animales, así cuadrúpedos como volátiles, dejando en unos el pelo y la pluma y quitándola de otras, según sus diferentes destinos' [tanned the skins of the animals very well, both four

legged as well as of the flying kind, leaving on some the fur and the feather, and removing it from others according to their different intended purposes].

Extracts from plants and trees that are rich in tannins are used as tanning agents . The Maldonado Alvarado brothers (2004) made a study of leather used as a material for writing on in pre-Hispanic codices, and noted that other easily available tanning agents could have been used, including derivatives of different woods and their products, because the indigenous knew their properties very well, as well as the uses of extracts from plants.

In the narrative that Mendieta (1997) gives about the skins that were treated by the indigenous, he explains that they were of various colours, including white, and he adds that their texture was so soft that in those days they used them for the manufacture of gloves. As described above, it is possible that the white skins were alum-tawed skin,⁹² because, as Sahagún (1999) and Motolinia (1971) mention, alum⁹³ was abundant in the lands of New Spain.

Among the uses that the indigenous made of the skins was as a material for writing on in some codices, and jaguar skin was used for their covering (Fernández Serna and Vite Bonilla, 1986; Arellano Hoffmann, 2002; León Portilla, 2003). Sahagún (1999) gives a brief description of a number of crafts practised by the indigenous in which they made use of leather; these included those who sold *cotaras* (a kind of sandal), those who sold cases and those who made bags. Mendieta (1997) says that they made footwear with these skins. Clavijero (2003) includes tapir skin, which was resistant to arrows and bullets, which suggests that they used it in the manufacture of shields and military clothing. Amongst the presents sent by Hernán Cortés to Charles V in about 1529, were leather shoes, tanned skins of birds with feathers and other animals with fur. This demonstrates that the craft of tanning and of working with skin and leather was well known to the indigenous.

As has already been mentioned, from the moment that the Spaniards established themselves in the New World, new animal species that did not previously exist in New Spain were introduced. Acosta (1985) as well as Clavijero (2003) differentiate between the *old* and *new*, the former being the ones that were domesticated before the Spanish arrival, and the latter are those which were introduced to New Spain in the sixteenth century. Amongst the species that already existed in New Spain there are lions, tigers, mountain cats, jaguars, martens, rabbits, hares, coyote, dogs, monkeys, deer and

⁹² See Glossary

⁹³ Alum: double sulphate of aluminum and potassium.

mice, amongst others. Amongst those that arrived with the Spaniards, there are references to bulls, cows, sheep, goats, pigs and dogs.

Larger and smaller farm animals were introduced from the Antilles to New Spain, pigs being the first, in 1521, followed by sheep in 1525 and finally cows in 1526. The proliferation of cows, pigs, sheep and goat was so fast that by the end of the sixteenth century, these animals could be found without difficulty in New Spain. From these animals it was not only the meat that was used, for human consumption, but the skins and the wool were also used, for the manufacture of clothing. Pack animals such as horses, mules and donkeys helped in the development of mining, the textile industry and commerce in general. Animal husbandry became one of the most important economic resources in New Spain (Pereyra, 1920; Matesanz, 1965; Crosby, 1991).

Both the introduction of animal husbandry and its extensive development, as well as the arrival of European tanners, transformed the craft of tanning: the indigenous used skins of a different nature to those which the settlers were accustomed to tan and the indigenous tanning techniques were modified under the influence of those of the Europeans. Some of the uses that the indigenous gave to the skins were maintained, such as the manufacture of shoes, others completely disappeared such as their use as a material for writing on, and new ones were introduced, such as their use in the mines, for saddles and harnesses for horses and, in all probability, for bookbinding.

Motolinía (1971, p. 241) says that the indigenous have learnt to 'curtir corambre, como en Castilla...Este oficio comenzó en Mechuacan,⁹⁴ y allí se curten buenos cueros' [tan hides like in Castile...This craft began in Mechuacan, and there they tan good leather]. He adds that the indigenous knew how to do all that can be done with the skins, such as shoes and harness for horses.

In a letter sent by the Spaniard Alonso Ortiz, a resident of Mexico, to his wife in 1574, he tells her that he had to buy a black-African slave in order to help him with the tanning work, because the indigenous that knew the craft were all employed in other tanneries. This shows that tanning was one of the commonest jobs in Mexico, so much so, that once the local market was supplied with skins, the rest was sent to Spain (Otte, 1993). In 1587, Acosta (1985) says that 64,340 skins arrived in Seville from New Spain and he adds that these skins were some of the best merchandise that had been sent from the New World to Spain and that their quality was better than that left for local consumption.

⁹⁴ Also known as Michoacán. See Appendix 13, Map 3.

In Spain, those who sold meat and tanned leather tried to prevent skins from the New World from being tanned and sold, arguing that they were no good and this was to the detriment of the Spanish tanners. However, it was demonstrated by the merchants that in reality the reason for such a request was the fact that the skins from New Spain were of such good quality that the consumers preferred them to those of Spanish origin.⁹⁵

The commerce in leather between Spain and New Spain seems to have been fluid and on a large scale. Some documents found in the AGI mention these transactions and the problems that faced those merchants who bought skins in New Spain and attempted to sell them in Spain. There were also Spanish merchants who sent skins to New Spain, and amongst these were printers such as Jacome Cromberger and Jacome Alemán.⁹⁶

The craft of tanner in New Spain became regularised through the *Ordenanza de Curtidores* [Ordinance of Tanners] from October 1561. In this ordinance, although the tanning process is not described step by step, it does indicate the compulsory procedures and treatments that the different skins had to undergo according to their intended use. In the same manner, it legislated on the buying and selling of leather and tanning materials and the knowledge required of the personnel who carried out such work (Barrio Lorenzo, 1921). In a detailed description of the tanning process, Castro Gutiérrez (1986) mentions that some of the tanning agents used were the *tequesquite*, *zumaque* and *cascalote*;⁹⁷ and the tanned skins could include: *vaquetas* (bovine leather), *badanas* (leather made from sheep, rams or deer) and *cordobán* (from goat).

Parchment can be defined as ‘an animal skin which has been soaked, dehaired, limed and dried under tension on a frame’ (Ligatus, 2013). This material has been used for either handwritten or printed texts, as well as for the covers of books. According to Carrera Estampa (1949), this material was sold in New Spain in *embotijados* whose equivalent is eight dozen. However, we really do not know when this material was commonly available either on the New Spain or Mexican markets. As has been mentioned above, the craft of tanning was transformed by the Spaniards in the sixteenth century but whether the process of making parchment was introduced to New

⁹⁵ AGI/INDIFERENTE 1961, L.3, F.240r-v. (13 de marzo de 1535, Madrid); AGI/INDIFERENTE 1964, L.11, F.111R-V. (This document is incomplete and it lacks a date, but it can be dated to between the 18th of October and 9th of November 1548, which are the dates of the documents immediately before and after it in this register.)

⁹⁶ AGI/INDIFERENTE 1961, L.3, F.239r-v. (13 de marzo de 1535, Madrid); AGI/JUSTICIA 817,N.3. (16 de agosto de 1576, Sevilla); AGI/INDIFERENTE 420, L.10, F.11v-12r. (15 de julio de 1525, Toledo); AGI/INDIFERENTE 421, L.13, F.224v-225r. (25 de junio de 1528).

⁹⁷ **Tequesquite o sal de tequesquite**: from the Nahuatl *tequizquitl*: efflorescent stone, from *tetl* stone and *quizquitl* to spring. From *quizca* to rise, to spring. Saltpeter from lacustrine soil. (*Diccionario de la lengua española*, 2001); **Zumaque**: bush from the anacardeaceae family that is used as a tanning agent due to the large quantity of tannin that it contains (Moliner, 2007) **Cascalote**: American tree from the Mimosaceae family, very tall and thick, whose fruits are high in tannins and it is used for tanning and also in medicine as an astringent (*Diccionario de la lengua española*, 2001).

Spain is still uncertain. The earliest evidence that I have found so far is that of González Angulo Aguirre (1983) in which the author states that there were parchment-making workshops established in Mexico in the eighteenth century.⁹⁸

2.8 METAL

In the books analysed, metals are found in the clasp fastenings⁹⁹ of two books bound in boards.¹⁰⁰

Pre-Hispanic cultures had an extensive culture of working in metal. They knew how to work silver, gold, tin, copper and bronze (Bergallo, 1955; Sahagún, 1999). The Jesuit priest José de Acosta (1985, pp. 141-142) recorded that the indigenous assigned various uses to the different metals: ‘...de unos se sirven para la cura de enfermedades; de otros para armas y defensa contra sus enemigos; de otros para aderezo y gala de sus personas y habitaciones; de otros para vasijas y herramientas...’ [...they use some to cure illnesses; others are used for weapons and for defence against their enemies, others for the adornment of their person and their rooms; others for vessels and tools ...]. Copper was used for the manufacture of pans and vessels for domestic use. Tools and arms such as axes, machetes and weapons were made out of bronze, an alloy of copper and tin that was used instead of iron.

The selling of metals, like so many other things, took place in the markets where, according to Hernán Cortés (2007), it was possible to find jewellery made out of gold, silver and other metals such as copper, tin and brass. The techniques used for the working of the metals were hammering, laminating, embossing and cutting, amongst others (Bergallo, 1955; Sánchez Montañés, 1990; Sahagún, 1999).

The massive use of precious metals gained the Crown a valuable income with which to sustain their political activities. At first, the Europeans adopted the indigenous techniques for the extraction of gold and silver, later they introduced a process of amalgamation with mercury which accelerated the development of the mining industry (Mazín, 2007). As already mentioned, the use of iron was not known in the New World until the arrival of the Spaniards.

⁹⁸ See section 3.6 Cover (pages 150-151).

⁹⁹ See Glossary.

¹⁰⁰ Clasp fastening: B-16 and CB-44.

2.9 DYES AND INKS

Colours that could have been obtained from dyes were probably used for the decoration of the edges¹⁰¹ of the textblocks. The ink described below could be used for the writing of the titles (lettering) on the spines of the limp, laced-case parchment covers and probably for staining the leather.¹⁰²

In the traditional arts of the ancient Mexicans, the use of dyes was commonplace. These materials are frequently found in murals, textiles, ceramics and codices amongst other objects. The indigenous knew the dyeing properties of certain plants and animals very well, and they also obtained colours and pigments from certain minerals. Motolinía (2007) reports that the indigenous used flowers to obtain colourants. At the same time, Clavijero (2003) adds that apart from flowers, the colours were obtained from woods and leaves from various plants, from fruits and from mineral earth. According to Motolinía (2007) the best colours to be found in New Spain were red, blue and yellow. These pigments and dyes were amongst the merchandise that could be acquired in the marketplaces (Cortés, 2007).

During the colonial period, the marketing of these products was a monopoly controlled by the government who fixed prices to their advantage. Practically the whole production of these materials was exported to Spain and only a small percentage remained for local consumption (Castro Gutiérrez, 1986; Contreras Sánchez, 1996).

Some dyes were used for colouring skins and were also used in tanning agents; among these there are *palo brasil*¹⁰³ which dyes both red and black depending on how it is mixed with other dyes and pigments, the *huizache*,¹⁰⁴ which is a colouring agent that dyes in black or dark grey and was also used as a tanning agent and finally the *cascalote*,¹⁰⁵ which is a dark red dye that is also used in tanning (Castro Gutiérrez, 1986; Arroyo Ortiz, 2008).

¹⁰¹ See Glossary.

¹⁰² Although the variety of dyes and colours is extensive, only those that might have been used in the decoration of the books examined for this study will be mentioned.

¹⁰³ *Palo brasil* (*Haematoxylum brasiletto*): a tree whose leaves measure around 7-9 mm. The flowers are reddish or purple. Its wood contains brasiline, a colouring matter that produces a red hue through oxidation. The dye is obtained from the trunk and its colour is red, black, violet and purple (Sahagún, 1999; Arroyo Ortiz, 2008). It is also referred as *huitzquáuitl*, the Nahuatl word used by the indigenous.

¹⁰⁴ Huizache (*Acacia farnesiana*) is a thorny tree or bush. It has bipinnated leaves and the flowers are yellow or orange. The fruit is a sheath that can contain up to 40% tannins and contains galotannic acid, which is soluble in water. The dye is obtained from the sheath and its colour is black or dark grey (Arroyo Ortiz, 2008).

¹⁰⁵ See footnote 97.

Other dyes used were *grana cochinilla*¹⁰⁶ and *achiote*,¹⁰⁷ both of which were used to dye in different shades of red. In order to obtain a yellow colour the *girasol acahualli*¹⁰⁸ was used, as well as the *zacatlaxcalli*.¹⁰⁹ Purple was obtained from mixing *grana cochinilla* with alum; on the coasts of the Gulf of Mexico it was possible to obtain this colour from *caracol púrpura*.¹¹⁰ Blue came from *añil*,¹¹¹ and brown came from *huizache* and *cascalote*, both already mentioned (Sahagún, 1999; Clavijero, 2003).

Dyes were also used for making inks for writing. As has been mentioned, this kind of ink could also be used for the titling. Sahagún (1999) reports the existence of an inedible fruit that grows in hot climates that is called *nacazcolotl* (*cascalote*);¹¹² this was mixed with *aceche* (ferrous sulphate)¹¹³ and other materials to produce a very good ink for writing. He adds that they also used the soot from burning *ocote*,¹¹⁴ called *tliliocotl* in Nahuatl, for the same purpose (Sahagún, 1999; Barbosa Cano, 2001). At the same time, Clavijero (2003) states that as well as all of these sources, the colour black was obtained from a mineral earth called *tlalhiyac* which means 'stinking' earth.

As has been shown, there was an exchange of materials and techniques of indigenous origin with those brought from Spain and the rest of Europe. Whilst the Spaniards made use of the technical abilities of the indigenous for the development of European industries and crafts in New Spain, the indigenous learnt the use of materials, tools and techniques that were imposed by the Europeans.

In the nascent craft of bookbinding in Mexico during the sixteenth century, the use of traditional Spanish and other European techniques and materials were favoured. This

¹⁰⁶ *Grana cochinilla* (*Dactylopius coccus*): the female insect of 4-5 mm length. It is a parasite of some kinds of cacti, which, when it reaches maturity, is covered by a white cotton-like substance that contains carminic acid. The dye is obtained from the whole insect and the colour obtained has red, pink, violet, orange and other hues, depending of the binding agent that has been used (Arroyo Ortiz, 2008). Sahagún (1999) refers to the red colour, but he does not mention the other colours that could have been obtained from the *grana cochinilla*.

¹⁰⁷ *Achiote* (*Bixa orellana*): a bush of cordated leaves, with pink flowers and a bristly capsular fruit. The seeds are surrounded with a red substance (Arroyo Ortiz, 2008). The dye is obtained from a seed and the colour is orange, although Clavijero (2003) reiterates that it is scarlet and he refers to it as *Achiotl*, a Nahuatl word used by the indigenous.

¹⁰⁸ *Girasol acahualli* (*Helianthus agnus*): a herbaceous plant with oil-based and edible seeds. With a height of 2-3 m, its flowers are yellow with black seeds. The dye is obtained from the seeds and the petals of the flowers. (Arroyo Ortiz, 2008). Sahagún (1999) and Clavijero (2003) refer to this flower as *Xochipalli*, a Nahuatl word that was used by the indigenous.

¹⁰⁹ *Zacatlaxcalli* (or *xacatlaxcalli*): a parasite plant with long and cylindrical stems, yellow and leafless, that adheres to other plants, extracting their sap through sucking. It has whiteish flowers and it is harvested before it flowers. The dye is extracted from the flowerless stems and this is yellow in colour. (Arroyo Ortiz, 2008).

¹¹⁰ *Caracol púrpura*: this is a mollusc that adheres to the rocks on the Pacific coast and the dye is secreted by the animal (Arroyo Ortiz, 2008).

¹¹¹ *Añil*: an American plant. A tropical legume variety, it is a tall standing bush of 2 m in height. It has oblong or oval leaves. The flowers are pink or yellow. The fruit is a curved sheath. (Arroyo Ortiz, 2008). The tincture is extracted from the stems and the leaves and is blue in colour.

¹¹² See footnote 97.

¹¹³ In colonial times this was also known as *caparrosa verde* or, in Nahuatl, *tlalliac* (Sahagún, 1999; Arroyo Ortiz, 2008).

¹¹⁴ *Ocote*: the generic name of a number of species of American pine, aromatic and resinaceous. A native species from Mexico to Nicaragua, it is 15 to 25 metres tall (*Diccionario de la lengua española*, 2001).

is understandable because the manufacture of books in the western fashion was completely unknown to the indigenous. However, the possibility that the techniques, materials and even some tools used in the indigenous tradition continued to be used until they were supplanted or transformed by the Spanish ones cannot be eliminated. The key features shown by the bookbindings of Mexican printed books of the sixteenth century studied in this thesis are discussed in greater detail in the next chapter.

CHAPTER THREE

THE SIXTEENTH CENTURY MEXICAN PRINTED BOOK AND ITS BINDING

From the point of view of their content and their social and historical impact, as well as from the beauty of the printing of the texts, these books have been the focus of many studies by bibliographers, historians, designers, sociologists and other scholars. For this reason, this section briefly shows some of the most relevant characteristics of these texts in order to understand the different features of the books that have been the object of this study.

As has already been mentioned in Chapter one,¹¹⁵ the main purpose of having a printing press in New Spain was the need for speedy evangelization. The press would increase the availability of multiple copies of works of a religious character, such as collections of sermons and confession manuals, catechisms and Christian doctrine. Once the printing press was established (which was also the first in the New World), and once bureaucratic and legal obstacles were overcome, these works were printed in both indigenous languages and Spanish. Although the original intention was to print evangelical works, the press soon demonstrated, as had already happened in Europe, that it was a very useful tool for the dissemination of ideas and laws (Fernández de Zamora and Alfaro López, 2007; Fernández de Zamora, 2009).

It was essential for the indigenous and the Europeans to understand each other for confession and to impart and receive the sacraments. This need for understanding initiated the printing of vocabularies and grammar books in indigenous languages that were mostly used by the missionaries; this led to the printing of a manual for the administration of the sacraments.¹¹⁶ The resolutions of the Mexican Provincial Councils,¹¹⁷ and the extremely careful surveillance of the inquisitors from 1571, resulted in books in New Spain being censored by the government of the Viceroy and the Church authorities before they were printed. The viceroy gave the permits for printing and the printed works were censored subsequently by the Holy Office which exercised its power over published works. The authors, who previously had had some freedom of expression, now had to follow rules and laws; the craft of printer and book-seller also changed because these reforms and censorship affected them with regard to the printing of texts and their subsequent sale. The final consumer, or, in other words, the reader, must also have been aware of these limitations (Reyes, 1948; Fernández de Zamora, 2009).

¹¹⁵ See page 29.

¹¹⁶ *Manuale Sacramentorum secundum usum ecclesiae Mexicanae. Nouiter / impressum, cum quibusdam additionibus vtilissimis: quae omnia seque[n]ti pagella reperies.* Printed by Juan Pablos in 1560.

¹¹⁷ The first from 1555 (resolutions published in 1556), the second in 1565 (resolutions published in 1769) and the third in 1585 (resolutions published in 1622).

Once the bureaucratic processes and the limited supply of materials for printing had been solved printing books either in Spanish or Latin was not a problem for the printers working in Mexico. The Latin alphabet was so familiar to them, that they could easily compose the text with movable type and design the layout of the pages, in contrast to the production of printed books written in indigenous languages. At that time the indigenous languages did not have established grammar models to follow. In addition for the first time in history, they were being written using the Latin alphabet, instead of the pictographic writing used by the indigenous people. In order to print in indigenous languages the printers were forced to develop new alphabetical signs and also to modify some of the existing signs. Once the technical problems of the movable type had been solved, they then faced the problem of the page layout since some of the indigenous languages, such as Nahuatl and Tarasco (spoken in Michoacán), were longer than the Spanish, that is, they required more graphic signs and therefore more space on the page, than the Spanish. The problem was exacerbated when the works had to be printed as bilingual or trilingual texts, printing together either Spanish or Latin and an indigenous language or printing all three languages together (Garone Gravier, 2009).

In addition to the Church and the government who were ordering the printing of ecclesiastical laws, tax regulations and legislation as well as jurisprudence, the first evangelisers were prolific writers and translators. As a result of their quick learning of the indigenous languages, they were able to produce manuscripts that would subsequently be printed for the indoctrination of the indigenous and the teaching of Spanish. There were also secular authors whose works were printed in Mexico, such as Vasco de Puga, a magistrate of the Royal Audience and Diego García de Palacio, judge, visitor and rector of the University. These authors wrote in Spanish, in indigenous languages and in Latin. As well as being bilingual or trilingual they wrote on other subjects, mostly of a religious character, such as theology, the lives of saints and prayer books. They also engaged in secular subjects such as arithmetic, cosmography, emblematics, social sciences, military art and medicine, amongst others (Olaguibel, 1991; Fernández de Zamora, 2009).

Religious subjects, apart from those already mentioned, also included music books that contained liturgical anthems. Their contents varied according to their intended use and, as a result, antiphonaries, missals, psalters and graduals were also printed. 'Estos hermosos libros de canto llano fueron los primeros de música impresos fuera de Europa...y son tan distintivos de la Nueva España como arquitectónicamente lo son las capillas abiertas' (Robles, 1993, cited in Fernández de Zamora, 2009, p. 264) [These beautiful singing books were the first music books printed outside Europe..., and they are distinctive to New Spain in the same way as open chapels are original to New Spain's architecture].

The readers were indigenous, mestizo and creole children as well as those of Spanish origin who used the books to understand, learn and carry out their social functions. The teaching of the Spanish language and in some cases Latin led to the use of texts that would facilitate learning. The indigenous learnt to read in their own languages by using the catechism and doctrines so that books therefore served the double function of both evangelising and teaching the indigenous to read. The teachers, who were mostly members of religious orders, made use of these works in order to learn the indigenous languages (Pereyra, 1920). In the words of Fernández de Zamora (2009, p. 314) 'Puede asumirse que un amplio público...que necesitaba comunicarse entre sí y conocer sus obligaciones y derechos fueron lectores de lo que se imprimió en la Nueva España' [It can be assumed that a sizeable public...who needed to communicate with each other and to know their rights and obligations, were readers of what was printed in New Spain].

The present scarcity of these books and in some cases the deficient state of conservation that they demonstrate, is partly due to the fact that they were so heavily used by those who read them during this period that they were damaged or destroyed. It is possible that the sewing structures of these books were so heavily worn that they broke down under constant use and that gatherings were lost. Another reason for their destruction or partial loss could have been due the shortage of paper, as is mentioned by García Icazbalceta (1886, p. 39), '...llegada al extremo cuando alguna guerra interrumpía las comunicaciones con España. Entonces se echaba mano de cuanto había, y los libros viejos contribuían grandemente al consumo público y se vendía como papel escrito' [...sometimes extreme, when a war interrupted communications with Spain. Then people helped themselves to whatever was available, and old books contributed to the public consumption and it was sold as written paper]. However, the need to have books was so powerful, that it led both to the binding of incomplete works and to the re-binding of books several times over the years.

The extensive use that these works endured was not the only reason that they were rebound. In the nineteenth century the nascent interest in bibliophilia in Mexico and the French influence that was prevalent at the time meant that book collectors looking to give a suitably dignified binding to the valuable Mexican printed works from the sixteenth century had many of these works rebound, substituting full-leather bindings in the French style of the time for the simple limp laced-case bindings in parchment. The same fate was suffered by full-leather bindings from the sixteenth century that they found in poor condition.

In the nineteenth century the fashion for collecting Mexican books was not a phenomenon in Mexico alone, but was found in many countries around the world, with the result that

some of collections assembled by Mexican bibliophiles were sold abroad during this period, both for commercial and political reasons.

All of the above contributed to the fact that the Mexican printed works from the sixteenth century that still exist are now dispersed around the world. The study by Fernández de Zamora undertaken in 2009, reported one hundred and thirty one titles identified up to that moment. According to this study, of the libraries that have the largest number of works of this kind, sixteen are in Mexico, eleven are in the United States, one is in South America and five are in Europe.

As has been mentioned in the Introduction, the sample for this study comprises forty-seven books that are located in sixteen libraries both in Mexico and abroad.¹¹⁸ The majority of the books, thirty-nine out of the forty-seven (83% of the books in the sample),¹¹⁹ have limp, laced-case parchment bindings, whereas those bound in boards with full leather covers are less numerous (seven books or 14.9%);¹²⁰ there is also one book (2.1%) from which only the sewn textblock remains.¹²¹

Independent of the types of binding that they were given, of the forty-seven books that were analysed, the majority are religious works, amongst which *Advertencias para Los Confessores de los Naturales*, by fray Juan Bautista (six copies)¹²² and *Reverendi Patris Fratr̃s Bartholomaei à Ledesma...* written by Bartolomé de Ledesma (eight copies)¹²³ are the ones that survive with the largest number of copies. On secular subjects, there are three vocabularies (*Aquí Comiença vn Vocabulario en la Lengua Castellana y Mexicana...* by fray Alonso de Molina,¹²⁴ of which there are two copies and *Vocabulario en Lengua Misteca...* by Francisco de Alvarado),¹²⁵ as well as four works on legal topics, one on medicine and another on philosophy.¹²⁶

The books analysed, both those bound in limp, laced-case covers and those bound in boards, have textblocks of various formats that were printed on European paper. These books present sizes in a range of 140 mm x 100 mm to 300 mm x 230 mm. Thirty-six of the books have watermarks¹²⁷ in the paper used for their textblocks.¹²⁸ The ones that

¹¹⁸ See Appendix 2.

¹¹⁹ See Appendix 4a and footnote 135.

¹²⁰ See Appendix 4b and footnote 135.

¹²¹ See Appendix 4c.

¹²² *Advertencias para Los Confessores de los Naturales*: B-8, B-29, B-36, B-38, B-39 and B-42. The books identified by B- belong to the sample of Mexican books that were analysed in this work. Those marked as CB-, belong to the comparative sample. See Appendix 1 and Appendix 3.

¹²³ *Reverendi Patris Fratr̃s Bartholomaei à Ledesma...*: B-1, B-2, B-3, B-31, B-32, B-34, B-40 and B-43.

¹²⁴ *Aquí Comiença vn Vocabulario en la Lengua Castellana y Mexicana...*: B-14 and B-37.

¹²⁵ *Vocabulario en Lengua Misteca...*: B-25.

¹²⁶ Legal topics: B-17, B-19, B-33 and B-46. Medicine: B-11. Philosophy: B-12.

¹²⁷ See Glossary.

could be clearly identified are those with the design of the pilgrim, of the hand and of the cross.¹²⁹

a) *Pilgrim* watermark: this watermark was observed in twenty-five books.¹³⁰ The design is very similar to those published by Basanta Campos (1996), who states that he identified them in documents issued in Madrid and Aragon between 1552 and 1581; to those published by Valls i Subirá (1980), who points out that this watermark appears in documents from Alcalá de Henares, Ávila and Toledo between 1562 and 1583, and to those published by Woodward (1996), who reports the pilgrim watermark in maps printed in Rome, between 1575 and 1585 and in Venice in 1575.

b) *Hand* watermark: seven books show this watermark.¹³¹ Its design is very similar to those published by Valls i Subirá (1980), identified in documents issued in Burgos, Seville and Toledo between 1490 and 1537; those published by Basanta Campos (1996), recognised in documents issued in Granada, Fuensalida, Seville, Madrid and Lugo, between 1515 and 1589, as well as those published by Briquet (2000) that correspond to documents issued in Collioure (France), Perpignan (France) and Genova (Italy), between 1509 and 1580.

c) *Cross* watermark: this watermark appears in the textblock of six of the books¹³² examined and they are very similar to those published by Valls i Subirá (1980), that correspond to documents issued in Cáceres, Spain, between 1530 and 1577, and with those published by Gayoso Carreira (1994), who identified it in a document originating in Madrid, in 1596.

¹²⁸ With watermarks: B-1, B-2, B-3, B-5, B-6, B-7, B-9, B-10, B-11, B-12, B-13, B-14, B-15, B-16, B-17, B-18, B-19, B-20, B-21, B-22, B-23, B-24, B-25, B-26, B-30, B-31, B-32, B-34, B-37, B-38, B-39, B-40, B-41, B-44, B-45 and B-46.

¹²⁹ See Appendix 6.

¹³⁰ Pilgrim watermark: B-1, B-2, B-3, B-6, B-7, B-9, B-11, B-12, B-13, B-15, B-16, B-19, B-20, B-21, B-23, B-25, B-26, B-30, B-31, B-32, B-34, B-40, B-41, B-44 and B-45.

¹³¹ Hand watermark: B-1, B-3, B-14, B-16, B-32, B-34 and B-37.

¹³² Cross watermark: B-2, B-15, B-20, B-24, B-25 and B-32.

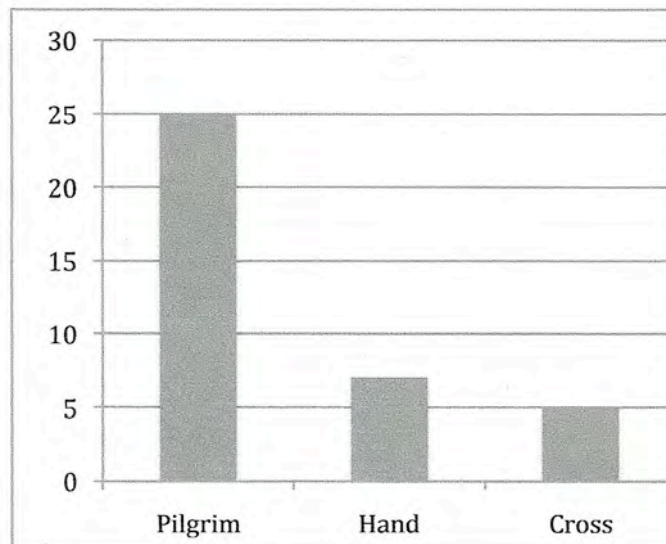


Fig. 1. Presence of the watermarks identified in the textblocks in the Mexican books

This graph shows that the pilgrim watermark is the most frequently found. It is worth noting that this watermark appears both alone and in combination with another one. Eight books contain the two watermarks that have been described above, being a combination of the pilgrim and the cross or the pilgrim and the hand.¹³³ This shows that most probably the paper for printing was bought from more than one source, or that the printer used the paper that was available to his printing press indiscriminately, a phenomenon that can be understood given the scarcity of this material in New Spain.

As an example we can take the work printed by Antonio de Espinosa in 1566, *Reverendi Patris Fratris Bartholomaei à Ledesma...* of which eight examples of the same edition were examined. In seven of these eight copies, the paper with the pilgrim watermark was used, either alone or in combination with paper with the cross or hand watermarks.¹³⁴ This evidence shows that the paper used for the books studied was imported from Europe, and the watermarks that have been identified corroborate the existence of a trade in paper between Spain and some other European countries and New Spain.

As has been mentioned above, two types of binding were identified in the books of the sample: thirty-nine out of the forty-seven books in the whole sample have limp, laced-case parchment bindings whilst seven books were bound in boards with full leather covers.¹³⁵ B-39 is the only book without cover. One possible reason for this disparity may be that the books had to be in circulation as soon after they were printed as possible, as they were

¹³³ Pilgrim and cross watermarks: B-2, B-15, B-20 and B-25. Pilgrim and hand watermarks: B-1, B-3, B-16 and B-34.

¹³⁴ Pilgrim: B-31 and B-40. Pilgrim and cross: B-2. Pilgrim and hand: B-1, B-3 and B-34. Pilgrim, hand and cross: B-32.

¹³⁵ Bound in limp, laced-case parchment binding: B-1, B-2, B-3, B-5, B-6, B-7, B-8, B-9, B-10, B-11, B-13, B-15, B-17, B-18, B-19, B-20, B-22, B-23, B-24, B-25, B-26, B-27, B-29, B-30, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-41, B-42, B-43, B-44, B-45, B-46 and B-47. Bound in boards cover with leather: B-4, B-12, B-14, B-16, B-21, B-28 and B-40.

mainly used for the task of evangelisation, as well as for teaching and understanding the various languages spoken in New Spain. Although the cost of parchment was presumably high in New Spain (as is shown in section 3.6 Cover), its durability and strength and the relatively easy construction of a limp, lace-case binding, could help to speed up the sale and distribution of books which would be subjected to frequent use.¹³⁶ Books that were bound in boards had bindings whose construction would have taken longer and they would therefore have been more expensive.

Given that the majority of the books within the sample (thirty-nine books) are bound in limp, laced-case parchment bindings this would appear to have been the most common type of binding used in Mexico in the sixteenth century, more common than bindings in boards covered with leather. The latter were more likely to have been made in response to specific requirements and might not, therefore, conform to a typical pattern of work. In order to identify such Mexican patterns of work, it was decided to work with the limp, laced-case parchment bindings. Details of this type of binding examined for this thesis are given below. A general description of the books bound in boards and covered with leather is found in Appendix 4b.

LIMP, LACED-CASE PARCHMENT BINDING

Although it can be said that most of the printed works in Mexico during the sixteenth century were bound in parchment, as has been described in various studies of Mexican printed books of the sixteenth century (García Icazbalceta, 1886; Romero de Terreros, 1943), this generalisation does not take into account the different ways in which the bookbinders assembled the books, even though they used the same binding components in each one of them. These variants can be the result of two main factors: the materials and tools available for this activity and the individual techniques of each binder. The European binders who worked in Mexico, as has already been mentioned, could have taught their assistants, and the latter, at the same time, could have adapted the learnt techniques and transformed them while at the same time maintaining a similar appearance and function for the bindings.¹³⁷

¹³⁶ See sections 3.6 Cover (page 151).

¹³⁷ According to Florescano (2004) the transformation in the use of raw material and the application of techniques introduced in New Spain by the Europeans is known as *mestizaje material o tecnológico* [material or technical *mestizaje*] and is defined as ‘..la confrontación de saberes indígenas procedentes de distintas culturas y donde se estableció un diálogo cotidiano y continuo para apreciar su naturaleza, conocer sus nombres, sus cualidades y verificar su efectividad en la práctica, o bien para adjudicarle sus nombres nuevos, cualidades y usos....fue un transportador de conocimientos y una escuela abierta que enseñaba a todos aquellos reunidos en una misma actividad, independientemente de la raza, la extracción social, la lengua o cultura de origen...’ (Florescano, 2004, p. 11) [...the confrontation of indigenous knowledge that came from various cultures and where a daily and continuous dialogue was established to appreciate its natures, to know its name, its attributes and to verify its effectiveness in practice, or in order to give them new names, attributes

The different features identified in this type of binding, are described below in the order in which a book is generally assembled.

3.1 ENMLEAVES

Once printed sheets had been folded into a textblock, it would be subject to the process of binding. This begins with the beating¹³⁸ process followed by the construction of the endleaves.

Given the frequent use to which these texts were subjected, it is not surprising that the endleaves have often suffered some kind of damage that would require repair or their replacement. The endleaves of four of the books in the main sample have been repaired using a variety of methods, and the endleaves in a further fourteen books have been replaced, as will be seen below.¹³⁹ From those fourteen books that retain their first endleaves in good condition,¹⁴⁰ two groups of endleaves were identified: those formed by one component, a group represented by twelve books in the sample; and those formed by two components, that is, endleaves that are made up from a combination of two different endleaf formats, as is the case with two of the books that were analysed in this study.¹⁴¹ All of these are separate endleaves, that is to say, endleaves that were added by the binder to a textblock. Finally, either damage to the books or extensive repair of the endleaves makes it impossible to describe the features of the endleaves of four books; in addition, there are two books whose endleaves are lost,¹⁴² and B-19 is the only book identified without endleaves. In this case, an economic interpretation could be made, since this book has neither endleaves, linings or endbands. In addition, it was sewn over three single supports and not-pack sewing. However, the cover is made of a first-use parchment, with turn-ins at head, tail and fore-edge and cover extensions at the fore-edge; it is attached to the bookblock by means of the three sewing-support slips. The method of attaching the cover to the textblock and the absence of other elements in the binding might suggest that the binder created a stable structure simply to keep the

and uses...it was a conveyor of knowledge and an open school where all those who were united in the same activity, independently of race, social extraction, language or culture of origin].

¹³⁸ See Glossary.

¹³⁹ In this thesis, *repaired endleaves* is used to describe those endleaves in which the repair has been done using the surviving elements of the endleaves; those cases in which only one of the endleaves is original to the binding on the book and where the other has been replaced, are also included in this group. *Replaced endleaves* is used to describe endleaves which are not the first endleaves made for the book. Repaired endleaves: B-3, B-27, B-45 and B-46. Replaced endleaves: B-1, B-5, B-6, B-10, B-11, B-13, B-15, B-17, B-20, B-22, B-24, B-25, B-31 and B-37.

¹⁴⁰ Books that retain their first endleaves in good condition: B-2, B-7, B-8, B-9, B-23, B-32, B-33, B-35, B-36, B-41, B-42, B-43, B-44 and B-47.

¹⁴¹ Endleaves formed by one component: B-2, B-7, B-9, B-23, B-32, B-33, B-35, B-36, B-41, B-42, B-43 and B-47. Endleaves formed by two components: B-8 and B-44. See Appendix 7.

¹⁴² Damaged endleaves: B-26 and B-29. Endleaves extensively repaired: B-18 and B-30. Lost endleaves: B-34 and B-38.

gatherings joined together, and made a cover to protect the textblock, while avoiding the additional materials and time that would have been needed to add any other elements to the binding. The features of this binding also allow the possibility, if desired, of easily removing the cover and adding the other elements that might be found in such a binding.

The endleaves in twenty-one books in the comparative sample have also suffered some kind of damage that needed to be repaired or required their replacement altogether, as is explained below.¹⁴³ In this sense, the European books used as a comparative sample were also subjected to heavy use, as was the case with the books in the main sample. Although, the booktrade was already well established in New Spain in the sixteenth century, it should be remembered that the booksellers had to pay the shipping costs and corresponding taxes for the importation, export and selling of them. In addition, in order to sell books in New Spain, it was necessary to deal with both the bureaucracy process and the Holy Office. Therefore, it is possible that to obtain a specific book in New Spain in that time was not an easy task.

Of the thirty-seven books bound in limp, laced-case covers that were analysed in the comparative sample, the majority is on religious subjects (54% of the books), something that suggests that these books would be used for the same task of evangelization, education and instruction in Christian doctrine, specially among the indigenous, but also the creoles, in addition to the use that the friars made of them in their daily work. The books in the comparative sample include works on law, grammar, agriculture and military topics, among others.¹⁴⁴

In addition to the twenty-one books in the comparative sample that have either replacement or repaired endleaves, there are ten books that retain their first endleaves in good condition.¹⁴⁵ In all of them the endleaves are formed by one component and all of these are separate endleaves, except for CB-29, where the right endleaves are integral, that is to say, the outermost leaf of the gathering is used as an endleaf. Finally, the damage to the book makes it impossible to describe the features of the endleaves of six books.¹⁴⁶

The single-component endleaves in the books in the main sample are mostly of type 6,¹⁴⁷ the sewn two-leaf texthook¹⁴⁸ with a folded stub,¹⁴⁹ that is found in five books.¹⁵⁰ All of

¹⁴³ Repaired endleaves: CB-5, CB-11, CB-12 and CB-23. Replaced endleaves: CB-1, CB-3, CB-6, CB-7, CB-10, CB-13, CB-17, CB-19, CB-22, CB-26, CB-28, CB-30, CB-32, CB-35, CB-36, CB-45 and CB-46.

¹⁴⁴ See Appendix 3.

¹⁴⁵ Books that retain their first endleaves in good condition: CB-8, CB-9, CB-15, CB-16, CB-18, CB-29, CB-31, CB-33, CB-43 and CB-47.

¹⁴⁶ Damaged endleaves: CB-2, CB-21, CB-25, CB-27, CB-39 and CB-41.

¹⁴⁷ The types of endleaves identified in the main and the comparative sample are shown in Appendix 7.

¹⁴⁸ See Glossary.

them were cut full-size with the textblock,¹⁵¹ with the exception of B-43, which was cut independently from the textblock. In books three books, the outer leaf of each endleaf section has been used as a pastedown.¹⁵² The pastedowns in books B-36 and B-43 were adhered overall to the inside of the cover (*Fig. 2a*), whilst in book B-42 they were adhered to the cover around their perimeters only (head-, tail- and fore-edge, *Fig. 2b*).¹⁵³ Finally, it should be observed that books B-9 and B-23 do not have pastedowns.



Fig. 2. Pastedown adhered overall (a) and around its perimeter (b) to the onside of the cover

Five out of the eleven books in the comparative sample that still retain their first endleaves in good condition,¹⁵⁴ also share the same kind of endleaf (type 6).¹⁵⁵ All of them were cut full-size with the textblock, with the exception of CB-8, which was cut independently from the textblock. In all these cases, the outer leaf was used as a pastedown. The pastedowns in two books were adhered overall to the inside of the cover, whilst in three books they were adhered to the cover around their perimeters only (head-, tail-, and fore-edges).¹⁵⁶

Although endleaves of type 6 were used on both the Mexican and European books, the Mexican books use overall adhesion for the pastedowns rather than the perimeter adhesion that might have been expected because of its common use on the limp, laced-

¹⁴⁹ See Glossary.

¹⁵⁰ Endleaves type 6: B-9, B-23, B-36, B-42 and B-43.

¹⁵¹ The damage to the endleaves makes it impossible to identify the size of the endleaves.

¹⁵² With pastedowns: B-36, B-32 and B-43.

¹⁵³ The reason for adhering the pastedown around the perimeters of the cover only was to avoid the deformation of the parchment cover by the moisture of the adhesive and, at the same time, to ensure that the cover stays flexible (Ligatus, 2013).

¹⁵⁴ The Mexican limp, laced-case parchment bindings were compared to the Spanish and other European books from the comparative sample that are in the same kind of binding.

¹⁵⁵ Endleaves type 6: CB-8, CB-16, CB-18, CB-31 and CB-47.

¹⁵⁶ Pastedowns adhered overall to the inside of the cover: CB-16 and CB-31. Pastedowns adhered to the cover around their perimeters only (head-, tail-, and fore-edges: CB-8, CB-18 and CB-47.

case bindings made in Spain and Italy during the sixteenth, seventeenth and eighteenth centuries.¹⁵⁷ It should be mentioned that CB-47 in the comparative sample was printed in Spain, where perimeter adhesion was in common use during the sixteenth century, a fact that might suggest that this book was bound in Spain. However, the features of the structure and the cover are so similar to those found in the books in the main sample,¹⁵⁸ that is not possible to determine whether this book was bound in Mexico or Spain.

Other types of endleaves consisting of one component only of which one single example were recorded are as follows:

Type 1: tipped single-fold of printed paper taken from a law book printed in Latin was identified in B-2. In this case the endleaves were cut independently from the textblock, and slightly undersize. The outer leaf of each of the endleaves was used as a pastedown, adhered overall to the inside of the cover (*Fig. 3a.*). This type of endleaf was identified as replacement endleaves in five books belonging to the comparative sample,¹⁵⁹ from which CB-28 was printed in Italy and CB-36 was printed in Spain. In both books, the pastedowns were adhered overall to the inside of the cover, in the same way as has been recorded in the Mexican books (*Fig. 3b.*). This fact could be interpreted either as the influence of Spanish and/or Italian binding techniques on Mexican practice, or that both the Mexican- and European-printed books were bound in Mexico.

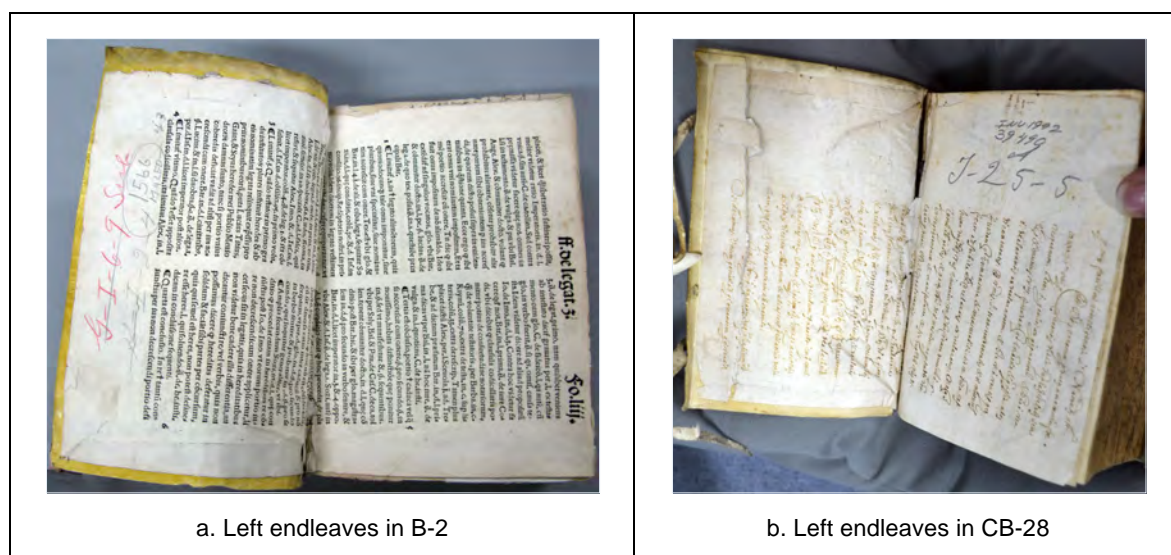


Fig. 3. Endleaves of type 1

¹⁵⁷ Information obtained from the course: *HEB 1500-1800*.

¹⁵⁸ CB-47 is sewn all-along with pack sewing, on three single supports spaced at equal intervals along the spine. The limp, laced-case cover was made of a first-used parchment, with the hairside outside, with turn-ins at head, tail and fore-edge, with lapped mitres at the corners, and with the fore-edge turn-ins over the head and tail turn-ins.

¹⁵⁹ Replaced endleaves type 1: CB-10, CB-19, CB-28, CB-30 and CB-36.

Type 2: sewn single-fold of paper. Endleaves cut full-size with the textblock, with each outer leaf used as a pastedown, were identified in B-47. These pastedowns are full-size, adhered to the cover around their perimeter and centre. The practice of pasting the perimeters and centre of the pastedowns is commonly found on Italian laced-case bindings and, given the similarities between Italian and Spanish bookbinding techniques in the sixteenth century,¹⁶⁰ it is likely that this practice was also common in Spain and its use is reflected in this book. This type of endleaf was not identified in the books in the comparative sample.

Type 4: sewn single-leaf text-hook of paper without pastedowns, was identified in B-7. The endleaves were cut full-size with the textblock. This type of endleaf indicates low-cost work because its construction requires little time and does not require the binder to spend time either pasting the pastedowns to the cover or sewing an extra gathering at each side of the textblock; in addition, the amount of paper used in their construction is the minimum necessary to provide a sewn endleaf (*Fig. 4*). This type of endleaf was also identified in B-41, however, it was not possible to determine if there were pastedowns. This type of endleaf was identified in book CB-15 and in the left endleaf of book CB-29 in the comparative sample; the endleaf in CB-29 was used as a pastedown adhered around their perimeters only (head-, tail- and fore-edge), whilst CB-15 has no pastedown.

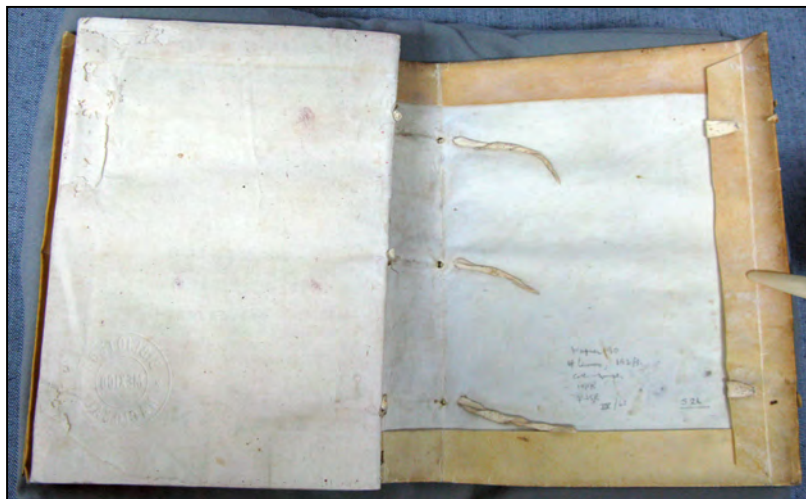


Fig. 4. Right endleaf of type 4 in B-7

The case of CB-29 is of interest because the endleaf at the left side is of type 4, as mentioned above, and was used as a pastedown, whilst the right endleaf is an integral endleaf of type 11, in which the outer leaf of the gathering was used as a pastedown (*Fig. 5*). Although the endleaves at each end of the textblock were made up differently, each has the same number of leaves at each end of the textblock and both pastedowns were

¹⁶⁰ Information obtained from the course: *HEB 1500-1800*.

adhered around their perimeters only (head-, tail- and fore-edge) to the inside of the cover. As has been stated before, type 4 endleaves indicate low-cost work. In the case of CB-29, this theory is supported by the fact that the right endleaf is an integral type, which means that the binder avoided taking up both time and material in the construction of the right endleaves; furthermore, the bookblock has a by-pass sewing, without both linings and endbands, features that show that the binder also saved time elsewhere in the binding process. However, the cover was carefully made of a first-use parchment, with turn-ins at head-, tail, and fore-edge, all of them approximately of the same width, with cover extensions that almost meet when folded over the fore-edge. This evidence might suggest that the binder received an already-sewn bookblock, with the endleaves in place, and just made the cover for the book. It is therefore possible that CB-29 arrived from Europe as a sewn bookblock and was covered in Mexico.

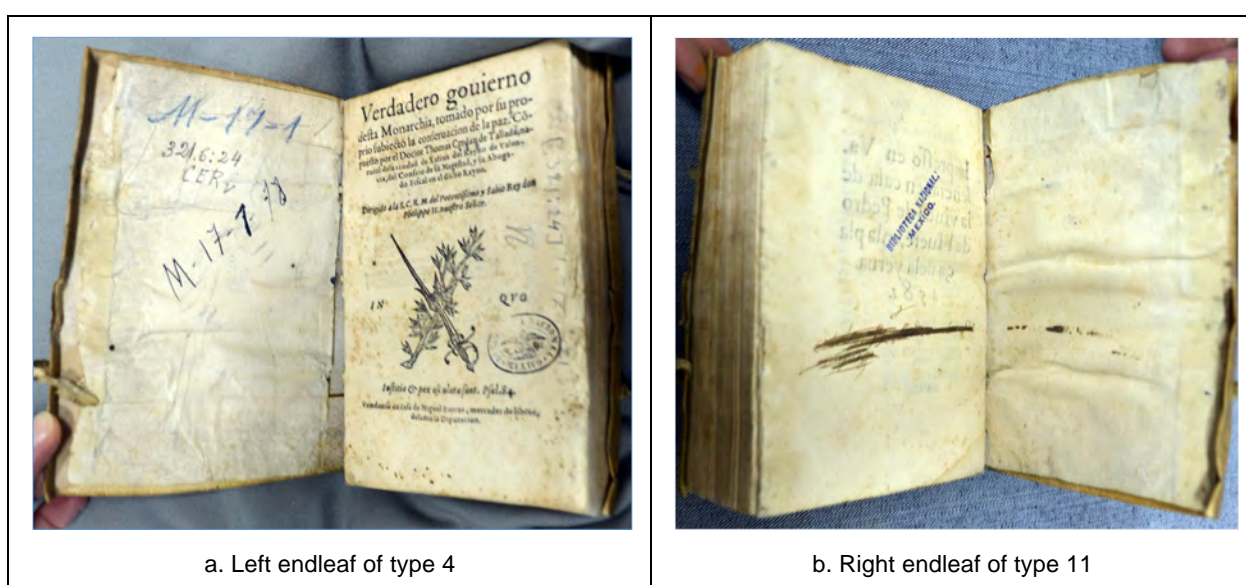


Fig. 5. Endleaves in CB-29

Type 10: three-leaf hook with separate stubs, was identified in B-35 (Fig. 6). The endleaves were cut full-size with the textblock, with each outermost leaf used as a pastedown, adhered around its perimeter only (head-, tail- and fore-edge). This type of endleaf was not identified in the comparative sample.

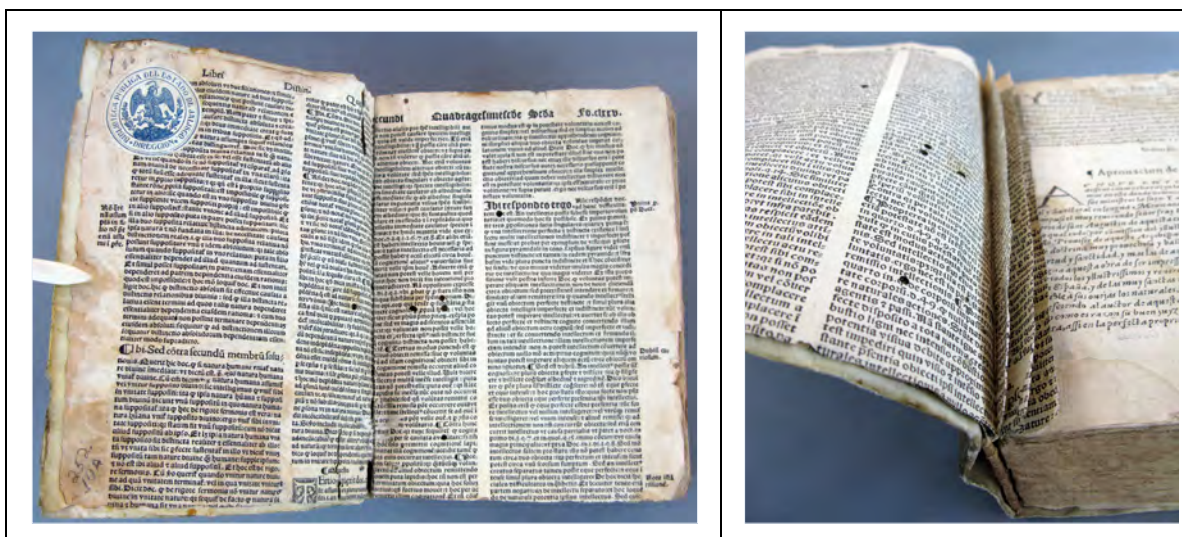


Fig. 6. Right endleaves in B-35

Other types of endleaves consisting of one component only of which one single example were recorded in the books in the comparative sample are as follows:

Type 7: sewn two-leaf outside hook of plain, handmade paper with a folded stub was identified in CB-9 (Fig. 7). In this case the endleaves were cut slightly undersize independently from the textblock, with the two stubs and the outer full-width leaf at each end adhered to the inside of the cover. The pastedowns were adhered around their perimeter only (head-, tail- and fore-edges). This type of endleaf was not identified in the main sample.



Fig. 7. Left endleaves of type 7 in CB-9

Type 15: sewn two-leaf text hook of paper, with separated stub, was identified in book CB-33. The endleaves were cut full-size, independently from the textblock, with the outer leaf at each side used as a pastedown, adhered overall to the inside of the cover.

Type 16: sewn two-leaf text hook of paper with folded stub, within a folded guard,¹⁶¹ probably of parchment, was identified in CB-43 (*Fig. 8*). The paper endleaves were cut full-size, independently from the textblock, with the outer leaf at each end used as a pastedown. These pastedowns were adhered around their perimeters only (head-, tail- and fore-edge).

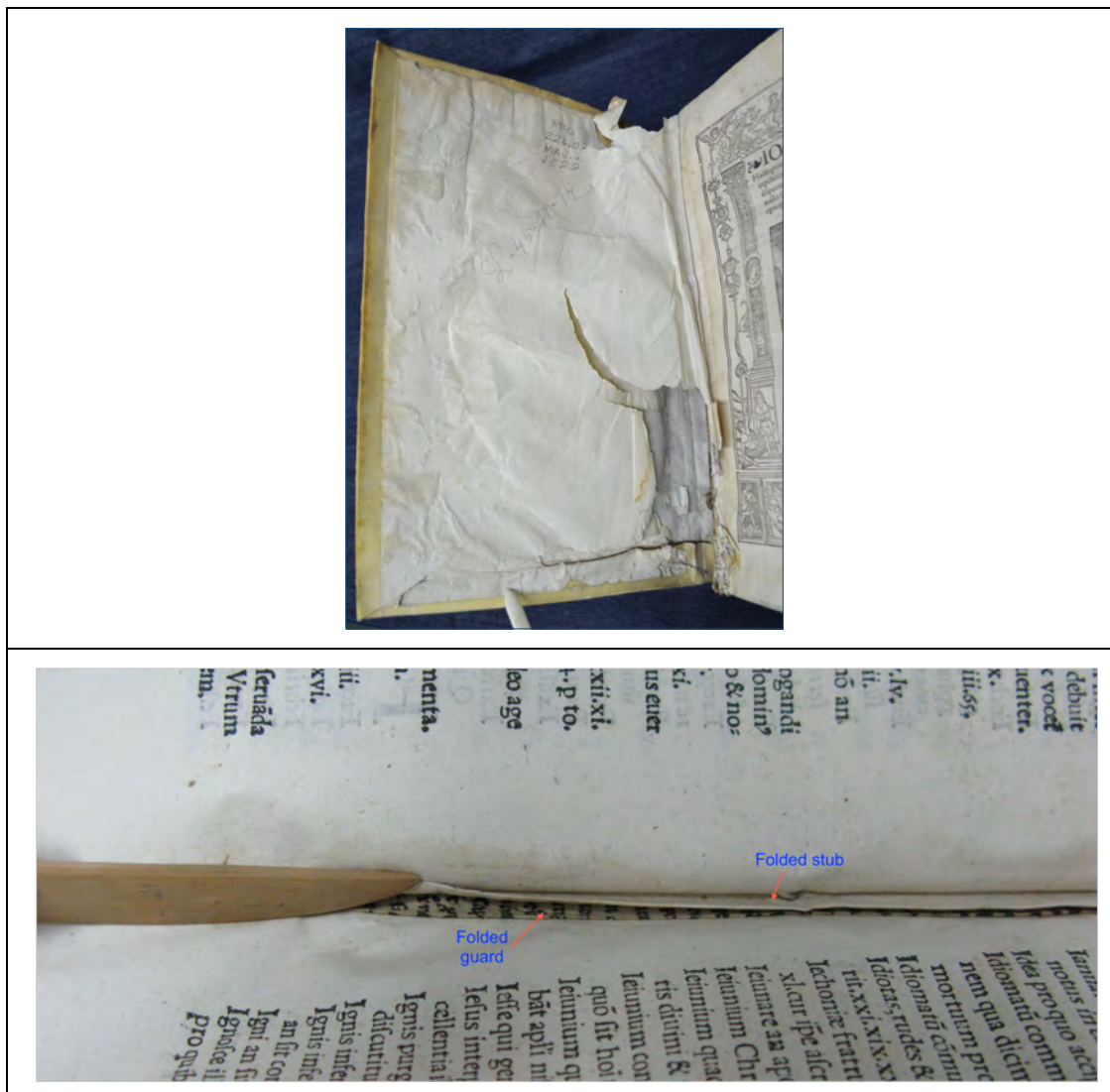


Fig. 8. Left endleaves of type 16 in CB-43

The material used for the single-component endleaves in the books in the main sample also varies. Plain, handmade paper was used in four books,¹⁶² of which the paper used for

¹⁶¹ See Glossary.

¹⁶² Plain, handmade paper: B-7, B-23, B-36 and B-42.

the endleaves in B-7 would appear to be the same as that used for the textleaves.¹⁶³ The plain, handmade paper used for the endleaves of book CB-15 in the comparative sample contains a pilgrim watermark, which confirms that this paper was made during the sixteenth century.¹⁶⁴ In addition to CB-15, plain, handmade paper was also identified in seven books in the comparative sample.¹⁶⁵

Five books in the main sample used re-used printed paper for the endleaves.¹⁶⁶ Those that could be identified were taken from books printed in Latin or Spanish, in legal or religious subjects, printed in the sixteenth century in Europe.¹⁶⁷ In book B-2, the re-used printed paper used as endleaves comes from a European law book, printed in Latin, which was taken from a bound book. This could be determined because half of the original spine fold, which still retains some animal-based adhesive, could be seen at the head-edge of the right endleaves and the other half of the spine fold could be seen at the tail-edge of the left endleaves (*Fig. 9*).

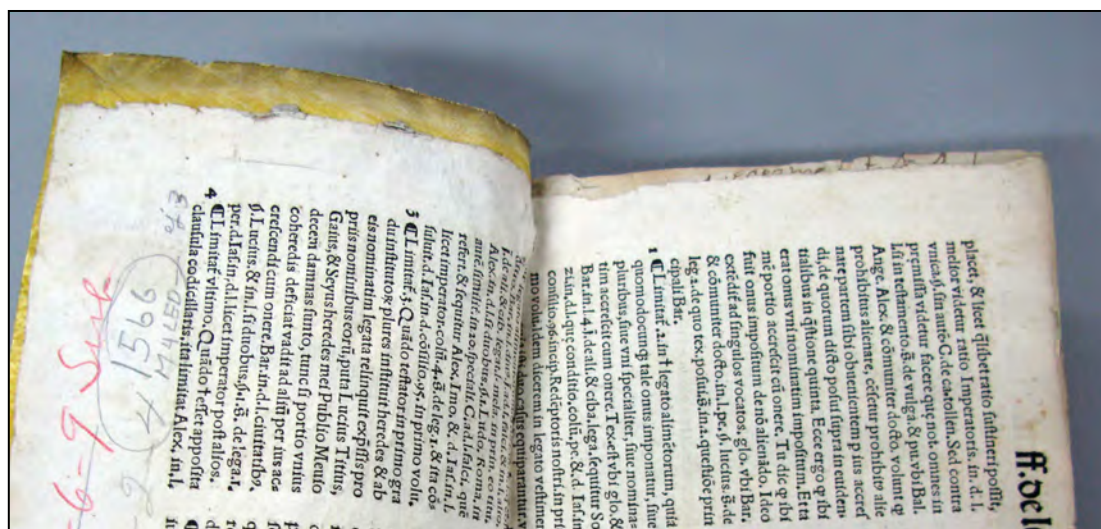


Fig. 9. Half of the original spine fold, which still retains some animal-based adhesive, can be seen at the head-edge of the right endleaves in B-2.

In the case of B-33, the re-used printed paper used for the endleaves was taken from a religious work of Nicholas of Lyra, printed in the sixteenth century in Europe (*Fig. 10a*). As European religious books were abundant in New Spain, finding some leaves from this type of book used as re-used paper for the binding of other books is not surprising. Considering the scarcity of paper in New Spain during that time, it is possible that the re-used paper may have been obtained from duplicates from the collections in libraries, or

¹⁶³ The characteristics of colour, texture and thickness determined by a visual examination show marked similarities.

¹⁶⁴ See Appendix 6.

¹⁶⁵ Endleaves of plain, handmade paper CB-8, CB-9, CB-16, CB-18, CB-29, CB-43 and CB-47.

¹⁶⁶ Re-used printed paper: B-2, B-32, B-33, B-35 and B-43.

¹⁶⁷ In order to determine the date of printing of the re-used paper used in the Mexican books studied in this work, I consulted Mr. Villagómez, Librarian of the Academia Mexicana de la Lengua, Mexico, for his advice (2010. pers. comm.).

from books that could be considered obsolete or were incomplete. The use of re-used printed paper was also found in two books from the comparative sample.¹⁶⁸ In these cases, the paper was printed in the sixteenth century in either Latin or Spanish (*Fig. 10b*).¹⁶⁹ Taking into account the existence in Mexico of books printed in both languages, it remains a possibility that these books might have been bound in Mexico.

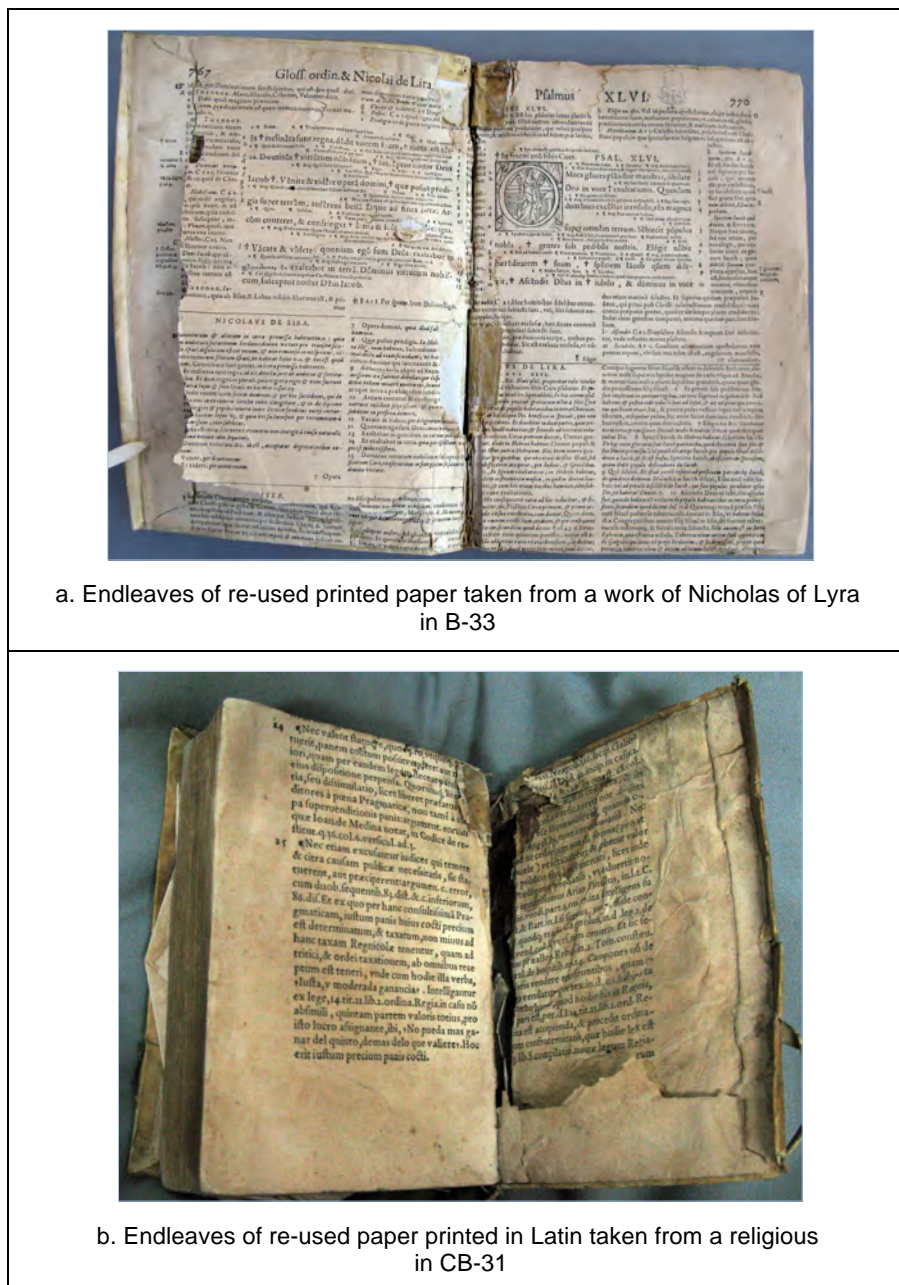


Fig. 10. Endleaves made of re-used paper

On the other hand, the absence of Mexican re-used sixteenth-century printed paper,¹⁷⁰ could be explained in economic terms: in order to print a book in Mexico, as has been explained before, it was necessary to import the raw materials from Europe, which means

¹⁶⁸ Re-used printed paper: CB-31 and CB-33.

¹⁶⁹ In order to determine the origin of the re-used printed paper it is necessary to make an extensive search to find a match.

¹⁷⁰ There is one single book, B-12, bound with laminated paper boards, of which the top layer of the left board is a paper leaf printed in Nahuatl. It was not possible to determine when it was printed.

that the Mexican editions presumably were more expensive than those printed in Europe, in addition to the bureaucratic and legal processes involved in printing, which could take a long time. Furthermore, to print books in indigenous languages, as has been explained before, was a challenge for the printers who were working in Mexico during the sixteenth century, a fact that could have had an impact on the cost of the editions.¹⁷¹ It is therefore possible that Mexican books were maintained in use for longer than the European books. This theory is supported by the presence of three books which were bound even though incomplete,¹⁷² of which B-5 and B-6 appear to retain their first structures but with new covers, whereas the repairs in B-13 obscure the full history of the volume.¹⁷³ Re-used Mexican printed paper was identified in CB-6 in the comparative sample, but, in this case, as is explained below, the re-used paper dates from the seventeenth century (see *Fig. 13*).

Another feature is the presence of deckle edges¹⁷⁴ on the endleaves of book B-36 (at head and tail). This indicates that the binder used a piece of paper that, when folded to make the endleaves, was smaller than the size of the textblock, avoiding in this way the waste that results when endleaves that are larger than the textblock are cut to the same size. According to Ligatus (2013), the presence of deckle edges in the endleaves may be considered as sign of careful or economical work, as is the case of B-36 in which the features of the structure and the endbands both indicate careful work.¹⁷⁵ A similar instance is that of CB-17 of the comparative sample, where deckle edges were identified in the replacement endleaves (*Fig. 11*). It would appear that the blue thread used to stitch the endleaves is the same as that used to work the endbands.¹⁷⁶ The evidence might suggest that the binder received the textblock already sewn and decided to preserve the sewing that was still in good condition, and supplied the endleaves, endbands and cover to complete the work.



Fig. 11. Endleaf with deckle edges at the tail of CB-17

¹⁷¹ See page 53.

¹⁷² Bound as an incomplete textblock: B-5, B-6 and B-13. In addition to these three books. There is B-4 that is bound in boards, see Appendix 4b for details.

¹⁷³ See Appendix 4a for details.

¹⁷⁴ See Glossary.

¹⁷⁵ This book is 152 mm x 100 mm x 46 mm size, with all-along on two supports swing, with endbands worked in a single, thin thread, with back beads, pack-sewn and eight tiedowns. See Appendix 4a for details.

¹⁷⁶ The characteristics of colour, ply, thickness and twist determined by visual examination show marked similarities. See Appendix 5a for details.

Samples B-32 and B-33 in the main sample show another interesting feature. In these books, the left endleaf is a three-leaf text hook with separate stubs (type 9, *Fig. 12*), whilst the right endleaf is a three-leaf endleaf-hook with separate stubs (type 10). In both books the outermost leaf of each of the endleaves was used as a pastedown, adhered to the cover around its perimeter only (head-, tail- and fore-edge). It is worth noting that both books belonged to the *Convento de San Francisco de Guadalajara* (Jalisco) and it is therefore possible either that the binder would have been the same in both cases, or, at least, that whoever bound these books employed the same technique to construct the endleaves. The former hypothesis is supported by the fact that there are some similar features in both bindings: the hairsheep parchment of medium-yellow tone cover is attached to the bookblock by means of added support slips¹⁷⁷ of tanned leather and both have transverse spine-linings of parchment in all panels. Considering the scarcity of paper in those days, the amount of paper used in the endleaves is of interest (a total of six leaves per book). In both cases re-used printed paper from the sixteenth century was used, which could be explained by the fact that the binder must have had available an ample supply of paper that could be re-used for the binding of other books, and that he was seeking in these bindings to construct stronger endleaves.

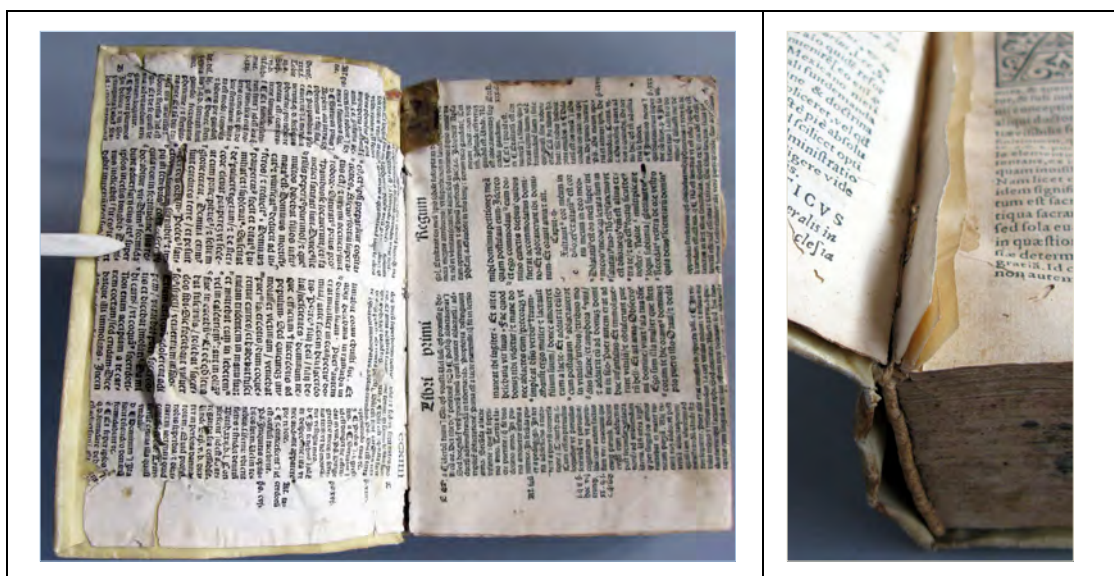


Fig. 12. Left endleaves of type 9 in B-32

Endleaves formed by two components were identified in books B-8 and B-44. The endleaves in B-8 combines types 3 and 6, with the outermost leaf at each side used as a pastedown, adhered around the perimeter to the inside of the cover. The material used in this case is plain, handmade paper and once again it is surprising to see the large amount

¹⁷⁷ Book B-32 is sewn on three single supports from which supports numbers 1 and 3 have added sewing-support slips and B-33 is sewn on three single supports with the slips cut off at the joints, but all with added slips. The presence of added slips in these two books could mean that the binder received the book already sewn and supplied additional sewing-support slips in order to be able to attach the cover by means of the new slips and, in these cases, also by the endband-core slips. See section 3.7 Cover Attachment (pages 203 and 208).

of paper used to make up these endleaves. The endleaves use four full leaves at each end, a total of eight leaves; in terms of the scarcity and cost of plain paper in New Spain, these endleaves represent work of comparatively high cost. This is reflected in the endbands¹⁷⁸ which were worked with a thin thread, with back beads¹⁷⁹ and pack-sewn,¹⁸⁰ with six tiedowns (the ratio of tiedowns to gatherings is 1:9),¹⁸¹ in addition to the decoration of the edges and the cover with cover extensions¹⁸² folded over the fore-edge. However, the textblock was sewn on two single supports¹⁸³ and the thread used for the sewing is not the same as the one used to sew the endleaf gatherings. The evidence suggests, therefore, that the binder received the textblock already sewn and completed the work with higher quality (and cost) elements than that of the sewing.

With regard to book B-44, the endleaves at each side of the textblock are different: the right endleaves are of type 6, in which the paper used for their construction would appear to be the same as that of the textleaves,¹⁸⁴ whereas, the left endleaves are of two components of plain paper which combines type 2 and 4; the outermost leaf at each side was used as a pastedown, adhered overall to the inside of the cover. A possible explanation for this fact is that the left endleaves are a replacement; this view could be supported by the spine-lining joints¹⁸⁵ that were replaced at this side. Endleaves formed by two components were not identified in the books in the comparative sample.

As has been mentioned before, the endleaves of four books in the main sample show some kind of repair, executed in a variety of ways, even though the types of endleaf that could be identified in these cases correspond to type 6 in B-3. In B-27, type 5 was identified in the left endleaves, whilst the right endleaves are of type 4. B-45 and B-46 are similar in that type 1 was identified in the left endleaves, whereas type 2 was identified in the right endleaves in B-45, and type 4 was identified in the right endleaves in B-46. It should be noticed that the full leaf adhered to the cover on the left side of B-27 is broken at the joint, and it is not certain that the pastedown was part of the endleaf section.

With regard to the fourteen books in which the endleaves have been replaced, the replacement in six books was made with plain, handmade paper with different seventeenth- or eighteenth-century watermarks.¹⁸⁶ In book B-24, the right endleaves have

¹⁷⁸ See Glossary.

¹⁷⁹ See Glossary.

¹⁸⁰ See Glossary.

¹⁸¹ See section 3.5 Endbands (page 140).

¹⁸² See Glossary.

¹⁸³ The more supports on which a book is sewn, the stronger it is likely to be and the longer it will take to sew. See section 3.2 Structure (page 76).

¹⁸⁴ The characteristics of colour, texture and thickness determined by a visual examination show marked similarities.

¹⁸⁵ See Glossary.

¹⁸⁶ Replaced endleaves made of plain, handmade paper: B-1, B-6, B-10, B-11, B-15 and B-31. Seventeenth-century paper: B-1 and B-11. Seventeenth- or eighteenth-century paper: B-6, B-10 and B-15. No identified: B-31. See Appendix 6.

been replaced with paper with a sixteenth-century watermark, whereas the left one was replaced with a paper with an eighteenth-century watermark.¹⁸⁷ It is possible that the endleaves were replaced at different times, the right endleaves during the sixteenth or at the beginning of seventeenth century and left endleaves during the eighteenth century. The possibility that sometimes the paper might be kept for a long time before it was used must also be considered, but in the case of New Spain, where paper was difficult to obtain, this seems unlikely. The types of endleaf used for this purpose correspond to type 1, type 2 and type 6. The endleaves of the other five books have been added to the textblock using a variety of methods of attachment.¹⁸⁸

As it has been mentioned before, the endleaves of four books of the comparative sample have been repaired using different methods and the endleaves in a further seventeen have been replaced. With regards to the four books in which the endleaves have been repaired, type 6 could be identified in CB-11 and type 1 in CB-12. In the case of CB-5 and CB-23, endleaves of a different type were identified at each side: the right endleaves in CB-5 are of type 4, whilst those on the left are of type 13. Type 6 was identified in the left endleaves in CB-23, whereas those on the right are of type 13.

In the case of the endleaves that have been replaced in the books in the comparative sample, the replacement in eleven books was made with plain, handmade paper with different sixteenth-, seventeenth- or eighteenth-century watermarks,¹⁸⁹ whereas both printed or manuscript re-used paper was used to make the replacement endleaves in six books.¹⁹⁰ The types of endleaf used for this purpose correspond to type 1, type 7, type 8, type 13 and type 14. The endleaves of the other seven books have been added to the textblock using a variety of methods of attachment.¹⁹¹

The material used to make the replacement endleaves in CB-6 is a case of interest as the endleaves at the right side were made of two different re-used papers, one printed in Latin, the other in Spanish. Both the leaves at the left side were cut full-size, whilst the endleaves at the right side were cut slightly undersize and were made of re-used paper, printed in both Latin and Nahuatl, taken from the work of Martin de León, *Camino del*

¹⁸⁷ See Appendix 6.

¹⁸⁸ Type 1: B-1, B-5, B-10, B-11, B-20 and B-25. Type 2: B-6 and B-31. Type 6: B-17. Other types of attachment: B-13, B-15, B-22, B-24 and B-37. See Appendix 4a for details.

¹⁸⁹ Replaced endleaves made of plain, handmade paper: CB-1, CB-3, CB-10, CB-13, CB-17, CB-19, CB-22, CB-30, CB-32, CB-36 and CB-46. Sixteenth-century paper: CB-3. Sixteenth or seventeenth-century paper: CB-36 and CB-46. Seventeenth-century paper: CB-10, CB-13 and CB-30. Seventeenth-or eighteenth-century paper: CB-19. Eighteenth-century paper: CB-32. No determined: CB-1, CB-17 and CB-22. See Appendix 6.

¹⁹⁰ Replaced endleaves made of re-used paper: CB-6, CB-7, CB-26, CB-28, CB-35 and CB-45. Printed paper: CB-6, CB-7, CB-26, CB-35 and CB-45. Manuscript paper: CB-28.

¹⁹¹ Type 1: CB-10, CB-19, CB-28, CB-30 and CB-36. Type 7: CB-32. Type 8: CB-6 and CB-26. Type 13: CB-45. Type 14: CB-13. Other type of attachment: CB-1, CB-3, CB-7, CB-17, CB-22, CB-35 and CB-46.

Cielo en Lengua Mexicana..., printed in 1612, in Mexico (Fig. 13).¹⁹² Although, it is not possible to determine whether the endleaves were supplied in the seventeenth century or later, the presence of re-used paper waste printed in Mexico in Nahuatl at the beginning of the seventeenth century could be interpreted as evidence of the changes in the production of printed books that took place from the seventeenth century and afterwards in Mexico. These changes, among others, include the expansion of printing and the establishment of a paper mill, that could have had an impact on the price of books by making them cheaper than they were in the sixteenth century.¹⁹³ The cover of this book is made of a reverse parchment (a practice that was not identified in the main sample) and the attachment between the cover and the bookblock is by means of added sewing-support slips. This evidence might suggest that CB-6 arrived from Europe bound and was repaired in Mexico.



Fig. 13. Left endleaves in book CB-6

The material used to make the replacement endleaves in books CB-26 and CB-45 in the comparative sample is also of interest (Fig. 14). In both cases the endleaves were made of pieces of different papers glued together to make leaves of the same height as the textblock, and both have pastedowns adhered overall to the inside of the cover. The use of several pieces of paper for the construction of the endleaves is most probably the result

¹⁹² Title-page: CAMINO DEL / CIELO EN LENGVA MEXICANA, / con todos los requisitos necesarios para conseguir esse / fin, co[n] todo lo que vn Xp[t]iano deue crear, saber, / y obrar, desde el punto que tiene vso de / razon, hasta que muere. / Co[m]puesto por el P.F. Martin de Leo[n], de la orde[n] de Predicadores. / Dirigido al Excelentissimo señor Don Fray Garcia / Guerra de la orde[n] de n[uest]ro padre S. Domingo, Arçobispo de Mexico, y Virrey desta Nueva España— / En Mexico, En la Empronta de Diego Lopez daualos / Y a costa de Diego Perez de los Rios. Año. De. 1612

¹⁹³ In the seventeenth century, the printing press in Mexico was already well established, the printers knew how to manage the technical and bureaucratic obstacles better than in the sixteenth century (see pages 52-53). There were also around thirteen printers working at Mexico City and two more in Puebla, where the printing press was established in 1639 (Iguíniz, 1938), as a result of the expansion of printing in Mexico, and, according to Lenz (1990), there was a paper mill, the *Rancho el Molino de Papel*, working in Mexico. As a consequence, the production of printed books, in comparison with that of the sixteenth century, was increased. All these factors could have had an impact in the price of the books printed in Mexico in the seventeenth century and later.

of the scarcity (and therefore cost) of paper in New Spain and the binders therefore had to work out how to make the best use of the material available.

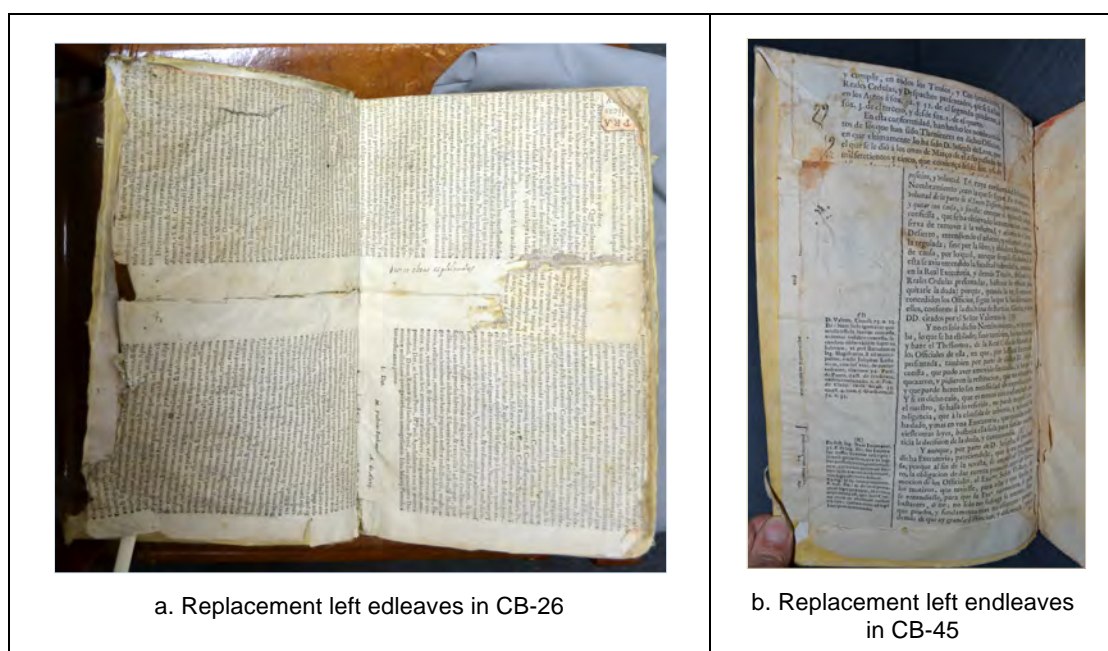


Fig. 14. Replacement endleaves made of different papers glued together in CB-26 and CB-45

As has been shown, the endleaves used in Mexican printed books are mostly of the type formed by one component. In this group, type 6 was the most frequently-used endleaf format. The outer leaf at each side could be used as a pastedown, either adhered overall to the inside of the cover or adhered to the cover around the perimeter only. The material used for the endleaves could be of re-used printed paper from European editions or plain, handmade paper, also of European origin.

It is possible that type 1 and type 2 reflect Spanish or Italian practice, though the features of the construction of these types of endleaves are essentially the same in both sets of samples. This suggests that the endleaves in the European books may have been added in Mexico. In order to determine if a Spanish or Italian practice is reflected in the books bound in Mexico, it would be necessary to analyse a much larger sample of books that were certainly bound in Spain and Italy.

The replacement of the endleaves in both sets of samples are mostly of type 1. In all of the cases, the outer leaf at each end was used as a pastedown either adhered overall to the inside of the cover or adhered to the cover around the perimeter only. It is not surprising that this type of endleaf was frequently used for replacements, since it consists only of a tipped single-fold that can be added to the textblock without detaching it from the cover.

It is worth noting that while a variety of types of endleaves was identified in the main sample, the small size of the sample makes it impossible to establish which of them represents a common practice in Mexico during the sixteenth century. However, endleaf types 2, 3, 7 and 8 were in use in Europe at the end of the sixteenth century (Blaser, 1994). Types 2 and 3 were only identified in the books in the main sample, whilst type 3 and 7 were only identified in the books in the comparative sample. This fact raises the possibility that the books in the comparative sample arrived from Europe with their endleaves in place but were covered in Mexico.

It should be observed that in order to carry out a complete analysis of the books, it is clearly necessary to take into account as many of their constituent parts as possible and not to concentrate on the endleaves alone; it is also important to take into consideration the various components that make up each binding in order to determine more precisely the period in which a particular binding was made. In the case of the paper used for the construction of the endleaves, it is necessary to identify any watermarks that will indicate the date of the manufacture of the paper though this will not necessarily mean the date of the binding. In some cases, the components of the binding might be in good condition and only the endleaves were replaced, perhaps several years, or even centuries, later with a new paper.

With regard to re-used printed paper, although it is sometimes possible to determine when it was printed, it is important to remember that these works may have been obsolete works that were no longer used and that they had possibly been kept for many years before they became raw material for the binding of other books. This means that the materials used for the construction of the endleaves cannot be used as the only and/or definitive element for determining the date of manufacture of these bindings. However the materials used to make endleaves which are original to a binding and not added to it later provide a *terminus post quem* for the date of the binding in which they are found.

3.2 STRUCTURE¹⁹⁴

All books in the sample bound in limp, laced-case binding were sewn with supported sewing¹⁹⁵ on two (eight books), three (twenty-five books) or four (four books)¹⁹⁶ raised supports¹⁹⁷ arranged along the spine.¹⁹⁸ Given that these books range in height from 145 to 305 mm, the results are not surprising. On average, books of 160 mm or less in height are sewn on two or three supports, whilst books ranging between 200 to 235 mm in height are sewn on three or four supports. Finally, there are three books in the range of 287 to 305 mm in height that are sewn on three supports, although it might be expected that this last group, being the tallest books, should be sewn on four supports rather than three.¹⁹⁹

There are six copies of *Reverendi Patris Fratrīs...* written by fray Bartolomé de Ledesma, all of them printed in 1566 by Antonio de Espinosa, bound in limp, laced-case binding, each in the range of 205 to 215 mm in height.²⁰⁰ Four of them are sewn on three single supports whereas only book B-31 is sewn on two supports and B-2 is sewn on four supports.²⁰¹ This can be interpreted from an economic point of view: the more supports on which a book is sewn, the stronger it is likely to be and the longer it will take to sew. In addition, the sewing on B-2 is both all-along²⁰² and packed, a fact that supports the identification of a higher quality structure. However, there are some features of the binding that are of lower quality than that shown by the structure: the endleaves are tipped single folds (type 1) of printed paper, which is one of the simplest types (it only requires a fold of paper tipped to each joint of the textblock),²⁰³ with panel spine-linings²⁰⁴ of parchment at head and tail only²⁰⁵ and the endbands were worked in a double,²⁰⁶ medium thread. However there is clear evidence that suggest that the book was worked on by more than one binder: there are five sewing stations²⁰⁷ when there should be six, as one of the kettlestitches²⁰⁸ has been cut away,²⁰⁹ and there are some offsets in black and red letters

¹⁹⁴ See Glossary

¹⁹⁵ See Glossary.

¹⁹⁶ On two supports: B-8, B-10, B-22, B-29, B-31, B-36, B-38 and B-42. On three supports: B-1, B-3, B-5, B-6, B-7, B-9, B-11, B-15, B-17, B-18, B-19, B-20, B-23, B-25, B-26, B-30, B-32, B-33, B-34, B-35, B-41, B-44, B-45, B-46, and B-47. On four supports: B-2, B-24, B-27 and B-37.

¹⁹⁷ See Glossary.

¹⁹⁸ The structure of B-13 has been repaired, making it impossible to describe the original features of the structure. The damage to the book B-43, also makes it impossible to describe the structure. See Appendix 4a for details.

¹⁹⁹ According to Pickwoad (1995, p. 217) 'the larger the book, the more supports it is likely to be sewn on'. Books in the range of 287 to 305 mm in height that are sewn in three supports: B-17 (300 mm), B-33 (305 mm) and B-46 (287 mm).

²⁰⁰ *Reverendi Patris Fratrīs* copies: B-1, B-2, B-3, B-31, B-32 and B-34.

²⁰¹ On two supports: B-31. On three supports: B-1, B-3, B-32 and B-34. On four supports: B-2.

²⁰² See Glossary.

²⁰³ See Appendix 7.

²⁰⁴ See Glossary.

²⁰⁵ See section 3.4 Spine and Lining (page 128).

²⁰⁶ The greater the number of threads on the needle the faster the endband will be worked' (Ligatus, 2013).

²⁰⁷ See Glossary.

²⁰⁸ See Glossary.

in the panel 2, 3 and 5 panels from earlier sixteenth-century manuscript linings.²¹⁰ Based on this evidence, it is possible to conclude that the binder needed to cut the tail-edge away, perhaps to remove a brand or because it was damaged.²¹¹ As a consequence, the textblock was reduced in height, which would have meant that a new cover would have been required. As any pastedowns would therefore have been lost with the earlier cover, the binder would have had to supply new endleaves, and work new endbands in order to provide slips²¹² with which to attach the new cover that had been made to fit the reduced size of the textblock (*Fig. 15*).



Fig. 15 Structure in B-2

Another similar case is that of the *Specvlvm Conivgiorm...* written by fray Alonso de la Veracruz, printed in 1556 by Juan Pablos.²¹³ There are two copies, B-20 and B-24, of the same height (216 mm) of which B-20 is sewn on three supports and B-24 is sewn on four. In comparing these two books, it is clear that the binding techniques are different in both cases: the sewing of B-20 is all-along and not packed, with panel linings at head and tail, with endbands attached by seven tiedowns to the textblock,²¹⁴ with a cover with cover extensions and without joint-creases,²¹⁵ with dark-brown tanned leather straps across the spine,²¹⁶ attached to the bookblock by both the endband-core and sewing-support slips²¹⁷ and with fore-edge ties each laced through three holes (according with pattern lacing type 3 or 4).²¹⁸ In contrast, B-24 is sewn two-on,²¹⁹ and transverse lining²²⁰ in each panel, with the endbands attached to the textblock by four tiedowns,²²¹ with a cover with joint-creases and cover extensions, attached to the textblock by means of the endband-core slips only

²⁰⁹ The head kettlestitch in B-3, sewn on three supports, has been also cut away. In this case, therefore, there are only four sewing stations when should be five.

²¹⁰ See Appendix 4a for details.

²¹¹ See section 3.3 Edges (page 107).

²¹² See *endband-core slips* in the Glossary.

²¹³ *Specvlvm Conivgiorm...*: B-15, B-20, B-24 and B-47

²¹⁴ The ratio of the tiedowns to gathering is 7:42. See section 3.5 Endbands (page 140).

²¹⁵ See Glossary.

²¹⁶ Some small pieces of tanned leather remain between the cover and the sewing-supports slips that are a clear evidence of the straps that were originally across the spine on the outside of the cover.

²¹⁷ See Glossary.

²¹⁸ See Appendix 11.

²¹⁹ See Glossary.

²²⁰ See Glossary.

²²¹ The ratio of the tiedowns to gatherings is 4:43.

and with fore-edge ties, each laced through one hole (type 1).²²² Despite the fact that B-24 has four supports, the technique used for the sewing is faster, and therefore less expensive, than the all-along and not packed sewing shown by B-20, as is explained below. In addition, the features of the cover and the endbands in B-20 show more expensive work. The most likely explanation for these different bindings is that they are the work of two different binders, with different techniques, and perhaps with different budgets.

There are other titles that are represented by more than one copy in the sample. These are *Advertencias para los Confessores de los Naturales...*, of which five copies were found,²²³ each in the range of 145 to 160 mm in height, all sewn on two supports, *Philippvs Hispaniarvm et Indiarvm Rex...*, of which three copies were found,²²⁴ each in the range of 300 to 305 mm in height, sewn on three supports and finally, *Sermonario en Lengva Mexicana...*, of which three copies were found,²²⁵ also sewn on three supports. None of these show a relationship between the features of the sewing and the printer or with the geographic area of the libraries to which each belonged; this suggests that the choice of the number of supports in relation to the size of the book may show a more general pattern.

All books in the comparative sample bound in limp, laced-case binding were also sewn with supported sewing on two (three books), three (twenty books), four (nine books), five (three books) and six (one book) raised supports arranged along the spine.²²⁶ The result are in line with the books which are in the height range of 102 to 412 mm. On average, books of 165 mm or less in height are sewn on two or three supports, whilst books ranging between 200 to 280 mm in height are sewn on three or four supports. Books of 280 to 340 mm in height are sewn on four or five supports and, finally, there is only one very much taller book, CB-9, of 412 mm in height, which is sewn on six supports. It should be mentioned that there are no books in the main sample sewn on five or six supports, which is in line with the height of the books, since B-33 is the tallest book identified in the main sample, at 305 mm, and is sewn on only three single supports.

There are only two titles represented by more than one copy in the comparative sample: there are two copies of *De Locis S[anctae] Scriptvrae Hebraicis Angeli Caninii*

²²² See Appendix 11.

²²³ *Advertencias para los Confessores de los Naturales...*: B-8, B-29, B-36, B-38 and B-42.

²²⁴ *Philippvs Hispaniarvm et Indiarvm Rex...*: B-17, B-33 and 46.

²²⁵ *Sermonario en Lengva Mexicana...*: B-6, B-30 and B-35. Book B-30 has been restored so extensively that it can no longer yield meaningful measurements. I have therefore not recorded the current measurements. In the cases of B-6 and B-35, they have a height of 205 mm and 210 mm respectively.

²²⁶ On two supports: CB-7, CB-8 and CB-16. On three supports: CB-1, CB-5, CB-6, CB-10, CB-11, CB-13, CB-15, CB-17, CB-18, CB-19, CB-21, CB-23, CB-27, CB-28, CB-29, CB-31, CB-33, CB-35, CB-46 and CB-47. On four supports: CB-12, CB-22, CB-25, CB-30, CB-36, CB-39, CB-41, CB-43 and CB-45. On five supports: CB-2, CB-3 and CB-26. On six supports: CB-9.

Commentarijs, et Antonii Nebrissensis Qvinqvagena,²²⁷ of 167 mm and 162 mm in height, both of which are sewn on two supports. This suggests that the choice of number of supports in relation to the size of the book may show a general pattern.

87% of the books bound in laced-case bindings in the main sample are sewn on single supports (thirty-four books, *Fig. 16a.*), with only three books that are sewn on double supports (*Fig. 16b.*)²²⁸ One possible explanation for such a disproportion may be that the binders who worked in Mexico, faced by an increasing demand for bound books, the consequence both of the establishment of the printing press in Mexico City as well as the importation of books from Europe, looked for strategies to reduce the time-consuming work needed to bind a book. Given that sewing is the part of the binding process that requires more time to be executed than all the others (Pickwood, 1995), sewing on single supports as opposed to double supports represents an acceleration of the sewing process and a consequent need to spend less time in binding the book.

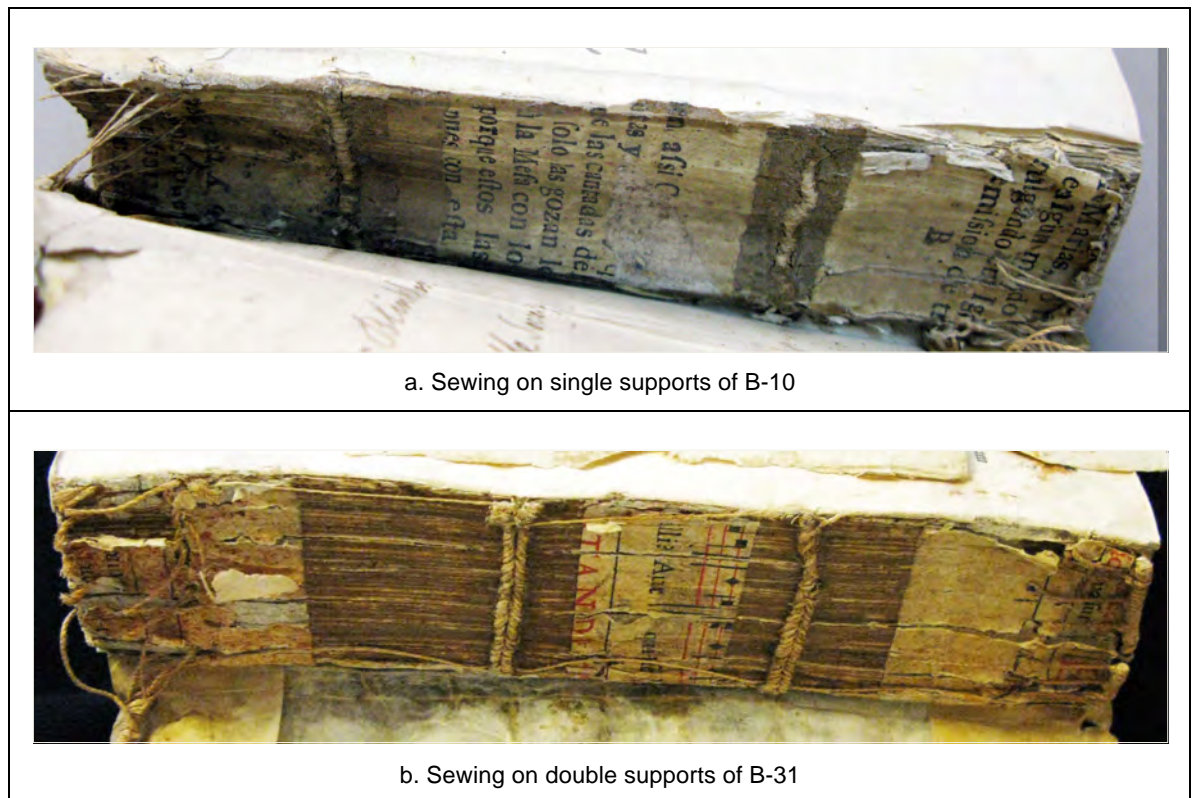


Fig. 16. Sewing on single (a) and double (b) supports in the main sample

It must be mentioned that 48.6% (eighteen books) of the books in the comparative sample are sewn on double supports, with only 37.83% (fourteen books) sewn on single

²²⁷ *De Locis S[anctae] Scripturae Hebraicis Angeli Caninii Commentarijs, et Antonii Nebrissensis Qvinqvagena*: CB-7 and CB-8.

²²⁸ Books sewn on single supports: B-1, B-2, B-3, B-5, B-6, B-7, B-8, B-9, B-10, B-11, B-15, B-17, B-18, B-19, B-20, B-22, B-23, B-24, B-25, B-26, B-27, B-29, B-30, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-42, B-44, B-46 and B-47. Books sewn on double supports: B-31, B-41 and B-45.

supports,²²⁹ in contrast to books in the main sample, in which only three are sewn on double supports, which suggests the possibility that the textblocks were already sewn when they arrived from Europe and were then given covers after they got there. This view can be supported by the fact that the booktrade during the sixteenth century was well established across Europe and the Spaniards expanded it to the American continent. In order to avoid the payment of the high taxes levied on books imported into New Spain, based on the weight and size of the shipment,²³⁰ booksellers may have preferred to ship books as sewn bookblocks without covers, to reduce the weight of the book, and thus an increased cost of shipping, as well avoiding the cost of making the cover. This same practice of selling books either in sheets or as sewn bookblocks was also common in the booktrade among the European countries (Pickwoad, 1994). In addition, the covers of the books in the comparative sample are similar to those shown by the Mexican books in the sample, something that suggests that the books in the comparative sample were possibly covered in Mexico.²³¹

The supports in the books in the main sample are made from three materials: alum-tawed skin, tanned leather and cord.²³² The majority of the single supports are of alum-tawed skin (twenty-seven books), with the exception of three books, whose sewing supports are of tanned leather.²³³ It should also be mentioned that the endband cores of B-22 and B-46 are of alum-tawed skin; the combination of tanned-leather supports and alum-tawed skin endband-cores reflects an Italian influence in this book.²³⁴

Of the three books that have double supports, each has sewing supports made from a different material: in B-41, the sewing supports are of tanned leather, whereas in B-45 they are of alum-tawed skin. Book B-31 is of interest in being sewn on two double supports of cord (*Fig. 17*), the use of which material for raised sewing-supports was a particularly German practice during the sixteenth century and seldom found elsewhere.²³⁵ To find what is clearly a German influence reflected in this Mexican book raises the question about how this practice came to be adopted. A possible explanation is that the Mexican binder may have seen a book bound in Germany that arrived from Europe already sewn and took it as a model to be followed. Another possibility is that cord was

²²⁹ Sewn on single supports: CB-6, CB-7, CB-10, CB-11, CB-15, CB-16, CB-17, CB-22, CB-27, CB-29, CB-30, CB-35, CB-46 and CB-47. Sewn on double supports: CB-1, CB-2, CB-5, CB-9, CB-12, CB-13, CB-18, CB-19, CB-21, CB-23, CB-25, CB-28, CB-31, CB-36, CB-39, CB-41, CB-43 and CB-45. The features of the sewing supports in CB-3, CB-8, CB-26, CB-32 and CB-33 could not be described because the books do not open far enough to see either between the cover and the spine.

²³⁰ See footnote 49.

²³¹ See section 3.6 Cover.

²³² See Glossary.

²³³ Single supports of alum-tawed skin: B-2, B-3, B-6, B-7, B-8, B-9, B-10, B-11, B-15, B-17, B-18, B-19, B-20, B-23, B-26, B-27, B-29, B-30, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-42 and B-44. Single supports of tanned leather: B-22, B-25 and B-46.

²³⁴ Information obtained from the course: *HEB 1500-1800*.

²³⁵ Information obtained from the course: *HEB 1500-1800*.

the only material that the binder had available. In addition to these two possibilities, it should also be remembered that Juan Pablos, who worked as a printer in Mexico during the sixteenth century,²³⁶ was a partner of Cromberger, which raises the possibility that bookbinding was also carried out at the printing workshop, and that he was familiar with German bookbinding practices. However, B-31 was printed in 1566 by Antonio de Espinosa and not by Juan Pablos, as it might be expected if there was to be a connection with Cromberger. The use of cord for sewing supports in this Mexican edition raises the question about when this practice became common in Mexico. Taking into account also that sewing on double supports became less common at the end of the sixteenth century in Europe, it may be that this book is the result of a binder in Mexico with rather old-fashion bookbinding practices.

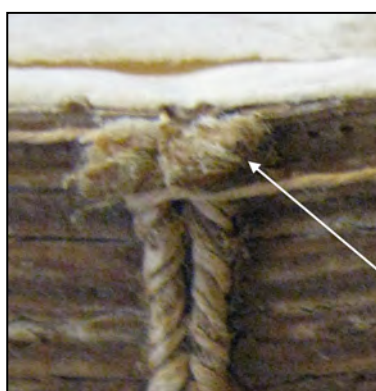


Fig. 17. Double supports made of cord in B-31

There is, unfortunately, not enough evidence to confirm any of these hypotheses and, in order to establish the frequency of the use of cord as a material for sewing supports in Mexico and when its use became common practice, it is necessary to find more books that were certainly bound in Mexico during the sixteenth century and later and analyse their structures.

The results obtained from the comparative sample are slightly different. Whilst the single sewing supports are of tanned leather and alum-tawed skin, the double sewing supports are mostly of tanned leather. In six out of the fourteen books sewn on single sewing supports, the supports are made of alum-tawed skin, whilst supports in two books are made of tanned leather. Finally, the material from which the sewing supports were made in six books could not be identified.²³⁷ With regards to the material used to make double supports, alum-tawed skin was used for the supports in six books, tanned leather was

²³⁶ See Chapter one (page 30).

²³⁷ Single supports of tanned leather: CB-10 and CB-46. Single supports of alum-tawed skin: CB-11, CB-15, CB-16, CB-17, CB-29 and CB-47. Material from which the supports were made could not be identified: CB-6, CB-7, CB-22, CB-27, CB-30 and CB-35.

identified in the supports of nine books and, finally, cord supports were identified in three books in the comparative sample (*Fig. 18*).²³⁸

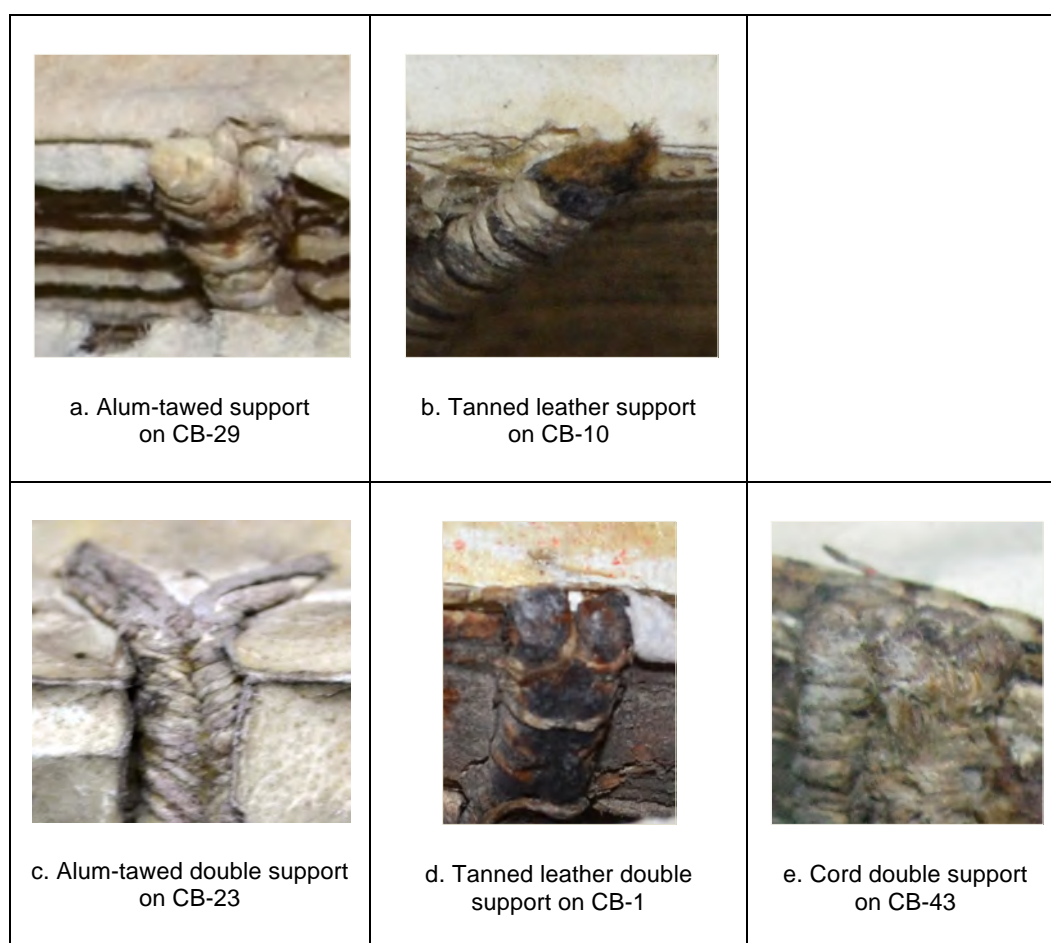


Fig. 18. Materials used to make the sewing supports identified in the comparative sample

The books that are sewn on cord supports, were printed in France, Spain and Germany.²³⁹ It is not surprising to find a German book sewn on cord supports, but with regard to the presence of cord sewing-supports on Spanish editions, it suggests that these books may have been bound during the seventeenth or eighteenth century or either arrived from Europe already bound or sewn.²⁴⁰ If this were the case, the presence of cord sewing-supports in a Mexican book would be understandable if the Mexican book had been rebound, but once again, in order to determine the frequency of its use and the time of its introduction in Spain, it is necessary to analyse a wider sample of books bound in Spain.

²³⁸ Double supports of tanned leather: CB-1, CB-2, CB-9, CB-12, CB-19, CB-25, CB-28, CB-36 and CB-39. Double supports of alum-tawed skin: CB-5, CB-13, CB-21, CB-23, CB-41 and CB-45. Double supports of cord: CB-18, CB-31 and CB-43.

²³⁹ Germany: CB-18, Spain: CB-31 and France: CB-43.

²⁴⁰ Pickwood identified the earliest use of cord sewing-supports in a Spanish imprint from the second half of the seventeenth century (Pickwood, 2011. pers.comm.).

Ten out of the eighteen books sewn on double supports in the comparative sample were printed in Spain, of which the supports in five books were made of tanned leather and in four of alum-tawed skin; cord was used to make the supports in book CB-41. There would appear, therefore, to be a greater tendency for Spanish editions of the sixteenth century to use tanned leather for double supports rather than for single supports, the majority of which (four books) are made of alum-tawed skin.²⁴¹ However, there is not enough evidence to confirm this hypothesis and, in order to determine the frequency of the use of tanned leather as a material for double supports in Spanish bindings of the sixteenth century, it would be necessary to analyze more books that were certainly sewn in Spain at that time.

Another instance of interest is that of the combination of tanned leather used to make the sewing supports and alum-tawed skin used to make the endband cores (*Fig. 19*). This combination of material was identified in four books printed in France, in five books printed in Spain and in only one book printed in Italy.²⁴² It is not surprising to find this combination of materials in a book printed in Italy, since this is an Italian practice. Considering the similarities between the Italian and Spanish bookbinding techniques in the sixteenth century, it is likely that this practice was also common in Spain.



Fig. 19. Combination of tanned leather used to make the sewing supports and alum-tawed skin used for the endband cores on CB-12

It should be mentioned that the sewing supports in book CB-9, printed in France, are made of tanned leather whilst the endband-cores are made of cord (*Fig. 20a*). This combination of materials was a French practice in the mid-sixteenth century (Pickwood,

²⁴¹ Spanish books sewn on double supports: on tanned leather supports: CB-12, CB-19, CB-25, CB-36 and CB-39. On alum-tawed skin supports: CB-13, CB-21, CB-23 and CB-41. On cord supports: CB-31. Spanish books sewn on single supports of alum-tawed skin: CB-11, CB-15, CB-16 and CB-47.

²⁴² Books printed in France: CB-1, CB-2, CB-10 and CB-46. Books printed in Spain: CB-12, CB-19, CB-25, CB-36 and CB-39. Book printed in Italy: CB-28.

1991); however, there is an added slip of alum-tawed skin stabbed through the head and tail of each joint close to the ends of the endband cores, and laced through the cover and turn-ins.²⁴³ The cover was carefully made of first-use parchment, with the hairside outside, with joint-creases and turn-ins at head, tail and fore-edge, and with cover extensions at the fore-edge. Taking into account that these features of the cover are similar to those shown by the Mexican books in the sample,²⁴⁴ and that fibres of tanned leather that can be seen adhered to the spine of the textblock, which are clear evidence of an earlier leather cover (*Fig. 20b.*), it is, therefore, possible that the textblock, with or without its earlier leather cover, arrived from Europe already sewn, with the endbands in place and that the present replacement limp, laced-case cover was made in Mexico.

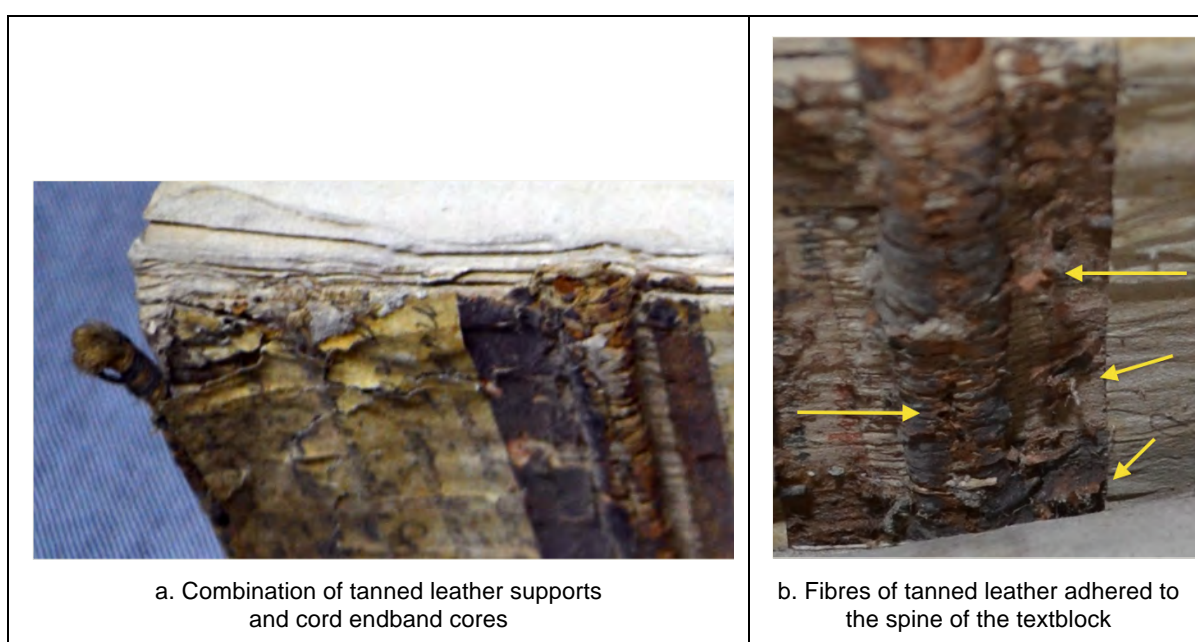


Fig. 20. The structure of CB-9

The formation of the supports can be executed in a variety of different ways. Of the single supports made from either alum-tawed skin or tanned leather in the main sample and in which the formation could be identified, rolled,²⁴⁵ twisted,²⁴⁶ crushed²⁴⁷ and folded²⁴⁸ supports can be identified, of which the majority are rolled (ten books). Twisted supports are represented by six books, crushed supports are represented by two books and one single book shows folded supports.²⁴⁹ In the case of double supports, only the rolled type could be identified, whereas in the comparative sample, the twisted and rolled type are preferred, as is explained below. The variety of techniques used to form the supports

²⁴³ See sections 3.5 Endbands (page 147) and 3.7 Cover Attachment (page 205).

²⁴⁴ See section 3.6 Cover page 154.

²⁴⁵ See Glossary.

²⁴⁶ See Glossary.

²⁴⁷ See Glossary.

²⁴⁸ See Glossary.

²⁴⁹ Rolled supports: B-2, B-6, B-11, B-20, B-25, B-26, B-33, B-36, B-37 and B-38. Twisted supports: B-7, B-8, B-9, B-17, B-23 and B-30. Crushed supports: B-19 and B-27. Folded supports: B-29

suggests that there were several binders working in Mexico, using different techniques to bind the books.

The formation of the supports in the books in the comparative sample was also executed in different ways. Of the single supports made of either alum-tawed skin or tanned leather and in which the formation could be identified, rolled supports can be identified in two books, whilst twisted supports could be identified in three books. In the case of the double supports, rolled supports are represented by five books in the sample whereas the sewing supports in four books are twisted. Finally, there are three books in the sample with crushed sewing supports.²⁵⁰

Once the binder has determined how many supports the bookblock is to be sewn on, and has chosen the material and technique for the formation of the supports, he has to decide how to space them along the spine. As has been mentioned before, the books in the main sample are sewn on either two, three or four supports and each of the supported sewing stations will be placed in a specific location. In addition to the supported sewing stations, there will usually be two change-over stations,²⁵¹ one each placed in the head and tail panels. The arrangement of the sewing stations along the spine forms a pattern that is a distinctive feature that can give information about the place, date and type of binding (Ligatus, 2013).

The patterns identified in the books of the sample fall into two main groups according to the relationship between the outermost panels (at head and tail) and those at the centre of the spine (*Fig. 21*). The first group contains books whose sewing supports are spaced at equal intervals along the spine. The books that have the sewing supports spaced at equal intervals along the spine, with shorter panels at head and tail are included in the second group.

As has been mentioned before, books in the comparative sample were sewn on either two, three, four, five or six supports. The spacing patterns identified in the books in the comparative sample fall into the two main groups identified in the Mexican books in the sample, (*Fig. 21*). The first group is that in which the sewing supports are spaced at equal intervals along the spine, whereas the second group includes those books in which the sewing supports are spaced at equal intervals along the spine, with shorter panels at head and tail. In the cases of the books sewn on five or six supports, only the pattern in which the sewing supports are spaced at equal intervals along the spine was identified.

²⁵⁰ Single rolled supports: CB-11 and CB-46. Single twisted supports: CB-10, CB-15 and CB-47. Double rolled supports: CB-2, CB-9, CB-12, CB-41 and CB-45. Double twisted supports: CB-5, CB-13, CB-21 and CB-23. Double crushed supports: CB-25, CB-28 and CB-36.

²⁵¹ See Glossary.







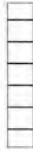
Number of supports		Supports spaced at equal intervals along the spine	Support spaced at equal intervals, with shorter panel at head and tail
Two supports			
Three supports			
Four supports			
Only found in the book in the comparative sample	Five supports		
	Six supports		

Fig. 21. Distribution of supports along the spines of the books in both sets of samples
(The change-over stations are not shown)

Independently of the number of sewing supports and their distribution, a relationship between the head and tail edges of the spine and the change-over station at each end was also identified. In all of the eight books sewn on two supports, the supports are arranged near the head- and tail-edges, that is to say that the panels at head and tail are shorter than the central panel. In these cases, the books have four sewing stations with pierced holes²⁵² along the spine. The relationship between each of the change-over stations and the edges close to which they are placed, shows four variants which are also reflected in the position of the sewing supports (*Fig. 22a., 22b., 22c. and 22d.*). From this group of books sewn on two supports, an interesting instance are samples B-22 and B-29 where the change-over stations at the head are placed 5 mm and 2 mm away from the edge respectively and that at the tail is placed 22 mm and 20 mm far from the edge respectively. This disproportion could be explained by considering that the margin at head in small books, such as in quartos or smaller formats as is the case of these books, is determined by the layout of the type by the printer and would be reflected in a fixed maximum height that allows the binder to place the sewing station in a reliable place,

²⁵² See Glossary.

knowing that it will not be cut off when the book is trimmed.²⁵³ The tail-edge of the uncut bookblock, however, was more irregular than that at the head, leading the binder to place the change-over station further from the edge in order to be able to cut enough to achieve a smooth surface on the tail-edge, without the risk of cutting into the change-over station. It is possible that in these two sample books, both facts are reflected in the spacing of the sewing stations along the spine.

In all of the three books sewn on two supports in the comparative sample, the supports are arranged near the head- and tail-edges, with shorter panels at head and tail than the central panel, and the relationship between each of the change-over stations and the edge close to which it is placed, follows the pattern shown in *Fig. 22d*. In these cases, the books have four sewing stations with pierced holes along the spine.

Five out of the twenty-five books sewn on three supports in the main sample show the supports spaced at equal intervals along the spine, whereas twenty of them have the sewing supports spaced at equal intervals along the spine, but with shorter panels at head and tail.²⁵⁴ All of these books have five sewing stations with pierced holes, with the exception of B-3 which was trimmed, cutting through the sewing thread and removing the change-over station at the head (where the kettlestitch was worked), leaving only four sewing stations when there should be five.

The relationship between the change-over station and the head- and tail-edges at each end of the spine shows three variants in these books sewn on three supports (*Fig. 22e*., *22f*. and *22g*.). From these patterns, that are shown in *Fig. 22e*. is preferred, followed in frequency by the pattern shown in *Fig. 22f*. The spaces between the tail-edge and the change-over stations in seven out of these twenty-five books,²⁵⁵ is approximately twice that of the distance between the head-edge and the change-over station (*Fig. 22g*.). It is possible that in these cases, as has been explained above, the position of the change-over station at the head-edge reflects the fact that the tail-edge of the uncut bookblock was more irregular than that at the head-edge.

Ten out of the twenty books sewn on three supports in the comparative sample show the supports spaced at equal intervals along the spine, whilst ten of them have the sewing supports spaced at equal intervals along the spine, but with shorter panels at head and

²⁵³ Information obtained from the course: *HEB 1500-1800*

²⁵⁴ Supports spaced at equal intervals along the spine: B-1, B-11, B-19, B-23 and B-30. Supports spaced at equal intervals, with shorter panel at head and tail: B-3, B-5, B-6, B-7, B-9, B-15, B-17, B-18, B-20, B-25, B-26, B-32, B-33, B-34, B-35, B-41, B-44, B-45, B-46 and B-47.

²⁵⁵ Pattern shown in *Fig. 22g*.: B-15, B-20, B-25, B-32, B-34, B-35 and B-45.

tail.²⁵⁶ All of these books have five sewing stations with pierced holes along the spine. The relationship between the change-over stations and the head- and tail-edges at each end of the spine shows two variants in those books sewn on three supports (*Fig. 22e. and 22g.*). Of these patterns, the one shown in *Fig. 22e.* is preferred. In these cases, in comparison with the Mexican books in the sample, the spaces between the change-over station and the tail- and head-edges at each end of the spine is approximately the same. Of this last group of books, the space between the tail-edge and the change-over stations in book CB-46 is approximately twice that of the distance between the head-edge and the change-over station (*Fig. 22g.*).

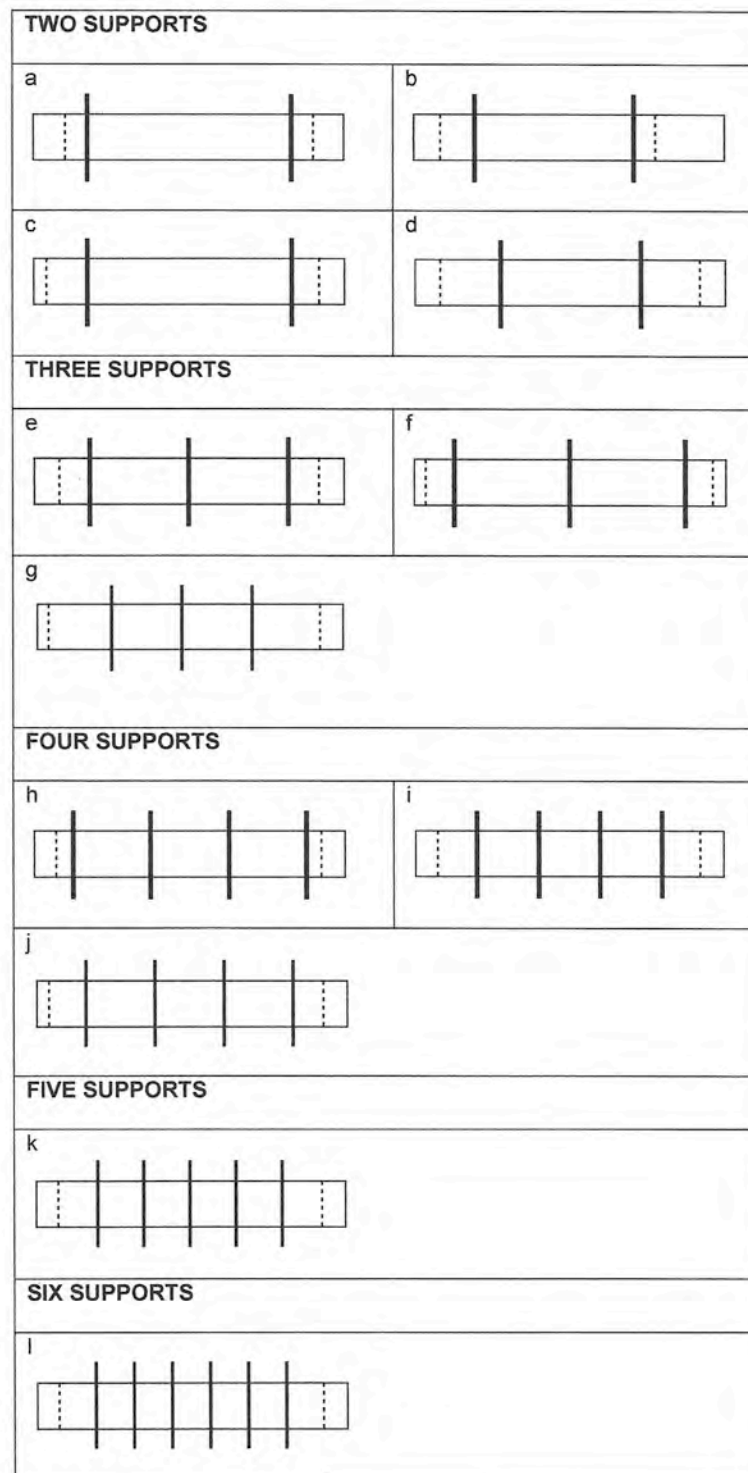
With regard to the sewing supports of the books in the main sample sewn on four supports, the supports are also arranged according to two main patterns. There are two books whose sewing supports are spaced at equal intervals from head to tail along the spine and there are also two books whose sewing supports are spaced at equal intervals along the spine, with shorter panels at head and tail.²⁵⁷ All of them have six sewing stations with pierced holes, with the exception of sample B-2 which was trimmed, cutting through the sewing thread and removing the change-over station at the tail (where the kettlestitches were worked), leaving only five sewing stations when there should have been six (*Fig. 15*). This same phenomenon was identified in book CB-22 in the comparative sample, but in this case, both the head and tail change-over stations (where kettlestitches were worked) were cut away, leaving only four sewing stations when there should have been six. Independently of the arrangement of the sewing-supports, each of the change-over stations is placed within a range of 5 to 8 mm from the head and tail ends of the spine (*Fig. 22h and 22i*). In three books sewn on four supports,²⁵⁸ the space between the tail-edge and the change-over stations is approximately twice that of the distance between the head-edge and the change-over station (*Fig. 22j*).

Finally, as has been described above, there are three books in the comparative sample sewn on five supports and one book sewn on six supports. In all of these, the sewing supports are spaced at equal intervals along the spine, and the relationship between the change-over stations and the head- and tail-edges at each end of the spine is approximately the same at each end of the spine (*Fig. 22k and 22l*).

²⁵⁶ Supports spaced at equal intervals along the spine: CB-1, CB-5, CB-6, CB-11, CB-18, CB-21, CB-23, CB-31, CB-33 and CB-47. Supports spaced at equal intervals, with shorter panel at head and tail: CB-10, CB-13, CB-15, CB-17, CB-19, CB-27, CB-28, CB-29, CB-35 and CB-46.

²⁵⁷ Supports spaced at equal intervals along the spine: B-24 and B-37. Supports spaced at equal intervals along the spine, with shorter panels at head and tail: B-2 and B-27.

²⁵⁸ Pattern shown in *Fig. 22j*: B-39, B-41 and B-43.



*Fig. 22. Arrangement of sewing supports and change-over stations in both sets of samples
(The heavy vertical lines show the sewing supports and the dotted lines represent the change-over stations)*

3.2.1 Sewing

Both packed and not-packed sewing were identified in the main sample, this distinction would appear not to be related to the number of sewing supports. The single thread used in both these types of sewing follows different routes along the gatherings²⁵⁹ in order to

²⁵⁹ See Glossary.

attach them to the sewing supports. There are many different combinations between the number of sewing supports, the type of sewing and the pattern of sewing.

The sewing of two of the eight books sewn on two supports is all-along and not packed, whereas in three books it is all-along and packed.²⁶⁰ In addition, B-31 uses a linked-sewing technique²⁶¹ as is explained below. The variations in sewing on two supports might suggest that there were several binders using different techniques to bind books in Mexico.

The case of B-38 is of interest because although its sewing is all-along and not packed and on only two supports (*Fig. 23*), taking the other characteristics of the binding into consideration such as its decorated edges, parchment panel linings, and endbands that were worked in a single thread with six tiedowns,²⁶² with a first-use parchment cover with cover extensions folded over the fore-edge and tie-lacing type 2,²⁶³ attached to the bookblock by means of lacing both the endband-core and sewing-support slips through the cover, there appears to be a contradiction between the quality of the different parts of the binding. It may be that this book was sold as a sewn texblock with no endleaves and the binder completed the work by adding the rest of the elements in order to attach the texblock to the cover. The evidence therefore suggests that the binding of this book was carried out by more than one binder.



Fig. 23. Sewing on two supports of B-38

All three books sewn on two supports in the comparative sample are sewn all-along, of which CB-16 has not-packed sewing. The type of sewing in the remaining two books sewn on two supports could not be identified.

Eight out of the twenty-five books sewn on three supports in the main sample were sewn all-along, packed sewing, eleven were sewn with all-along with not-packed sewing

²⁶⁰ All-along and not-packed sewing: B-22 and B-38. All-along and packed sewing: B-8, B-10 and B-29.

²⁶¹ See Glossary.

²⁶² The ratio of tiedowns to gathering is 6:55.

²⁶³ See Appendix 11.

whereas two were sewn with linked-sewing as is described below. The sewing type of the remaining four books could not be determined.²⁶⁴ In the first group, sewn all-along and packed on three supports, two very different cases were identified, B-3 and B-7. B-3 has decorated edges, panel linings in all panels, endbands worked with a double, thin thread, with a back bead and five tiedowns, the cover with cover extensions folded over the fore-edge and, originally, tanned leather straps across the spine behind each of the sewing supports through the ends of which each of the sewing support slips was laced. It is attached to the bookblock by means of the slips of both the endband cores and the sewing supports; there are also two pairs of alum-tawed ties on the fore-edge, each laced through three holes following types 3 or 4.²⁶⁵ These features, in addition to the type of sewing, confirm that it is a relatively expensive binding. On the other hand, even though B-7 has decorated edges, it has neither linings nor endbands, it has two pairs of alum-tawed ties, each laced through one hole following the type 2 pattern,²⁶⁶ the cover is attached to the bookblock by means of each of the three sewing supports slips from which the sewing supports on the left have added slips.²⁶⁷ These features suggest, once again, that the work was carried out by different binders (*Fig. 24*).



Fig. 24. The structure of B-7

The sewing of three of the twenty books sewn on three supports in the comparative sample is all-along and not packed, whereas in four books it is all-along and packed (*Fig. 25*). In addition, three books use a linked-sewing technique, and five books use by-pass sewing,²⁶⁸ as described below. This last type of sewing was not identified in the books sewn on three supports in the main sample. All-along sewing was used in the remaining five books, but it was not possible to identify whether any of them were sewn packed or not-packed.²⁶⁹

²⁶⁴ All-along, not-packed sewing: B-5, B-6, B-17, B-19, B-20, B-25, B-26, B-32, B-33, B-44 and B-46. All-along, packed sewing: B-1, B-3, B-7, B-9, B-11, B-18, B-23, and B-34. Linked-sewing: B-41 and B-45. No determined: B-15, B-30, B-35 and B-47.

²⁶⁵ See Appendix 11.

²⁶⁶ See Appendix 11.

²⁶⁷ See footnote 117 and section 3.6 Cover (page 173).

²⁶⁸ All-along, packed sewing: CB-1, CB-28, CB-46 and CB-47. All-along, not-packed sewing: CB-6, CB-13 and CB-15. Linked-sewing technique: CB-19, CB-23 and CB-31. By-pass sewing: CB-11, CB-17, CB-18, CB-29 and CB-35.

²⁶⁹ All-along sewing, sewing type not identified: CB-5, CB-10, CB-21, CB-27 and CB-33.

With regard to books sewn on four supports in the main sample, two out of the four cases, B-2 and B-27, were sewn all-along and packed. As has been mentioned before, the features of the binding of book B-2 are in line with a simple laced-case binding, with no evidence of expensive work other than the sewing. In the specific case of B-27, even the sewing reflects elaborate work, but the book does not have either spine linings or endbands. In this case it is clear that a well-worked structure that might otherwise represent a more expensive binding, does not always match the quality of the other features of the binding, which may be executed in a much simpler manner. This disparity of qualities between the structure and the rest of the features of this binding, might be explained if the books were already sewn before another binder completed the work with a simple, limp, parchment cover. Another explanation is that the book was repaired and the binder decided to preserve the first sewing and not to add other elements such as the linings or the endbands. This last view is reflected in B-2 which shows, as has been explained above, some evidence that suggests that the cover of this book is a replacement. In addition to these two books there are B-24, which is sewn on four supports with two-on sewing as is described below, and B-37 whose features of the sewing could not be identified.

All-along, packed sewing was identified in the books sewn on four supports in the comparative sample (*Fig. 25*). This combination is represented by two books. In addition, three books use a linked-sewing technique, and two books use by-pass sewing, as described below. Finally, the sewing in CB-45 could not be identified.²⁷⁰ In addition, there are three books sewn on five supports, of which CB-2 was sewn all-along, not-packed; CB-26 was sewn all-along, but it was not possible to determine whether or not it was sewn packed. Finally, it was impossible to identify either the type or the route of the sewing in CB-3. Only CB-9 was sewn on six supports, with all-along and not-packed sewing.



Fig. 25. All-along, packed sewing of CB-43

²⁷⁰ All-along, packed sewing: CB-39 and CB-43. Linked-sewing technique: CB-12, CB-25 and CB-41. By-pass sewing: CB-22 and CB-30.

Of the books sewn on either five or six supports with all-along not-packed sewing, CB-2 (five supports) and CB-9 (six supports), which are the largest books in both sets of samples, are sewn on double supports. The use of this number of supports is related to the size of the book, as has been explained at the beginning of this section. Although in technical terms, the tallest books should require the larger number of supports, the use of a non-packed sewing, which requires fewer turns around the supports than packed sewing and thus requires much less time to be executed, would speed up the sewing process and would therefore impact on the cost of the binding. Even though these two books are in limp, laced-case bindings of parchment, which could be consistent with types of sewing structure used, there is some evidence that might suggest that the covers in these books are replacements. CB-2, printed in France, was been sewn on tanned leather supports, with the slips cut off at the joints, with the endbands worked on cores of alum-tawed skin, with undecorated edges, but the left side only of the title of the work can be seen written across the fore-edge, showing that the first part only of a thicker textblock has survived. The title written on the fore-edge might suggest that this book belonged to a library in Europe before it arrived in Mexico, as this practice has not been identified in the books in the main sample.²⁷¹ In addition, although it is not possible to determine where or when the textblock was divided, the binder, either, in Europe or in Mexico, would have probably needed to make a new cover that fitted the new size of the textblock.

CB-9, printed in France, was sewn on tanned leather supports, with the slips cut off at the joints, with endbands worked in two colours over cord cores and with an added slip of alum-tawed skin stabbed through the head and tail of each joint close to the ends of the endband-cores, and laced through the cover and turn-ins.²⁷² In addition, the linings have been repaired and the new transverse linings are adhered over the original linings. It is also possible to see some leather fibres attached to the spine (*Fig. 20b*). It is clear, therefore, that this book was previously bound with a leather cover over boards, and that, for some reason, it lost them and the binder supplied a cheaper cover of parchment. The evidence in both cases suggests that the binders who worked on these books decided to preserve the sewing and to finish the binding by giving them limp, laced-case covers of parchment.

The cases analysed show that it is possible to find packed sewing in bindings of both lower and higher cost. For books bound in a simple cover such as those with limp, laced-case covers, sewing would be the most time-consuming part of the bookbinding process. It is therefore reasonable to think that when the production of books increased at the end of the century, not-packed sewing became more widely used as a consequence of the

²⁷¹ See section 3.9 Titling (page 224).

²⁷² See section 3.5 Endbands (page 147).

need to save time in the sewing process. However, this chronological relationship is not reflected in the main sample, in which it is possible to find both packed and not-packed sewing in the latter part of sixteenth century. A possible explanation for this phenomenon is that there were several binders using different techniques to sew books and that some of them, perhaps, kept on using old-fashioned techniques for longer than others.

There are three books in the main sample which are sewn with linked-sewing on double supports;²⁷³ of these, B-31 is sewn on two cord supports, B-41 is sewn on three tanned double supports (*Fig. 26a* and *26b* respectively), and B-45 is sewn on three alum-tawed double supports. As linked-sewing on alum-tawed supports was characteristic of French work in the sixteenth century,²⁷⁴ it is possible that a French influence is reflected in the structure of B-45, whilst the German influence is evident in B-31 because, as has been said above, the use of cord was a typical German practice at this time.

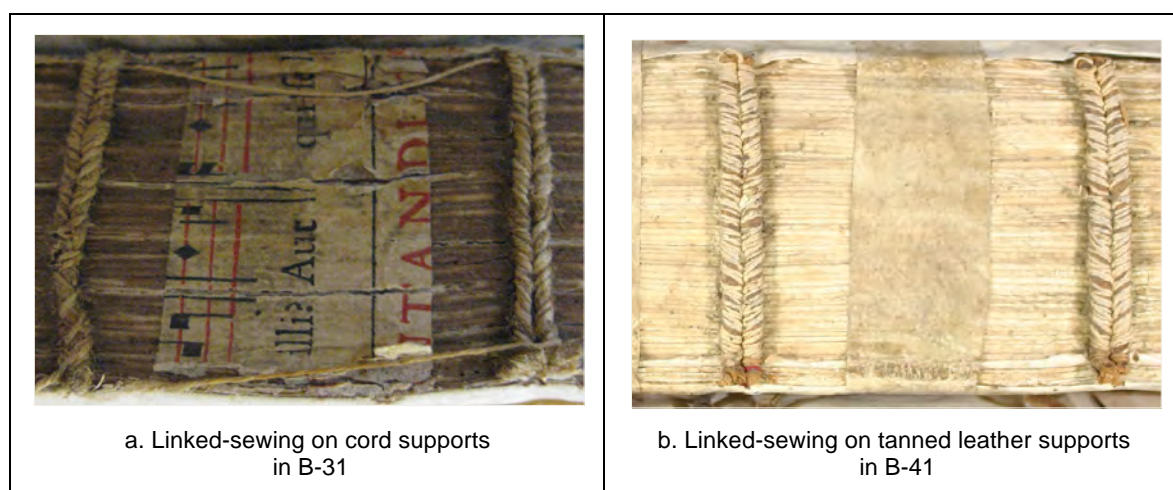


Fig. 26 Linked-sewing in B-31 and B-41

It is also interesting to note that these three books were produced within a ten-year period and each belonged to different monasteries in three very different geographical areas of Mexico²⁷⁵ and yet they show a similar sewing technique despite the variety of the materials used for their sewing supports. It may therefore be that the similarities between the sewing techniques used in these books may indicate a developing pattern.

²⁷³ Sewn with linked-sewing on double supports: B-31, B-41 and B-45.

²⁷⁴ Linked-sewing was common in Europe in the Middle-ages (Ligatus, 2013; Information obtained from the course: *HEB 1500-1800*), but the absence of recorded data makes it difficult to determine if this was also a Spanish practice in the sixteenth century. In order to identify how common linked-sewing was in Spain in the sixteenth century, it is necessary to analyse more books that were certainly bound in Spain.

²⁷⁵ Book B-31 was printed in 1566 and belonged to the *Convento de San Buenaventura de Valladolid*, Morelia, in Michoacán, B-41 was printed in 1568 and belonged to the *Convento de San Francisco de la Puebla de los Ángeles*, in Puebla and B-45 was printed in 1576 and belonged to *Convento de Santo Domingo de la Ciudad de México*, in Mexico City.

In the comparative sample, seven books with linked-sewing were identified,²⁷⁶ all of them printed in Spain between 1549 and 1593 and sewn on either three or four double supports of alum-tawed skin, tanned leather or cord, of which tanned leather was identified in three books (*Fig. 27*).²⁷⁷ Although the evidence might suggest that there is a preference in the use of tanned leather and linked-sewing in the case of these Spanish editions, the use of a variety of materials for sewing supports raises a question about which features of linked-sewing could be considered as a typically Spanish practice and which, therefore, might have influenced Mexican practice. It should be observed that the same three materials used to make the supports were identified in both sets of samples, and the features of linked-sewing identified in the main sample are the same of those of the comparative sample. There is therefore not enough evidence to be able to draw conclusions as to whether the books from the comparative sample were sewn in Mexico or Europe.

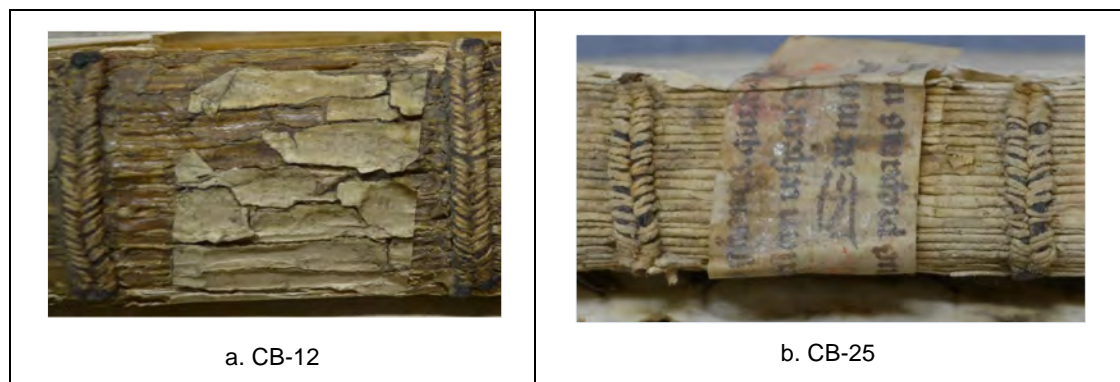


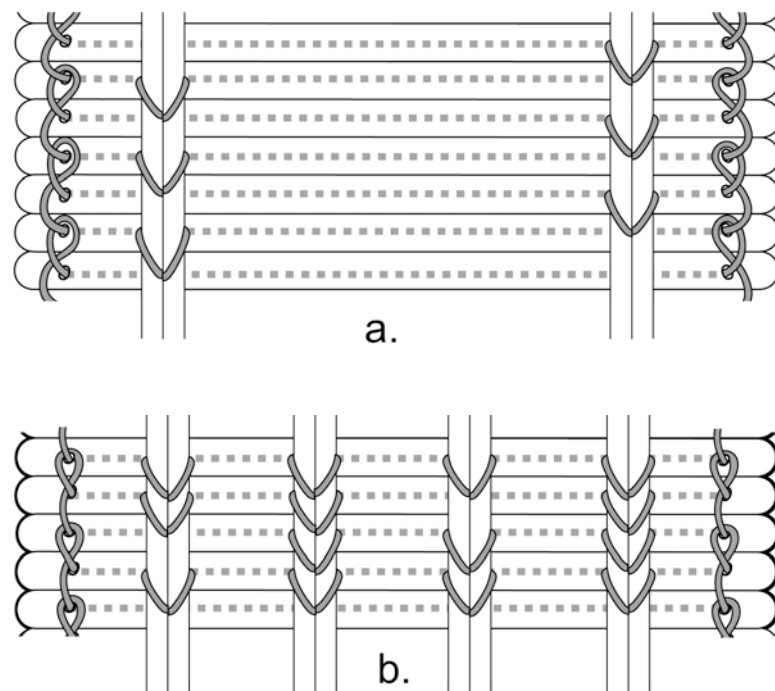
Fig. 27. Linked-sewing on tanned leather supports in CB-12 and CB-25

Another sewing technique used by binders to help them reduce the time that was required for sewing is that known as by-pass sewing.²⁷⁸ This type of sewing became popular after the 1550s in Europe and it is often found in books bound during the seventeenth century (Pickwoad, 1995; Ligatus, 2013). In book B-31, printed in 1566, which, as has been said above, is sewn with linked-sewing on two double supports, the binder omitted to sew one double support in each gathering, alternating the omitted support in each gathering (*Fig. 28a*). Although by-pass sewing allowed the structure to secure the gatherings with thread, the fact that one of the sewing supports is missed in each gathering will result in a weak structure. The combination of linked and by-pass sewing was also identified in CB-36 in the comparative sample, but in this case the sewing was executed on four double supports, following the route shown in *Fig. 28b*.

²⁷⁶ Linked-sewing: CB-12, CB-19, CB-23, CB-25, CB-31, CB-36 and CB-41.

²⁷⁷ Linked-sewing on tanned leather supports: CB-12, CB-19 and CB-25.

²⁷⁸ See Glossary.



*Fig. 28. a. By-pass sewing, linked, on two supports in book B-31 (above)
 b. By-pass sewing, linked, on four supports in book CB-36 (below)
 (The kettlestitches shown in these drawings are conjectural, as the originals are not visible)*

In addition to CB-36, there are seven books in the comparative sample that also show a by-pass sewing, of which five are sewn on three supports and the remaining two are sewn on four supports. Five out of the seven books are Spanish editions,²⁷⁹ one was printed in Germany and the last in France. The use of alum-tawed skin for the supports in CB-17 (printed in France) and the use of cord in BC-18 (printed in Germany) suggest that these two books might have arrived from Europe already sewn. For the other five books printed in Spain, alum-tawed skin was identified in the supports of CB-11 and CB-29; the material used to make the supports in the remaining three books could not be identified. It would be necessary to analyse a wider sample of books bound in Spain in order to determine the frequency of the use of this type of sewing in Spanish bindings.

Two-on sewing was an alternative way to reduce the time taken by the sewing process, and involves sewing pairs of gatherings are secured to the sewing supports with a single thread, which alternates between them. Pickwoad identified two-on sewing in French edition from the 1550s, and Szirmai identified the use of this sewing technique in an Antwerp edition of 1553 (Pickwoad, 1995; Szirmai, 1999). In the main sample, this technique was identified in book B-24, printed in 1556, in which the sewing thread follows the pattern shown in *Fig. 29*. This type of sewing was not identified in the comparative sample.

²⁷⁹ Printed in Spain: CB-11, CB-22, CB-29, CB-30 and CB-35.

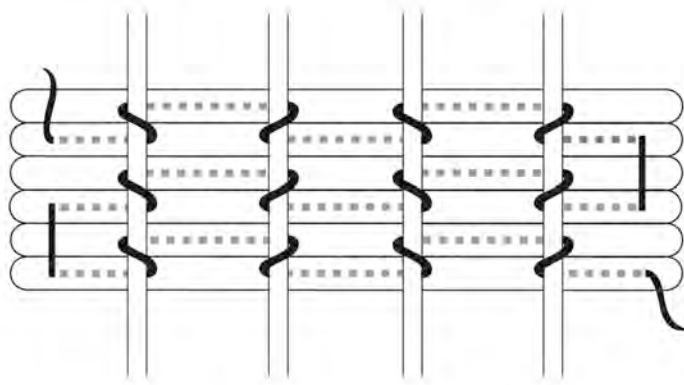


Fig. 29. Two-on sewing on four supports in book B-24
(To avoid confusion in the diagram, the kettlestitches at the change-over stations are not shown)

Whatever the type of sewing or the route followed by the sewing thread there will normally be a kettlestitch at each of the change-over stations in all of the books in the main sample. The kettlestitch allows the direction of the sewing of the textblock to be determined, because it forms a sequence of chevrons, that 'point' in the direction in which the textblock was sewn (*Fig. 30a*). As a result, when it was possible to see one or both of the kettlestitches, the direction of sewing could be identified. Ten books were sewn from left to right, whilst the direction of sewing of the remaining twenty-nine books could not be determined.²⁸⁰ Although the direction of the sewing in the majority of the books in the main sample could not be identified, sewing the bookblock from left to right was preferred. It is known that in France, Italy, England and Spain, bookblocks were typically sewn from left to right.²⁸¹ It is therefore likely that the choice of sewing from left to right was a consequence of Spanish influence.

In addition to the kettlestitches, it is also possible to determine the direction of the sewing when the bookblock is sewn using a linked-sewing technique. This type of sewing creates a chevron pattern on the supports, with the chevrons 'pointing' in the direction in which the textblock was sewn (*Fig. 30b*). Three out of the ten books sewn from left to right show linked-sewing.²⁸²

The direction of the sewing observed in the books in the comparative sample is similar to that shown by the books in the main sample. It was possible to identify the direction of the sewing in nine books, all of them printed in Spain and sewn from left to right.²⁸³ This fact

²⁸⁰ From left to right: B-7, B-19, B-25, B-27, B-29, B-31, B-34, B-38, B-41 and B-45.

²⁸¹ Information obtained from the course: *HEB 1500-1800*.

²⁸² Sewn from left to right and linked-sewing: B-31, B-41 and B-45.

²⁸³ From left to right: CB-12, CB-19, CB-23, CB-25, CB-29, CB-31, CB-36, CB-39 and CB-41.

supports the hypothesis that the direction of sewing identified in the main sample could be a result of Spanish influence. Five out of these books show linked-sewing.²⁸⁴

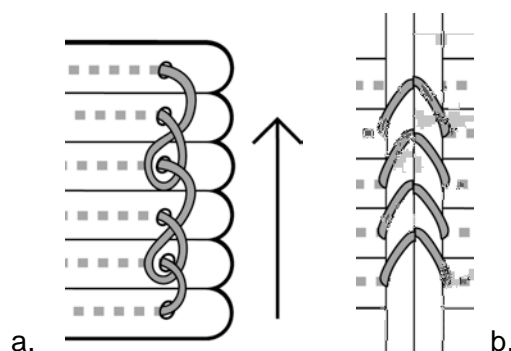


Fig. 30. Direction of the sewing determined by the kettlestitch (a) and by the linked-sewing (b)

3.2.2 Thread

The sewing thread used in the books of the main sample shows a great diversity of features, including material, thickness, ply, twist and colour. In addition, there were some binders that gave a coating to the thread in order to stop the thread twisting as it was pulled through the holes in the gatherings at the sewing stations and also to stop it being abraded.²⁸⁵ The use of some kind of coating was identified in thirty-three books in the main sample, whilst the thread used in three books was not coated. Finally, it was not possible to determine whether the thread in three books was coated.²⁸⁶

The fibres identified in the sewing thread are those of linen, hemp, cotton, jute and silk.²⁸⁷ These results show that for the making of books, they used imported fibres such as linen, hemp, and most probably jute. With regard to cotton and silk, there is some doubt as to where they came from, because there are fibres that in the sixteenth century were produced in both Spain and New Spain and commerce between Europe and the New World and Orient, where silk was readily available, was also well-established. The identification of jute is of interest because, according with Matthews (1947, p. 325) 'its entry into commercial use in the Western World dates around 1832'. The earliest evidence of its cultivation and use in Mexico that I have found so far is that of Canudas Sandoval (2005) in which the author states that the first jute mill was established in Mexico in the nineteenth century and adds that at that time it was not easy to grow jute in Mexico and that it was not cultivated there. However, jute was grown in India in the sixteenth century, and the fibre was used to make clothes, ropes and cords, among other objects (TEPCON

²⁸⁴ See page 95.

²⁸⁵ Information obtained from the course: *HEB 1500-1800*.

²⁸⁶ Coated thread: B-1, B-2, B-3, B-5, B-6, B-7, B-8, B-9, B-10, B-15, B-17, B-18, B-19, B-20, B-22, B-23, B-24, B-25, B-26, B-27, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-41, B-42, B-44, B-46 and B-47. No coated thread: B-11, B-29 and B-45. No determined: B-13, B-30 and B-43.

²⁸⁷ Linen: B-1, B-3 and B-7. Hemp: B-2 and B-5. Cotton: B-15. Jute: B-6. Silk: B-37. See Appendix 8.

International, 2002). A possible explanation for the presence of jute in the Mexican books is that this fibre could have arrived in Mexico from India by the *Galeón de Manila*, which made it possible to bring merchandise from Asia to New Spain.²⁸⁸ Unfortunately, there is at the moment no evidence to support this last hypothesis. The material from which the sewing thread in the books in the comparative sample was made could not be identified.

Among the characteristics analysed in the thread used for sewing the books in the sample were the ply, twist and thickness,²⁸⁹ as well as the colour. The relative thickness of the thread, based on visual observation only, can be divided into three groups:²⁹⁰ *thin*, *medium* and *thick*, where *medium* describes a thread with a thickness that is expected to be found for the sewing of books, *thin* and *thick* correspond to threads that are markedly thinner or thicker than might have been expected. Similarly broad criteria were used to determine the colour of the thread: *dark natural* describes a thread with a colour between brown and dark brown tones, *toned natural* describes a thread whose colour is between dark and natural colours and *natural* describes a thread whose colour is in the range of light beige and beige tones.²⁹¹ In the case of the tightness of the *twist* of the thread, the analysis is also based on visual observation and three levels were determined: *tight* (angle between 25° and 45°), *medium* (angle between 10° and 25°) and *loose* (angle up to 10°) (Boudalis, 2004).²⁹² The results of analysis of the features of the thread are shown in *Table 1*.

	TWIST AND PLY						THICKNESS			COLOUR			
	Tight		Medium		Loose		Thick	Medium	Thin	Dark	Toned	Natural	Other
	S	Z	S	Z	S	Z							
QUANTITY OF BOOKS	11	1	14	2	6	2	2	10	24	4	7	23	2 (blue and red-brown)

Table 1. Sewing thread characteristics identified in the books in the main sample²⁹³

²⁸⁸ See page 27 and Map 2 in Appendix 13.

²⁸⁹ **Ply:** depending on the direction in which the thread was twisted, the spin could resemble the central stroke of an S or a Z. A thread, yarn or cord has an S twist when, if 'held in a vertical position, the spirals conform in the direction of slope of the central portion of the letter S. A yarn has Z twist, if the spiral conform in the direction of slope to the central portion of the letter Z' (Matthews, 1947, pp. 29-30). **Twist:** 'the number of turns about its axis per unit of length' (Matthews, 1947, p. 31). **Thickness:** the thickness of the thread depends on the yarn number and thickness and the tightness of the twist. See Appendix 9 *Fig. 162 and Fig. 163*.

²⁹⁰ This descriptive method was applied for the survey of the manuscripts in the monastery of Saint Catherine on Mount Sinai to determine some features of the manuscripts, in order to make the most of the time available for the survey (Pickwood, 2004). I decided to apply this method in my own records for the same time reasons.

²⁹¹ See Appendix 8.

²⁹² See Appendix 8.

²⁹³ **Twist and ply:** tight, S: B-1, B-2, B-10, B-15, B-17, B-18, B-22, B-27, B-32, B-41 and B-42. Tight, Z: B-9. Medium, S: B-3, B-5, B-7, B-11, B-19, B-20, B-23, B-24, B-26, B-33, B-34, B-35, B-37 and B-47. Medium, Z: B-25, B-36. Loose, S: B-6, B-8, B-29, B-31, B-45 and B-46. Loose, Z: B-38 and B-44. **Thickness:** thick: B-26 and B-29. Medium: B-5, B-8, B-18, B-22, B-33, B-34, B-38, B-45, B-46 and B-47. Thin: B-1, B-2, B-3, B-6, B-7, B-9, B-10, B-11, B-15, B-17, B-19, B-20, B-23, B-24, B-25, B-27, B-31, B-32, B-35, B-36, B-37, B-41, B-42 and B-44. **Colour:** dark: B-6, B-27, B-46 and B-47. Toned: B-3, B-9, B-11, B-19, B-22, B-31 and B-44. Natural: B-1, B-2, B-5, B-7, B-8, B-10, B-15, B-17, B-18, B-20, B-24, B-25, B-26, B-29, B-32, B-33, B-34, B-35, B-36, B-38, B-41, B-42 and B-45. Other: B-23 (red-brown) and B-37 (blue).

The table shows that the medium-twist, S-ply thread predominates, and that, independently of the twist of the thread, S-ply threads are in the majority. It is, perhaps, surprising to see the preference for the use of a thin thread rather than medium, especially where the books are pack-sewn on three or four supports. In eight books of the sample,²⁹⁴ thin thread was used for all-along, pack sewing on three or four supports, which could be read as a high quality sewing. The thinner the thread, the longer it will take to work a packed-sewing because the binder will need to make extra turns around the sewing support in order to achieve the same degree of packing.

B-37 is unusual in that it was sewn all-along on four alum-tawed supports with blue silk thread. The use of a coloured silk thread for sewing the book might be taken to indicate expensive work, and there are features of the binding that could support this hypothesis. These include all-along sewing on four supports, decoration on all the edges of the bookblock, and endbands worked with a single, medium thread, with a back bead, pack-sewn, with seven tiedowns (one for every eight gatherings). As this is the only book that shows this type of thread, it would be necessary to analyse more books bound in Mexico in the sixteenth century that retain their first bindings in order to determine how common the use of this type of thread might have been. The use of silk thread was common for the secondary sewing²⁹⁵ of the endbands²⁹⁶ which was a decorative sewing worked over the primary endband,²⁹⁷ but its use for sewing the bookblock was also uncommon in Europe.

Another case is that of B-23 in which the thread used for the sewing is apparently the same of that used to work the endbands (red-brown colour), indicating that both the sewing and the endbands were worked at the same time. This same phenomenon was identified in book CB-41 in the comparative sample, where a medium, blue-colour, S-ply thread with a loose-twist was used for both the sewing and the endbands (*Fig. 31*).²⁹⁸



Fig. 31. Blue thread used for the sewing and the endbands of CB-41

²⁹⁴ On three supports: B-1, B-3, B-7, B-9, B-11 and B-23, on four supports: B-2 and B-27.

²⁹⁵ See Glossary.

²⁹⁶ Information obtained from the course: *HEB 1500-1800*

²⁹⁷ See Glossary.

²⁹⁸ In both cases, the characteristics of colour, ply, twist and thickness determined by visual examination show marked similarities.

The thread used in the books in the comparative sample also shows a great diversity of thickness, ply, twist and colour. The result of the analysis of the features of the thread are shown in *Table 2*. In addition to these characteristics, coated thread was identified in thirty books in the sample, whereas the thread used in three books was not coated. Finally, it was not possible to determine whether the thread in four books was coated.²⁹⁹

	TWIST AND PLY			THICKNESS			COLOUR			
	Tight	Medium	Loose	Thick	Medium	Thin	Dark	Toned	Natural	Other
	S	S	S							
QUANTITY OF BOOKS	4	14	15	3	16	14	1	11	19	2 (blue and dark-brown)

*Table 2. Sewing thread characteristics identified in the books in the comparative sample*³⁰⁰

The table shows that the results are slightly different from those shown by the main sample: the use of loose-twist thread predominates in the comparative sample, in contrast to the main sample, in which the use of a medium-twist thread was preferred. Another difference is that of the ply of the thread identified in each set of samples: S-ply is the only ply identified in the comparative sample, whilst Z- and S-ply were identified in the main sample. In relation to the colour of the thread, it can be said that, although in each set of samples there is one book sewn with a blue thread,³⁰¹ the characteristics of colour, texture and thickness determined by visual examination show marked differences. Even though the material used to make the sewing thread in CB-41 in the comparative sample could not be identified, its characteristics indicate that it was probably made from either hemp, cotton or linen (and not from silk).

3.2.3 Treatment of the sewing-support slips

Once the bookblock has been sewn, the binder needs to decide how the sewing-support slips will be treated, the books in the main sample show a number of variant treatments. In sixteen books the slips were cut off at the joints, whilst in fifteen, the slips were laced

²⁹⁹ Coated thread: CB-1, CB-2, CB-5, CB-6, CB-8, CB-9, CB-10, CB-11, CB-12, CB-13, CB-15, CB-16, CB-17, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-27, CB-28, CB-29, CB-30, CB-31, CB-33, CB-35, CB-36, CB-41, CB-43 and CB-47. No coated thread: CB-7, CB-39, and CB-46. No determined: CB-3, CB-26 CB-32 and CB-45.

³⁰⁰ **Twist and ply:** tight, S: CB-5, CB-6, CB-27 and CB-36. Medium, S: CB-10, CB-13, CB-15, CB-17, CB-18, CB-21, CB-22, CB-23, CB-25, CB-28, CB-29, CB-30, CB-33 and CB-43. Loose, S: CB-1, CB-2, CB-7, CB-8, CB-9, CB-11, CB-12, CB-16, CB-19, CB-31, CB-35, CB-39, CB-41, CB-46 and CB-47. **Thickness:** thick: CB-19, CB-25 and CB-43. Medium: CB-5, CB-7, CB-9, CB-11, CB-12, CB-13, CB-15, CB-18, CB-22, CB-23, CB-27, CB-30, CB-31, CB-33, CB-35 and CB-41. Thin: CB-1, CB-2, CB-6, CB-8, CB-10, CB-16, CB-17, CB-21, CB-28, CB-29, CB-36, CB-39, CB-46 and CB-47. **Colour:** dark: CB-43. Toned: CB-1, CB-6, CB-7, CB-8, CB-9, CB-19, CB-23, CB-25, CB-27, CB-28 and CB-31. Natural: CB-2, CB-5, CB-10, CB-11, CB-12, CB-13, CB-15, CB-16, CB-17, CB-18, CB-21, CB-22, CB-29, CB-30, CB-33, CB-36, CB-39, CB-46 and CB-47. Other: CB-35 (dark-brown) and CB-41 (blue).

³⁰¹ Books sewn with a blue thread: in the sample: B-37. In the comparative sample: CB-41

through the cover,³⁰² but in different ways.³⁰³ In those cases where the slips were laced-in, the outer end of each of the slips in seven books was trimmed neat and square inside the cover (*Fig. 32b*).³⁰⁴ This fact indicates that the slips were cut after lacing. There are three books where the ends of the slips were trimmed to tapered points, most probably before they were laced in, and left in this way inside the cover.³⁰⁵

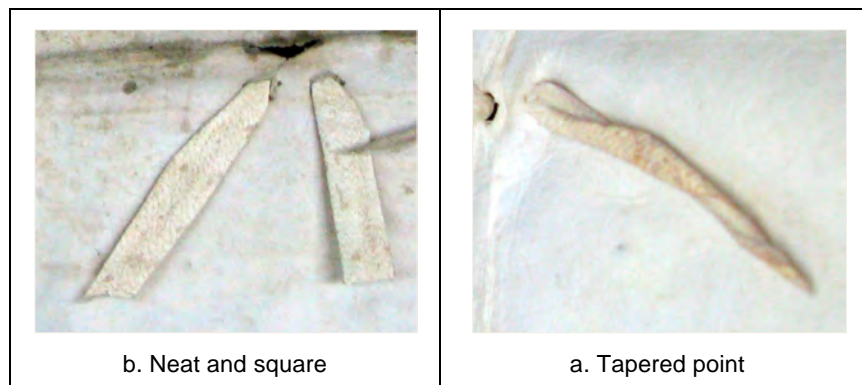


Fig. 32. Treatment of the sewing-support slips

Finally, the sewing-support slips of four books were cut off at the joints, but in all these cases there are added slips that have been used to attach the cover to the bookblock,³⁰⁶ which could suggest that the books were sold already sewn and that the cover was attached later. Another possibility is that the attachment between the cover and the bookblock is a repair.

Of the group of books where the slips were laced in, B-17 is sewn on three single supports and only the slips of sewing support number 2 (numbered from head to tail) were laced through the cover and were trimmed inside the cover to a tapered point. The slips of sewing supports numbers 1 and 3 were cut off at the joints. In this case, the cover is attached to the bookblock by means of the endband-core slips and the slips of sewing support number two. The binder, therefore, saved time in the process of attaching the cover to the bookblock, lacing only one of the three sewing-supports slips along each joint, but ensured that the structure was strong enough to keep the gatherings joined together.³⁰⁷ The attachment between the cover and the bookblock is reinforced by the pastedowns and the lining joints, both of which are adhered to inside of the cover.³⁰⁸ A

³⁰² Slips cut off at the joints: B-1, B-2, B-6, B-10, B-11, B-15, B-18, B-22, B-24, B-29, B-31, B-42, B-44, B-45, B-46 and B-47. Slips laced in: B-3, B-7, B-8, B-9, B-17, B-19, B-20, B-23, B-25, B-26, B-27, B-30, B-38 and B-41. In B-32, the slips of support numbers 1 and 3 have been repaired at the left and right sides respectively. All the slips, original and added, were laced through the cover.

³⁰³ See section 3.7 Cover Attachment (page 182).

³⁰⁴ Slips trimmed neat and square: B-3, B-19, B-20, B-23, B-26, B-38 and B-41.

³⁰⁵ Slips trimmed to a tapered point: B-7, B-27 and B-30.

³⁰⁶ Slips cut off at the joints: B-33, B-35, B-36 and B-37. See section 3.6 Cover (page 173) and footnote 117.

³⁰⁷ B-17 is 300 mm in height, sewn with all-along, not-packed sewing on three single supports spaced at equal intervals along the spine, with shorter at head and tail. The structure is consistent with the size of the book.

³⁰⁸ See section 3.7 Cover Attachment page 199.

similar treatment of sewing-support slips was identified in CB-13 in the comparative sample, sewn on three double supports. The difference between the two books in the treatment of the slips that were not laced-in is that the unlaced sewing-supports slips in CB-13 were left free inside the cover, instead of being cut off at the joints, as is the case of B-17 .

The results of the analysis of the treatment of sewing-supports slips in books in the comparative sample are different from that obtained in the main sample: in twenty-six books, the slips were cut off at the joints, whereas in nine, the slips were laced through the cover,³⁰⁹ but in different ways.³¹⁰ In those cases where the slips were laced-in, the outer end of each of the slips in books four books was trimmed neat and square inside the cover. Also in this group of books, the ends of the slips in four books were trimmed to a tapered point. Finally, the sewing-support slips of five books were cut off at the joints,³¹¹ but in all cases there are added slips that have been used to attached the cover to the bookblock,³¹² which could suggest, as it has been explained above, that either the textblock was sold already sewn or the present cover is a replacement.

There are two books, CB-5 and CB-21, in which the treatment of the sewing-support slips is completely different from those described before, though they themselves are similar to each other.³¹³ CB-5 was sewn on three double supports of alum-tawed skin. All the slips at each end were adhered to the endleaves forming a V-pattern at each station, and trapped inside the cover by the pastedowns. In CB-21, which was sewn on three double supports made of alum-tawed skin, the two slips from each element of the double supports numbers 1 and 3 are trapped between the cover and the pastedowns. The slips from the upper element of double support number 2 are trapped between the cover and the pastedown, and the slips of the lower element are laced through the cover. This type of treatment was not identified in the main sample, and there is neither a geographical nor chronological relationship between them.³¹⁴ The treatment of the sewing-supports slips raises the question of whether these books were bound in Mexico or Europe.

As has been shown, Mexican printed books of the sixteenth century could be sewn on two, three or four supports depending, in general, on the height of the textblock. However, it possible to find some special cases where the binder decided to sew on fewer or more

³⁰⁹ Slips cut-off at the joints: CB-1, CB-2, CB-3, CB-6, CB-7, CB-8, CB-9, CB-11, CB-12, CB-16, CB-17, CB-18, CB-19, CB-22, CB-26, CB-27, CB-28, CB-30, CB-31, CB-33, CB-35, CB-36, CB-39, CB-43, CB-45 and CB-46. Slips laced-in: CB-10, CB-13, CB-15, CB-21, CB-23, CB-25, CB-29, CB-41 and CB-47.

³¹⁰ See section 3.7 Cover Attachment page 150.

³¹¹ Slips trimmed neat and square: CB-15, CB-23, CB-29 and CB-41. Slips trimmed to a tapered point: CB-10, CB-21, CB-25 and CB-47. Slips cut off at the joints: CB-6, CB-9, CB-16, CB-22 and CB-30.

³¹² See section 3.7 Cover Attachment pages 205-214.

³¹³ See section 3.7 Cover Attachment pages 118-200.

³¹⁴ CB-5: printed in France, 1541, belonged to the *Convento Grande de San Francisco de México*, Mexico City. CB-21: printed in Spain, 1590, belonged to the *Convento de San Diego de México*, Mexico City.

sewing supports than those required by the size of the bookblock. It is possible, therefore, that the decision on the number of sewing supports to use was related to the cost of the work. The material use for the sewing supports and the techniques applied for their formation can be diverse. A great variety of combinations of types of sewing and sewing supports (number, material and formation) were found. This diversity of techniques used to sew the books again suggests that there were several binders working in Mexico. An Italian influence was also identified in the combination of tanned-leather supports and alum-tawed skin endband-cores in B-22 and B-46; a German influence in the use of cord sewing-supports in B-31 and finally B-45, whose linked-sewing on alum-tawed supports, reflects a French practice.

The books bound in limp, laced-case bindings reflect three clear tendencies: the first is a well-made binding in which all the components correspond to careful work and therefore show a relatively high level of cost; the second concerns books whose sewing would have taken a long time but where the other components of the binding were more cheaply made and where the price would therefore be lower, and the third, where all the components are of low quality, and which therefore represent the cheapest bindings.

A great variety of combinations of types of sewing and sewing supports were also found in the comparative sample, the difference being that the majority of the books in this sample are sewn on double supports, in contrast to books in the main sample, in which only three are sewn on double supports, which suggests that the textblocks were already sewn when they arrived from Europe and were then covered in Mexico. This hypothesis is supported by the presence of two books, one printed in France and sewn on double supports of alum tawed skin, and one printed in Germany sewn on double cord supports. In both cases the features of the sewing are typical of the countries in which they were printed. Finally, there are two instances in the comparative sample in which the sewing supports that are not laced-in are trapped inside the cover by the pastedowns instead of being cut off at the joints, as is the case in the books in the main sample. This treatment of the sewing-support slips raises the possibility that these two books in the comparative sample arrived from Europe already bound.

3.3 EDGES

The edges of all the thirty-nine books bound in limp laced-case bindings in the main sample have been cut.³¹⁵ Seventeen books were plain-cut on all edges (head-, tail- and fore-edges), meaning that they have well-cut edges with no marks left by the tool used to cut them.³¹⁶ There is evidence in fourteen of the books that the edges were cut using a draw-knife,³¹⁷ because they bear knife-marks on one or two of their edges (*Fig. 33*).³¹⁸

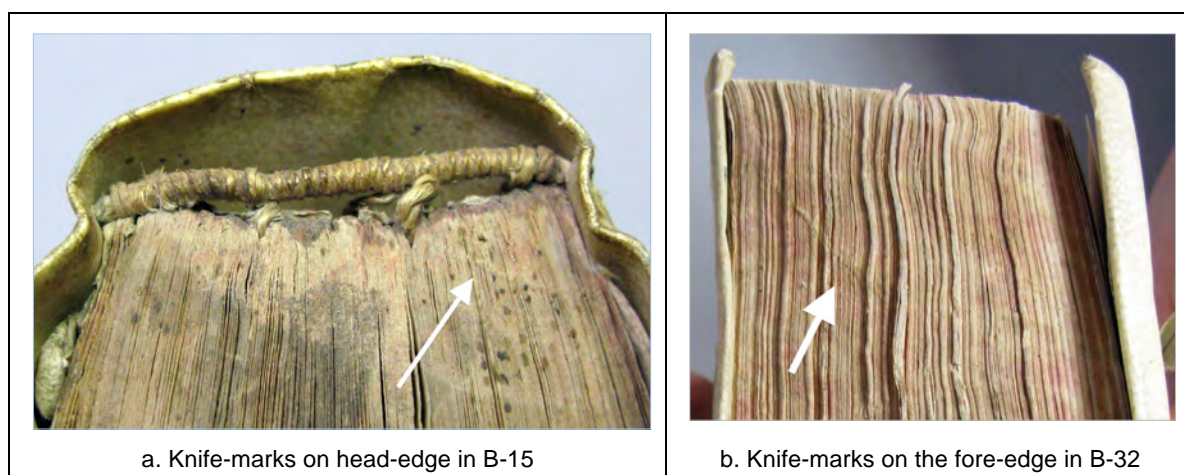


Fig. 33. Knife-marks on edges

Another tool that was used for cutting the edges of bookblocks was the plough,³¹⁹ a tool invented in Europe specially for that purpose. It is not known exactly when it was introduced, but it appears that it may have been in use by the first years of the sixteenth century (Szirmai, 2000). A particular type of mark is made by the plough when the head- and tail-edges are cut under pressure between cutting boards in a cutting- or laying press (*Fig. 34*). Because of the swelling created by the sewing thread, the cutting boards are placed up to but not over the area close to the spine, which means that this area is not fully compressed. As a result when the plough is used, the blade does not cut cleanly in this relatively soft area and leaves parallel lines on it. Once the textblock is removed from the pressure of the press, the bookblock regains some of its former, uncompressed, thickness, and these parallel straight lines become curved lines that converge towards the centre of the spine. Plough-marks in the head- and tail-edges near the spine were identified in books B-1 and B-37, printed in 1566 and 1555 respectively. Although this suggests that the plough might have been in use in Mexico during the second half of the sixteenth century, the features of the bindings of these two books make it difficult to

³¹⁵ See Appendix 4a.

³¹⁶ Plain cut on all edges: B-6, B-8, B-9, B-10, B-13, B-18, B-19, B-29, B-31, B-33, B-35, B-38, B-41, B-42, B-43, B-45 and B-47.

³¹⁷ See Glossary.

³¹⁸ With knife-marks on edges: B-2, B-3, B-7, B-11, B-15, B-17, B-20, B-22, B-24, B-32, B-34, B-36, B-44 and B-46.

³¹⁹ See Glossary.

establish exactly when they were made.³²⁰ It is therefore not possible to draw conclusions about when the plough was introduced into Mexico, and therefore whether this happened during the sixteenth century or later.

All of the books in the comparative sample bound in limp, laced-case bindings have been cut.³²¹ Twenty-five books were plain-cut on all edges, whereas there are four books where the edges show marks left by a draw-knife used to cut them, and seven books in which plough-marks were identified on the edges.³²²



Fig. 34. Plough-marks on CB-23

If in terms of the use of the plough, a comparison is made between the two sets of samples, there are only two Mexican books with plough-marks on any of its edges against seven books in the comparative sample with the same features on its edges. The European books in this group were printed between 1541 and 1600, of which CB-5 was printed in France and sewn on double supports of alum-tawed skin and CB-18 was printed in Germany and sewn on double cord supports. In both cases, the features of the structure are typical of the countries in which they were printed. In addition, CB-19 and CB-23, both Spanish editions, are sewn with a linked-sewing technique and CB-17, printed in France, is sewn with a by-pass sewing. Based on the evidence, therefore, it allows the possibility that these books might have arrived from Europe already sewn, with the edges cut using the plough.

³²⁰ See section 3.6 Cover (pages 151-152).

³²¹ See Appendix 5.

³²² Plain cut on all edges: CB-1, CB-2, CB-6, CB-7, CB-10, CB-11, CB-12, CB-13, CB-15, CB-16, CB-21, CB-25, CB-26, CB-27, CB-29, CB-31, CB-33, CB-35, CB-36, CB-39, CB-41, CB-43, CB-45, CB-46 and C-47. With knife-marks: CB-3, CB-8, CB-9 and CB-30. With plough-marks: CB-5, CB-17, CB-18, CB-19, CB-23, CB-28 and CB-32.

The bookblocks of nine of the books analysed were cut to show proof,³²³ which means that the bookbinder left evidence of having taken the minimum amount of paper from the edges to achieve a smooth surface. This process leaves 'proof' in the form of the deckle edges, surviving in whole or in part, on the shortest leaves of the textblock (*Fig. 35*).³²⁴ This type of cut was also identified in fourteen books in the comparative sample.³²⁵

There are two further instances that should also be mentioned: B-2 and B-3, whose kettlestitches have been cut away at the tail of B-2 and at the head of B-3. A possible explanation for this is that there was a brand on the edge that needed to be removed and the binder was obliged to cut the edge so deeply that the kettlestitch was unintentionally trimmed away. Another explanation is that one of the edges in each book was damaged and the binder decided to cut away the damaged areas in order to achieve a smooth surface.



Fig. 35. Cut to show proof (fore-edge in B-20)

Another interesting case is B-1, where manuscript notes on the fore-edge margin of the textblock are partially cut away. This fact suggests that either the book was annotated when the edges were uncut or that the textblock has been cut more than once. However, there is not enough evidence to make it clear which of these two possibilities is the correct one.

The cutting of the edges creates a flat area that can be decorated, as is shown in twenty-eight books in the main sample,³²⁶ whereas eight books have edges that were not decorated.³²⁷ Of the remaining books, damage makes it impossible to identify how the edges of B-19 were decorated, whilst the repairs to book B-30 obscure the features of the technique used to decorate the edges.

³²³ Cut to show proof: B-8, B-11, B-17, B-19, B-20, B-24, B-33, B-41 and B-45.

³²⁴ The deckle edge can only be identified where the paper used for the textblock is handmade.

³²⁵ Cut to show proof: CB-5, CB-12, CB-13, CB-16, CB-19, CB-21, CB-23, CB-25, CB-28, CB-29, CB-33, CB-39, CB-41 and CB-46.

³²⁶ Decorated edges: B-1, B-3, B-6, B-7, B-8, B-9, B-10, B-13, B-15, B-17, B-18, B-20, B-22, B-24, B-26, B-27, B-31, B-32, B-34, B-36, B-37, B-38, B-42, B-43, B-44, B-45, B-46 and B-47.

³²⁷ Edges no decorated: B-2, B-11, B-23, B-25, B-29, B-33, B-35 and B-41.

The techniques of decoration that have been identified are as follows, in decreasing order of frequency: sprinkled³²⁸ (fourteen books), coloured³²⁹ (ten books), mottled³³⁰ (three books), and one single book shows dabbed³³¹ edges.³³² Each one of these was made in different colours. Some of the decorated edges identified in the main sample are shown in *Fig. 36*.

With regard to the fourteen books with sprinkled edges, the majority of them (ten books) were sprinkled with a red pigment. Other coloured pigments were used on sprinkled edges in the sample, such as purple (one book), magenta (two books) and brown (one book).³³³ The colour that was most often used to decorate solid-coloured edges is red (nine books) whereas there is only one book that was coloured with magenta.³³⁴ The edges of three books were mottled, one of these, B-7, with purple pigment, B-42 with a red pigment and the edges of B-32 were mottled using two colours, red and green. The only identified example that has dabbed edges is book B-3, which was decorated using red and olive green pigments on all edges. It is interesting to note that in both cases where two colours were used, one of the colours is red and the other some sort of green.

Of the books in the comparative sample, nineteen books show decorated edges, whilst sixteen books have edges that were not decorated.³³⁵ The techniques for the decoration of the edges in the comparative are similar to those identified in main sample (*Fig. 36*). In decreasing order of frequency, the techniques identified are as follows: coloured (eleven books), sprinkled (seven books) and dabbed (one book). Finally, the damage to one book makes it impossible to determine the technique used to decorate the edges.³³⁶

So far as the eleven books with coloured edges are concerned, eight books were coloured using a red pigment. Other coloured pigments were used for this purpose, such as blue, yellow, orange, each of which is represented by one book in the sample.³³⁷ In the case of CB-43, two techniques of decoration were used for the decoration of the head- and fore-edges. All the edges were coloured yellow, but the head- and tail-edges were then

³²⁸ See Glossary.

³²⁹ See Glossary.

³³⁰ See Glossary.

³³¹ See Glossary.

³³² Sprinkled: B-1, B-8, B-9, B-10, B-13, B-15, B-27, B-34, B-36, B-38, B-43, B-44, B-46 and B-47. Coloured: B-6, B-17, B-18, B-20, B-22, B-24, B-26, B-31, B-37 and B-45. Mottled: B-7, B-32 and B-42. Dabbed: B-3.

³³³ Sprinkled in red: B-1, B-10, B-13, B-15, B-27, B-36, B-43, B-44, B-46 and B-47. In purple: B-34. In magenta: B-8 and B-9. In brown: B-38.

³³⁴ Solid-colour edges: red: B-6, B-17, B-18, B-20, B-22, B-24, B-31, B-37 and B-45. Magenta: B-26

³³⁵ Decorated edges: CB-1, CB-6, CB-7, CB-8, CB-9, CB-10, CB-13, CB-17, CB-18, CB-23, CB-26, CB-28, CB-32, CB-33, CB-36, CB-39, CB-41, CB-45 and CB-46. Edges no decorated: CB-2, CB-3, CB-5, CB-11, CB-12, CB-15, CB-16, CB-19, CB-21, CB-25, CB-27, CB-29, CB-30, CB-31, CB-35 and CB-47.

³³⁶ Sprinkled: CB-6, CB-10, CB-17, CB-26, CB-28, CB-32 and CB-33. Coloured: CB-1, CB-7, CB-8, CB-9, CB-13, CB-18, CB-23, CB-39, CB-41, CB-45 and CB-46. No determined: CB-22.

³³⁷ Coloured in red: CB-1, CB-7, CB-9, CB-13, CB-18, CB-39, CB-41 and CB-45. In blue: CB-8. In yellow: CB-23. In orange: CB-46.

sprinkled with a brown pigment; the endbands worked before the edges were coloured (Fig. 37).

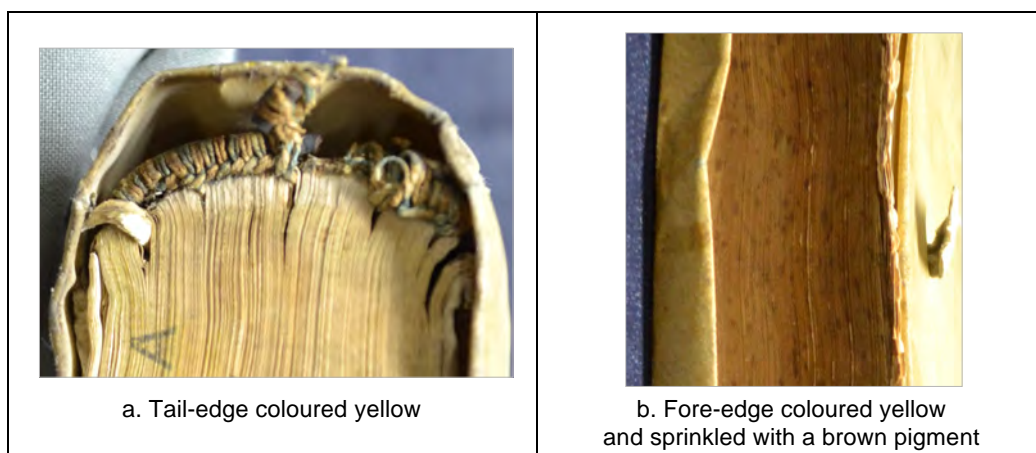


Fig. 37. Decorated edges in CB-43

Although the decorative techniques that were most used for the edges of the books in the comparative sample are solid colouring and sprinkling, there are some small differences in their use with respect to the main sample: solid-coloured edges are preferred in the majority in the comparative sample, whereas in the Mexican books, sprinkled edges predominate. In both cases, red pigment is the most often used. With regards of to the use of other colours for the decoration of the edges of the Mexican books, there is a tendency for the use of red tones such as purple and magenta, which are not present in the comparative sample. By contrast, brown, yellow and orange pigments were preferred for the decoration of the edges in books from the comparative sample, but of these, only brown pigment was identified in the main sample, and that on only one book.

There is also some indication of a correlation between the edge-decoration techniques and the monasteries to which the books belonged, because there are five books from the *Convento Grande de San Francisco de México*, in Mexico City, with edges coloured with a red pigment (including one from the main sample and four from the comparative sample)³³⁸ which suggests the possibility of a pattern in the decoration of the edges. Unfortunately, the rest of the decorative techniques do not show this correlation. In order to draw firm conclusions from this evidence it would be necessary to look for more books that belonged to the *Convento Grande de San Francisco de México*, and identify those books that have the same decorated edges. Similarly, to determine if there was a tendency to use one specific technique for the decoration of the edges at any monastery or college, it would first be necessary to identify a large quantity of books that can be shown to have belonged to a particular library.

³³⁸ Books belonging to *Convento Grande de San Francisco de México*, Mexico City: B-17 in the main sample and CB-1, CB-7, CB-13, and CB-39 in the comparative sample.




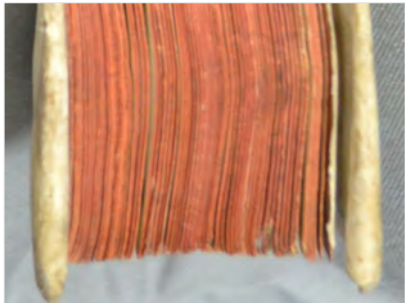

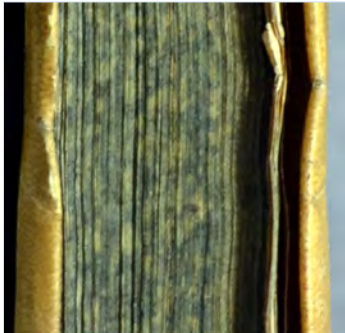

MAIN SAMPLE	COMPARATIVE SAMPLE
 <p>Sprinkled tail-edge in B-1</p>	 <p>Sprinkled fore-edge in CB-33</p>
 <p>Coloured head-edge in B-18</p>	 <p>Coloured fore-edge in CB-7</p>
 <p>Dabbed fore-edge in B-3</p>	 <p>Dabbed fore-edge in CB-36</p>
 <p>Mottled fore-edge in B-7</p>	

Fig. 36. Techniques of decoration indentified on the edges in both sets of samples

The decoration of the edges can be done at different stages of the binding process. In the books in the main sample, two different stages were identified in relation to the endbands; in four cases the edges were decorated after the endbands were worked and fourteen books have edges that are decorated right up to the spine edge, which indicates that the edges were decorated before the endbands were worked.³³⁹ It is possible to determine that the edges were decorated after the endbands were sewn from the narrow strips of undecorated edge preserved under the endbands (*Fig. 38*).

Where the edges were decorated after the endbands were worked, the binder responsible for the edge decoration must have received the textblock already sewn, with the endbands worked and, in order to satisfy a request from a client or because of a personal choice, decided to give the book the appearance of a work of higher economic status or a more fashionable appearance. When that decoration might have been carried cannot necessarily be known, and might follow after many years. On the other hand, those instances in which the edges were decorated before the endbands were decorated, indicate that the decoration of the edges was part of the design of the book from the beginning of the binding process.

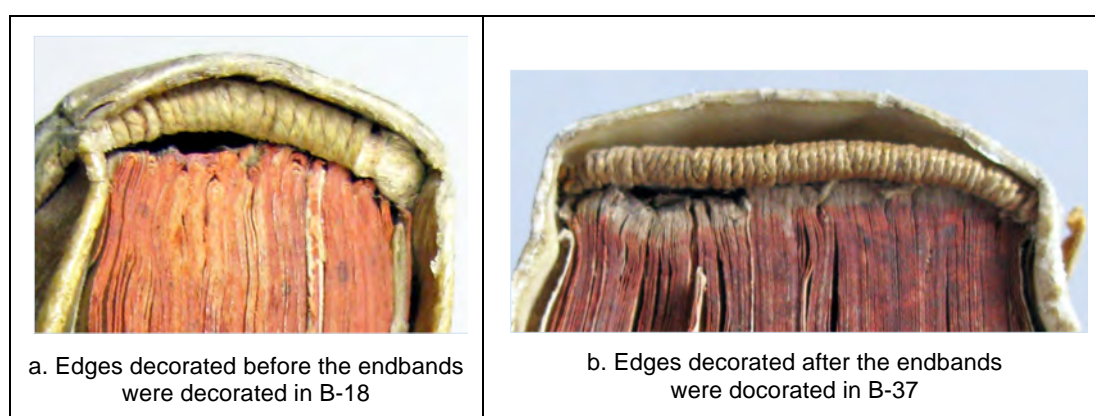


Fig. 38. Decoration of the edges in relation to the endbands

The comparative sample also shows these two processes: in fourteen books the edges were decorated before the endbands were worked, whereas the edges were decorated after the endbands were worked in six book.³⁴⁰ This fact alone, however, does not allow us to determine whether the edges of these books were decorated in Mexico or in Europe.

³³⁹ After the endbands were worked: B-1, B-20, B-32 and B-37. Before the endbands were worked: B-3, B-6, B-10, B-13, B-15, B-17, B-18, B-22, B-26, B-31, B-34, B-36, B-38 and B-42.

³⁴⁰ Edges decorated before the endbands were worked: CB-1, CB-6, CB-8, CB-10, CB-17, CB-18, CB-26, CB-28, CB-32, CB-33, CB-36, CB-39, CB-41 and CB-46. Edges decorated after the endbands were worked: CB-7, CB-9, CB-13, CB-23, CB-43 and CB-45.

As has been shown, the edges of the Mexican books were cut by using either a knife or a plough. With regard to the decoration of the edges, it can be said that the majority of the sixteenth-century Mexican printed books analysed have decorated edges that use different techniques, of which solid colouring and sprinkling were preferred. In both techniques, red was the colour that was most often used. Although the comparative sample shows the same features, it is not possible to determine if the edges were cut and decorated in Mexico.

3.4 SPINE AND LINING

The shape of the spine is the result of several factors: the thickness and softness of the material that was used to form the gatherings, the type of sewing³⁴¹ and the thickness of the thread used and the extent to which the bookblock may have been compressed in a press before applying the adhesive to the spine will all impact on the final shape of the spine. On the other hand, bookbinding has also been subjected to fashions over the years, and the shape of the spine would therefore also be likely to change according to the prevailing fashion at the moment of its manufacture (Ligatus, 2013). In such cases, the binder could control the factors already mentioned in order to achieve a specific spine shape. According to the degree of flatness or roundness of the spine, three different shapes were identified in the main sample (*Figs. 39 and 40*). Slight-round and flat spines are represented by the same number of books in the main sample (seventeen books with each shape), two books have a round spine and finally, the damage to the remaining three books made it impossible to determine the original shape of their spines.³⁴² Independently of the shape of the spine, none of the examples shows spine joints.³⁴³

³⁴¹ Depending on the sewing technique used to hold the gatherings together, the amount of sewing thread in the spine-fold of the gatherings will vary. See section 3.2 Structure (page 95).

³⁴² Flat spines: B-1, B-5, B-7, B-9, B-11, B-13, B-18, B-19, B-20, B-23, B-24, B-27, B-29, B-31, B-33, B-43 and B-46. Slight-round spines: B-2, B-3, B-6, B-8, B-10, B-15, B-17, B-22, B-25, B-32, B-35, B-36, B-38, B-42, B-44, B-45 and B-47. Round spines: B-37 and B-41. Damaged: B-26, B-30 and B-34.

³⁴³ See Glossary.

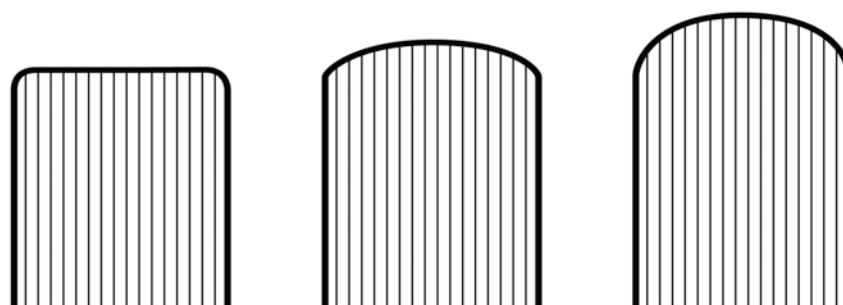


Fig. 39. Spine shapes (from left to right): flat, slight-round and round

The spines of the books in the comparative sample show the same shapes as those identified in the books in the main sample (*Figs. 39 and 40*), but the conclusions drawn from both sets of samples are slight different: slight-round spines are represented by twenty-three books in the comparative sample (62.1%), in contrast with the main sample in which slight-round and flat shapes are preferred (43.6% of each shape). Flat spines are represented by eight books in the comparative sample (21.6%), whilst six books (16.2%) have round spines.³⁴⁴

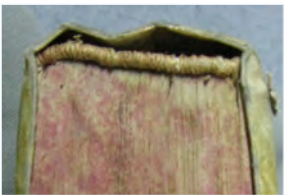
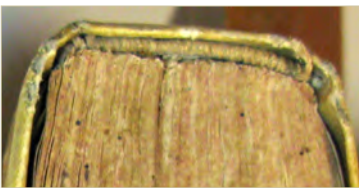


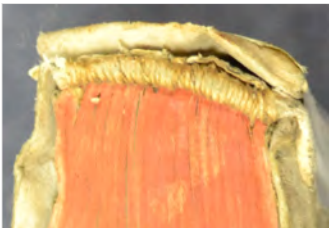

MAIN SAMPLE	 a. B-1	 b. B-10	 c. B-41
SHAPE	Flat spine	Slight-round spine	Round spine
COMPARATIVE SAMPLE	 d. CB-3	 e. CB-7	 f. CB-18

Fig. 40. Spine shapes identified in both sets of samples

With regards to the relation between the amount of sewing thread in the spine-fold of the gatherings and the shape of the spine, one example is worth noting. B-24 was sewn two-on on four single supports, with the result that there is half the amount of sewing thread of

³⁴⁴ Flat spines: CB-2, CB-3, CB-9, CB-10, CB-15, CB-29, CB-32 and CB-41. Slight-round spines: CB-1, CB-5, CB-6, CB-7, CB-8, CB-11, CB-12, CB-13, CB-16, CB-17, CB-21, CB-22, CB-23, CB-26, CB-27, CB-28, CB-31, CB-33, CB-35, CB-36, CB-45, CB-46 and CB-47. Round spines: CB-18, CB-19, CB-25, CB-30, CB-39 and CB-43.

that used in all-along sewing. Because of this, it is not surprising that the spine of this book is flat. Although the sample gives some evidence of the relationship between different techniques and binding quality and between the amount of sewing thread and the shape of the spine, it is possible that the shapes of the spines were the unintended consequence of the use of such thread and other materials as were available to make the books.

3.4.1 Adhesive

Another feature analysed was the use of adhesive on the spine which was used to reinforce the bond between the gatherings and control the flexibility of the spine. In thirty-eight books in the main sample, the use of adhesive was identified,³⁴⁵ whereas only B-27 has no adhesive on the spine. Non-adhesive spines were common in archival bindings, in order to be able to incorporate more gatherings if it was necessary.³⁴⁶ It is therefore likely that the binder who bound this book may have been more used to binding archival books and that this type of work is reflected in the binding on this printed book. Animal-based adhesive³⁴⁷ was identified in fourteen books of the main sample whilst starch-based adhesive was identified in seven books.³⁴⁸ The nature of the adhesive in seventeen books could not be identified (*Fig. 41a and 41b*).³⁴⁹

In spite of the fact that starch-based adhesive was in common use before the arrival of the Spanish, it appears that animal-based adhesives were preferred in the binding of Mexican books (36% of the books in the main sample). In contrast, the use of either starch- or animal-based adhesive on the spines of the books in the comparative sample (*Fig. 41c and d*), is approximately the same (ten (27%) and eleven (29.7%) books respectively).³⁵⁰ In order to determine if there is a Spanish practice reflected in the use of a preferred adhesive, a closer examination was made of the Spanish books in the comparative sample, which confirmed that both types of adhesive were used on the spines.³⁵¹ There is therefore not enough evidence to draw firm conclusions about the use of animal-based adhesive as a Spanish practice reflected in the Mexican books.³⁵²

³⁴⁵ With adhesive: B-1, B-2, B-3, B-5, B-6, B-7, B-8, B-9, B-10, B-11, B-13, B-15, B-17, B-18, B-19, B-20, B-22, B-23, B-24, B-25, B-26, B-29, B-30, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-41, B-42, B-43, B-44, B-45, B-46 and B-47.

³⁴⁶ Information obtained from the course: *HEB 1500-1800*.

³⁴⁷ See Glossary.

³⁴⁸ Animal-based adhesive: B-1, B-2, B-5, B-6, B-10, B-11, B-18, B-19, B-22, B-23, B-31, B-34, B-37 and B-45. Starch-based adhesive: B-7, B-9, B-15, B-20, B-32, B-38 and B-41.

³⁴⁹ The use of adhesive in these books was identified because of the presence of spine linings: B-3, B-8, B-13, B-17, B-24, B-25, B-26, B-29, B-30, B-33, B-35, B-36, B-42, B-43, B-44, B-46 and B-47.

³⁵⁰ Starch-based adhesive: CB-2, CB-5, CB-8, CB-9, CB-11, CB-15, CB-18, CB-29, CB-39 and CB-41.

Animal-based adhesive: CB-1, CB-6, CB-12, CB-13, CB-17, CB-26, CB-30, CB-31, CB-36, CB-43 and CB-45.

³⁵¹ Spanish editions: there are six books with animal-based adhesive on the spine: CB-12, CB-13, CB-26, CB-30, CB-31 and CB-36; and there are five books with starch-based adhesive on the spine: CB-11, CB-15, CB-29, CB-39 and CB-41.

³⁵² There is no reference to the use of animal adhesive in the literature, but Professor Pickwood has told me that in his experience, the use of animal-based adhesive would appear to be a common practice in the Spanish bindings from the sixteenth to the eighteenth century (Pickwood, 2010. pers. comm.).





MAIN SAMPLE	COMPARATIVE SAMPLE
 <p>a. Animal-based adhesive in B-6</p>	 <p>c. Animal-adhesive in CB-1</p>
 <p>b. Starch-based adhesive in B-7</p>	 <p>d. Starch-based adhesive in CB-15</p>

Fig. 41. Adhesives used in both sets of samples

3.4.2 Linings

Whatever the adhesive may have been, it was used to secure linings to the spine in thirty books in the main sample.³⁵³ Two types of linings were identified: transverse linings, a type represented in twenty-one books in the main sample; and panel linings, which is represented in seven books. There is a small group of six books that have no linings. Finally, there are three books whose type of linings could not be identified.³⁵⁴

The use of linings was also investigated in the comparative sample: thirty-two books of the thirty-seven selected use linings,³⁵⁵ of which transverse linings were identified on twenty-six books, the use of panel linings was identified on four books. CB-31 uses a combination of transverse and panel linings. Although the use of lining could be identified in CB-16, it was not possible to determine the type of linings. There is small group of three books that

³⁵³ With linings: B-1, B-2, B-3, B-8, B-9, B-10, B-11, B-13, B-15, B-17, B-18, B-20, B-22, B-24, B-25, B-26, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-41, B-42, B-44, B-45, B-46 and B-47.

³⁵⁴ Transverse linings: B-9, B-10, B-11, B-13, B-15, B-17, B-18, B-22, B-24, B-26, B-31, B-32, B-33, B-34, B-35, B-36, B-41, B-44, B-45, B-46 and B-47. Panel linings: B-1, B-2, B-3, B-20, B-25, B-38 and B-42. No linings: B-5, B-6, B-7, B-19, B-23 and B-27. The damage to the books B-29 and B-43 makes it impossible to describe the linings. Book B-30 has been restored. See Appendix 4a for details.

³⁵⁵ With linings: CB-1, CB-2, CB-5, CB-6, CB-7, CB-8, CB-9, CB-10, CB-11, CB-12, CB-15, CB-16, CB-17, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-26, CB-27, CB-28, CB-30, CB-31, CB-32, CB-33, CB-36, CB-39, CB-41, CB-43, CB-45 and CB-47.

have no linings (*Fig. 42*), and, finally, it was not possible to determine whether two books have linings.³⁵⁶



Fig. 42. Spine with no linings in CB-29

The evidence shows that in both sets of samples, transverse linings were preferred to panel linings (53.9% against 18% in the main sample and 70.2% against 10.8% in the comparative sample). An explanation for these similar results in both sets of samples could be that the spine linings of the books in the comparative sample were made in Mexico, where it appears that the use of transverse linings was more common than that of panel linings. The use of transverse linings was common across Europe during the sixteenth century and its presence in the books in the main sample, therefore, is not surprising.

The location of the linings, the length and treatment of the spine-lining joints, the height of the linings within the panels on the spine, and the materials used for the linings show variations within linings of the same type. The findings concerning both transverse and panel linings identified in both sets of sample are discussed below.

3.4.2.1 Transverse linings

Twenty out of the twenty-one books with transverse linings in the main sample have linings placed in all panels on the spine. In these cases, the width of the spine-lining joints is variable.³⁵⁷ Ten books show short spine-lining joints and eight books have spine-lining joints of medium length (*Fig. 43*).³⁵⁸ There are two instances in which the length of the spine-lining joints at head and tail is different from that in the central panel. In B-13, the head and tail lining-joints are shorter than that in the centre, but in book B-22 the head and tail lining-joints are longer than that in the centre. We can only speculate on whether, in these cases, the binder intended to have lining joints of different lengths in each panel or whether it was accidental.

³⁵⁶ Transverse linings: CB-1, CB-2, CB-5, CB-7, CB-8, CB-9, CB-10, CB-11, CB-12, CB-15, CB-17, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-26, CB-27, CB-30, CB-33, CB-36, CB-39, CB-41, CB-43 and CB-47. Panel linings: CB-6, CB-28, CB-32 and CB-45. No linings: CB-13, CB-29 and CB-46. No determined: CB-3 and CB-35.

³⁵⁷ In order to establish an approximate width of the spine-lining joints, it was measured in relation to the width of the textblock.

³⁵⁸ Short spine-lining joints: B-9, B-10, B-26, B-31, B-32, B-33, B-34, B-35, B-36 and B-41. Medium spine-lining joints: B-11, B-15, B-17, B-24, B-44, B-45, B-46 and B-47.

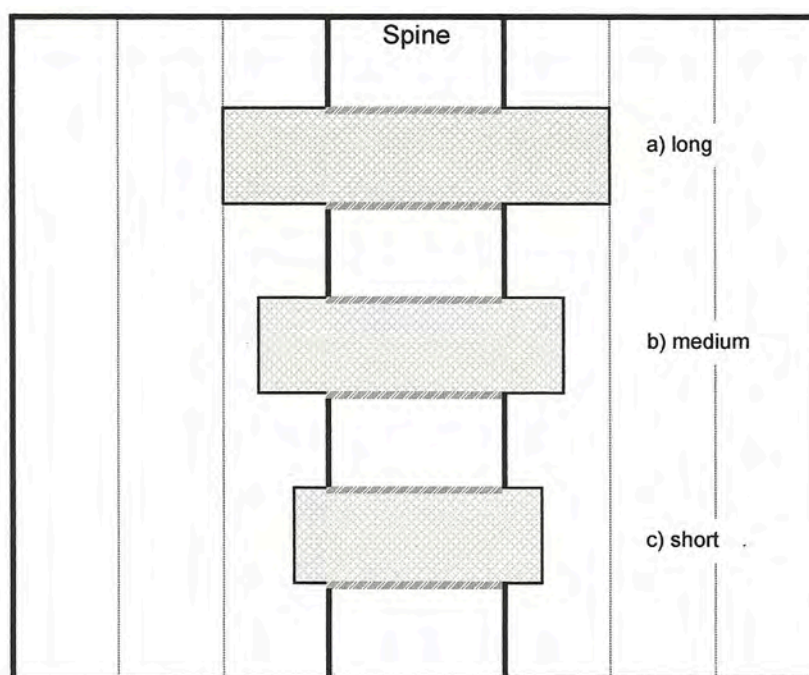


Fig. 43. Length of the spine-linings joints referred to the width of the textblock. a. long, b. medium and c. short. (The heavy dotted lines represent the sewing supports)

The edges of the lining joints in all of the twenty books with transverse linings in all panels were trimmed to different shapes. In all cases the upper and lower edges of the spine linings show a neat cut, whereas the outer edges could be trimmed in an oblique angle to the spine (four books), trimmed square (ten books) or the outer edges were trimmed irregularly to an approximately square shape, as is the case in six out of the books in the sample (Fig. 44).³⁵⁹ Finally, the spine-lining joints of book B-18 could not be analysed because of repairs to the endleaves.

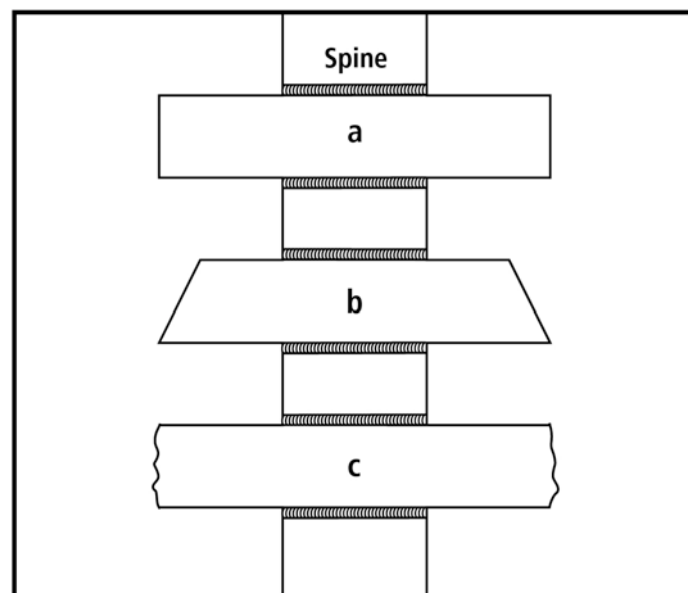
Of the twenty-five books with transverse linings in the comparative sample, seventeen books have linings placed in all panels on the spine. In these cases, the width of the spine-lining joints is also variable. Six books show short spine-lining joints and eleven books have spine-lining joints of medium length.³⁶⁰ The outer edges of the lining joints in these books could be trimmed in an oblique angle to the spine (one book), trimmed square (eight books) or the outer edges were trimmed irregularly to an approximately square shape (eight books).³⁶¹ In all of the cases, the upper and lower edges of the spine-lining show a neat cut.

³⁵⁹ Shape of the outer edges of the spine-lining: oblique angle trim: B-11, B-15, B-31 and B-46. Square trim: B-17, B-22, B-26, B-32, B-33, B-34, B-35, B-36, B-41 and B-45. Irregular trim: B-9, B-10, B-13, B-24, B-44 and B-47.

³⁶⁰ Short spine-lining joints: CB-2, CB-22, CB-30, CB-36, CB-43 and CB-47. Medium spine-lining joints: CB-10, CB-11, CB-12, CB-17, CB-18, CB-19, CB-21, CB-23, CB-25, CB-27 and CB-41.

³⁶¹ Shape of the outer edges of the spine-lining joints: oblique angle trim: CB-47. Square trim: CB-11, CB-18, CB-21, CB-23, CB-25, CB-36, CB-41 and CB-43. Irregular trim: CB-2, CB-10, CB-12, CB-17, CB-19, CB-22, CB-27 and CB-30.

If a comparison is made between the books with transverse linings in all panels in both sets of samples, the features shown by the books in the comparative sample are similar to those shown by the books in the main sample, but represented by different numbers of books in each sample. Spine linings with joints of short and medium length were preferred in the main sample, each represented by approximately the same number of books (ten and eight respectively). In contrast, spine linings of medium length were the most frequently-used in books in the comparative sample (eleven books), and a small number of books only have short spine-lining joints (six books). With regards to the shapes of the outer edges of the spine-lining joints, the results obtained from both sets of sample are approximately the same. Unfortunately, for the moment is not clear whether or not these differences and similarities will prove to be significant.



*Fig. 44. Outer edges of the spine-lining joints trimmed in different shapes
a. square, b. oblique and c. irregular cut suggesting a square shape
(The dotted lines represent the sewing supports)*

Two different techniques were identified in the treatment of the spine-lining joints: in the first, the lining joints were adhered to the outermost leaf of the endleaves.³⁶² This Italian, therefore Spanish, practice (Ligatus, 2013) is reflected in seven books in the main sample.³⁶³ The other technique identified is that in which the spine-lining joints were adhered to the inside of the covers, which apparently is the case in book B-22. In this book, the endleaves of which were adhered around their perimeters only (head-, tail- and fore-edges), evidence can be seen of an animal-based adhesive which was used to

³⁶² According to Ligatus 'Pasting lining joints [to the flyleaf] was probably used on sewn textblocks and books in inexpensive case covers to keep the lining joints out of the way and undamaged in case an owner might want to have boards and a new covering material added at a later date' (Ligatus, 2013).

³⁶³ Lining joints adhered to the endleaves: B-9, B-24, B-26, B-32, B-33, B-35 and B-41.

secure the joints of the lining in the central panel to the inside of the left cover. However, the remaining five lining joints, two at the left side and three at the right side, are adhered to the endleaves. As the endleaves in this book have been replaced, it is possible that the linings were replaced at the same time and the evidence of animal-based adhesive on the inside of the cover might be taken to suggest that the bookblock was re-attached to the same cover (*Fig. 45*).



Fig. 45. Evidence of an animal-based adhesive which was used to secure the joints of the lining in the central panel to the inside of the left cover of B-22

Of the two different techniques identified in the main sample for the treatment of the spine-lining joints, lining joints which were adhered to the outermost leaf of the endleaves were identified in six books.³⁶⁴ As all of them are found on Spanish editions, except for CB-43 that is French edition and CB-18 that is German edition, this treatment of the lining joints is not unexpected. However, as this technique was also identified in seven books in the main sample, it is difficult to determine whether the linings of these books were made in Mexico or in Europe (*Fig. 46*).



Fig. 46. The lining-joints adhered to the outermost endleaf in CB-18

³⁶⁴ Lining joints adhered to the outermost endleaf: CB-11, CB-18, CB-19, CB-41, CB-43 and CB-47.

In those books whose pastedowns were adhered overall to the inside of the covers, it is difficult to determine whether the spine-lining joints were adhered to the outermost leaf of the endleaves before the pastedowns were adhered to the inside of the cover or whether they were adhered to the inside of the cover before the pastedowns were adhered over them. This difficulty exists in eight of the books in the main sample with transverse linings and in nine books in the comparative sample.³⁶⁵

The books in the main sample also show differences between the heights of the linings within the panels formed by the sewing supports, which could vary slightly from one panel to another on the same book. There are seven books whose linings fill 75% of the height of each panel whereas the linings in three books fill 90% of the height of each panel.³⁶⁶ There are six examples where the spine linings fill 100% of the head and tail panels, whereas the spine linings in the remaining panels occupy only 75% (*Fig. 47a*).³⁶⁷ Apparently there is a pattern in the features of the transverse lining in the Mexican bindings in which, in general, the transverse linings fill approximately the entire height of the panels in which they are found, as was also the practice in both Spain and Italy (Ligatus, 2013). The clear influence of these two countries is not surprising because Italian and Spanish bookbinding techniques were so similar during the sixteenth century.³⁶⁸

The same tendency described above, of making transverse spine linings of either the entire or approximately the entire height of the panels was also identified in the comparative sample: the linings in two books fill 100% of the height of each panel, whereas in seven books the linings fill the 90% of the height of each panel (*Fig. 47b*).³⁶⁹ Of all these books, seven are Spanish editions and three are French, a fact that makes it difficult to determine, whether the linings of these books were made in Mexico, Spain or elsewhere in Europe.³⁷⁰ There are also eight books where the linings fill between the 65% and 75% of the height of each panel.³⁷¹

³⁶⁵ Lining joints adhered to both the pastedown and the inside of the cover: main sample: B-10, B-11, B-13, B-17, B-31, B-36, B-44 and B-46 (right side). For books B-32, B-45 and B-47, whose pastedowns were adhered to the covers around their perimeters (at head-, tail- and fore-edge only), I have no record of whether the spine-lining joints were adhered to the inside of the covers or to the outermost leaf of each of the endleaves. Comparative sample: CB-2, CB-12, CB-17, CB-21, CB-22, CB-27, CB-30 and CB-36.

³⁶⁶ 75% height: B-9, B-17, B-18, B-26, B-31, B-44 and B-46. 90% height: B-13, B-36 and B-45.

³⁶⁷ 100% height at head and tail and 75% in the remaining panels: B-10, B-22, B-32, B-34, B-35, and B-47.

³⁶⁸ Information obtained from the course: *HEB 1500-1800*.

³⁶⁹ 100% height: CB-2 and CB-43. 90% height: CB-11, CB-22, CB-23, CB-25, CB-27, CB-30 and CB-36.

³⁷⁰ Spanish editions: CB-11, CB-19, CB-22, CB-23, CB-25, CB-27 and CB-30. French editions: CB-2 and CB-43.

³⁷¹ 65-75% height: CB-10, CB-12, CB-17, CB-18, CB-19, CB-21, CB-41 and CB-47.

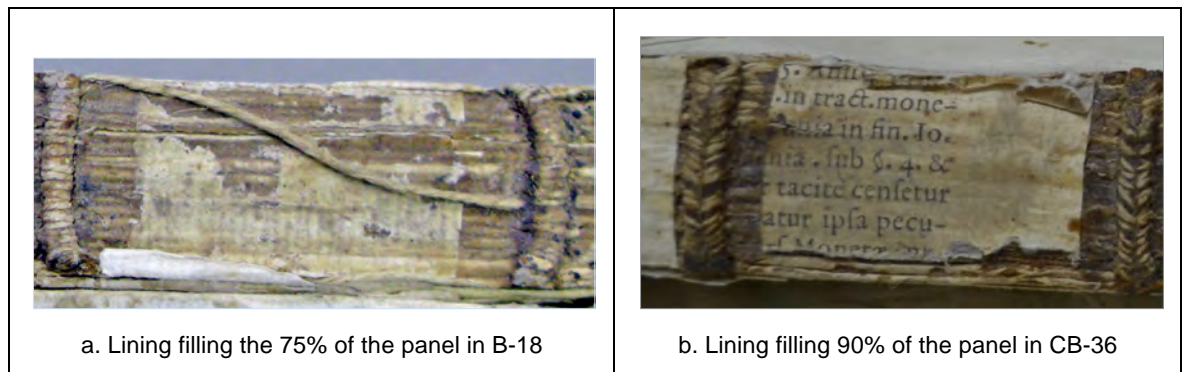


Fig. 47. Heights of the linings within the panels formed by the sewing supports

It should be added that the transverse linings at head and tail in books B-13, B-18 and B-36, were cut flush with the edges and the edge-colour can be seen on the outer edges of the linings (*Fig. 48*). This shows that the head- and tail-edges were cut with the linings already in place at head and tail panels and that the edges were decorated before the endbands were worked.³⁷² Books CB-18 and CB-41 in the comparative sample also show the linings cut flush at head and tail, with the edge-colour on the outer edge of the linings. Other books in the main sample with transverse linings in all panels cut flush at head and tail are B-31, B-32 and B-33. Although books B-31 and B-32 have decorated edges, the colour of the edges cannot be seen on the outer edges of the linings.

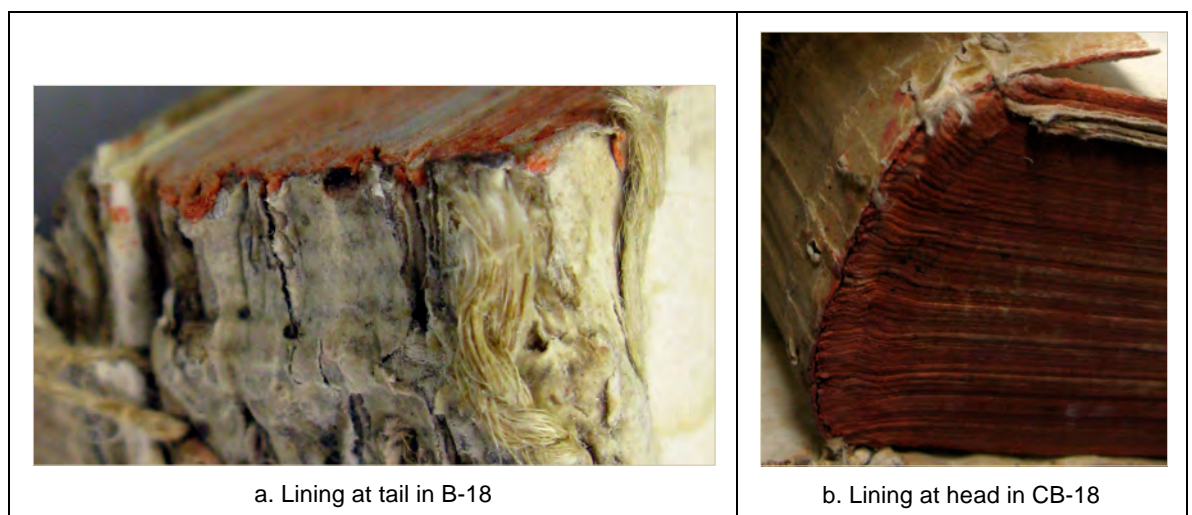


Fig. 48. Linings cut flush with the edges, with the edge-colour on the outer edge of the linings

Book B-41 is of interest because its transverse linings are distinctly narrower than those identified in the others books in the sample; they occupy less than 50% of the height of the panels where they are found (*Fig. 49a*). This type of lining is common in bindings from Germany and the Low Countries³⁷³ and their influence is reflected in this book. In the comparative sample, a book that was printed in Germany, CB-18, shows narrow

³⁷² See section 3.3 Edges (page 111).

³⁷³ Information obtained from the course: *HEB 1500-1800*.

transverse spine-linings and sewing on cord supports, raising the possibility that this book arrived from Europe already bound, at which point it might have been used as a model to follow by the binders who were working in Mexico during the sixteenth-century (*Fig. 49b*). However, considering the fact that Mexico and the Low Countries were under the control of the Spanish Crown, the possibility must exist that this type of lining arrived in Mexico through the Low Countries rather than from Germany.

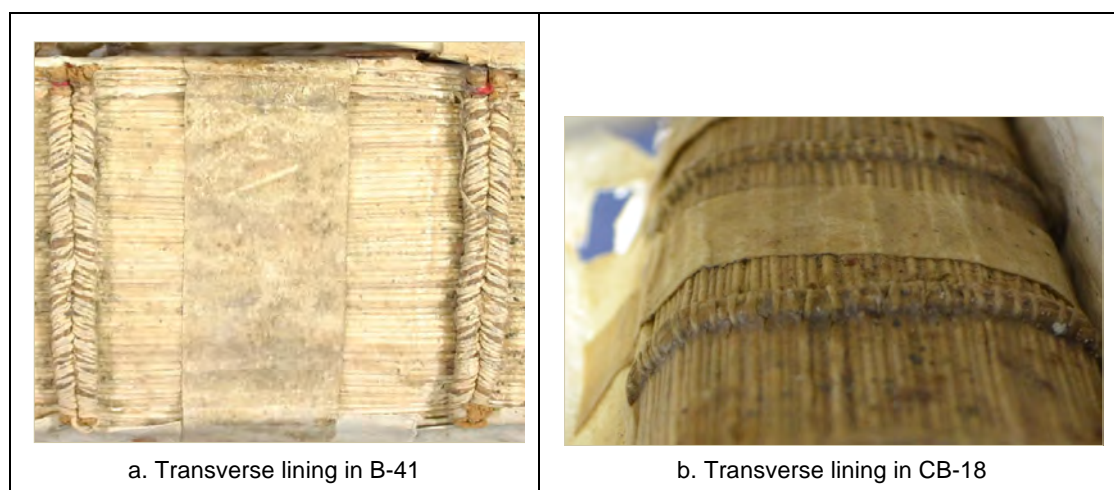


Fig. 49. Narrow linings in book B-41 and CB-18

With regard to the materials used for the transverse spine linings, parchment, European paper and indigenous paper were identified. In the majority of the twenty-one books that have transverse linings in the main sample, the linings are of European paper (eleven books), while six are of parchment.³⁷⁴ The materials used to make transverse linings in the books in the comparative sample are the same as that used in the books in the main sample, except for the indigenous paper that was not identified in the comparative sample. There are nine books where the transverse linings in all panels are made of European paper, whereas the linings in four books are all of parchment.³⁷⁵

The spine linings in books B-26 and B-36 in the main sample are of plain parchment, whereas B-32 and B-41 use a combination of plain and manuscript parchment on their spines. Book B-32 has spine linings of plain parchment in panels 1, 3 and 4³⁷⁶ and manuscript parchment, written in black and red ink, apparently with musical notation, in panel 2; in the case of books B-41, the linings in panels 1, 2 and 3 are of plain parchment whilst the one in panel 4 is of manuscript parchment written in Latin (*Fig. 50*). It is possible that the plain parchment used on these books might have been taken from the margins of the same manuscript used to make the other linings.

³⁷⁴ Linings of European paper: B-9, B-10, B-13, B-15, B-18, B-22, B-31, B-44, B-45, B-46 and B-47. Linings of parchment: B-26, B-32, B-33, B-35, B-36 and B-41.

³⁷⁵ Linings of European paper: CB-2, CB-11, CB-17, CB-19, CB-21, CB-22, CB-27, CB-36 and CB-43. Linings of parchment: CB-18, CB-23, CB-25 and CB-41.

³⁷⁶ The panels are numbered from head to tail.



Fig. 50. Transverse linings of plain and manuscript parchment in B-41

From those books whose spine linings are made of paper, plain paper was used for the linings of seven books in the main sample.³⁷⁷ In book B-10 the re-used, printed-paper used for the spine linings is from a religious book printed in Spanish, whereas re-used manuscript paper³⁷⁸ was used to make the linings of book B-13 (*Fig. 51*). In the case of the book B-9, the spine lining in panels 1 and 2 are of plain paper whilst those in panels 3 and 4 are of printed paper. These differences in the type of paper used for the linings in books B-9 could be explained by the binder using printed paper to make the linings in panels 1 and 2 and possibly the plain paper of the margins of the same printed paper to make the linings in panels 3 and 4. This case is similar, therefore, to that of books B-32 and B-41 mentioned above. The use of both printed and plain paper to make transverse spine linings within the same book was also identified in CB-11, printed in Spain, in the comparative sample. The transverse linings in panels 1 and 4 are of printed paper, whilst those in panels 2 and 3 are of plain paper. This combination of plain and printed paper was common in Italian bindings in the sixteenth century,³⁷⁹ but for the moment, there is not enough evidence to determine its use in Spain.



Fig. 51 Transverse linings of manuscript paper in B-13

³⁷⁷ Linings of plain paper: B-15, B-18, B-22, B-44, B-45, B-46 and B-47.

³⁷⁸ The type of manuscript could not be identified.

³⁷⁹ Information obtained from the course: *HEB 1500-1800*

Another combination of materials identified in the books in the comparative sample with transverse linings in all panels is that of parchment and paper within the same book. Transverse linings at head and tail in CB-10, CB-30 and CB-47 are made of parchment whilst the linings in the remaining panels are of either plain or printed paper.³⁸⁰ In all of the cases, the tiedowns of the endbands were worked through the linings. Taking into account this fact, the use of parchment at head and tail in these cases gives an extra reinforcement to the area where the tiedowns were to be worked, since parchment is a stronger material than paper and gives, therefore, greater strength to the tiedowns. As this combination of materials to make the transverse linings within the same book was not identified in the main sample, it raises the possibility that these books were bound in Europe; however, CB-10 and CB-30 show evidence of having been repaired, whilst the features of the cover in CB-47 are similar to those shown by the Mexican books,³⁸¹ something that makes it difficult to determine whether these books were bound in Mexico or in Europe. It should be observed that of this small group, CB-30 and CB-47 were printed in Spain. The combination of both materials within the same books is of Italian origin and, considering the similarities between the Spanish and Italian binding techniques in the sixteenth century, it is possible that this practice might also have been in use in Spain in the same period.

It is worth noting that books B-44, B-45 and B-46 in the main sample, whose transverse linings are of plain paper, with medium length spine-lining joints, belonged to the *Convento de Santo Domingo de la Ciudad de México* (Mexico City). Although it might appear that this begins to show evidence that the use of transverse spine-linings of paper was a practice of a binder who worked in or for this monastery, the rest of the features of the linings do not support this view. The spine-lining joints were cut in different shapes in each book and in addition, the height of the linings within the panels in each book also varies. Furthermore, there are no similarities between the features of the bindings of these three books that would suggest that these books were bound by the same binder or bound for a specific client (in this case the monastery) who asked each time for the same characteristics in the binding. Therefore, in view of the fact that transverse linings were identified in twenty-one of the books in limp, laced-case bindings, it can only be said, independently of the material used to make the linings, that the use of the transverse linings was common in Mexico during the sixteenth century. Actually, from the sixteenth to the eighteenth century, transverse lining was the most common type used in all Europe (Ligatus, 2013), therefore, the preference for its use in the Mexican books is not surprising.

³⁸⁰ Transverse linings of parchment at head and tail whilst the linings in the remaining panels are of either paper: CB-10, CB-30 and CB-47.

³⁸¹ Cover made of first-used parchment, with the hairside outside, without joint-creases, and turn-ins at head, tail and fore-edge, with edges neat-trimmed and lapped mitres at the corners, with the fore-edge turn-ins over the head and tail turn-ins. See section 3.6 Cover.

There is a single book, B-34, which has transverse linings of indigenous paper, filling 90% of each panel, with short spine-lining joints, trimmed neat and square (*Fig. 52*).³⁸² The scarcity of European paper (perhaps also of other materials used for bookbinding) during the sixteenth century in New Spain, suggests that the binder decided to use the indigenous paper that presumably was more easily available than that from Europe and probably cheaper. The presence of the indigenous paper in this book is certainly evidence that this book was bound in Mexico.



Fig. 52. Lining of indigenous paper in B-34

Book B-15 is set apart from the rest of the books with transverse linings, as it is the only instance with transverse linings of plain paper at head and tail only, with medium length lining-joints. This book was sewn on three single supports spaced at equal intervals along the spine, with shorter panels at head and tail, with the supports slips cut off at the joints. The cover of this book is attached to the textblock by means of the endband-core slips. Apparently, the transverse linings in this case were used to reinforce the attachment between the cover and the bookblock where the lacing was made and to reinforce also the area through which the tiedowns of the endbands were worked. However, it should be observed that the endleaves of this book have been replaced,³⁸³ and they are now adhered overall to the inside of the cover, leaving the endband-core slips and the spine-lining joints adhered between the endleaves and the cover. This obscures the real intention of the binder in using this type of lining.

³⁸² In addition to this book, the AGN keeps an archive binding in which the linings are made of indigenous paper (AGN/Real Hacienda Vol.1291).

³⁸³ See Appendix 4a.

In contrast with the main sample, there are six books in the comparative sample that have transverse linings at head and tail only. Of these, the linings in four books were made of either printed or plain paper, whereas in the remaining two books the linings were made of parchment.³⁸⁴ There are five books from this group where the cover is attached to the bookblock by means of the endband-core slips only, in all of the cases there are pastedowns and the tiedowns of the endbands are worked through the linings.³⁸⁵ It is, therefore, possible that these instances support the hypothesis that the transverse linings of parchment were used to reinforce both the area through which the tiedowns were worked and the attachment between the cover and the bookblock. Finally, in book CB-15, the transverse linings at head and tail are made of parchment and their joints are adhered to the outermost endleaves, which are themselves not adhered to the cover. The bookblock was therefore attached to the cover by means only of both the sewing-support and endband-core slips. (*Fig. 53*). In this case, it would be possible for the cover to be removed and replaced by another cover or by boards and leather without disturbing the endleaves, endbands and sewing structure.



Fig. 53. Attachment in CB-15

A different arrangement of transverse linings was identified only in CB-39, in the comparative sample. It was sewn on four supports, with transverse linings of printed paper in panels 1, 3 and 5, whilst the panels 2 and 3 have no linings. In this case the cover is attached to the bookblock by means of the endband-core slips only, reinforced by the lining joints and the pastedowns both of which are adhered to the inside of the cover. The tiedowns of the endbands were worked through the linings. Although there not all the panels have linings in them, the attachment is still strong enough to keep the cover and

³⁸⁴ Linings made of paper: CB-1, CB-5, CB-7 and CB-33. Linings made of parchment: CB-8 and CB-15.

³⁸⁵ Endband-core slips laced-in, with pastedowns and tiedowns through the linings: CB-1, CB-5, CB-7, CB-8 and CB-33.

bookblock securely attached to each other and to reinforce the tiedowns as they emerge from the spine.

Book B-37 in the main sample, which was sewn on four single supports, with the slips cut off at the joints, spaced at equal intervals along the spine, is of interest in that it has three transverse linings of plain parchment arranged in an unusual manner: the bottom edge of lining number 1 lies over sewing support number 1; lining number 2 lies over sewing support number 3 and lining number 3 is below sewing support number 4 (*Fig. 54*).³⁸⁶ The reasons for this arrangement cannot at the moment be understood.

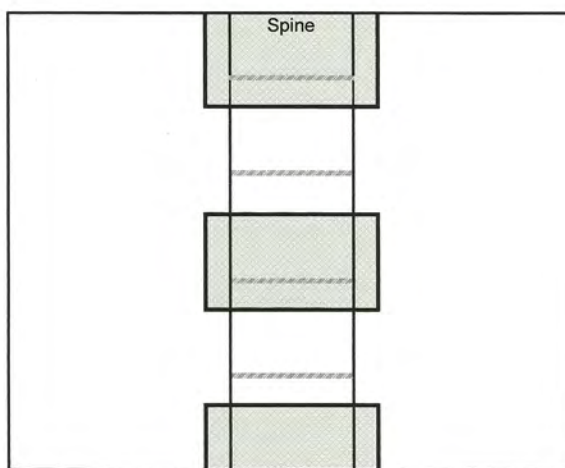


Fig. 54. Transverse linings on B-37 (The dotted lines represent the sewing supports)

3.4.2.2 Panel linings

From the seven books in the main sample with panel linings, two groups of books were identified: those whose panel linings were placed in the head and tail panels only, a group represented by three books and those whose linings were placed in all panels, as is the case with four books in the sample.³⁸⁷

The books from the first group (those with the panel linings at head and tail only) are sewn on three or four supports and some type of adhesive can be seen on their spine.³⁸⁸ Taking into account that these two features represent a strong and reinforced structure,³⁸⁹ it is possible that the binder was looking to give an extra reinforcement to the area where the tiedowns were to be worked. For instance, in book B-20, manuscript parchment was used

³⁸⁶ Sewing supports and linings are numbered from head to tail along the spine.

³⁸⁷ Books with panel linings at head and tail only: B-1, B-2, B-20. Books with panel linings in all panels: B-3, B-25, B-38 and B-42.

³⁸⁸ The adhesive on the spine of the books B-1 and B-2 is animal-based whilst the adhesive on the spine of B-20 is starch-based.

³⁸⁹ As has been explained in section 3.2 Structure (page 76), the more supports on which a book is sewn, the stronger it is likely to be. Adhesive is used on the spine in order to reinforce it.

to construct the panel linings. This material is stronger than paper, as has been explained above, and will give greater strength and therefore durability to the tiedowns (*Fig. 55*).



Fig. 55. Parchment lining at the head of the spine, with the tiedowns worked through the lining, in B-20

Book B-2, which also belongs to this group, is an interesting case: the sewing of this book is both all-along and packed on four supports, with five sewing stations surviving of the original six (the kettlestitch at the tail has been cut away),³⁹⁰ with plain parchment spine linings at head and tail only. However, there are some offsets in black and red letters in panels 2, 3 and 5, and the tiedowns of the endbands worked under the sewing supports (*Fig. 56*), with the cover attached to the textblock by means of the endband-core slips. In addition, there are some rests of previous tiedowns worked through the linings at the tail of the spine (*Fig. 66*). The evidence might suggest that were spine linings in all panels from an earlier binding, of which only those at head and tail were still in place when the binder received the textblock. In order to attach the new cover that fitted the new size of the textblock, the binder worked the endbands in order to provide slips with which to attach the new cover.



Fig. 56. Offsets in black and red letters in panels 2, 3 and 5 in B-2

³⁹⁰ See section 3.3 Edges (page 107).

There are also some variations in the heights of the linings within the panels formed by the sewing supports among the books of this group. In books B-1 and B-20, the panels fill 75% of the height of the panels, whereas in book B-2 the linings fill 100%. It appears that, independently of the type of linings, the practice of constructing linings filling approximately the entire height of the panels was a common practice in Mexico, most probably adopted from Spanish and Italian practice.

With regard to the second group (books whose linings were placed in all panels), books B-25 and B-38 show plain parchment panel linings at head and tail whereas paper was used for the central panel linings (*Fig. 57*).³⁹¹ This combination of material, as has been mentioned above, is frequently found in books bound in Italy during the sixteenth century,³⁹² therefore it could be said that this Italian practice is being reflected in these Mexican books.³⁹³ Re-used printed-paper was used for the panel linings in the remaining book of this group, B-3.



Fig. 57. Combination of parchment and paper for panel linings in B-38

The four books with panel linings in the comparative sample show similarities with the Mexican books, of which CB-32 has panel linings of parchment at head and tail only and CB-6, CB-28 and CB-45 have linings in all panels. In CB-28 the linings are made of plain paper and in CB-45 they are made of parchment. In the case of CB-6, the book does not open far enough to see between the cover and the spine, and although the use of panel linings could be identified, it was not possible to determine the material used to make the linings.

³⁹¹ Book B-25 was sewn on three supports, and the spine lining of paper is therefore placed in panels number 2 and 3. In the case of book B-38, which was sewn on two supports, the paper panel lining is placed in panel number 2.

³⁹² Information obtained from the course: *HEB 1500-1800*.

³⁹³ As has been said before, Italian and Spanish bookbinding techniques were very similar during the sixteenth century, and it is therefore possible that these books reflect a Spanish rather than an Italian practice. However, in order to confirm this hypothesis it is necessary to analyse a wider sample of books bound in Spain.

Book CB-31 in the comparative sample is set apart from the books with spine linings, since is the only instance in both sets of samples with a combination of panel and transverse linings. The linings at head and tail are transverse linings of plain parchment, whereas the linings in panels 2 and 3 are panel linings of printed parchment. It is possible that the plain parchment used at the head and tail were cut from the margins of the printed re-used parchment. It is worth noting that neither the combination of two types of lining nor the use of printed re-used parchment were identified in the books in the main sample. In addition, it was sewn with linked-sewing over three double cord supports (*Fig. 58*). These features might suggest that this book could have arrived from Europe already bound.



Fig. 58. Spine linings and linked-sewing in CB-31

Although the spine lining might be considered an indicator of greater quality and therefore of the cost of the binding, in the case of Mexican books there is no consistent relationship between the features of the binding and the characteristics of the linings that might establish the quality and the cost of the bindings. Considering the difficulty in finding material for bookbinding in New Spain during the sixteenth century, it could be argued that transverse linings represent a more expensive lining than panel linings, because they require more material than that needed for a panel linings. In the case of transverse linings, the length of the spine-lining joints and the shape to which they were trimmed could give information about the care with which the linings were made and therefore of the cost of this component. With regard to the panel linings, the books whose panel linings are placed in all panels could be considered to be more expensive than those books with panel linings placed in selected panels along the spine. Finally, independently of the type of lining, the height of the linings within the panels could also give economic information: the larger area of the panel that is filled by the lining, the more expensive it might be. This last view is, however, difficult to support, since bookbinding practices can vary from one country to another and it is possible that the practices may have no relationship to the cost of the material.³⁹⁴

³⁹⁴ In the seventeenth century in Holland, which was then a very wealthy nation, and where such an economy might not be thought necessary, narrow linings were in common use. Information obtained from the course: *BHE 1500-1800*.

Similarly, it is possible to obtain economic indications from the material used for the construction of the spine linings. In general, the linings appear to have been cut from pieces of material that might otherwise have been discarded, indicating that the binder made the best use of the available material, an important practice when some materials were scarce, as was the case in New Spain. Unfortunately there is not enough evidence to determine the prices of the materials used for bookbinding in Mexico. Although plain parchment or paper could have been obtained from the margins of waste leaves, in general it can be assumed that plain material will have come from unused sheets of paper or parchment and will therefore have been more expensive than that obtained from re-used printed or manuscript leaves.

It appears that Mexican bookbinding practices favoured the use of animal-based adhesives rather than starch-based adhesives, slightly rounded or flat spine shapes and the use of transverse linings. In addition, there is a diversity of materials used for linings which include plain and printed or manuscript re-used paper and parchment or a combination of them in the same book. Indigenous paper is less frequent, but was also identified.

It is also interesting to note that an Italian practice is reflected in seven books in the main sample, whose spine-lining joints are adhered to the outermost leaf of the endleaves,³⁹⁵ and in B-25 and B-38, whose spine linings are made from a combination of paper and parchment. Finally, there is a possible German influence reflected in book B-41 whose spine-linings cover less than 50% of the height of the panels between the sewing supports.

Although the features of the spine linings in the books in the comparative sample are similar to those shown in the main sample, there are two features that were only identified in the comparative sample. The first has concerns the location and type of lining: a combination of panel and transverse linings was identified in one book. Similarly, there is one book in which not all the panels have linings. The second feature regards to the use of the material to make the linings within a single book: a combination of parchment and paper was identified in three books, whereas printed parchment was identified in the linings of one book. These features raise the possibility that these books arrived from Europe already bound, since these practices were not identified in the books in the main sample.

³⁹⁵ See footnote 363.

3.5 ENDBANDS

Thirty-three out of the thirty-nine books (85%) bound in limp, laced-case bindings in the main sample have endbands whilst three books have no endbands.³⁹⁶ In book B-25 it is possible to determine that there were endbands because of the evidence provided by some pierced holes from the endband tiedowns below the kettlestitches and through the linings, whereas the damage to the books three books makes it impossible to determine whether there were endbands.³⁹⁷

The results from the comparative sample are similar to those shown by the Mexican sample: all the thirty-seven books from the comparative sample bound in limp, laced-case covers have endbands, except for CB-29 that has no endbands. Although the endbands are missing in book CB-13, it is possible to know that there were endbands because of the narrow strip of undecorated edge preserved at head and tail edges, near the spine (*Fig. 59*), as will be explained below.



Fig. 59. Evidence of missing endbands in CB-13

Considering that the use of endbands in limp bindings means, in most cases, that the endband-core slips will be laced through the cover in order to attach the bookblock to the cover, the results in both sets of samples are not surprising. In fact, the endband-core slips in all of the books with endbands in both sets of samples are laced through the cover.³⁹⁸

In those books in the main sample that have no endbands, an economic interpretation can be made. All of these three books have some features that could represent simple bindings and therefore less expensive work: the endleaves in B-7 are constructed by one single-leaf texthook of plain, handmade paper at each end of the textblock, without

³⁹⁶ With endbands: B-1, B-2, B-3, B-5, B-6, B-8, B-9, B-10, B-11, B-13, B-15, B-17, B-18, B-20, B-22, B-23, B-24, B-25, B-30, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-41, B-42, B-44, B-45, B-46 and B-47. With no endbands: B-7, B-19, B-27.

³⁹⁷ Damaged books: B-26, B-29 and B-43.

³⁹⁸ See section 3.7 Cover Attachment (page 184).

pastedowns (type 4).³⁹⁹ These endleaves are of one of the simplest types identified in the sample; its construction requires little time and the amount of paper used in their construction is the minimum possible for a sewn endleaf, and, in addition, this type of endleaf is sewn with the first and last gathering to the textblock and does not therefore involve the sewing of two additional gatherings. Book B-19 has neither linings nor endleaves⁴⁰⁰ and was sewn on three supports without packed sewing. Finally, B-27 has no linings. It is also interesting to note that B-7 and B-19 were printed towards the end of the century (B-7 was printed in 1583 and B-19 was printed in 1585), which suggests that the use of the endbands decreased chronologically towards the final part of the century. This phenomenon could be explained by the fact that by the end of the sixteenth century, the printing press was already well established in Mexico and the booktrade from Europe to New Spain was a profitable business, which indicates that the demand for bound books was, presumably, increasing. Faced by this new situation, it is possible that the binders were looking for ways in which to make cheaper bindings more quickly. However, given the small size of the sample, it is not possible to draw firm conclusions from the evidence.

The economic interpretation given above could also be made from the features of the binding of CB-29 in the comparative sample. The left endleaf is of type 4,⁴⁰¹ which is made of a single-leaf text hook of plain, handmade paper, whereas the right endleaf at the side is an integral endleaf, that is to say, the outer leaf of the gathering is used as an endleaf (type 11).⁴⁰² Although the endleaves at each end of the textblock were made up differently, each has the same number of leaves used as endleaves at each end of the textblock. As has been stated before, type 4 endleaves indicate low-cost work, whereas an integral endleaf means that the binder avoided taking up both time and material in the construction of the endleaves; furthermore, the bookblock has by-pass sewing,⁴⁰³ without both linings and endbands, features that show that the binder also saved time elsewhere in the binding process.

The endband cores in the books of the main sample are made of two materials: the cores of twenty-nine books are of tawed-skin (87% of the books with endbands), whereas in three books, the endband-cores are of tanned leather.⁴⁰⁴ One possible explanation for such a disproportionate ratio, almost one in ten, may be the difference in durability of the two materials: in general terms, alum-tawed skin is more durable than tanned leather (Middleton, 1996). Taking into account that endband-core slips were used to attach the

³⁹⁹ See Appendix 7.

⁴⁰⁰ See section 3.7 Cover Attachment (page 190).

⁴⁰¹ See Appendix 7.

⁴⁰² See Appendix 7 and section 3.1 Endleaves (page 63).

⁴⁰³ See by-pass sewing (page 95).

⁴⁰⁴ Tawed-skin cores: B-1, B-2, B-3, B-5, B-6, B-8, B-9, B-10, B-11, B-13, B-15, B-17, B-18, B-20, B-22, B-23, B-24, B-30, B-31, B-32, B-34, B-35, B-36, B-38, B-42, B-44, B-45, B-46 and B-47. Tanned leather cores: B-33, B-37 and B-41.

cover to the textblock, the use of alum-tawed skin as a material to be preferred to tanned leather as an endband-core material would appear to be logical (*Fig. 60*).

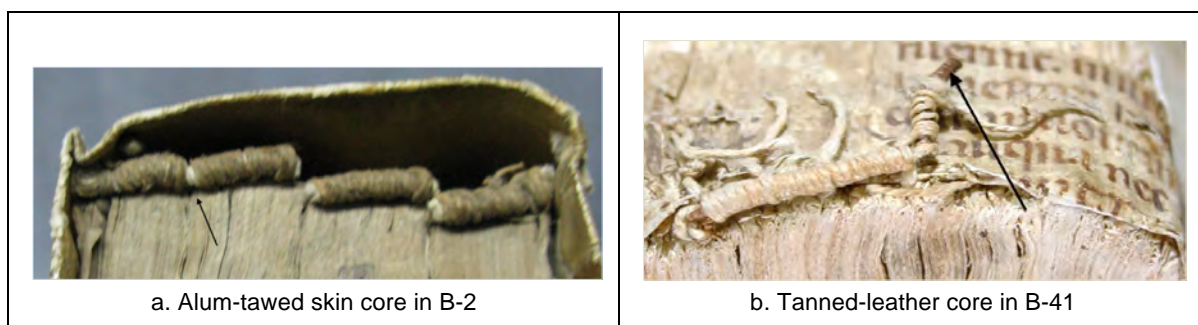


Fig. 60. Materials used to make the cores of the endbands in the main sample

In order to explain the distinct difference in the use of tanned leather and alum-tawed skin for the endband cores, it is necessary to consider the possibility of a correlation between the use of endband-core slips of tanned leather and a geographical area: B-33 and B-37 were identified as belonging to the *Convento de San Francisco de Guadalajara*, in Jalisco,⁴⁰⁵ something that suggested that they could have been worked either by the same person or that the use of endband-cores of tanned leather may have been in use in Guadalajara. However, if a comparison is made between these two books, this hypothesis is difficult to support as although both books were sewn on single supports of alum-tawed skin, with the slips cut off at the joints, the subsequent use of added slips to attach the covers is done in two quite different ways. It would appear that the binder of B-33 received the textblock already sewn and finished the binding by using tanned leather for the added slips which are laced under the sewing supports as well as for the endband cores. As the bookblock is attached to the cover by means of the added sewing supports and the endband-core slips, it is possible that the binder was looking for a specific appearance on the outside of the cover. Another possible explanation is that tanned leather was the only material that the binder had available. In contrast, B-37 has stabbed-slips⁴⁰⁶ of alum-tawed skin placed between the sewing supports,⁴⁰⁷ with the cover attached to the bookblock by means of these slips as well as the endband-core slips. In this case the outside of the cover shows a combination of tanned leather and alum-tawed skin, something that suggests that in this case the binder was also looking for a specific, but different, appearance on the outside of the cover (*Fig. 61*). Another explanation for this combination of tanned leather and tawed skin is that the stabbed-slips and the endbands were worked at different times and, perhaps, by different binders. The evidence might suggest that each of these books was made by different binders working in Guadalajara.

⁴⁰⁵ See Appendix 13, map 3.

⁴⁰⁶ See Glossary.

⁴⁰⁷ See section 3.7 Cover Attachment (page 209).

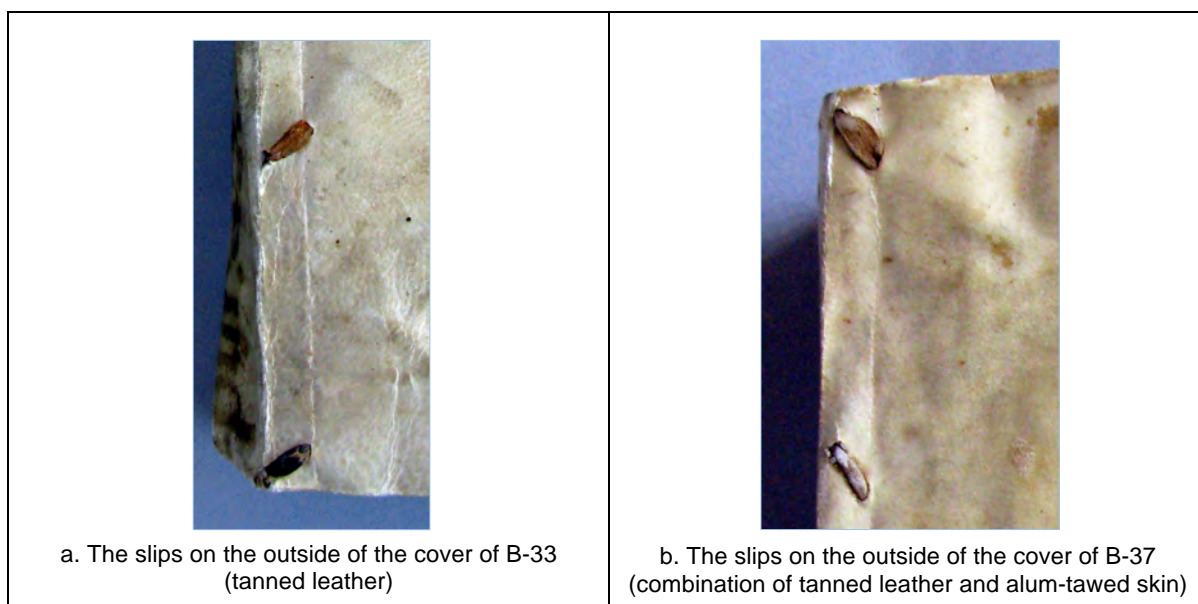


Fig. 61. The slips on the outside of the cover of B-33 and B-37

Another possible, chronological explanation for the difference in the use of endband cores of tanned leather and those of alum-tawed skin could be the possibility that the use of tanned leather increased towards the end of the sixteenth century or possibly later on; if such were the case, what is shown by these three books could be the result of a process of repair. In order to confirm this hypothesis it would be necessary to analyse a larger number of books bound in Mexico during the final part of the sixteenth century and later.

It should also be added that the sewing supports in book B-22 are of tanned leather whereas the endband cores are of alum-tawed skin. As has been mentioned above,⁴⁰⁸ in view of the similarities between Italian and Spanish bookbinding techniques in the sixteenth century, it is possible that an Italian, or perhaps Spanish, influence is reflected in this book.

Alum-tawed skin and tanned leather were also identified as materials used to make the cores of the endbands in books in the comparative sample. In thirty-two out of the thirty-six books with endbands, the cores were made of tawed skin, whereas tanned leather was identified in one book. Finally, the cores in one book are made of cord.⁴⁰⁹

⁴⁰⁸ See section 3.2 Structure (page 80).

⁴⁰⁹ Alum-tawed cores: CB-1, CB-2, CB-3, CB-5, CB-6, CB-7, CB-10, CB-11, CB-12, CB-15, CB-16, CB-17, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-26, CB-27, CB-28, CB-30, CB-31, CB-32, CB-33, CB-35, CB-36, CB-39, CB-41, CB-45, CB-46 and CB-47. Tanned leather cores: CB-43. Cord cores: CB-9.

With regards to books CB-9 and CB-43, both printed in France, these two books share some features: they were sewn on double supports,⁴¹⁰ with the endband-core slips cut off, more probably broken, at the joints, but there is an added slip of alum-tawed skin stabbed through the head and tail of each joint close to the ends of the endband-cores, and laced through the cover and turn-ins (*Fig. 105*). In both books, the endbands were worked in two colours of double thread (natural and blue); out of the whole sample (both main and comparative samples), these are the only books that shows this phenomenon (*Fig. 71*), as is discussed below. In addition, the cover of each book shows marked similarities with those shown by the covers on books in the main sample.⁴¹¹ All these features suggest that the textblocks arrived in New Spain already sewn, with the endbands in place and were, apparently, given covers there. It should be mentioned that some fibres of tanned leather could be seen adhered to the spine of the textblock in CB-9, a clear evidence that the present cover is a replacement (*Fig. 20*). Finally, it must be remembered that there is one book in the main sample, B-31, that was sewn on double supports of cord, as is also the case of CB-43 in the comparative sample. These books follow a particularly German practice in the sixteenth century, although the evidence might suggest the possibility that CB-43 was rebound in Mexico at a later date,⁴¹² though the features of the endbands make it difficult to support this last hypothesis.

The formation of the cores can be carried out in a variety of different ways. From the twenty-nine alum-tawed skin cores in which formation could be identified, eleven books each with either crushed or twisted cores were identified, whereas rolled cores are represented by one single book in the main sample. There is a further group of six books in which the formation of the cores could not be determined.⁴¹³ With regard to cores of tanned leather, a twisted formation was identified in B-41 whilst the formation of the cores in B-33 and B-37 could not be identified.

A twisted formation was identified in twenty-five in the cores in the books in the comparative sample with endband-cores of alum-tawed skin, whereas the endband cores in four books are rolled. The formation of the endband-cores could not be identified in two books.⁴¹⁴ The use of rolled tanned leather to make endband-cores was identified in CB-43, which is the only instance identified with the endband-cores of tanned leather in the

⁴¹⁰ It must be remembered that the bulk of the books in the comparative sample (eighteen books, or 48.6% of the sample) are sewn on double supports, in contrast to the main sample (three books or 7.5% of the sample).

⁴¹¹ Limp, laced-case cover of first-use parchment, with the hairside outside, with joint-creases, turn-ins at head, tail and fore-edge, and cover extensions at the fore-edge. See section 3.6 Cover (page 154).

⁴¹² See section 3.2 Structure (pages 81-81).

⁴¹³ Crushed cores: B-1, B-2, B-8, B-13, B-15, B-17, B-18, B-22, B-31, B-44 and B-46. Twisted cores: B-5, B-9, B-10, B-20, B-23, B-24, B-30, B-34, B-36, B-38 and B-42. Rolled cores: B-45. No identified: B-3, B-6, B-11, B-32, B-35 and B-47.

⁴¹⁴ Twisted cores: CB-1, CB-3, CB-5, CB-6, CB-7, CB-10, CB-12, CB-15, CB-16, CB-17, CB-18, CB-19, CB-22, CB-25, CB-26, CB-27, CB-28, CB-30, CB-33, CB-35, CB-36, CB-39, CB-45, CB-46 and CB-47. Rolled cores: CB-11, CB-23, CB-31 and CB-41. No identified: CB-2 and CB-32.

comparative sample. Whether or not the use of rolled, tanned cores was a practice common in Mexico can only be confirmed by the examination of a wider sample of books bound in Mexico during the sixteenth century and later.

3.5.1 Sewing

All the endbands recorded in both sets of samples are pack-sewn, as is usual with this type of endband,⁴¹⁵ whatever the material used for the endband cores (*Fig. 62*). In the main sample, the use of a single thread on the needle was identified in twenty-one books (*Fig. 63a*), whilst the use of double thread was observed in the endband sewing in ten books.⁴¹⁶ This is potentially significant because the use of a double thread speeds up the sewing process and would therefore impact on the cost of the binding. This is because a double thread on a needle across a given length of endband core requires half as many turns around the core as a single thread, and thus requires much less time to execute.



Fig. 62. Pack-sewn endband in B-32

The use of both single or double thread on the needle was also identified in the endbands of the comparative sample. The endbands in twenty books were worked with a double thread (*Fig. 63b*) whilst a single thread was used in the endbands of fourteen books.⁴¹⁷ In comparing the use of either single or double thread in both sets of samples, the conclusions from the main sample are the opposite of those obtained from the comparative sample. Approximately the 55% of the endbands in the comparative were worked with a double thread, versus the approximately 30% of the endbands in the main sample that were worked using double thread. Similarly, approximately the 39% of the endbands in the comparative sample were worked using a single thread, in contrast to the approximately 67% of the endbands in the main sample that show the use of a single thread for the same purpose.

⁴¹⁵ See Glossary.

⁴¹⁶ Single thread: B-5, B-6, B-9, B-10, B-13, B-15, B-17, B-18, B-20, B-22, B-30, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-41 and B-47. Double thread: B-1, B-2, B-3, B-11, B-23, B-24, B-42, B-44, B-45 and B-46.

⁴¹⁷ Single thread: CB-1, CB-2, CB-5, CB-6, CB-11, CB-17, CB-18, CB-22, CB-25, CB-28, CB-31, CB-33, CB-39 and CB-47. Double thread: CB-3, CB-7, CB-9, CB-10, CB-12, CB-15, CB-16, CB-19, CB-21, CB-23, CB-26, CB-27, CB-30, CB-32, CB-35, CB-36, CB-41, CB-43, CB-45 and CB-46.

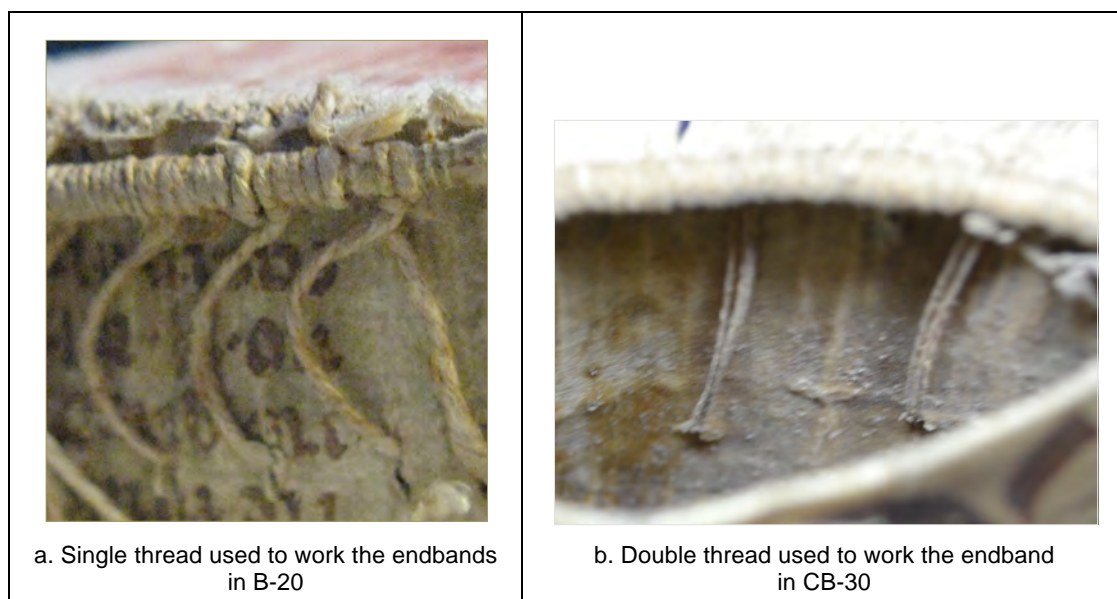


Fig. 63. Single and double thread used to work the endbands

Based on the possibility that the books sewn on double supports in the comparative sample could have arrived from Europe as sewn textblocks, a closer examination was made of them in order to determine if there was a relationship between this type of sewing and the use of either double or single thread to work the endbands. The conclusions are that the use of both single and double thread to work the endbands are represented by approximately the same number of books (eight and nine respectively).⁴¹⁸ There is therefore not enough evidence to draw firm conclusions. However, it should be remembered that book CB-9, whose binding features have been discussed above, and which most probably arrived from Europe already sewn with the endbands in place, is sewn on double supports with the endbands worked with a double thread.

Two different techniques for working the endbands have been observed, irrespective of the use of single or double thread and the material used for the endband-cores. Nineteen out of the thirty-three books have endbands with back beads, whereas the endbands in nine books were sewn with no bead at all.⁴¹⁹ The route of the thread used in the endbands in five books could not be determined.⁴²⁰ It would appear that the preference for sewing with back beads starts to show a pattern in Mexican practice.

⁴¹⁸ Sewn on double support and endbands worked in a single thread: CB-1, CB-2, CB-5, CB-18, CB-25, CB-28, CB-31 and CB-39. Sewn on double support and endbands worked in a double thread: CB-9, CB-12, CB-19, CB-21, CB-23, CB-36, CB-41, CB-43 and CB-45.

⁴¹⁹ With back beads: B-1, B-2, B-3, B-5, B-6, B-8, B-15, B-17, B-20, B-22, B-24, B-31, B-33, B-35, B-36, B-37, B-41, B-46 and B-47. Without bead: B-9, B-10, B-11, B-18, B-32, B-38, B-42, B-44 and B-45. No determined: B-13, B-23, B-25, B-30 and B-34.

⁴²⁰ In books B-13, B-23, and B-30 it was not possible to see between the spine and the cover whilst the damage to book B-34 made it impossible to determine the route of the thread.

Both techniques of sewing either with back beads (*Fig. 64*) and no bead at all were identified in the books in the comparative sample. Thirty out of the thirty-six books have endbands with back beads,⁴²¹ whilst CB-46 is the only book identified with no bead at all. In addition, the endbands in book CB-9 and CB-43, both printed in France, are sewn without back beads but with front beads and tiedowns, using two threads of different colours. According to Ligatus (2013), the technique of sewing the primary endband in this manner was used in France from the second quarter of the sixteenth century, especially for less expensive bindings, as is explained below.⁴²² This technique was not identified in the main sample. Once again, this fact, in addition to the use of two colours of thread to work the endbands in both books, might suggest that these two books arrived from Europe with the endbands already worked. The route of the thread used in the endbands in three books could not be determined.⁴²³

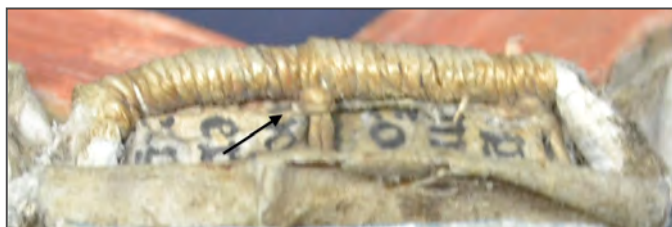


Fig. 64. Back bead in the endbands in CB-7

It should be added that CB-8 in the comparative sample, in addition to the primary sewing worked in a double, thin thread of natural colour, with back beads, has a secondary sewing worked over the primary sewing. It was worked in two colours of thread, natural and dark-natural respectively, with a front bead and pack-sewing. The secondary sewing, in this case, has a decorative function. As the edges in this book were decorated before the endbands were worked, in addition to the fact that secondary sewing can be carried out at any time over the primary sewing, it is not possible to determine whether it was worked in Mexico or in Europe (*Fig. 65*). This type of endband was not identified in the main sample.



Fig. 65. Endband with a secondary sewing in CB-8

⁴²¹ With back beads: CB-1, CB-2, CB-3, CB-6, CB-7, CB-8, CB-10, CB-11, CB-12, CB-15, CB-16, CB-17, CB-18, CB-19, CB-21, CB-22, CB-23, CB-26, CB-27, CB-28, CB-30, CB-31, CB-32, CB-33, CB-35, CB-36, CB-39, CB-41, CB-45 and CB-47.

⁴²² See page 147.

⁴²³ In books CB-5, CB-13 and CB-25, it was not possible to see between the spine and the cover.

There are some features of the endband that can be used to establish its quality. One is the sewing pattern in which the turns of the thread, single or double, around the core, that lie neatly, including the tiedowns, in order to fill the core with threads beside one another to create a smooth sewing pattern around the core. The features of the tiedowns to secure the endband core to the bookblock, might be also be used to determine the quality of the endband. The first one is the point at which the needle emerges from the inside of the gatherings in relation with the position of the kettlestitches; in the best quality work, the needle would emerge either below or through the kettlestitches in order to prevent the tiedowns tearing back through the gatherings. The second one is the frequency, that is to say, the number of tiedowns in relation to the number of gatherings. The highest strength, and therefore the best quality, in an endband will be represented by the presence of one tiedown for each gathering; anything less would represent a decrease in quality. The third and last feature is the position of the tiedown in relation to the centre-folds of the gatherings. Those endbands whose tiedowns are placed in the centre-fold of the gatherings were stronger than those whose tiedowns are placed in a random position, that is to say, the tiedowns are not necessarily in the centre-fold of the gatherings. In the former, the thread will be secured by all the folds of the bifolios that make up the gatherings, which is not possible to achieve by the latter method where the tiedowns are placed in a random position, and will therefore mostly be secured by fewer than the optimal number of bifolios. It should also be understood that placing the tiedowns at the centre-fold of the gatherings represents a time-consuming process because, before sewing the endband, each centre-fold of the gatherings must be marked-up in order to know where to introduce the needle. Therefore, this position of the tiedowns would indicate a carefully-worked endband which requires more time for the work and, in economic terms, a higher price for the work, unless the binding was made in a non-commercial environment, such as in a monastery for its own use (Ligatus, 2013).

With regard to the position of the tiedowns in relation to the linings and the kettlestitches, there are twenty-nine books in the main sample that show both endbands and linings.⁴²⁴ From this group, there are twenty-two books whose tiedowns are worked through the lining and below the kettlestitches.⁴²⁵ The tiedowns in B-41, B-42 and B-46 are worked through the linings, but it was not possible to determine the length of the tiedowns in relation to the kettlestitches. Although the endbands in B-2 have been replaced, as will be explained below, there are two tiedowns preserved from an earlier endband at the tail of

⁴²⁴ With linings and endbands: B-1, B-2, B-3, B-8, B-9, B-10, B-11, B-13, B-15, B-17, B-18, B-20, B-22, B-24, B-26, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-41, B-42, B-44, B-45, B-46 and B-47.

⁴²⁵ Through the linings and below the kettlestitches: B-1, B-3, B-8, B-9, B-10, B-11, B-13, B-15, B-17, B-18, B-20, B-22, B-24, B-31, B-32, B-33, B-35, B-36, B-37, B-44, B-45 and B-47.

the spine. These tiedowns are worked through the lining, but it was not possible to determine the length of the tiedowns in relation to the kettlestitches (*Fig. 66*).

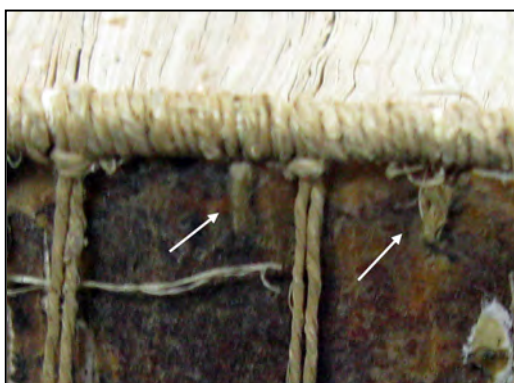


Fig. 66. Tiedowns preserved of earlier tiedowns in B-2

B-38 is the only book in which the tiedowns emerge immediately below the lining and below the kettlestitch, a practice that was common in Italy in the sixteenth century and its influence is therefore reflected in this book (*Fig. 67*),⁴²⁶ whilst in B-26 and B-34, the position of the tiedowns in relation to the lining and kettlestitches could not be determined. Finally, it should be observed that B-5, B-6 and B-23 have no linings, of which B-6 has tiedowns which were worked below the kettlestitches, whereas the length of the tiedowns in relation to the kettlestitches could not be determined in B-23. The endbands in B-5 are replacements, as will be explained below. This evidence would seem to indicate a pattern in Mexican bookbinding practice in which tiedowns were typically worked below the kettlestitches and through the linings.

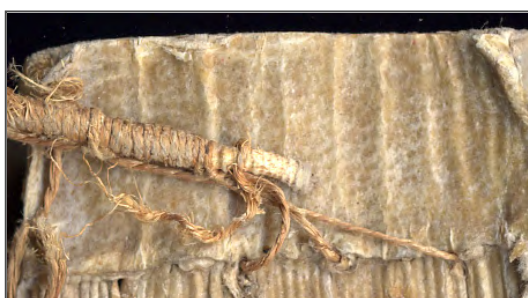


Fig. 67. Tiedowns emerge immediately below the lining in B-38

The position of the tiedowns in relation to the spine and the kettlestitches was also analysed in the comparative sample. There are thirty-two books that show both endbands and linings.⁴²⁷ From this group, there are twenty-six books whose tiedowns are worked

⁴²⁶ Information obtained from the course: *HEB 1500-1800*.

⁴²⁷ With linings and endbands: CB-1, CB-2, CB-5, CB-6, CB-7, CB-8, CB-9, CB-10, CB-11, CB-12, CB-15, CB-16, CB-17, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-26, CB-27, CB-28, CB-30, CB-31, CB-32, CB-33, CB-36, CB-39, CB-41, CB-43, CB-45 and CB-47.

through the lining and below the kettlestitches.⁴²⁸ The tiedowns in CB-1 and CB-32 are worked through the linings, but it was not possible to determine the length of the tiedowns in relation to the kettlestitches. Although the tiedowns in books CB-18 and CB-43 are worked above the kettlestitches, their relationship with the lining is different in each case. The tiedowns in CB-18 are worked through the linings whereas in CB-43 they were worked before the linings were glued in place. Finally, in CB-22, as will be explained below, the endbands are replacements, whilst in the remaining CB-16, the position of the tiedowns in relation to the lining and kettlestitches could not be determined.

Using the ratio of tiedowns to gathering to establish the quality of the endbands, a comparison can be made between the copies of the same title in the sample which therefore contain, approximately, the same number of gatherings in the textblock.⁴²⁹ In book B-1, the ratio of tiedowns to gatherings is 4:53 whereas the ratio in book B-32 is 8:52, indicating, therefore, that the structure of the endband in B-1 is of a lower quality than that of B-32, as the latter has one tiedown for every six gatherings, whilst B-1 has one tiedown for every thirteen gatherings. A similar case is that of CB-39 and CB-45 in the comparative sample. Although they are not copies of the same title, they share the same number of gatherings. In CB-39, the ratio of gatherings is 8:75 whilst the ratio in book CB-45 is of 4:75, indicating, therefore, that the structure of the endband in CB-39 is of a higher quality than that of CB-45, as the latter has one tiedown for every eighteen gatherings whilst CB-39 has one tiedown for every nine gatherings.

Another instance that should be mentioned is the group of books B-32, B-36, and B-41 in the main sample. Although all of them have eight tiedowns, the number of the gatherings varies considerably. The ratio of tiedowns to gatherings in these books varies widely. In book B-41, it is 8:17, in book B-36, 8:43 and finally in B-32, 8:52. These three books, therefore, present three levels of quality in their endband structures: the highest quality is represented by book B-41, whose endbands were worked with a single thread, with one tiedown for every two gatherings. The medium quality is shown by book B-36, whose endbands were worked with a single thread, with one tiedown for every five gatherings and, finally, the endbands in B-32 are of the lowest quality which were worked with a single thread, with a tiedown worked every six gatherings. A similar case was also identified in the enbands of the comparative sample: CB-12, CB-23 and CB-30 have endbands worked with a double thread and six tiedowns, but the number of gatherings in theses books varies widely and, therefore, the ration of tiedowns to gatherings varies considerably. In book CB-12, it is 6:36, in book CB-23, it is 6:56, and in CB-30, it is 6:109.

⁴²⁸ Through the linings and below the kettlestitches: CB-2, CB-5, CB-6, CB-7, CB-8, CB-9, CB-10, CB-11, CB-12, CB-15, CB-17, CB-19, CB-21, CB-23, CB-25, CB-26, CB-27, CB-28, CB-30, CB-31, CB-33, CB-36, CB-39, CB-41, CB-45 and CB-47.

⁴²⁹ *Reverendi Patris Fratrís...* written by Bartolomé de Ledesma, all of them printed in 1566 by Antonio de Espinosa.

The same three levels of quality in the endbands identified in the main sample, are also represented by these three books in the comparative sample, of which, CB-30 shows endbands of the lower quality (one tiedown for every eighteen gatherings), the endbands in CB-23 are of the medium quality (one tiedown for every nine gatherings), whilst CB-12 shows endbands of the highest quality (one tiedown for every six gatherings).

The position of the tiedowns within the gatherings shows two variations in the books in the main sample: in the majority of the books (twenty-seven), tiedowns were found in a random position. In contrast, there are two instances whose tiedowns were found in the centre-folds of the gathering.⁴³⁰ These results would suggest a pattern in the endbands worked in México whose tiedowns were typically placed in a random position.

The conclusions drawn from the position of the tiedowns within the gatherings from the books in the comparative sample are similar to those shown by the books in the main sample: in the majority of the books (thirty), tiedowns were found in random positions.⁴³¹ In contrast, CB-10 has tiedowns in the centre-folds of the gatherings.

Two unusual cases should also be mentioned, B-2 and B-3, whose tiedowns are worked below the sewing supports nearest to each edge of the spine. In B-2, the tail end of the bookblock, including the kettlestitch, has been cut away in the course of repairs or rebinding, suggesting that the binder decided to use the sewing support nearest to the tail-edge to work the tiedowns firmly to the textblock. Although there is the kettlestitch at the head, it is possible that the binder decided to sew both endbands following the same pattern (*Fig. 68*). So far as book B-3 is concerned, the book has been repaired, and it might therefore be thought that working the tiedowns below the sewing supports at each end of the spine was the result of the repair process.

⁴³⁰ Random position: B-1, B-2, B-3, B-5, B-6, B-8, B-9, B-13, B-15, B-17, B-18, B-20, B-22, B-23, B-24, B-31, B-32, B-33, B-35, B-36, B-37, B-38, B-41, B-42, B-44, B-45 and B-47. Tiedowns in the centre-folds of the gathering: B-10 and B-46.

⁴³¹ Random position: CB-1, CB-2, CB-5, CB-6, CB-7, CB-8, CB-9, CB-11, CB-12, CB-15, CB-16, CB-17, CB-18, CB-19, CB-21, CB-23, CB-26, CB-27, CB-28, CB-30, CB-31, CB-33, CB-35, CB-36, CB-39, CB-41, CB-43, CB-45, CB-46 and CB-47.

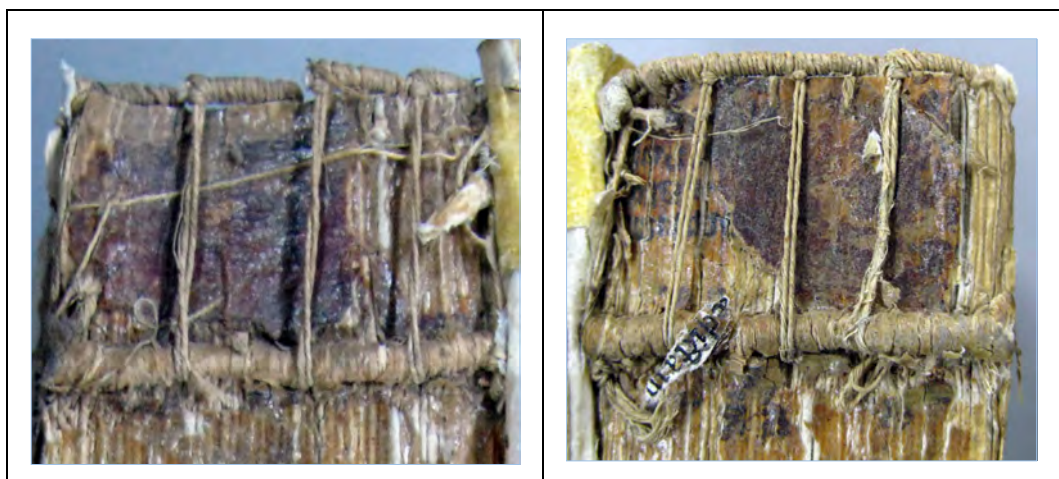


Fig. 68. Tiedowns worked below the sewing supports nearest to the head-edge (left) and to the tail-edge (right) of the spine in B-2

In the comparative sample, the kettlestitches at head and tail in CB-22 have also been cut away. In this case, the tiedowns are worked above the sewing support at the head and below the one at the tail and through the linings (*Fig. 69*).



Fig. 69. Tiedowns at the head in CB-22

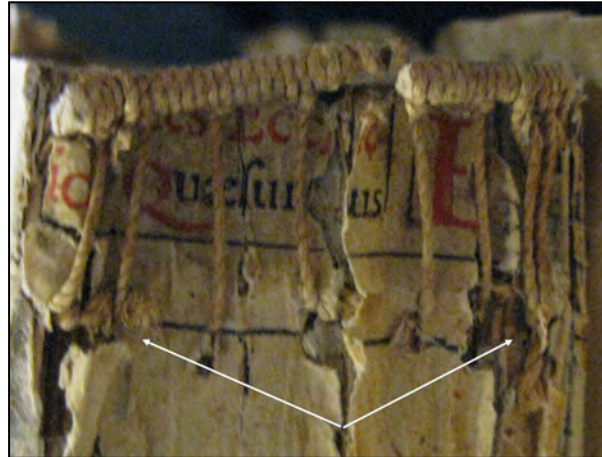
The ends of the sewing thread used to work the endbands could also be treated in different manners. There are fifteen books in which the first and last tiedowns were secured with a knot at the bottom of the tiedown of the exit hole⁴³² on the spine (*Fig. 70*).⁴³³ This same pattern of securing the first and last tiedowns at the textblock is shown by book B-6, which has no lining, so that in this case the knots are directly on the outside of the spine. According to Tacón Clavaín⁴³⁴ this type of knotting was also used in Spain during the sixteenth century and it is therefore possible that these books from the sample are influenced by Spanish practice. It must be mentioned that this pattern of securing the

⁴³² See Glossary.

⁴³³ First and last tiedowns secured with a knot at the bottom of the tiedown of the exit hole on the spine: B-1, B-2, B-3, B-6, B-8, B-9, B-15, B-17, B-18, B-22, B-24, B-31, B-41, B-42 and B-46.

⁴³⁴ Email from Javier Tacón Clavaín, Book Conservator, Universidad Complutense de Madrid. Biblioteca Histórica. Department of Conservation and Restoration, Madrid. 4 August 2010. pers. comm.

first and last tiedowns at the exit hole on the spine is also shown by twenty-four⁴³⁵ books in the comparative sample, of which eighteen are Spanish editions.⁴³⁶ However, as the features of the endbands that show this pattern of knotting are similar in both sets of samples, in order to confirm whether this is indeed a Spanish practice, it would be necessary to analyse a larger number of books known to have been bound in Spain.



*Fig. 70. Each of the first and last tiedowns were secured with a knot at the bottom of the tiedown of the exit hole on the spine.
Endband at the head-edge in B-31*

In addition, there are four books in the main sample in which the end of the thread was knotted at the bottom of the tiedown at the exit hole on the right-side of the spine, whereas in three books the end of the thread was knotted at the bottom of the tiedown at the exit hole on the left-side of the spine.⁴³⁷ Another case that should be mentioned is that of B-13, in which each of the ends on the left-side of the thread used to work the endbands was passed under the second tiedown. Finally, it should be noted that it was impossible to identify the treatment of the ends of the thread in eleven books.⁴³⁸ The different ways identified of treating the ends of the endband sewing-thread suggest that there were several bookbinders working in Mexico.

In addition to the twenty-four books in the comparative sample that show the pattern of securing the first and last tiedowns at the exit holes on the spine, is CB-18, in which the end of the thread was knotted at the exit hole on the left-side of the spine, whilst in CB-2 the end of the thread of the final tiedown was secured with a knot at the bottom of the

⁴³⁵ First and last tiedowns secured with a knot at the bottom of the tiedown of the exit hole on the spine: CB-1, CB-6, CB-7, CB-8, CB-11, CB-15, CB-16, CB-17, CB-19, CB-21, CB-22, CB-23, CB-25, CB-26, CB-28, CB-30, CB-33, CB-35, CB-36, CB-39, CB-41, CB-45, CB-46 and CB-47.

⁴³⁶ Spanish editions: CB-11, CB-15, CB-16, CB-19, CB-21, CB-22, CB-23, CB-25, CB-26, CB-28, CB-30, CB-33, CB-35, CB-36, CB-39, CB-41, CB-45 and CB-47.

⁴³⁷ Knotted at the right-side: B-10, B-33, B-35 and B-38. Knotted at the left-side: B-36, B-37 and B-45. The end of the thread in B-32 was knotted on the spine. I have no record of whether the end was knotted on left or right side.

⁴³⁸ Treatment of the end of the thread not identified: B-5, B-11, B-20, B-23, B-25, B-26, B-29, B-30, B-34, B-44 and B-47.

penultimate tiedown. Finally, there are ten books where the treatment of the ends of the thread could not be identified.⁴³⁹

3.5.2 Thread

The sewing thread used for sewing the endbands in the books of the main sample shows a great diversity of features including material, thickness, ply, twist and colour.⁴⁴⁰ The fibres identified in the thread used to work the endbands are those of jute in three books and linen and hemp represented by one book in the sample.⁴⁴¹ These results show that the thread could be of European origin, as is the case of those threads where linen and hemp have been identified. In the case of jute, there is a possibility that it might have been imported to New Spain from India, in the *Nao de China*.⁴⁴² The material from which the thread used to work the endbands in the books in the comparative sample could not be identified.

The features of the endband-sewing thread were determined according to the same criteria that were applied to analyse the sewing thread.⁴⁴³ The results of this analysis are shown on *Table 3*.

	TWIST AND PLY						THICKNESS			COLOUR			
	Tight		Medium		Loose		Thick	Medium	Thin	Dark	Toned	Natural	Other
	S	Z	S	Z	S	Z							
QUANTITY OF BOOKS	4	4	19	3	2	0	5	16	11	13	10	8	1 (red-brown)

*Table 3. Characteristics of endband thread in the main sample*⁴⁴⁴

The table shows that a medium-twist, S-ply thread predominates and that there is a preference for the use of medium thread, either single or double, to sew the endbands. In books B-1 and B-24, the endbands were worked with a double, thick thread, which can be interpreted as low quality work in comparison with an endband worked with a single, thin thread. As has been explained above, the use of a double thread will speed up the

⁴³⁹ Treatment of the end of the thread not identified: CB-3, CB-5, CB-9, CB-10, CB-12, CB-13, CB-27, CB-31, CB-32 and CB-43.

⁴⁴⁰ See Appendix 7.

⁴⁴¹ Jute: B-1, B-5 and B-10. Linen: B-2. Hemp: B-6.

⁴⁴² See section 3.2 Structure (page 98).

⁴⁴³ See section 3.2 Structure (page 99).

⁴⁴⁴ **Twist and ply:** tight, S: B-2, B-6, B-45 and B-46. Tight, Z: B-10, B-31, B-32 and B-36. Medium, S: B-1, B-3, B-5, B-8, B-13, B-15, B-17, B-18, B-22, B-23, B-24, B-30, B-34, B-35, B-38, B-41, B-42, B-44 and B-47. Medium, Z: B-9, B-33 and B-37. Loose, S: B-11 and B-20. **Thickness:** thick: B-1, B-22, B-24, B-31 and B-47. Medium: B-2, B-6, B-13, B-15, B-18, B-30, B-32, B-33, B-34, B-35, B-37, B-38, B-41, B-42, B-44 and B-46. Thin: B-3, B-5, B-8, B-9, B-10, B-11, B-17, B-20, B-23, B-36 and B-45. **Colour:** dark: B-2, B-5, B-6, B-11, B-13, B-15, B-17, B-22, B-24, B-31, B-42, B-44 and B-47. Toned: B-1, B-3, B-8, B-18, B-32, B-33, B-35, B-36, B-37 and B-41. Natural: B-9, B-10, B-20, B-30, B-34, B-38, B-45 and B-46. Other: B-23 (red-brown).

process of sewing endband.⁴⁴⁵ If, in addition, the double thread used for this purpose is thick, the time required to work the endband would be still further reduced.

The features of the endband-sewing thread were also investigated in the comparative sample. The results of this analysis are shown on *Table 4*.

	TWIST AND PLY						THICKNESS			COLOUR			
	Tight		Medium		Loose		Thick	Medium	Thin	Dark	Toned	Natural	Other
	S	Z	S	Z	S	Z							
QUANTITY OF BOOKS	12	1	16	0	3	3	7	14	14	12	12	5	6 (brown and blue)

*Table 4. Characteristics of endband thread in the comparative sample*⁴⁴⁶

The table shows that the conclusions drawn from the features of the thread used to work the endbands in the books in the comparative sample share similarities with those shown by the endband thread in the main sample: a medium-twist, S-ply thread predominates and that there is a preference for the use of medium thread, either single or double, to sew the endbands. The use of double, thick thread to work the endbands in CB-19 and CB-26 in the comparative sample can be interpreted as evidence of low quality work. It must be mentioned also that the endbands in CB-9 and CB-43 are worked with two threads of different colours (*Fig. 71*). The use of two colours to work the primary endbands is a European practice introduced in the first quarter of the sixteen century, and it was a technique that helped to reduce the time needed to work a decorated endband, since it is not necessary to work a secondary sewing to decorate the primary endband (Ligatus, 2013). As this technique of working the primary endbands was not identified in the main sample, the presence of these books raises the possibility that they arrived from Europe already sewn and with endbands in place. Whether this practice was introduced in Mexico and, if so, when, will only be determined by the analysis of a larger number of books that were certainly bound in Mexico during the sixteenth century and later.

⁴⁴⁵ See page 137.

⁴⁴⁶ **Twist and ply:** tight, S: CB-6, CB-7, CB-18, CB-19, CB-21, CB-23, CB-31, CB-32, CB-33, CB-35, CB-45 and CB-46. Tight, Z: CB-39. Medium, S: CB-1, CB-2, CB-3, CB-9, CB-10, CB-11, CB-12, CB-15, CB-17, CB-22, CB-25, CB-26, CB-28, CB-30, CB-43 and CB-47. Loose, S: CB-27, CB-36 and CB-41. Loose, Z: CB-5, CB-8 and CB-16. **Thickness:** thick: CB-11, CB-17, CB-19, CB-22, CB-25, CB-26 and CB-33. Medium: CB-2, CB-3, CB-15, CB-16, CB-18, CB-21, CB-28, CB-31, CB-35, CB-39, CB-41, CB-43, CB-45 and CB-46. Thin: CB-1, CB-5, CB-6, CB-7, CB-8, CB-9, CB-10, CB-12, CB-23, CB-27, CB-30, CB-32, CB-36 and CB-47. **Colour:** dark: CB-11, CB-12, CB-16, CB-21, CB-22, CB-23, CB-26, CB-27, CB-28, CB-30, CB-32 and CB-39. Toned: CB-2, CB-3, CB-5, CB-10, CB-15, CB-18, CB-31, CB-33, CB-35, CB-36, CB-45 and CB-46. Natural: CB-6, CB-7, CB-8, CB-25 and CB-47. Other: CB-1 (brown), CB-9 (natural and blue), CB-17 (blue), CB-19 (blue), CB-41 (blue) and CB-43 (natural and blue).

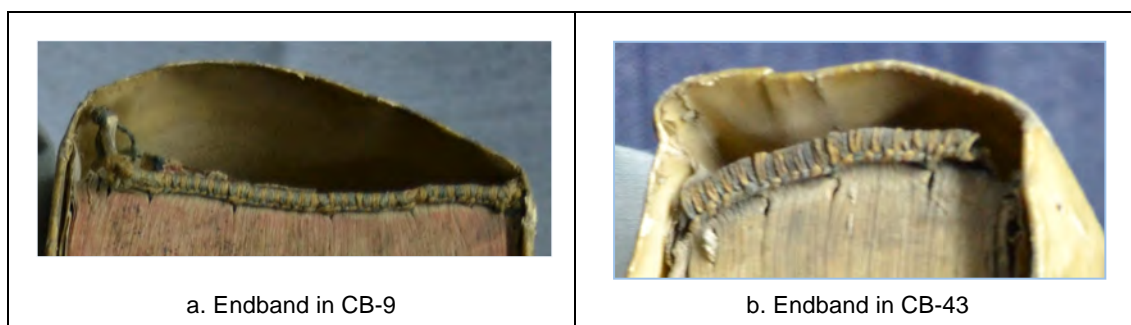


Fig. 71. Endbands worked in two colours of thread in CB-9 and CB-43

3.5.3 Treatment of the endband-core slips

Once the endbands were worked and the endband-core slips were laced through the cover, the outer end of each of the endband-core slips could be treated in different ways inside the cover. In nine books in the main sample the outer end of each of the slips was trimmed neat and square inside the cover, which is evidence that the slips were cut after lacing. There are fifteen books where the inside ends of the slips were trimmed to tapered points, most probably before they were laced in, and then left in this way inside the cover (*Fig. 72*). From this last group, there are eight books of which the ends of the slips were trimmed to a long, tapered point.⁴⁴⁷ The diversity of the endband-core slip treatment, once again, suggests different techniques executed by different binders working in New Spain.

The treatment of the outer end of each of the endband-core slips on the insides of the covers on the books in the comparative sample, shares similarities with that shown by the books in the main sample: there are ten books where the outer end of each of the slips was trimmed neat and square, whereas the slips of nineteen books were trimmed to a tapered point. From this last group, there are eleven books of which the ends of the slips were trimmed to a long, tapered point.⁴⁴⁸

⁴⁴⁷ Trimmed neat and square: B-3, B-9, B-10, B-20, B-23, B-36, B-38, B-44 and B-46. Trimmed tapered point: B-17, B-18, B-24, B-32, B-33, B-41 and B-45. Trimmed long, tapered point: B-1, B-2, B-6, B-11, B-15, B-22, B-34, and B-42.

⁴⁴⁸ Trimmed neat and square: CB-2, CB-12, CB-15, CB-18, CB-19, CB-23, CB-26, CB-31, CB-36 and CB-41. Trimmed tapered point: CB-5, CB-11, CB-17, CB-21, CB-32, CB-35, CB-46 and CB-47. Trimmed long, tapered point: CB-1, CB-3, CB-7, CB-16, CB-22, CB-25, CB-27, CB-28, CB-33, CB-39 and CB-45.

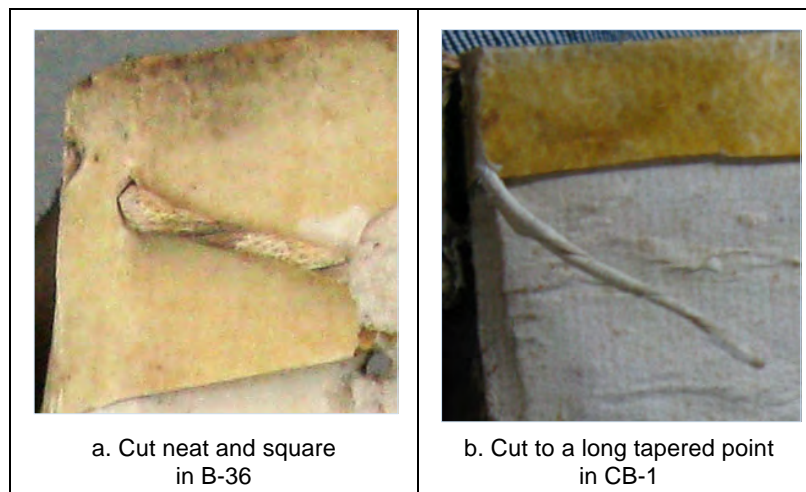


Fig. 72. Treatment of the outer end of the endband-core slips on the inside of the cover

Finally, it must be remembered that, as has been mentioned in section 3.c *Edges*, the endbands can be worked at different stages of the binding process. In the books in the main sample, two different stages were identified in relation to the edges; in four books the endbands were worked before the edges were decorated whilst in fourteen books the endbands were worked after the edges were decorated.⁴⁴⁹ These same stages were identified in the books in the comparative sample: in fourteen books the endbands were worked after the edges were decorated, whilst the endbands were worked before the edges were decorated in six books (*Fig. 73*).⁴⁵⁰

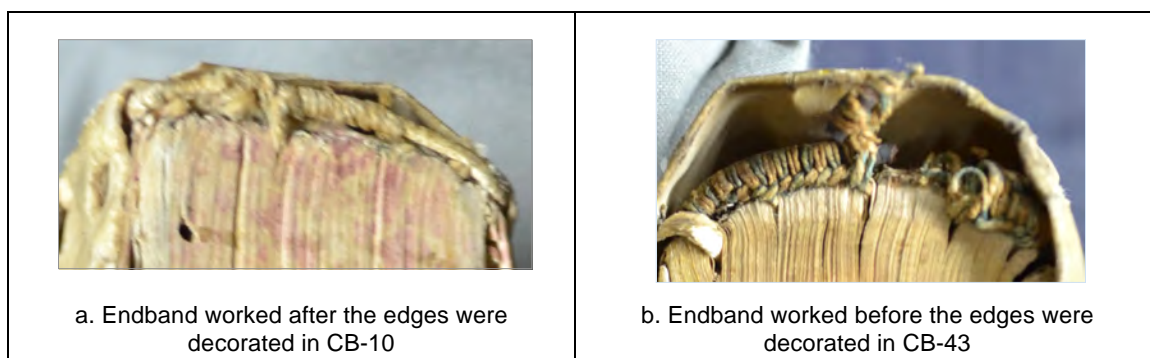


Fig. 73. Working of the endbands relative to the decoration of the edges

As has been shown, the majority of the Mexican books printed in the sixteenth century bound in limp, laced-case covers analysed in this thesis have endbands worked in either single or double thread, with back beads and packed sewing. Occasionally, an endband

⁴⁴⁹ Before the edges were decorated: B-1, B-20, B-32 and B-37. After the edges were decorated: B-3, B-6, B-10, B-13, B-15, B-17, B-18, B-22, B-26, B-31, B-34, B-36, B-38 and B-42. The two stages mentioned are described on page 111.

⁴⁵⁰ Endbands worked before the edges were decorated: CB-7, CB-9, CB-13, CB-23, CB-43 and CB-45. Endbands worked after the edges were decorated: CB-1, CB-6, CB-8, CB-10, CB-17, CB-18, CB-26, CB-28, CB-32, CB-33, CB-36, CB-39, CB-41 and CB-46.

has been found with packed sewing with no bead at all. The techniques preferred for making alum-tawed endband-cores, whose slips were laced through the cover, were crushed and twisted. While a clear picture emerges with regard to the ratio of tiedowns to gatherings, the position of tiedowns in relationship to the centre-fold of the gatherings, the linings and the kettlestiches also starts to show a pattern: in most of the books, the tiedowns were worked below the kettlestiches through the linings and they are not placed in the centre-fold of the gatherings. There is a tendency to secure the first and last tiedowns with a knot on the outside of the lining which, perhaps, represents a Spanish influence. A practice of Italian or Spanish origin was identified in the use of a combination of both tanned leather and alum-tawed skin whether they are used for the sewing supports or the endband cores. Occasionally, another Italian practice was identified in the position of the tiedowns which were worked immediately below the lining and below the kettlestitch. Finally, it should be observed that the use of endbands appears to decrease towards the end of the sixteenth century.

The features of the endbands identified in the books in the comparative sample are similar to those shown by the books in the main sample, the difference being that the twisted formation of the endband cores was preferred in contrast with the endband cores in the main sample, where both twisted and crushed cores are preferred. Finally, there are two books printed in France whose endbands are sewn not with back beads but front beads, using two threads of different colours. Similarly, there is one book in which the primary endband has a secondary sewing worked in two threads of different colours. Neither technique was identified in the main sample, raising the possibility that these books arrived from Europe as sewn bookblocks.

3.6 COVER

Although there is some evidence that parchment was sold in New Spain, it is still uncertain when it started to become commonly available. The majority of the legal documents of the sixteenth century issued in New Spain and preserved in the archives in Mexico are written on European paper rather than on parchment, with only a small number on indigenous paper.⁴⁵¹ With regard to the covers of the bound files of documents compiled in New Spain during the sixteenth century, limp, laced-case covers of tanned-leather are more common in the Mexican archives than those bound in similar covers of

⁴⁵¹ It also must be remembered that indigenous paper continued to be used after the introduction of European paper to New Spain. Documents, therefore, on indigenous paper can also be found in the archives in Mexico. See paper in Chapter two (page 37).

parchment, which would have been unusual in Europe in the same period.⁴⁵² From the archive materials that I have so far found, it should also be mentioned that the documents bound in limp, laced-case covers of tanned leather were issued from 1580 to 1594, whilst those covered in parchment were issued from 1597 to 1600. In contrast to the limp, laced-case covers found in the archives, the majority of the books printed in Mexico during the sixteenth century⁴⁵³ appear to have been bound in limp, laced-case covers of parchment. Based on this evidence, it would appear that leather was more readily available than parchment towards the middle of the sixteenth century, when the printing press was well established in Mexico; in addition, it must be remembered that the books printed in Mexico during the sixteenth century were presumably expensive,⁴⁵⁴ therefore, parchment covers on the printed books suggest the use of a comparatively expensive material for highly-valued books,⁴⁵⁵ in contrast to the European practice in which laced-case covers of parchment were mostly used for less expensive bindings (Pickwoad, 1994). Another possible interpretation of the use of parchment covers on the printed books is that the books printed in Mexico were mainly used for the task of evangelisation, as well as for teaching and understanding the diverse languages spoken in New Spain. It is therefore possible that parchment covers were preferred over leather ones because of their durability, toughness and relatively easy construction despite their possibly higher price.

Considering the heavy use to which Mexican printed books were subjected, it is not surprising that some of their elements have been repaired or replaced over the years. In the case of the covers of the books in the main sample, the main difficulty is to establish when they were made. It must be understood that laced-case limp parchment covers were in common use in Mexico until the end of the eighteenth century and, based on the fact that the covers on the books in the main sample share similarities, it appears that the binders followed the same traditional practices over a long period. In order to analyse the

⁴⁵² I have reviewed the files from the sixteenth century in the archives *Colección Manuscritos en Fondos Históricos de la Biblioteca Pública del Estado de Jalisco* and *AGN* that still retain their first bindings. In addition, according to Velasco Castelán (2004), limp, laced-case bindings of tanned leather were more common than parchment on Colonial Mexican archive bindings.

⁴⁵³ It should be remembered that the printing press in Mexico was established in 1539. See Chapter one (page 29).

⁴⁵⁴ The majority of the raw materials was imported from Europe, in addition to which, the time consuming legal and bureaucratic processes involved in printing them would have added to the cost. See Chapter one (page 18) and Chapter two (page 32).

⁴⁵⁵ Seven out of the forty-seven books in the main sample are bound in boards, with full-leather covers, and six of the seven books are blind-tooled (B-12, B-14, B-16, B-21, B-28 and B-40, see Appendix 4b). This type of binding is more likely to be associated with private commissions rather than the general booktrade; they are also related to the value of the book, as highly-valued books would be more likely to be bound in boards with full-leather cover and tooled, as is the case with these six books. Although the evidence suggests that parchment was relatively expensive in New Spain in the sixteenth century, as is shown in this section, it must be remembered also that both technical and commercial bookbinding traditions were brought over from Europe, where parchment was often seen as a cheap material and, therefore, was used for everyday bindings. However, independently of the cost of the covering material, a book bound in boards also needs a more complex structure than that used for a laced-case, which will be reflected in the cost of the binding (see page 179). If the leather-cover is also tooled, this will add to the expense, therefore, this kind of binding could be found in collections of wealthy owners. No tooled bindings in parchment made in Mexico have yet been identified.

covers on the books in the main sample, they were divided in three groups: the first group (Group A) includes the books whose covers are almost certainly the first that the books received, as they show no signs of repair or replacement. It can therefore be assumed that the covers of eleven books in the sample were made in the sixteenth century.⁴⁵⁶ The books in which it is evident that the cover is a replacement are included in the second group (Group B); this group consists of four books in the sample that were either bound as incomplete textblocks or one of the kettlestitches was cut away; in both cases, the bookblock would need a new cover to fit the new size of each bookblock, as will be explained below. Finally, the third group (Group C), consists of twenty-four books where it is uncertain whether the cover is the first that the book received or a replacement (*Table 5*).

GROUP A with almost certain the first cover (sixteenth century cover)	GROUP B with replaced cover	GROUP C with uncertain date cover
B-3	B-2	B-1
B-8	B-5	B-7
B-9	B-6	B-10
B-19	B-13	B-11
B-20		B-15
B-23		B-17
B-26		B-18
B-29		B-22
B-38		B-24
B-42		B-25
B-47		B-27
		B-30
		B-31
		B-32
		B-33
		B-34
		B-35
		B-36
		B-37
		B-41
		B-43
		B-44
		B-45
		B-46

Table 5. Groups of books according with their cover status

⁴⁵⁶ It should be noted that although the endleaves in B-3 have been repaired and the endleaves in B-20 have been replaced, the covers reflect the typical features of books made in the sixteenth century under Spanish influence which were also limited to that period, as it will be explained below; the covers of B-3 and B-20 can therefore be dated with some certainty to the sixteenth century.

3.6.1 Group A

All of the covers of the books in the Group A have turn-ins at head, tail and fore-edge, and ten out of the eleven covers included in this group have fore-edge cover extensions folded over the fore-edge of the bookblock.⁴⁵⁷ In all of the cases, the cover extensions were folded over the fore-edge at an oblique angle with square ends, except B-3 and B-20, in which the cover extensions were folded over the fore-edge at right-angles with square ends. In these cases, each of the cover extensions folded over the fore-edge covers approximately 45% of the thickness of the textblock, leaving approximately 10% of the centre of the fore-edge uncovered, that is to say, these two books have cover extensions that almost meet when folded over the fore-edge (*Fig. 74*). This same phenomenon was also identified in B-7 in Group C. The use of cover extensions folded over the fore-edge of the textblock was a typical feature of European limp, laced-case covers of parchment, including Spanish ones,⁴⁵⁸ so its presence in the covers in the sample is not surprising. Finally, the damage to the parchment in two books makes it impossible to describe how they were folded.⁴⁵⁹

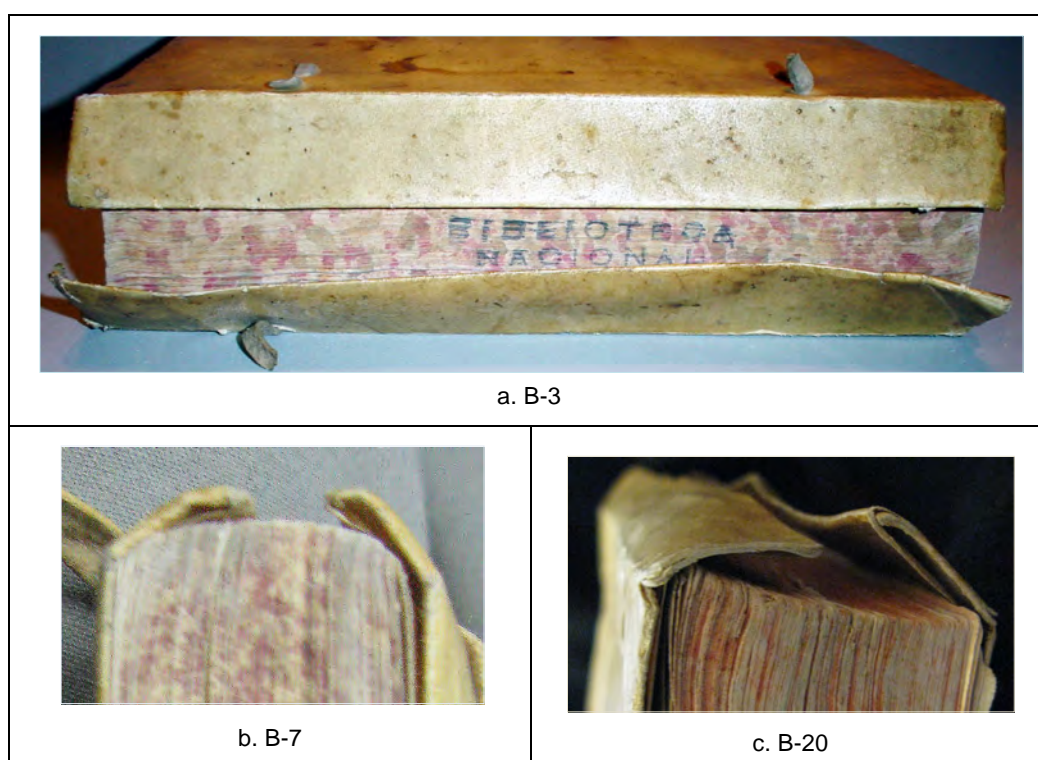


Fig. 74. Cover extensions of books in the main sample that almost meet when folded over the fore-edge

⁴⁵⁷ With cover extensions: B-3, B-8, B-9, B-19, B-20, B-23, B-29, B-38, B-42, and B-47. With no cover extensions: B-26.

⁴⁵⁸ Information obtained from the course: *HEB 1500-1800*.

⁴⁵⁹ The damage to the parchment in B-19 and B-23 makes it impossible to describe how they were folded.

So far as covers in the books in the comparative sample are concerned, all of the them have turn-ins at head, tail and fore-edge, and twenty-four out of the thirty-seven covers have cover extensions folded over the fore-edges of the bookblocks.⁴⁶⁰ From this last group of covers, the cover extensions were all folded over the fore-edge at an oblique angle with square ends except for four books, in which the cover extensions were folded over the fore-edge at right-angles with square ends (*Fig. 75*).⁴⁶¹ In these cases, the cover extensions almost meet when folded over the fore-edge, as in the covers of the three books in the main sample mentioned before.



Fig. 75. Cover extensions of the books in the comparative sample that almost meet when folded over the fore-edge

With regard to the turn-ins, in ten books in Group A, the edges of the turn-ins were neat-trimmed,⁴⁶² whilst the edges of the turn-in in book B-42 were rough-trimmed⁴⁶³ (*Fig. 76*).⁴⁶⁴ Similarly, the edges of the turn-ins of the covers in twenty-nine books in the comparative sample were neat-trimmed, whereas in seven books one or more of the edges were rough-trimmed.⁴⁶⁵ The edge of the right fore-edge turn-in in two books were irregularly trimmed,⁴⁶⁶ as is explained below.

⁴⁶⁰ With cover extensions: CB-1, CB-2, CB-5, CB-8, CB-9, CB-10, CB-11, CB-12, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-28, CB-29, CB-30, CB-31, CB-33, CB-36, CB-39, CB-41, CB-43 and CB-46. With no cover extensions: CB-3, CB-6, CB-7, CB-13, CB-15, CB-16, CB-17, CB-26, CB-27, CB-32, CB-35, CB-45 and CB-47.

⁴⁶¹ Folded at right-angles with square ends: CB-23, CB-25, CB-29 and CB-41.

⁴⁶² See Glossary.

⁴⁶³ See Glossary.

⁴⁶⁴ Edges neat-trimmed: B-3, B-8, B-9, B-19, B-20, B-23, B-26, B-29, B-38 and B-47.

⁴⁶⁵ Edges neat-trimmed: CB-1, CB-2, CB-3, CB-6, CB-7, CB-8, CB-9, CB-10, CB-12, CB-13, CB-15, CB-16, CB-17, CB-18, CB-22, CB-23, CB-27, CB-28, CB-29, CB-30, CB-31, CB-33, CB-35, CB-36, CB-39, CB-41, CB-45, CB-46 and CB-47. Edges rough-trimmed: CB-5, CB-11, CB-19, CB-25, CB-26, CB-32 and CB-43.

⁴⁶⁶ Irregularly trimmed: CB-19 and CB-21. See Glossary.

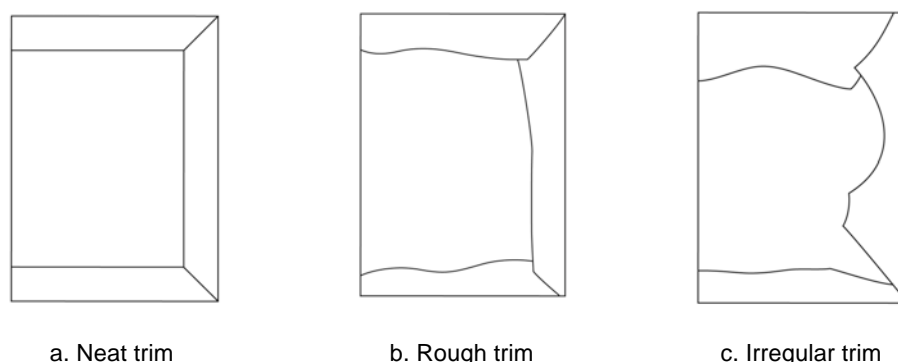


Fig. 76. Turn-in edge trimming

In addition, the width of the turn-ins could vary: the width of the turn-ins in eight books in the main sample is approximately the same on all edges (*Fig. 77*),⁴⁶⁷ while the turn-ins of three books show a combination of different widths of turn-in on the same book. The fore-edge turn-ins in B-3 and the head turn-ins in B-9 are obviously wider than the others, whereas the fore-edge turn-ins in B-20 are obviously narrower than the others. The evidence seems to show a tendency to use pieces of parchment that were large enough to create turn-ins of approximately the same width, with neatly trimmed edges. Although from the point of view of quality, those covers in which one of the turn-ins was either narrower or wider than the others could be interpreted as showing less careful work than those in which all the turn-ins are of the same width, it is worth noting that in the majority of cases, the covers were carefully made. This could be interpreted as showing the careful and intelligent use of a material, parchment, that was, apparently, relatively expensive in the first century or two after the introduction of printing and presumably less often used in New Spain. This last view is supported by the fact that the majority of the covers in Groups B and C were also carefully made.

⁴⁶⁷ Turn-ins of approximately the same width can be found on: B-8, B-19, B-23, B-26, B-29, B-38, B-42 and B-47.



Fig. 77. Turn-ins of approximately the same width in B-26⁴⁶⁸

The width of the turn-ins of the covers of the books in the comparative sample also shows a careful and intelligent use of the parchment, following the same tendency of using a piece of parchment large enough to create turn-ins of approximately the same width. The width of the turn-ins in thirty books is approximately the same on all edges,⁴⁶⁹ whilst the turn-ins in six books show a combination of different widths of turn-in on the same book. The right-side fore-edge turn-in in three books, and both fore-edge turn-ins in one book are noticeably wider than the others (*Fig. 78*),⁴⁷⁰ whereas, the right-side head-edge turn-in in one book and the right-side head- and tail-edges turn-ins in another are noticeably narrower than the others.⁴⁷¹

The similarities of the use of cover extensions, in addition to the features of the width and trim of the edges of the turn-ins shown by the covers of books in both sets of samples, make it difficult to determine whether the covers of the books in the comparative sample were made in Mexico. However, it should be remembered that in the cases of CB-9, CB-22 and CB-43 there is evidence that suggests that the covers are replacements⁴⁷² and it therefore remains a possibility that the covers, at least in these three books, were supplied in Mexico.

⁴⁶⁸ In books where the covers have cover extensions, the width of the turn-ins does not include the width of the turn-in folded to create the cover extension. In these cases, the width of the fore-edge turn-ins is measured from the inner edge of the cover extension to the cut edge of the turn-in on the inside of the cover.

⁴⁶⁹ Turn-ins of approximately the same width can be found on: CB-3, CB-5, CB-6, CB-7, CB-9, CB-10, CB-13, CB-15, CB-16, CB-17, CB-19, CB-21, CB-22, CB-23, CB-26, CB-27, CB-28, CB-29, CB-30, CB-31, CB-32, CB-33, CB-35, CB-36, CB-39, CB-41, CB-43, CB-45, CB-46 and CB-47.

⁴⁷⁰ Right-side fore-edge turn-in wider than the others: CB-2, CB-12 and CB-18. Both-fore-edge turn-ins wider than the others: CB-25.

⁴⁷¹ Right-side head-edge turn-in narrower than the others: CB-1. Right-side head- and tail-edges turn-ins narrower than the others: CB-11

⁴⁷² In addition to the added endband-core slips, there are some fibres of tanned leather adhered to the spine of the textblock of CB-9. CB-43 also has added endband-core slips and the kettlestitches in CB-22 were cut away. See section 3.5 Endbands (page 147).



Fig. 78. The fore-edge turn-in wider than the head- and tail-edges turn-ins in CB-12

In the turn-ins of all of the books in Group A, the fore-edge turn-ins are folded over the head and tail turn-ins (*Fig. 79*), except for B-29 in which the left-side fore-edge turn-in is folded over the tail turn-in but under the head-edge turn-in, whilst the right-side fore-edge turn-in is folded over both head and tail turn-ins. Taking into account the frequent use to which these texts were subjected, it is possible that this unusual example is the result of accidental changes to the lapping of the turn-ins at the corner rather than reflecting an intentional decision by the binder. However, this phenomenon was also identified in B-5 in Group B, in B-44 in Group C and in CB-32 in the comparative sample.⁴⁷³ In thirty-five out of the thirty-seven books in the comparative sample, the fore-edge turn-ins are folded over the tail and head turn-ins.⁴⁷⁴

⁴⁷³ B-5: the left fore-edge turn-in is folded over the tail turn-in but under the head-edge turn-in, whilst the right-side fore-edge turn-in is folded over both head and tail turn-ins. B-44: the left-side fore-edge turn-in is folded over the head and tail turn-ins, whereas the right-side fore-edge turn-in is folded under the head turn-in and over the tail turn-in. CB-32: the left-side head-edge turn-in is folded over the fore-edge turn-in, whilst the right-side fore-edge turn-in is over the tail turn-in but under the head turn-in.

⁴⁷⁴ Fore-edge turn-in folded over the head and tail turn-ins: CB-1, CB-2, CB-3, CB-5, CB-6, CB-7, CB-8, CB-9, CB-10, CB-11, CB-12, CB-15, CB-16, CB-17, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-26, CB-27, CB-28, CB-29, CB-30, CB-31, CB-33, CB-35, CB-36, CB-39, CB-41, CB-43, CB-45, CB-46 and CB-47.



Fig. 79. The fore-edge turn-in folded over the head and tail turn-ins in B-38

Another feature that the covers of Group A have in common is lapped mitres at the corner, which show a variety of different types of corner. These variations are shown in *Fig. 80*, from which the apparent variations of each technique used to form the corner are shown together. The small variations identified within each technique are the result of cutting the parchment by hand, perhaps in a rapid manner, to form the corner, that is to say, these variations are within the range of the variation of work done by hand. Variations *k* and *l* in *Fig. 80* could be also the result of using a piece of parchment with irregular (or rough-trimmed) edges which did not provide enough material for a full corner and then folding it in the best way possible to form the corner. Lapped mitres at the corners were also identified in thirty covers of the books in the comparative sample.⁴⁷⁵

⁴⁷⁵ Lapped mitres at the corners: CB-1, CB-2, CB-3, CB-5, CB-8, CB-9, CB-10, CB-11, CB-12, CB-15, CB-16, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-27, CB-28, CB-29, CB-30, CB-31, CB-33, CB-35, CB-36, CB-39, CB-41, CB-43, CB-46 and CB-47.

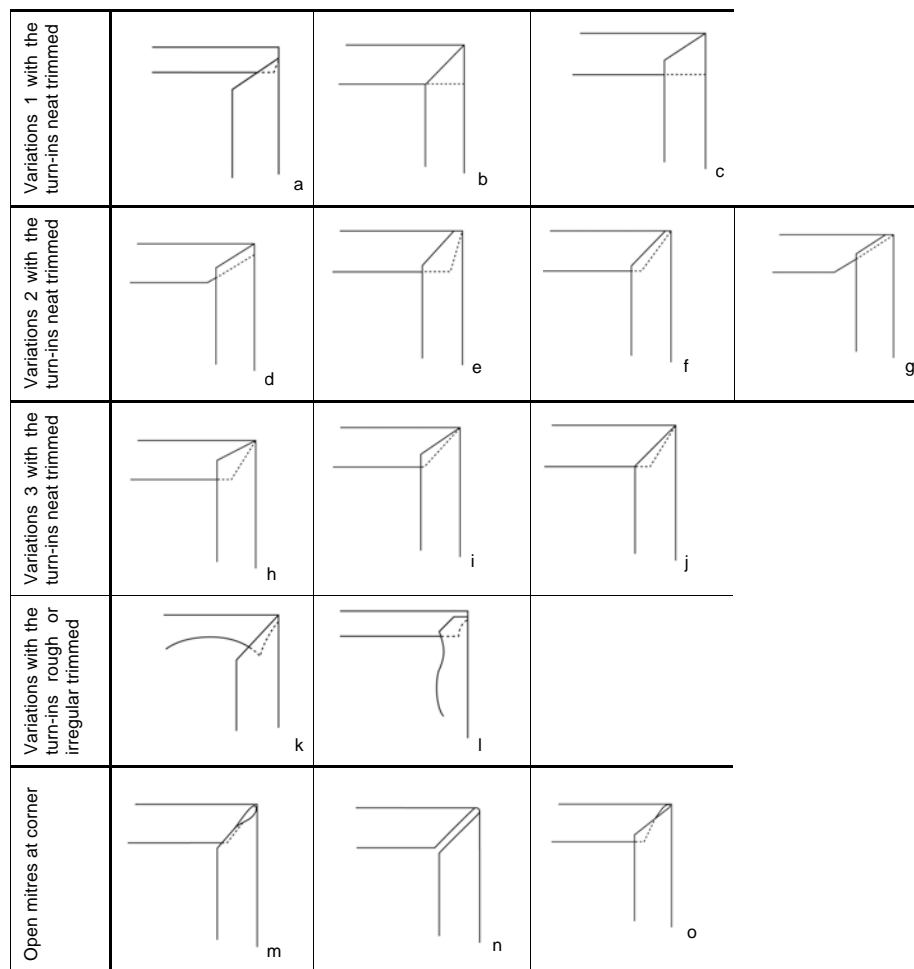


Fig. 80. Corner mitering types

Books B-42 and B-47 in the main sample have lapped mitres at the corners with the fore-edge turn-in folded over the head and tail turn-ins, except for the left-side at the head corner in B-42 and right-side at the head corner in B-47, both of which show an open mitre at those corners (*Fig. 80 m, n and o*). This fact could be interpreted in two different ways, both of them in economic terms: it could be that this feature reveals that the binder was probably working under pressure and made a rapid trim, cutting further than necessary to form the corners with the result that there is an open mitre at the corner. This view can be supported by the fact that there is only one open mitre in each cover, which suggests that the open mitres in these cases were an unfortunate accident. It could also be that the open mitre was the result of using of a piece of parchment that was slightly too small for making the cover and that there was therefore not enough parchment for lapping all the corners. This suggests that the binder was making the best use of the parchment available to him, perhaps because it was expensive, and was working in a methodical and careful way. Similar instances are those of B-13 in Group B and B-10 and B-27 in Group

C.⁴⁷⁶ Six books in the comparative sample also show lapped mitres in three corners, and an open mitre in the remaining corner (*Fig. 81*).⁴⁷⁷

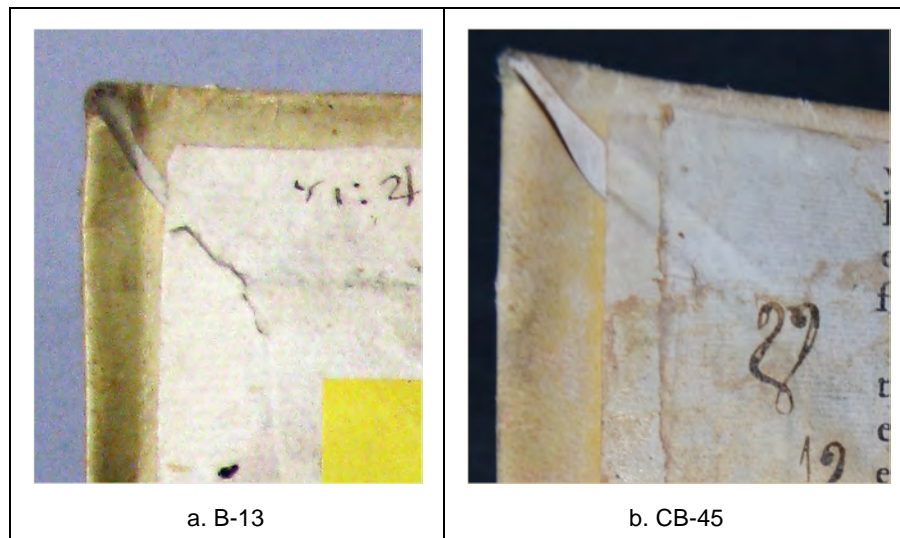


Fig. 81. Open mitres at the corners

From the covers that belong to Group A, four books have joint-creases made from the outside of each cover at approximately 5 to 10 mm in distance from the spine-creases,⁴⁷⁸ whereas seven books in this group have no joint-creases (*Fig. 82a*).⁴⁷⁹ The joint-creases are made on each cover in order to allow the case-cover to open more easily (Ligatus, 2013), and its presence or absence, as well as the distances at which they were made in relationship to the spine-creases, indicate different approaches to making covers that could be interpreted as showing that there were several different binders working in Mexico. This conclusion is supported by the variety of corner-mitering types that have been identified. The use of joint-creases was also investigated in the comparative sample: twenty-seven out of the thirty-seven books have joint-creases made from the outside of each cover at approximately 5 to 15 mm in distance from the spine crease, whilst ten books have no joint-creases (*Fig. 82b*).⁴⁸⁰

⁴⁷⁶ B-10: open mitre on the right-side at the tail corner. B-13: open mitres on the left-side corners. B-27: open mitre on the left-side at the tail corner.

⁴⁷⁷ CB-6: open mitre on the left-side at the tail corner. CB-7: open mitre on the right-side at the tail corner. CB-17: open mitre on the left-side at the head corner. CB-26: open mitre on the left-side at the head corner. CB-32: open mitre on the left-side at the tail corner. CB-45: open mitres on the left-side at the head corner and on the right-side at the tail corner.

⁴⁷⁸ See Glossary.

⁴⁷⁹ With joint-creases: B-8 (8 mm), B-19 (10 mm), B-29 (no record) and B-47 (9 mm). With no joint-creases: B-3, B-9, B-20, B-23, B-26, B-38 and B-42.

⁴⁸⁰ With joint-creases: 5 mm: CB-5, CB-6, CB-13, CB-18, CB-19, CB-39 and CB-46. 6 mm: CB-35. 7 mm: CB-17, CB-21, CB-23, and CB-36. 8 mm: CB-11, CB-22, CB-30 and CB-32. 9 mm: CB-1 and CB-2. 10 mm: CB-3, CB-43 and CB-45. 13 mm: CB-12. 15 mm: CB-9. With no joint-creases: CB-7, CB-8, CB-10, CB-15, CB-16, CB-25, CB-26, CB-29, CB-31 and CB-47. No record: CB-27, CB-28, CB-33 and CB-41.



	MAIN SAMPLE	COMPARATIVE SAMPLE
With joint-creases	 <p>a. B-29</p>	 <p>b. CB-46</p>
With no joint-creases	 <p>c. B-3</p>	 <p>d. CB-29</p>

Fig. 82. Use of joint-creases on the covers of both sets of samples

The parchment used for the covers in Group A are from the skins of different types of animal. The parchment of the covers in one book is probably sheep, in four books is probably goat and in four books hairsheep.⁴⁸¹ Finally, in two books the type of animal from which the parchment of the cover was made could not be identified.⁴⁸² In all of the cases, the parchment was used with the hairside⁴⁸³ on the outside of the cover and of different

⁴⁸¹ See Glossary and Appendix 9.

⁴⁸² It should be noted that it is often quite difficult to identify, on the basis of visual observation, the animal from which parchment was made, especially between goat, sheep and hairsheep, because of their similar patterns of hair-follicles (Reed, 1972). My provisional conclusions are as follows: probably sheep parchment: B-20. Probably goat: B-9, B-23, B-26 and B-38. Probably hairsheep parchment: B-19, B-29, B-42 and B-47. The type of animal could not be identified in: B-3 and B-8.

⁴⁸³ See Glossary.

tones of yellow, including pale and dark yellow as well as yellow-grey, yellow-orange, yellow-brown tones.⁴⁸⁴ Although the use of parchment with the hairside on the inside of the cover was common in both Italian and Spanish bindings, and might therefore be expected to have been used in Mexico, this practice was not identified in the main sample. Whether or not it was ever used in Mexico can only be determined by the analysis of a larger number of books which were certainly bound in Mexico, but on the basis of the example examined, there would appear to be no evidence that it was.

It should be mentioned that on CB-6 (printed in France), CB-7 (printed in the Low Countries) and CB-16 (printed in Spain) in the comparative sample, the parchment was reversed, with the hairside on the inside of the cover, and the fleshside, of a yellow-grey tone, on the outside. The type of animal from which these parchment covers were made could not be identified (*Fig. 83*). Considering that this practice was not identified in the covers in the main sample, it remains a possibility that these books arrived from Europe already bound. Although, in all of the cases, it would appear that the sewing is the first that the books received, there is some evidence that suggests that the books have been repaired: the right endleaves in CB-6 are replacements made of re-used, seventeenth-century paper printed in Nahuatl, with added sewing-supports slips, and the cover was made from a second-use parchment which had previously been used as the cover of another book. The endleaves in CB-7 are replacements, of re-used paper printed in Latin, and in CB-16, the sewing supports have added slips; in both cases, the covers were made from first-use parchment. A possible interpretation of these books is that they arrived from Europe already bound and were subsequently repaired in Mexico, and that the covers were preserved and re-attached to the bookblocks.

⁴⁸⁴ The tones of yellow were determined based on visual observation only. Pale-yellow: B-42, yellow: B-8, B-9, B-20, B-23 and B-47, yellow-grey: B-3, B-19 and B-38, yellow-orange: B-26 and yellow-brown: B-41. See Appendix 9.

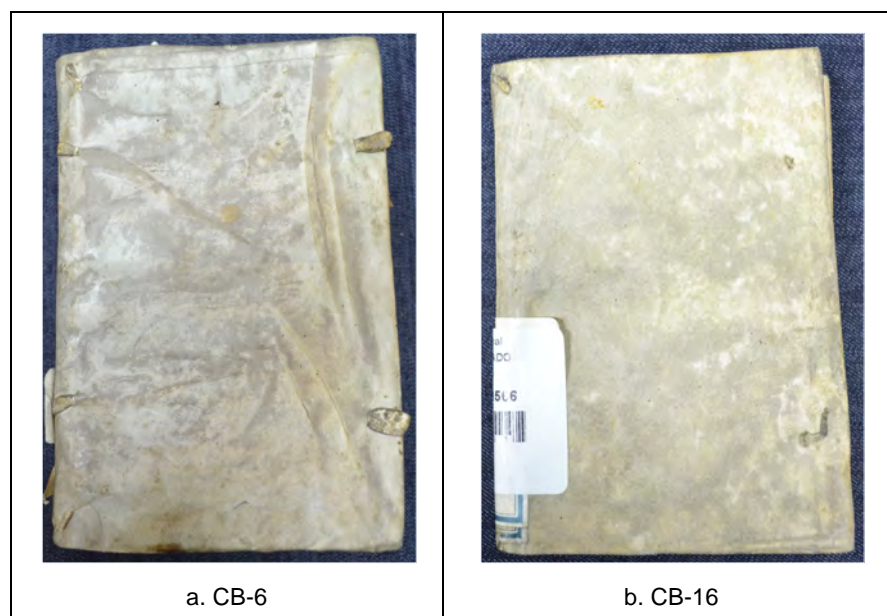


Fig. 83. Reversed parchment used with the hairside on the inside of the cover

In addition to the three books in the comparative sample described above, the parchment in thirty-four books was used with the hairside on the outside of the cover, of different tones of yellow, and from different types of animal.⁴⁸⁵ The parchment of the covers in eleven books is probably hairsheep and in three books is probably goat. Finally, in twenty books the type of animal from which the parchment of the cover was made could not be identified.⁴⁸⁶

With regards to the origin of the parchment, there is some doubt as to what type of animal it may have come from. As was mentioned in *Chapter 2*, animal husbandry, including the rearing of goat and sheep, was introduced by the Spaniards during the sixteenth century and the craft of tanning in New Spain was transformed by the arrival of the Spanish, but this does not necessarily mean that the technique of making parchment was also introduced at the same time. In addition, although there is evidence that parchment was sold in New Spain,⁴⁸⁷ the earliest documentary evidence that I have found so far is that of González Angulo Aguirre (1983), in which the author indicates that during the eighteenth century parchment was a material addressed to a specialized and small market, and that therefore the parchment-making workshops were small. However, the vast quantity of books bound in Mexico in limp, laced-case covers of parchment from the sixteenth to the

⁴⁸⁵ Hairside outside: CB-1, CB-2, CB-3, CB-5, CB-8, CB-9, CB-10, CB-11, CB-12, CB-13, CB-15, CB-17, CB-18, CB-19, CB-21, CB-22, CB-23, CB-25, CB-26, CB-27, CB-28, CB-29, CB-30, CB-31, CB-32, CB-33, CB-35, CB-36, CB-39, CB-41, CB-43, CB-45, CB-46 and CB-47. **Tones of yellow:** yellow-orange: CB-1, CB-9, CB-27, CB-33, CB-39 and CB-47. Yellow: CB-2, CB-5, CB-8, CB-11, CB-12, CB-18, CB-23, CB-30, CB-32, CB-35, CB-36, CB-43 and CB-46. Yellow-grey: CB-3, CB-15, CB-21 and CB-29. Pale-yellow: CB-10, CB-13, CB-22, CB-26, CB-28 and CB-45. Yellow-brown: CB-17, CB-19, CB-25, CB-31 and CB-41.

⁴⁸⁶ Probably hairsheep: CB-3, CB-5, CB-10, CB-13, CB-18, CB-21, CB-23, CB-29, CB-30, CB-32 and CB-36. probably goat: CB-1, CB-22 and CB-23. The type of animal could not be identified in: CB-2, CB-8 CB-9, CB-11, CB-12, CB-15, CB-17, CB-19, CB-25, CB-26, CB-27, CB-31, CB-33, CB-35, CB-39, CB-41, CB-43, CB-45, CB-46 and CB-47.

⁴⁸⁷ See section 2.7 Leather and parchment.

nineteenth century that can be seen in the Mexican libraries contradict this view. Considering the features of the covers that, as has been mentioned above, reflect a careful and intelligent use of the material, it is possible that the parchment was imported from Europe during the sixteenth century and therefore it was expensive and difficult to obtain in New Spain until local production of this material was established. However, the evidence is insufficient to draw firm conclusions about the origin of the parchment used in the covers of Mexican limp bindings.

The covers of B-3 and B-20, which are included in Group A,⁴⁸⁸ are of interest because they originally had dark-brown tanned leather straps across the spine, of which only some small pieces remain between the cover and the sewing support slips on the spine. In the case of B-3, the cover also has cover-extensions that almost meet when folded over the fore-edge; in addition, each of the first and last tiedowns in the endbands was secured with a knot at the bottom of the tie-down at the exit hole on the spine. In both cases, the type of laced-fastening corresponds to type 3 or 4,⁴⁸⁹ which also reflects Spanish practice. All these features reflect typical Spanish bookbinding practice in these two books, which is hardly surprising; however, it should be noticed that the use of dark leather straps across the spine of parchment covers (most probably following an archival bookbinding practice), was unique to Spain and only used during the sixteenth century,⁴⁹⁰ a fact that suggests that the covers in these two Mexican books were made in Mexico during the sixteenth century (*Fig. 84*).

⁴⁸⁸ It should be mentioned that, although the endleaves in B-3 have been repaired, the repair has been done using the surviving elements of the endleaves (see Appendix 4b for details). In the case of B-20, the endleaves have been replaced with tipped single-fold endleaves (type 1; see Appendix 6) which can be added to the textblock by applying adhesive to the joints even if the cover is still attached to the textblock; in both cases, the repair in B-3 and the replacement in B-20, as has been shown, could be done with the textblock attached to the cover; it can therefore be said that the covers of B-3 and B-20 were most probably made in Mexico during that same period, following Spanish practice.

⁴⁸⁹ See Appendix 11.

⁴⁹⁰ I am very grateful to Professor Nicholas Pickwoad for letting me read his article *Books for reading: Commercial bindings in parchment and paper in the era of the handpress*, written for the exhibition *Entre Manos Reales*, scheduled to open in Madrid in October 2011.



Fig. 84. Dark leather straps across the spine parchment covers secured by the slips laced-in through them in B-3 (above) and B-20 (below).

CB-25 in the comparative sample, printed in Spain, shares similarities with these two books in the main sample. The cover is made of a first-use parchment with the hairside on the outside of the cover, with turn-ins at head, tail and fore-edge and cover extensions at the fore-edge that almost meet when folded. Originally, it had dark-brown tanned leather straps across the spine of which only small pieces remain between the cover and the sewing-support slips nearest to the head and on the spine. It is sewn on four double tanned-leather supports, from left to right. Although the endbands are mostly missing, all the four tiedowns survive at the tail of the spine, which were worked below the kettlestitches and through the lining, with each of the first and last tiedowns secured with a knot at the bottom of the tiedown at the exit hole on the spine. The cover is attached to the textblock by means of the surviving endband-cores and a split-laced sewing-supports slips, with laced fastening type 5,⁴⁹¹ which was not identified in the main sample (*Fig. 85*). Considering that the book was printed in Spain and that, as has been said before, the features of the binding are unique to Spain and only used during the sixteenth century, the evidence might suggest that CB-25 arrived from Europe (probably from Spain) already bound.

⁴⁹¹ See Appendix 11.

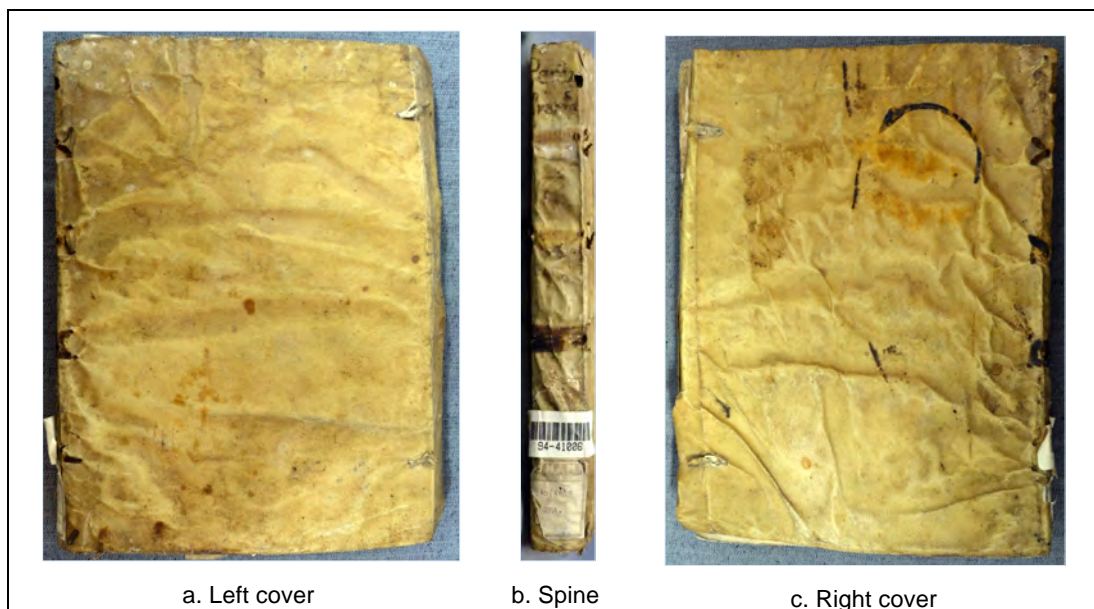


Fig. 85. The parchment cover on CB-25

This last hypothesis could be supported by the comparison between CB-25 and CB-23 in the comparative sample, printed in Spain, which also show the type of cover extensions that almost meet when folded over the fore-edge, with the cover attached to the textblock by means of the endband-core slips and split-lacing of the sewing-support slips, as described above on CB-25. If a more detailed comparison is made between these two books, the evidence suggests that, although there are some binding features that both have in common and suggest that both were sewn in Europe, perhaps in Spain, features of their covers suggest that each was covered in a different place. As has been explained before, the cover of CB-25 has dark-brown leather straps held to the spine of the cover by being split-laced under the sewing-support slips, in contrast to CB-23 in which, although the sewing appears to have been done in Europe (probably in Spain), the features of the cover are so similar to those shown by the books in the sample⁴⁹² that it is difficult to determine whether CB-23 was covered in Mexico or Spain (*Fig. 86*).

⁴⁹² It was sewn with an all-along, linked sewing on three double supports of alum-tawed skin, with transverse linings of parchment in all panels; the endbands were worked over alum-tawed skin cores and the first and last tiedowns secured with a knot at the bottom of the tiedowns at the exit holes on the spine. The cover was made of a first-use parchment, with hairside outside, of a yellow tone, with joint-creases, turn-ins and cover extensions that almost meet when folded over the fore-edges.

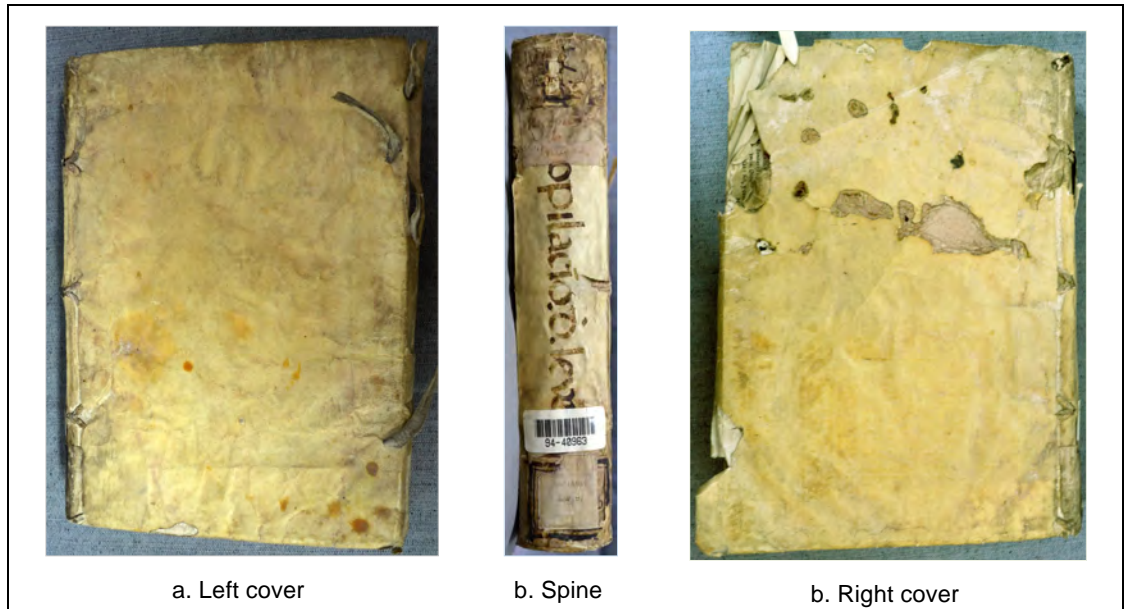


Fig. 86. The parchment cover on CB-23

Another case of interest is that of B-42, in which the parchment used to make the cover was probably second-use, as there is a line scored parallel at approximately 5 mm from the head-edge inside the left cover. Although the evidence would indicate that the cover was made from second-use parchment, it is also possible that the scored lines in the covers were the result of a mistake made by the binder who scored the line for folding in the turn-ins in the wrong place and corrected it by scoring another line (*Fig. 87*).



Fig. 87. Second-use parchment used for the cover of B-42

A similar case is that of B-35 in Group C, in which there is one line scored parallel at approximately 4 mm to both head- and tail-edges on the inside of the left cover. The covers of five books in the comparative sample were also made from second-use parchment, in all cases previously used as the cover of another book (*Fig. 88*).⁴⁹³



Fig. 88. Second-use parchment used for the cover of CB-27

The cover on B-26 in Group A was also made of a second-use parchment that was previously used for the cover of another book, with the hairside outside, with no joint-creases and with turn-ins at head, tail and fore-edge (*Fig. 89*). In this case there is a stitched flayhole in the exterior of the left cover (i.e. the front cover in books that read from left to right, as is the case in most western books); this type of flayhole was created by a nick made in the skin during flaying which opens when the skin dries and shrinks on the parchment-maker's herse.⁴⁹⁴ In the case of B-26 the nick made in the skin during flaying was stitched in order to stop it opening up during as it dried. Taking into account that the work was used for the introduction of the indigenous in Christian doctrine, printed in both Spanish and Nahuatl.⁴⁹⁵ It is possible that the owner was looking for a cheap binding only to protect the textblock during use, and the binder used a piece of parchment large enough to make the cover, without considering its appearance. Although it was possible to determine that it originally had transverse linings in all panels, the damage to the book unfortunately makes it difficult to determine either the type of the endleaves or whether it had endbands, it cannot be confirmed just how cheap the binding might have been when it was made.

⁴⁹³ Covers made of second-use parchment: CB-1, CB-6, CB-13, CB-15 and CB-27.

⁴⁹⁴ See Glossary.

⁴⁹⁵ See Appendix 1.

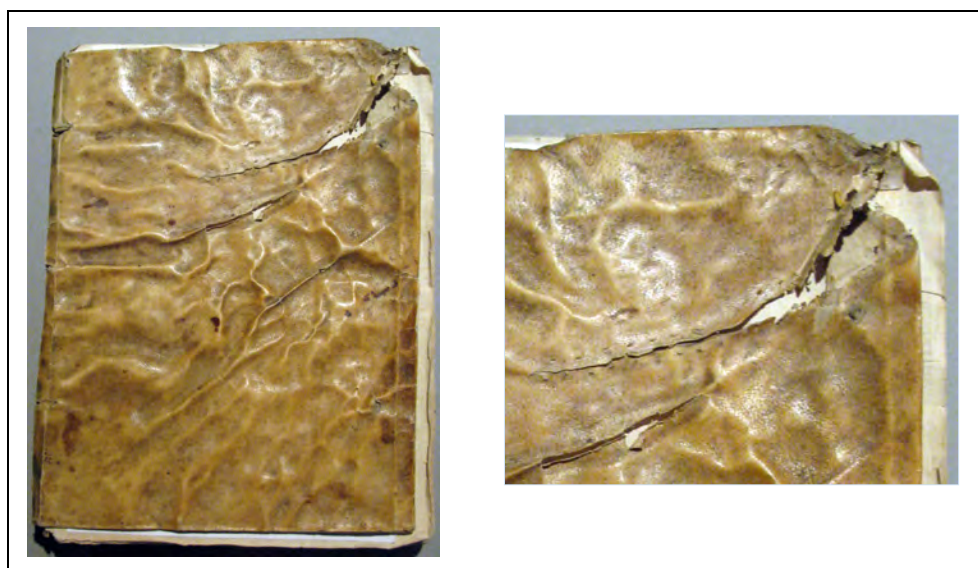


Fig. 89. The flayhole in the left cover of B-26

By contrast, there is in B-6 in Group C half of an oval flayhole in the left tail-edge turn-in (*Fig. 90a*). The positioning of the flayhole reflects an intelligent, careful and economic approach to the work that makes the best use of the parchment available; the binder decided to leave the flayhole in the turn-in as it would be covered by the pastedown adhered to the inside of the cover and thus achieve a neat appearance on both the outside and the inside of the cover despite the fault in the skin. A similar case is that of CB-15 in the comparative sample, but in this case the nick made in the skin during flaying was stitched together and the stitched area of the parchment is in the left tail-edge turn-in (*Fig. 90b*).

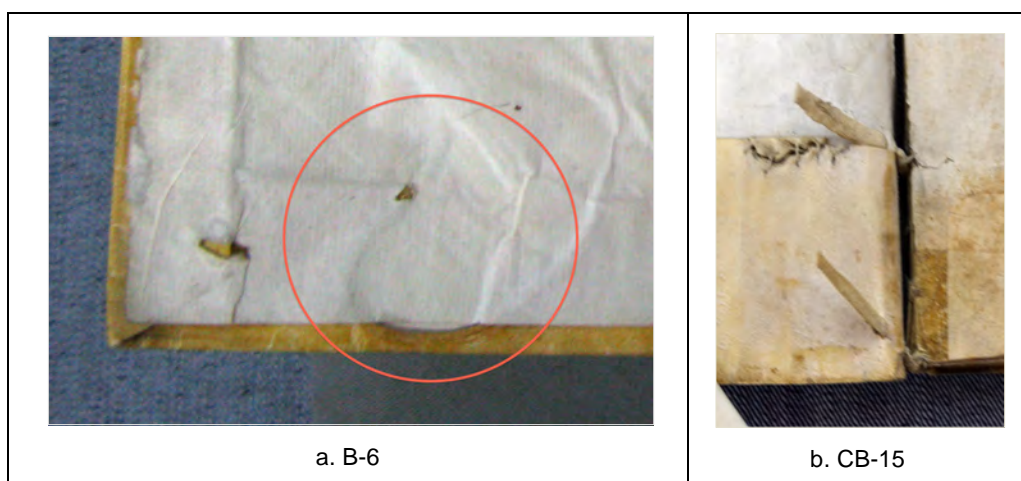


Fig. 90. Flayholes in the turn-ins in B-6 and CB-15

3.6.2 Group B

With regard to the covers in Group B which are clearly replacements, three books were bound as incomplete textblocks,⁴⁹⁶ with new endleaves, although the sewing structures appear to be the first that the books received.⁴⁹⁷ In these cases, it is possible that the textbook had lost some gatherings, and the binder decided to preserve the remaining sewing structure and replaced the cover with a new one that fitted the new thickness of the bookblock. In the case of B-6, the replacement of the endleaves was made with seventeenth- or eighteenth-century paper, and it is therefore possible that the cover and endleaves were replaced at the same time.⁴⁹⁸ B-2 is different in that the tail kettlestitch has been cut away, as a result of which the textblock was reduced in its height.⁴⁹⁹ The binder was therefore forced to replace the earlier cover with one that fitted the new size of the bookblock. In addition, the spine of the cover has been reinforced on the inside by a piece of plain, probably hairsheep, parchment with the hairside outside and of a light-brown tone. It is the same size as the spine and it is held in place by being tucked under the head and tail turn-ins (*Fig. 91*). This technique was frequently used in Sicilian laced-case parchment bindings in which the spine was reinforced by a piece of paper board.⁵⁰⁰ The presence of this feature in a book bound in Mexico could, perhaps, be understood in the context of the fact that in the sixteenth century, Sicily was under the control of the Spanish Crown. It should be noted that the use of this type of reinforcement on the inside of the spine of the cover was apparently common in Mexican bindings of the seventeenth century,⁵⁰¹ which suggests that this cover in the Mexican sample may have been made after the sixteenth century. In order to establish when this practice was introduced in Mexico and when it was in common use, it would be necessary to analyse a much wider sample of books bound in Mexico in the sixteenth and later centuries.



Fig. 91. Spine of the cover reinforced on the inside of the cover by a piece of parchment

⁴⁹⁶ Bound as incomplete textblocks: B-5, B-6 and B-13.

⁴⁹⁷ See Appendix 4a for details.

⁴⁹⁸ See Appendix 4a for details.

⁴⁹⁹ See section 3.3 Edges (page 107).

⁵⁰⁰ I am very grateful to Professor Nicholas Pickwoad who let me see the presentation he made for the lecture *Bookbindings / the missing piece in the bibliographical jigsaw*, given on September 24th, 2009 in Castello Maniaci in Siracusa, Sicily, in which he described books using this technique in the libraries of the Patri Capuccini in Ferla and Sortino.

⁵⁰¹ I have so far found this type of reinforcement in at least three bindings of the seventeenth century that belong to the Biblioteca Nacional de México and to the AGN.

In general terms, the features of the covers in the books of this group are similar to those shown by the covers in Group A: in all the cases, the limp, laced-case cover was formed from a first-use skin of sheep, goat or hairsheep parchment, with the hairside outside, of a yellow or yellow-grey tone.⁵⁰² There is one instance, B-6, in which the parchment used for the cover was stained yellow and the stain is streaked across the parchment, which could be the result of an uneven surface left by the use of a parchment-maker's crescent-shaped or circular knife during the preparation of the skin and emphasized by the yellow stain (*Fig. 92a*). This phenomenon was also identified in B-1 in Group C. Striped parchment was also identified in the covers of books CB-6 and CB-7 in the comparative sample, that could also be an evidence of the use of a crescent-shaped or circular knife during the preparation of the skin (*Fig. 92b*). In addition, B-13 is the only instance in Group B that has cover extensions folded over the fore-edge of the textblock at an oblique angle with square ends whereas three books have no cover extensions at all.⁵⁰³ Finally, two books have joint-creases made from the outside of each cover at approximately 6 mm in distance from the spine creases, whilst two books have no joint-creases.⁵⁰⁴

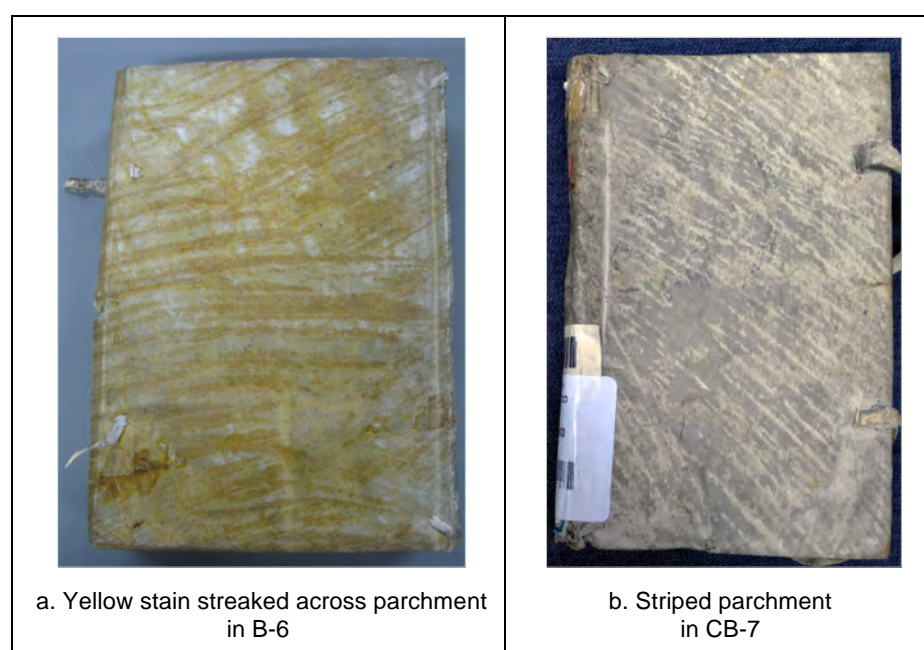


Fig. 92. Marks left by the use of a parchment-maker's crescent-shaped or circular knife during the preparation of the skin

In all of the cases in Group B, the covers have turn-ins with the edges neat-trimmed, with lapped mitres at the corners, with the exception of B-13, which has open mitres at the left-side corners. In all the cases, the fore-edge turn-ins were folded over the head and tail turn-ins. With regard to the width of the turn-ins, in three books from Group B, the width of

⁵⁰² Probably goat: B-2 and B-13. Probably hairsheep: B-5. Probably sheep: B-6. **Yellow tones:** yellow: B-2 and B-13. Yellow-grey: B-5.

⁵⁰³ With no cover extensions: B-2, B-5 and B-6.

⁵⁰⁴ With joint-creases: B-6 and B-13. With no joint-creases: B-2 and B-3.

the turn-ins is approximately the same on all edges, with the exception of the right-side fore-edge turn-in B-2 and both left- and right-side fore-edge turn-ins in B-5, which are wider than the others.

Although the covers in Group B are clearly replacements, the similarities identified in the features of the covers in Groups A and B make it difficult to determine the date at which the covers in Group B were made. It is therefore possible that the techniques used by the Mexican binders to make limp, laced-case covers remained the same with no evident variations for a long time. It must be remembered that limp, laced-case covers were still common in Mexico, as in Spain, towards the end of the eighteenth century. In order to identify if there are any specific features in the preparation and use of covers that could help to determine the date at which they were made, it would be necessary to analyse a wider sample of books bound in Mexico in the sixteenth century and onwards.

3.6.3 Group C

With regard to Group C, which consists of covers that are of uncertain date, thirteen out of the twenty-four books in this group have replaced or repaired endleaves.⁵⁰⁵ Of these thirteen books, the endleaves in six books were replaced with either seventeenth- or eighteenth-century paper;⁵⁰⁶ the features of the covers in these books are also similar to those shown by the covers in Group A, a fact that suggests that while the endleaves were replaced, the first covers on the books were left in place.⁵⁰⁷ This hypothesis is supported by the fact that the endleaves in six books in Group C⁵⁰⁸ were replaced with tipped single-fold endleaves (type 1)⁵⁰⁹ which can be added to a textblock by applying adhesive to the joints even if the cover is still attached to the textblock. On the other hand, in B-17 and B-31, the endleaves were replaced with a type of sewn endleaf (types 6 and 2 respectively)⁵¹⁰ which must be added to the textblock with the cover taken off in order to be able to get access to the spine and sew the new endleaves around the sewing-supports; it is therefore possible that in both these cases, the covers and the endleaves were replaced at the same time.

⁵⁰⁵ Replaced or repaired endleaves: B-1, B-10, B-11, B-15, B-17, B-22, B-24, B-25, B-27, B-31, B-37, B-45 and B-46. Replaced with seventeenth-century paper: B-1, B-11 B-46. Replaced with eighteenth-century paper: B-24. Replaced with seventeenth- or eighteenth-century paper: B-10 and B-15. See section 3.1 Endleaves (page 59).

⁵⁰⁶ Seventeenth century paper: B-1, B-11, B-46. Seventeenth- or eighteenth-century paper: B-10, B-15. Eighteenth-century paper: B-24.

⁵⁰⁷ This explanation should be understood from the economic point of view, in which the binders were trying to reuse the existing covers to avoid making a new one and not for reasons of conservation, as the concept of conservation as we understand it today did not exist at that time.

⁵⁰⁸ Replaced endleaves of type 1: B-1, B-10, B-11, B-25, B-45 and B-46. The endleaves in these last two books were also replaced with endleaves of type 1, but as the right endleaves in both cases are original to the bindings on the books, they were included in the group of repaired endleaves. See footnote 139.

⁵⁰⁹ See Appendix 7.

⁵¹⁰ See Appendix 7.

Another feature found in six books in Group C that makes it uncertain when the covers were made is the presence of added slips.⁵¹¹ The presence of added slips could mean that the binder received the book either with the slips purposely cut off at the joint or broken off accidentally before he received the book. In both cases, the binder would have had to supply additional sewing-support slips in order to attach the cover to the bookblock. Although the features of these covers are similar to those shown by the covers in Groups A and B, the lacing patterns used on these books to attach the covers to the bookblocks were more common in Italy and Spain after the sixteenth century, as will be explained below, which indicates that the covers were probably made after the sixteenth century.⁵¹²

In general, the features of the covers identified in Group C share similarities and these features are also similar to those shown by the covers in Group A. All of the covers are of parchment, with the hairside outside, in the range of colour of pale-yellow to yellow-brown tones, either with or without joint-creases, with turn-ins, with lapped mitres at the corners, with the fore-edge turn-ins over the head and tail turn-ins and with or without fore-edge cover extensions. However, there are some particular features that must be mentioned: nineteen out of the twenty-four books in Group C have fore-edge cover extensions folded over the fore-edge of the bookblock. In all of the cases, the cover extensions were folded over the fore-edge at an oblique angle with square ends. In addition, there are only five books in Group C that have no cover extensions.⁵¹³

With regard to the turn-ins, in eighteen books of Group C, the edges of the turn-ins were neat-trimmed, whilst the edges of the turn-ins in two books were rough trimmed.⁵¹⁴ The edges of the turn-ins in B-22 show a combination of both neat- and rough-trim: all of the edges were neat trimmed, except for the left fore-edge turn-in, which was rough trimmed. Another instance that should be mentioned is that of book B-46 in which the right fore-edge turn-in was trimmed irregularly, while the head and tail turn-in edges were neat-trimmed; in addition, the edges of the turn-ins at the left side were rough trimmed. In order to interpret these combinations of trims, it is necessary to look at how parchment is made: once the skin is soaked, it is submerged in the unhairing bath in order to facilitate the removal of the hair; finally, the skin is attached to the herse. This can be done in various ways, including the use of small pebbles pushed into the wet skin around the edges and secured with a loop of cord, the other end of which attached to pegs inserted into the herse which can be twisted to tighten the cords; the skin is then left under increasing

⁵¹¹ With added slips: B-7, B-32, B-33, B-35, B-36 and B-37.

⁵¹² See *Fig. 164 k, l and m*.

⁵¹³ With cover extensions at the fore-edge: B-1, B-7, B-10, B-11, B-15, B-18, B-22, B-24, B-27, B-30, B-31, B-32, B-33, B-35, B-36, B-37, B-41, B-43 and B-45. With no cover extensions: B-17, B-25, B-34, B-44 and B-46.

⁵¹⁴ Edges neat-trimmed: B-1, B-7, B-10, B-11, B-15, B-17, B-18, B-24, B-30, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-41 and B-45. Edges rough-trimmed: B-27 and B-44. The damage to the B-43 makes it impossible to describe the trimming of the edges.

tension as it shrinks as it dries. This stretching process will give the skin the features of strength, smoothness and pale colour typically associated with parchment (Reed, 1975). The evidence of the drying process will be reflected in the shape of the edges of the parchment (*Fig. 93*), as during this process some of the liquid ground substances in the skin move toward the edges of the parchment and become hard when they dry, leaving a natural, somewhat crusty and irregular edge. In order to remove the pebbles from the parchment, they might be cut away with the piece of parchment that was attached to it, whereas the rest of the edge of the parchment remains untouched (*Fig. 93a*); the same might happen with other attachment sites that would be cut away with the surrounding parchment. The result in both cases will be turn-ins with irregular edges. Another technique to remove the usable part of the skin was to cut it all around the edges of the parchment which results in a rough-trimmed edge (*Fig. 93b*).

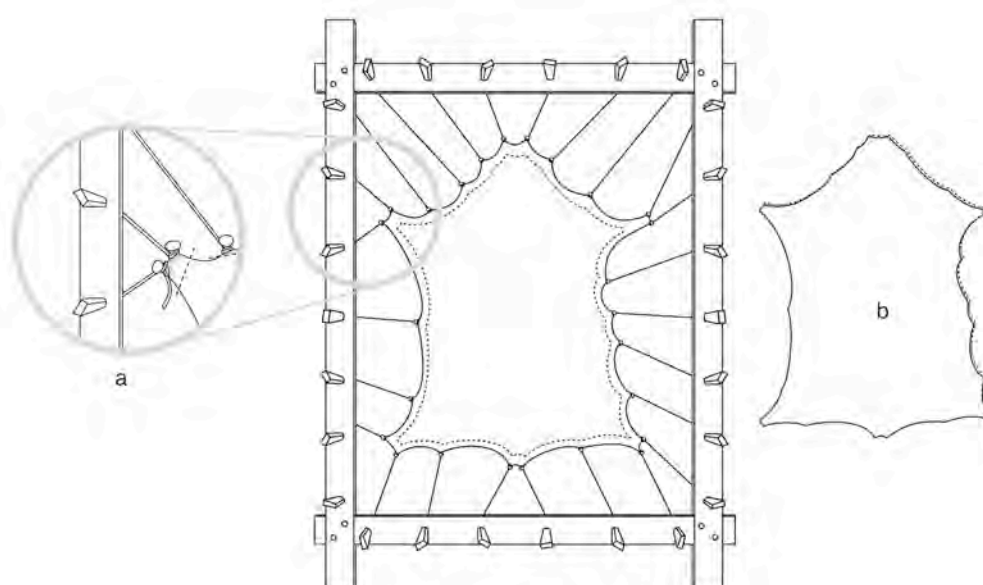


Fig. 93. Parchment attached to the herse during the drying process

With this in mind, it is possible to say that in B-22 and B-46, the binder tried to make the best use of the available material by cutting a piece of parchment that was approximately of the correct size needed to make the cover and only trimmed the edges neatly where it was cut from the skin, leaving the edge that was not trimmed irregular, as it left the parchment-maker's workshop. In the case of B-22, therefore, the rough trim at the left-edge turn-in is probably the result of leaving the edge of the parchment which was cut around the perimeter of the skin (*Fig. 93b*); by contrast, the irregularly trimmed edge of the fore-edge turn-in in B-46 reflects the use of the edge of parchment from which the pebbles were removed by cutting them away (*Fig. 93a*). Both instances show a thoughtful and methodical way of working in which it was made sure that the piece of parchment was large enough to make the cover and in which any irregular or rough edges of the turn-ins

would be covered by the pastedowns adhered to the inside of the cover, thus giving a neat appearance to the binding both inside and outside the cover.

There are eight instances in the comparative sample where the edges of the turn-ins show a combination of trims. Six out of the eight books show a combination of both neat- and rough-trim, whereas two books show a combination of both neat- and irregular-trim (*Fig. 94*).⁵¹⁵

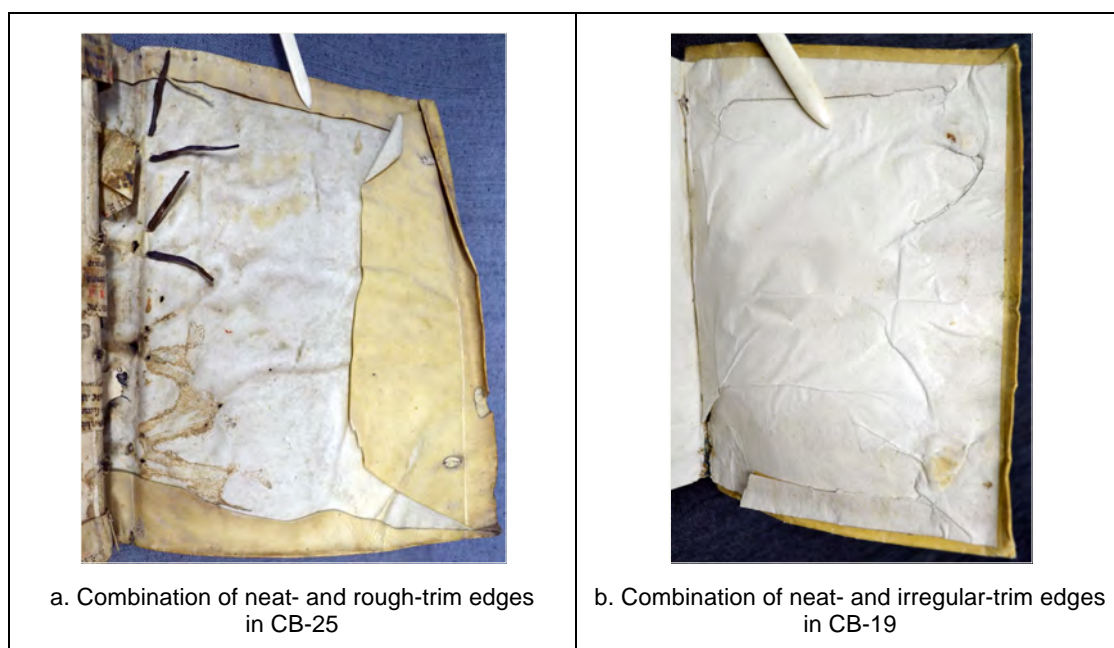


Fig. 94. The combination of different types of trimming of the edges of the turn-ins

The turn-ins of the books in Group C show different widths within each cover: the widths of the turn-ins in twelve books are approximately the same on all edges,⁵¹⁶ while the turn-ins in ten books show a combination of different widths of turn-in in the same book. From this last group, there are four books in which one of the turn-ins is obviously narrower than the others, whereas one of the turn-ins in four books is obviously wider than the others. Finally, there is a small group of two books in which all of the turn-ins are of different widths.⁵¹⁷

The different types of mitering identified in the books in Group C also show variations (*Fig. 80*). The turn-ins in nineteen books show lapped mitres at the corners with the fore-edge

⁵¹⁵ Combination of both neat- and rough-trim: CB-5, CB-11, CB-25, CB-26, CB-32 and CB-43. combination of both neat- and irregular-trim: CB-19 and CB-21.

⁵¹⁶ Turn-ins of approximately the same width can be found on: B-7, B-15, B-17, B-18, B-27, B-30, B-34, B-35, B-37, B-41, B-44 and B-45.

⁵¹⁷ With one turn-in narrower than the others: at head: B-33. At tail: B-1 and B-46. At fore-edge: B-24. With one turn-in wider than the others: at head: B-11, B-31 and B-32. At fore-edge: B-36. Each turn-ins of different width: B-10 and B-22.

turn-ins over the head and tail turn-ins.⁵¹⁸ Two books have lapped mitres at the corners, with the fore-edge turn-in folded over the head and tail turn-ins, except for one or two corners within the same book that have open mitres at these corners.⁵¹⁹

One interesting instance is that of book B-34 in which the corners were formed by folding first the head- and tail-edges and then the fore-edges, without any mitering, resulting in four thicknesses of parchment at each corner (*Fig. 95*).

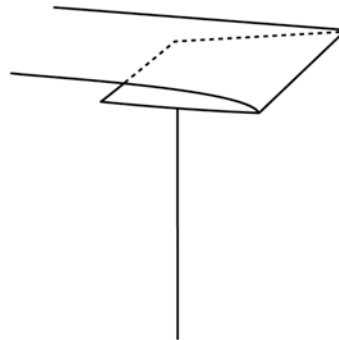


Fig. 95. Italian-type corner

This type of corner was typically Italian, adopted from the bookbinding practices used for archival material during the sixteenth century, which was almost certainly adopted as a Spanish practice that would explain its presence in this book.⁵²⁰ Furthermore, the parchment used to make the cover was probably second use, as the parchment shows some features that provide evidence of earlier use. Firstly, the parchment has different tones in each of the turn-ins which indicates that the fore-edge turn-ins were exposed to the atmosphere, probably because they were on the outside of the previous cover. Secondly, there is a folding line scored on the inside of the left cover, parallel to the fore-edge, and approximately 5 mm away from it, which serves no purpose on this book. Based on these features, it is possible to say that the parchment used for the cover in this book previously belonged to a book that was approximately the same height as B-34, but was either wider or thicker than it and the binder flattened it to make a cover that fitted the size of B-34. The different tones in each of the turn-ins and the parallel lines scored in the cover indicate that the binder needed to make new folds in order to create the new turn-ins for the cover in B-34. In addition, there are three pierced holes arranged in a line at right-angles to the fore-edge of the cover of which only the holes that are closest to the

⁵¹⁸ Lapped mitres at the corners: B-1, B-7, B-11, B-15, B-17, B-18, B-22, B-24, B-30, B-31, B-32, B-33, B-35, B-36, B-37, B-41, B-44, B-45 and B-46.

⁵¹⁹ B-10: lapped mitres at the corners, except for the right tail corner which has an open mitre. B-27: lapped mitres at the corners except for the left tail corner which has an open mitre.

⁵²⁰ Information obtained from course: *HEB 1500-1800*.

fore-edge were used to lace in the current ties, using the type 2 lacing pattern.⁵²¹ The holes are correctly positioned for use on this cover which indicates that they were made for the cover in its second use, and that the current ties must be a subsequent replacement (*Fig. 96*).

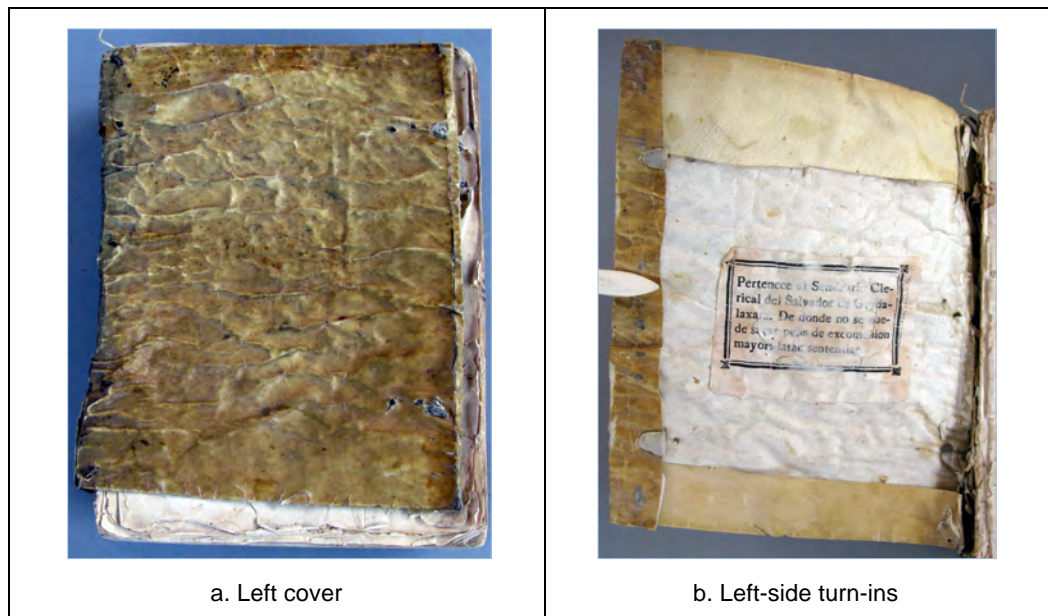


Fig. 96. Cover on B-34

Book CB-13, printed in Spain, in the comparative sample, shares similarities with the cover of B-34. The cover was made of a second-use parchment, with turn-ins and corners formed by folding first the head- and tail-edges and then the fore-edges, without any mitering (*Fig. 97d*), as has been described before. It should be noted that it would appear that the existing cover was made with the endbands already lost and the binder did not replace them. There are no pierced holes in the cover that could suggest that endband-core slips were ever laced in (*Fig. 97b*). There is a clean uncoloured area across the spine-ends of the head- and tail-edges that indicates that there must once have been endbands before the edges were decorated (*Fig. 97c and d*). The cover is therefore a replacement of a lost previous cover. Although the features of the cover are similar to those shown by B-34 in the main sample, it is not possible to determine whether the present cover was made in Mexico.

⁵²¹ See Appendix 11.

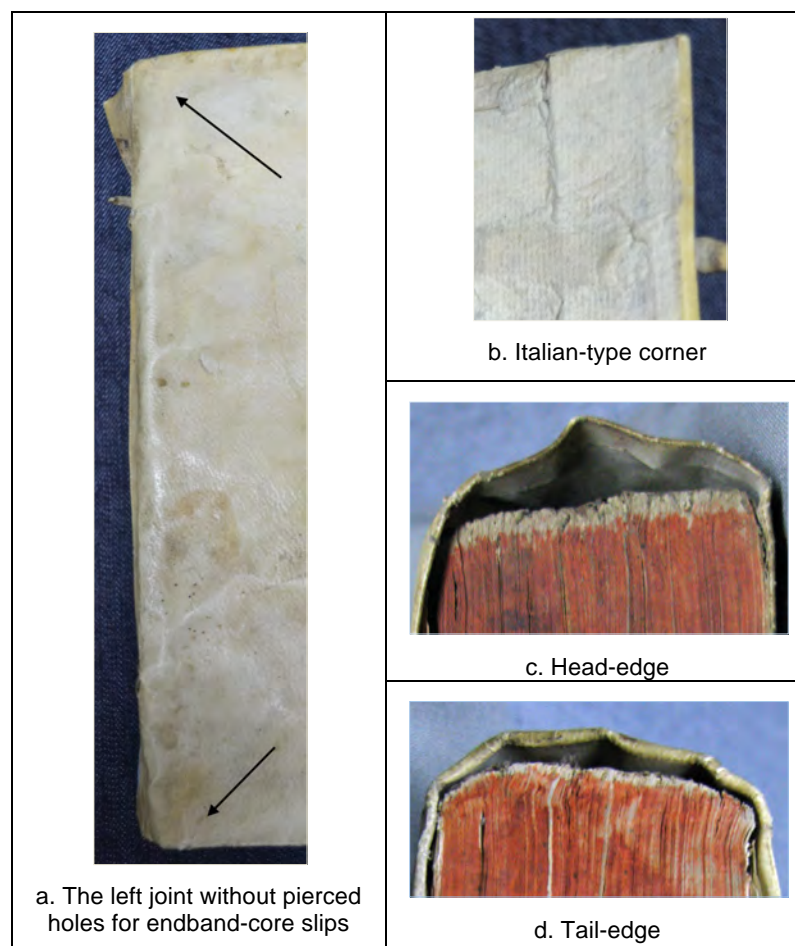


Fig. 97. Replacement cover on CB-13

There are fifteen books in Group C that show joint-creases scored from the outside of each cover at approximately 5 to 17 mm in distance from the spine creases, whereas eight books in the sample have no joint-creases.⁵²² The evidence suggests that covers with joint-creases are more common than those with no joint-creases and, as has been mentioned before, could be the result of the working habits of different binders working in Mexico using different bookbinding techniques.

The parchment used in the covers of Group C was also made from the skins of different types of animal. The parchment of the covers in five books is probably of goat, the type of animal in one book is probably sheep and in twelve books parchment from hairsheep was identified. Finally, in six books, the type of animal from which the parchment of the cover was made could not be identified.⁵²³ In all of the cases, the parchment was used with the

⁵²² With joint-creases: B-1 (6 mm), B-10 (15 mm), B-11 (8 mm), B-15 (6 mm), B-17 (6 mm), B-22 (no record), B-24 (6 mm), B-31 (6 mm), B-32 (8 mm), B-33 (9 mm), B-35 (10 mm), B-36 (5 mm), B-43 (no record), B-45 (17 mm) and B-46 (9 mm). With no joint-creases: B-7, B-18, B-27, B-30, B-34, B-37, B-41 and B-44. It was not possible to determine whether B-25 has joint-creases.

⁵²³ Probably goat parchment: B-10, B-30, B-35, B-43 and B-45. Probably sheep parchment: B-37. Probably hairsheep parchment: B-7, B-17, B-22, B-24, B-27, B-31, B-32, B-33, B-36, B-41, B-44 and B-46. The type of animal could not be identified in: B-1, B-11, B-15, B-18, B-25 and B-34.

hairside on the outside of the cover and was of different tones of yellow, including pale-yellow, dark-yellow, as well as yellow-orange and yellow-brown.⁵²⁴

The cover in B-25 is unusual by comparison with the others and hard to interpret. It has a limp, laced-case primary cover⁵²⁵ of parchment, with the hairside outside, without turn-ins. This cover was subsequently given a secondary cover⁵²⁶ of tanned leather. This secondary cover has turn-ins with rough-trimmed edges which have not been pared, with lapped mitres at the corners with the fore-edge turn-ins over the head and tail turn-ins. The turn-ins are cut across close to the joint, and the head-cap turn-in was trimmed straight across with square ends. This unusual case may possibly be explained by the binder, or perhaps someone who was not a trained binder, trying to give the appearance of a higher status binding to a limp, laced-case cover in parchment, using the parchment already in place as a kind of lining to the leather (*Fig. 98*).

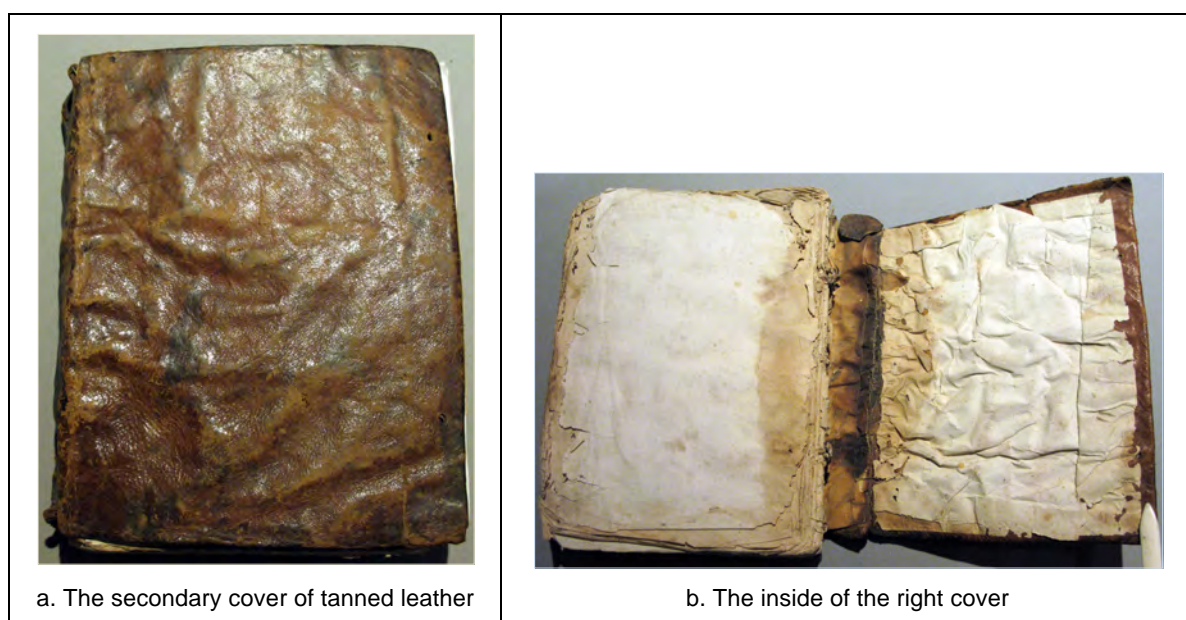


Fig. 98. Secondary full leather cover given over a limp, laced-case primary cover of parchment on B-25

Generally speaking, a full leather cover on a book bound in boards is associated with a higher status for the binding than would be the case with a limp parchment cover because it would be more expensive; however, the different costs between these two types of cover is a consequence of the different structures needed for each binding and not only of the different covering materials. In the case of a full leather cover, the book will normally

⁵²⁴ Pale-yellow: B-24, B-30, B-37, B-42, B-43, B-44 and B-46. Yellow: B-7, B-10, B-11, B-15, B-17, B-22, B-27 B-45 and B-47. Dark-yellow: B-32 and B-33. Yellow-orange: B-31. Yellow-brown: B-18, B-34, B-35, B-36 and B-41. See Appendix 9.

⁵²⁵ See Glossary.

⁵²⁶ See Glossary.

be bound in boards that then will be covered with leather, a structure that requires the preparation of the boards by cutting and shaping them to fit the textblock in addition to lacing them on, which is a time-consuming process that is not required for limp, laced-case bindings, in which the parchment cover is secured directly to the textblock by lacing the sewing-support slips through it. The association therefore of leather with more complex and therefore more expensive bindings has resulted in a general sense that all leather-covered books will be more expensive, though in fact it is the underlying structure that dictates the cost of the binding and not necessarily its cover material.

However, the evidence shown in this section appears to indicate that parchment was relatively expensive in New Spain and for this reason, it has been suggested that its use might have been preferred for highly-valued books; therefore, the secondary cover of leather in this particular case might be explained by the preference of an owner, perhaps of European origin who was familiar with the cost and significance of a leather-covered binding.

It is also interesting to note that the practice of converting a simple binding into a more complex binding by the addition of leather was also used on some Italian longstitch bindings at the beginning of the sixteenth century.⁵²⁷ The presence of this type of cover in B-25 might therefore show the influence of an Italian practice, possibly brought to Mexico by a Spanish binder. However, given that the limp, laced-case primary cover of parchment of B-25 has no turn-ins (nor evidence that it once had them and that they were subsequently cut off) in addition to its unusual lacing pattern, is possible that the binding was designed to have a secondary cover of leather from the beginning.

Another unusual case, this time in the comparative sample, is that of CB-1. The cover is made of a second-use,⁵²⁸ probably goat, parchment, with the hairside outside, joint-creases, turn-ins at head, tail and fore-edge, and cover extensions at the fore-edges. There is a piece of paper adhered to the inside of each cover which is cut to the height and width of each side (up to the joint crease). Its exact purpose is unclear. According to Ligatus (2013), a lining of white paper adhered under the parchment was sometimes used to brighten a translucent parchment, but that cannot be the case here, as although the lining of the left cover is made of plain, handmade paper, the one in the right cover is a piece of re-used printed paper (*Fig. 99*). A possible explanation for the use of different papers to make the linings is that the binder made the best use of the material available and used the plain paper in the left cover, perhaps considering to give a better appearance to the front cover of the book, and left the printed paper for the right cover,

⁵²⁷ Information obtained from the course: *HEB 1500-1800*.

⁵²⁸ The cover was previously used as the cover of another book.

which is the back cover of the book. We can only speculate about this last hypothesis as to whether the binder intended to create a better appearance on the front cover or whether it was accidental. However, the possibility that these pieces of paper were used as linings on each side as a reinforcement rather than for reasons of appearance should also be considered.

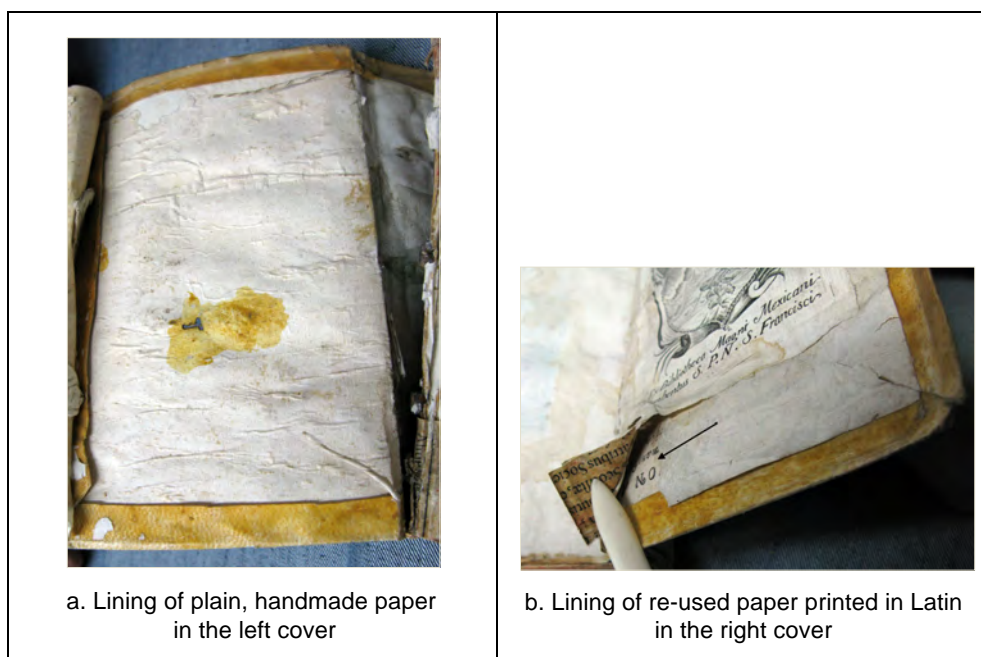


Fig. 99. Linings of paper adhered to the inside of each cover in CB-1

As has been shown, although there are some peculiarities in each of the groups, the features of the covers in all three groups, A, B and C, have a marked similarity, a fact that makes it difficult to determine when the covers in Groups B and C were made. The limp, laced-case parchment covers that were almost certainly made in Mexico in the sixteenth century (Group A) are of sheep, goat or hairsheep, of a variety of yellow tones, both with and without joint-creases, with turn-ins and, in the majority of the cases (77%), with cover extensions folded over the fore-edge of the textblock at an oblique angle with square ends. Cover extensions were in common use across Europe in sixteenth century and it is hardly surprising, therefore, to find them on Mexican bindings. With regard to the turn-ins, the edges are, in general, neat-trimmed, with lapped mitres at the corners, with the fore-edges turned-in over the head and tail turn-ins and the turn-ins of approximately the same width. It is worth noticing that the covers were carefully made of a parchment apparently used for first time and a clearly careful and intelligent use has been made of the parchment, features that suggest, once again, that the parchment may have been a relatively expensive material in New Spain. Within this same group of covers, the presence of two covers with dark leather straps across the spine shows a Spanish influence.

With regard to the use of joint-creases, neither a chronological nor geographical pattern could be identified; their presence or absence, as well as the variety of corner-mitering types identified on the same covers, could be interpreted as showing nothing more than that there were several binders with different working practices in Mexico.

Finally, two more influences of European origin have been identified: the first is an Italian practice reflected in the corners formed by folding the head- and tail-edges and then the fore-edges, without any mitering, resulting in four thicknesses of the parchment at each corner. Since there is only one instance of a cover with this kind of corner in the main sample, it is not possible to draw firm conclusions from its presence in the sample. The second one is a possibly Sicilian influence identified by the use of a reinforcement on the inside of the spine of the cover. The use of the same practice in two different and distant places raises the question about how this could be possible. The fact that both Mexico and Sicily were Spanish colonies in the sixteenth century, when this practice was in use in Sicily suggests a possible connection. It is possible either that this practice arrived in Mexico through Spain, or that there might have been a Sicilian bookbinder working in Mexico.

The comparative sample shows approximately the same features in the covers, such as the use of parchment with the hairside outside of the cover, ranging in tone from pale-yellow to yellow brown. The majority of the covers (70%) have joint-creases, although it is possible to find covers without them, and turn-ins and the majority have cover extensions (65%). The similarities between the covers of both sets of samples makes it difficult to draw firm conclusions when or where the books were covered, although, it should be remembered that there are three books with covers made of a reverse parchment, a practice that was typically Italian and was not identified in the books in the main sample. Therefore, the possibility that these books arrived from Europe already bound should be considered.

3.7 COVER ATTACHMENT

In group A, which are the covers that it is almost certain were made in the sixteenth century, three types of lacing pattern used to attach the cover to the bookblock have been identified: the covers on two books are attached to the bookblock by means of lacing the endband-core slips only through the cover, in two books, the cover is attached to the bookblock by means of the sewing-support slips only and, in six books, the covers are attached to the bookblock by means of each of the endband-core slips and each of the

sewing-support slips (*Fig. 100*).⁵²⁹ In all of the cases, the slips were laced following a mirror-lacing pattern.⁵³⁰ Finally, damage to book B-29 makes it difficult to identify how their covers were attached to the bookblocks.

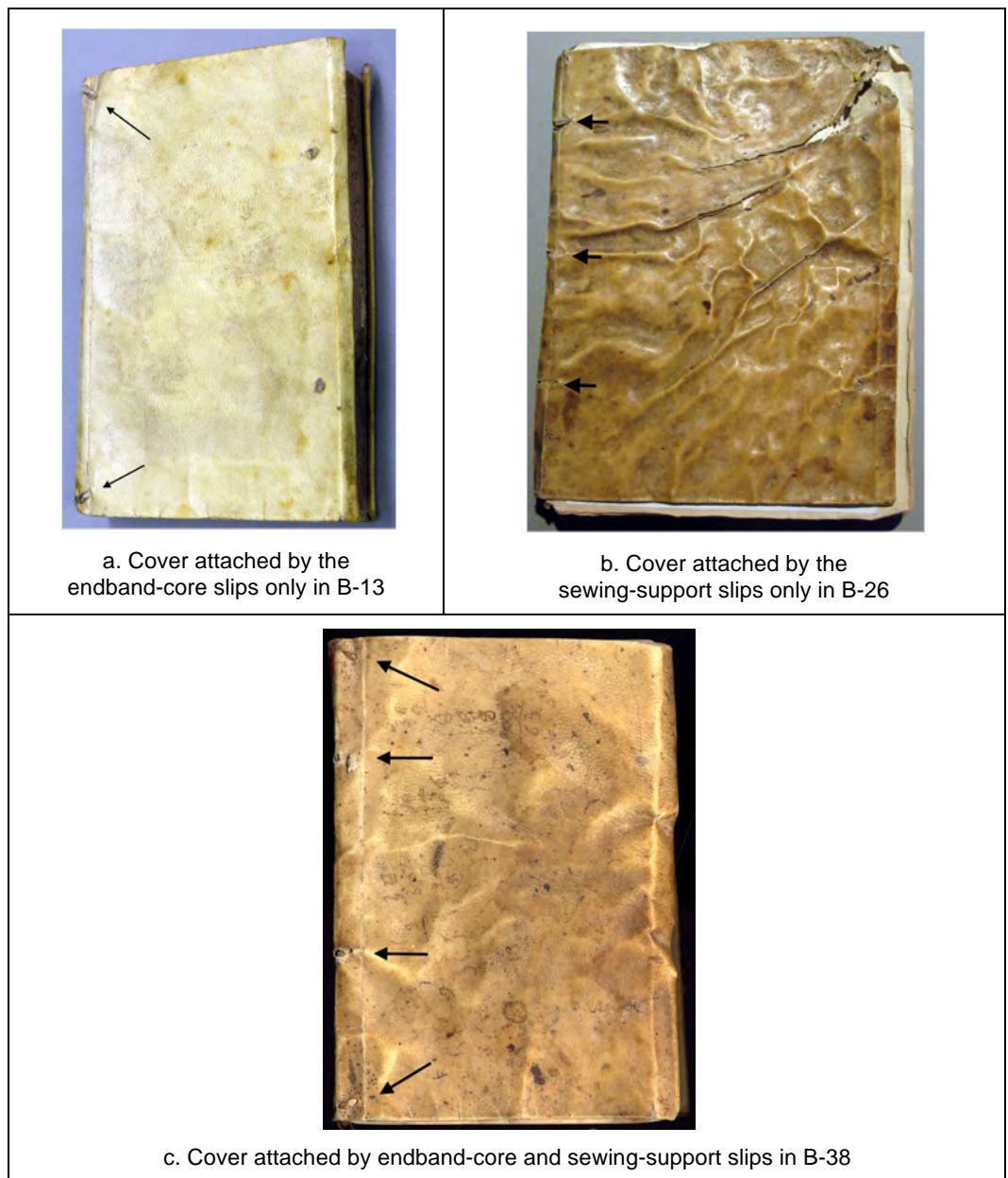


Fig. 100. Types of lacing used to attach the cover to the bookblock in the main sample

⁵²⁹ Cover attached to the bookblock by means of the endband-core slips only: B-42 and B-47. Cover attached by means of the sewing-support slips only: B-19 and B-26. Cover attached by means of each of the endband-core slips and sewing-support slips: B-3, B-8, B-9, B-20, B-23 and B-38.

⁵³⁰ See Glossary.

All of the three types of lacing used to attach the cover to the bookblocks identified in group A were also identified in the attachment of the covers in the comparative sample. The covers in twenty-three books are attached to the bookblock by means of lacing the endband-core slips only through the cover, in two books, the cover is attached to the bookblock by means of the sewing-support slips only and, in six books, the cover is attached to the bookblock by means of each of the endband-core slips and each of the sewing-support slips.⁵³¹ In all the cases, the slips were laced following a mirror-lancing pattern. Finally, there are six books where the attachment of the cover to the bookblock is by means of both the endband-core slips and either added sewing-support slips or select-lacing of the sewing supports,⁵³² as is explained below.

3.7.1 Attachment by means of the endband-core slips only

Independently of the presence of joint-creases in the cover, each of the endband-core slips in both B-42 and B-47, whose covers are attached to the bookblock by means of the endband-core slips only, is laced through two holes arranged at an oblique angle of approximately 60 and 40 degrees respectively from the spine (*Fig. 101*). In both cases, the length of the endband-core slips visible on the outside of the covers is approximately 10 mm. B-47 has joint-creases made in the cover and each of the entry holes through which the endband-core slips are laced was pierced through the joint-crease, whereas B-42 has no joint-creases (*Fig. 164b* and *164a* respectively).⁵³³ This same type of attachment by means of lacing the endband-core slips only was also identified in all of the four books in Group B: in these replaced covers, the endband-core slips are laced through two holes arranged at an oblique angle of between approximately 45 to 60 degrees from the spine. In the cases of B-6 and B-13, which have joint-creases made in the cover, the entry-holes through which each of the endband-core slips is laced was pierced through the joint-crease (*Fig. 164b*). The length of the endband-core slips visible on the outside of the covers is approximately 8 mm and 13 mm respectively. Eleven books in Group C use a similar method, in which the lacing of the endband-core slips is through two holes arranged at an oblique angle within a range of approximately 25 to 65 degrees from the spine.⁵³⁴ The length of the endband-core slips visible on the outside of the cover is in the

⁵³¹ Cover attached to the bookblock by means of the endband-core slips only: CB-1, CB-2, CB-3, CB-5, CB-7, CB-8, CB-11, CB-12, CB-16, CB-17, CB-18, CB-19, CB-26, CB-27, CB-28, CB-31, CB-32, CB-33, CB-35, CB-36, CB-39, CB-43 and CB-46. Cover attached by means of the sewing-support slips only: CB-13 and CB-29. Cover attached by means of each of the endband-core slips and sewing-support slips: CB-10, CB-15, CB-23, CB-25, CB-41 and CB-47.

⁵³² Cover attached to the bookblock by means of both the endband-core slips and either added sewing-support slips or select-lacing of the sewing supports: CB-6, CB-9, CB-21, CB-22, CB-30 and CB-45.

⁵³³ The lacing patterns identified in the main and the comparative sample are shown in Appendix 10.

⁵³⁴ Cover attached to the textblock by means of the endband-core slips only in Group C: B-1, B-10, B-11, B-15, B-18, B-22, B-24, B-31, B-34, B-44 and B-45.

range of approximately 7 mm to 17 mm.⁵³⁵ Eight out of these eleven books have joint-creases⁵³⁶ and the entry holes through which each of the endband-core slips are laced were pierced through the joint-crease (*Fig. 164b*), except for B-10 and B-15, in which each of the entry holes was pierced 2 or 3 mm beyond from the joint-crease, towards the fore-edge (*Fig. 164c*). This small variation is within the range of variation likely to be found in a handmade object. It must be observed that the use of attaching the cover to the bookblock by means of lacing the endband-core slips only is of Italian origin in the second half of the sixteenth century and it is likely, therefore, also to be a Spanish practice in the same period,⁵³⁷ and its influence is reflected in these books in the main sample.

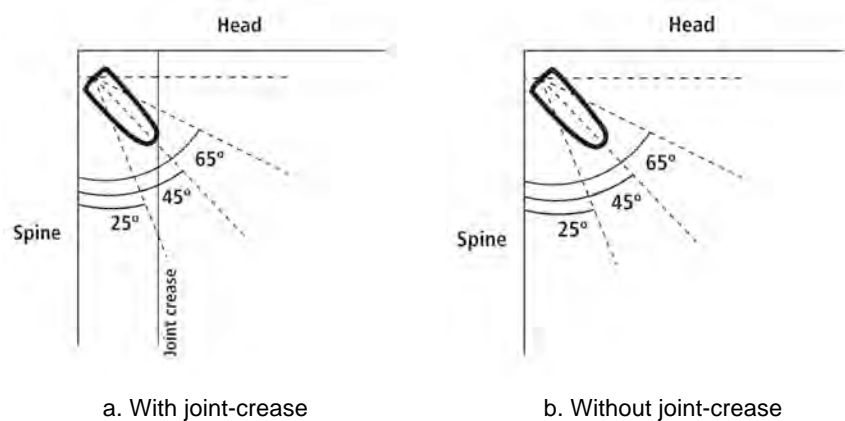


Fig. 101. The lacing angle of endband-core slips

Independently of the presence of joint-creases in the cover, each of the endband-core slips in the twenty-three books in the comparative sample, whose cover are attached to the bookblock by means of the endband-core slips only, is laced through two holes arranged at an oblique angle within a range of approximately 30 to 65 degrees from the spine (*Fig. 102*). Eighteen out of the twenty-three books in this group have joint-creases made in the cover⁵³⁸ and each of the entry holes through which the endband-core slips are laced was pierced through the joint-crease (*Fig. 164b*), except for three books, in which each of the entry holes was pierced 2 or 3 mm beyond from the joint-creases, towards the fore-edge (*Fig. 164c*).⁵³⁹ The length of the endband-core slips visible on the outside of the cover in these books is in the range of approximately 8 mm to 13 mm.⁵⁴⁰

⁵³⁵ The length of the endband-core slips visible on the outside of the cover approximately: 7 mm: B-18. 8 mm: B-15. 9 mm: B-1, B-24 and B-31. 10 mm: B-11. 15 mm: B-44. 17 mm: B-10. No determined: B-45. No record: B-22 and B-34.

⁵³⁶ With joint-creases: B-1, B-10, B-11, B-15, B-22, B-24, B-31 and B-45. With no joint-creases: B-18, B-34 and B-44.

⁵³⁷ Information obtained from the course: *HEB 1500-1800*.

⁵³⁸ With joint-creases: CB-1, CB-2, CB-3, CB-5, CB-11, CB-12, CB-17, CB-18, CB-19, CB-27, CB-28, CB-32, CB-33, CB-35, CB-36, CB-39, CB-43 and CB-46.

⁵³⁹ The entry holes pierced 2 or 3 mm beyond from the joint-creases, towards the fore-edge: CB-1, CB-18 and CB-33.

⁵⁴⁰ The length of the endband-core slips visible on the outside of the cover approximately of: 8 mm: CB-5, CB-16, CB-18, CB-35, CB-39 and CB-46. 10 mm: CB-3, CB-11, CB-12, CB-17, CB-19, CB-31, CB-32, CB-36 and

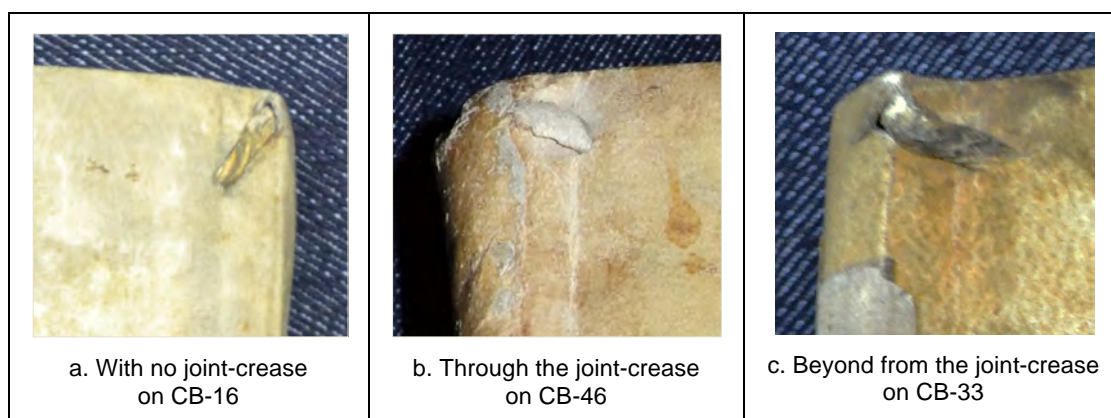


Fig. 102. The lacing of the endband-core slips in relation with the joint-creases in the comparative sample

It must be mentioned that the practice of lacing the endband-core slips at oblique angles is a typical practice adopted from medieval bookbinding techniques, in which the endbands-core slips were laced through the boards or covers in order to reinforce the board/cover attachment; in some cases, the width of the squares⁵⁴¹ was too narrow to lace the endband-core slips at a right-angles to the spine without running the risk of splitting the board or cover because the holes would be too close to the edge of the board or cover; in addition, there were some cases in which the boards or cover had no squares, and therefore, in order to achieve a stable lacing at head and tail, the endband-core slips had to be laced at an oblique angle from the spine. This practice was then adopted for any type of binding in which the endband-core slips were laced in. It is therefore to be expected that endband-core slips will be laced in at an oblique angle through the cover, but the exact angle of lacing may vary. An angle of the lacing in the range of approximately 25 to 65 degrees from the spine appears to be the typical Mexican practice. In addition, it must be mentioned that within this range, in fifteen of the seventeen books whose covers show this type of attachment,⁵⁴² the lacing angle of the endband-core slips is within the range of approximately 40 to 65 degrees from the spine. The conclusion drawn from the comparative sample is slightly different from that of the main sample, since the angle of the lacing is in the range of approximately 30 to 65 degrees from the spine; within this range, eleven out of the twenty-two books whose attachment is by means of the endband-core slips only,⁵⁴³ the lacing angle is of approximately 45 degrees (that is, almost 50% as opposed to 33% in the main sample).

CB-43. 12 mm: CB-1, CB-2, CB-26 and CB-33. 13 mm: CB-7. No determined: CB-8. No record: CB-27 and CB-28.

⁵⁴¹ See Glossary.

⁵⁴² Lancing angle within the range of 40 to 65 degrees: 65 degrees: B-22 and B-44. 60 degrees: B-5, B-6, B-10, B-15, B-42 and B-45. 45 degrees: B-1, B-2, B-11, B-13, B-18 and B-24. 40 degrees: B-47.

⁵⁴³ Lancing angle of approximately 45 degrees: CB-1, CB-7, CB-8, CB-11, CB-12, CB-16, CB-17, CB-18, CB-19, CB-31 and CB-32.

It should be understood that when the covers of limp, laced-case bindings in parchment are opened, they will tend to move away from the spine, creating a gap between the cover and the spine edge of the bookblock. Depending on the structural elements that hold the cover and the bookblock together, it is possible to control the movement of the cover and therefore keep the cover close to the bookblock and so reduce the weakness of the attachment. The gap between these two elements is more evident when only the endband-core slips hold the cover and the bookblock together, increasing the need to reinforce the attachment by adding other structural elements such as lacing the sewing-support slips through the cover, or adhering the spine-lining joints or pastedowns to the inside of the cover. The more elements that are used for the attachment, the more stable and stronger it is likely to be.

In all of the books in Groups A, B and C in which the cover is attached to the textblock by means of the endband-core slips only, therefore, the attachment between these two elements is reinforced by the pastedowns adhered to the inside of the covers; in addition, the attachment in one book in Group B and six books in group C, has also been reinforced by adhering the joints of the transverse linings to the inside of the covers.⁵⁴⁴ Although B-22 in Group C has transverse linings, the lining joints are adhered to the endleaves, with the pastedowns adhered around their perimeters only (head-, tail- and fore-edges) to the inside of the covers;⁵⁴⁵ in this case, therefore, the lining joints contribute very little to the strength of the cover attachment, which is reinforced by the pastedowns only. Based on this evidence, there would appear to be a pattern to this, as it appears that adhering the endleaves and/or spine-lining joints to the cover only was often done to reinforce the attachment when only the endband-core slips were laced through the cover. Similarly, in all of the books in the comparative sample in which the cover is attached to the bookblock by means of the endband-core slips only, the attachment between these two elements is reinforced by the pastedowns adhered to the inside of the cover. This attachment in ten out of the twenty-three books has also been reinforced by adhering the transverse-lining joints to the inside of the cover.⁵⁴⁶ Although six other books have transverse linings, in these the spine-lining joints are adhered not to the cover but to the outermost endleaves only, which are in turn adhered to the cover around their perimeters (head-, tail, and fore-edges). In these cases, therefore, as explained above, the attachment is reinforced only by the pastedowns and not by the spine-lining joints.⁵⁴⁷

⁵⁴⁴ Books with transverse-lining joints adhered to the inside of the covers: in Group B: B-13 and in Group C: B-10, B-11, B-15, B-24, B-31 and B-44. B-45 in Group C has transverse linings, but I have no record whether the lining-joints were adhered to the inside of the cover or to the endleaves. Because of this, it is not possible to state whether the lining-joints slips were used to reinforce the attachment. See Appendix 4a for details.

⁵⁴⁵ See section 3.d Spine and Lining (page 118).

⁵⁴⁶ Books with transverse-lining joints adhered to the inside of the cover: CB-2, CB-7, CB-12, CB-17, CB-26, CB-27, CB-31, CB-33, CB-36 and CB-39

⁵⁴⁷ Books with transverse-lining joints adhered to the endleaves: CB-1, CB-5, CB-8, CB-1, CB-18 and CB-19.

From the group of books in the comparative sample, CB-5, printed in France, is of interest as is the only instance in both sets of samples in which the cover is attached to the bookblock by means of the endband-core slips only but the sewing-support slips are not cut off at the joints. In this case, the sewing-support slips were adhered to the endleaves at each end forming a V-pattern at each station (*Fig. 103a*). The bookblock was sewn all-along on three alum-tawed skin double supports. The right endleaf is original to the binding and consists in a sewn single-leaf text hook (type 4),⁵⁴⁸ whereas the left endleaf is a replacement made of a single-leaf outside hook sewn to the textblock around each of the sewing supports at each sewing station (type 13),⁵⁴⁹ the pastedown at each side is adhered to the cover around its perimeter only (head-, tail- and fore-edges). The attachment is reinforced by the transverse-lining joints at head and tail, which are adhered to both the cover and the pastedowns. A possible explanation for this phenomenon is that the bookblock arrived from Europe already sewn, with the endleaves in place, but without a cover, with all the slips of both the endband-cores and sewing-supports ready to be laced through either boards or cover. It is likely that the binder could receive the bookblock with the left endleaf already lost or damaged, and replaced it by sewing in a new one, and completed the work with a simple limp, laced-case cover of parchment attached to the bookblock by lacing the endband-core slips through it. As the sewing-support slips were not laced in, it appears that the binder bore in mind the possibility of the later replacement of the cover.

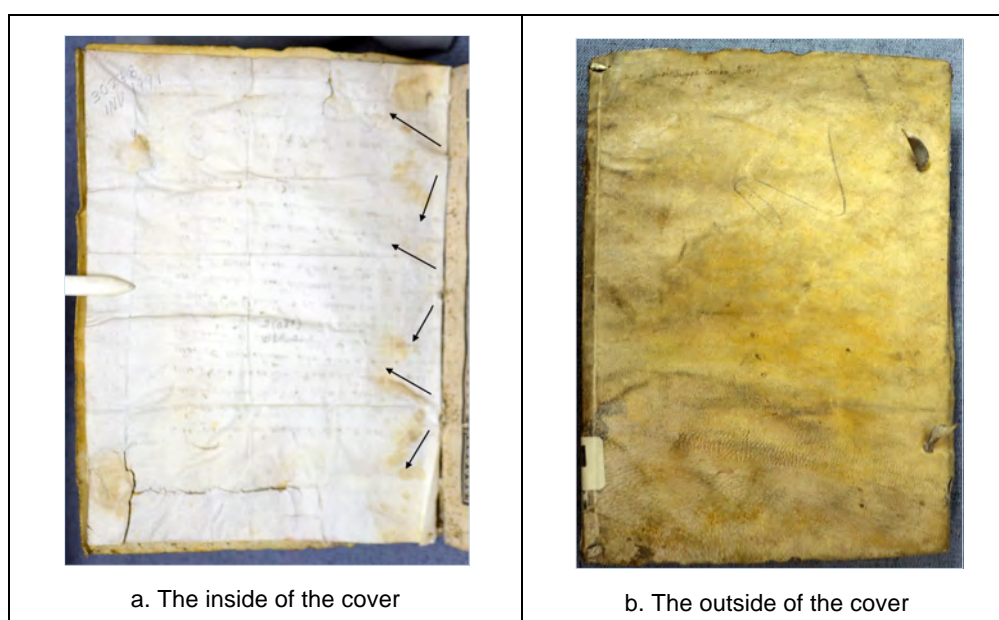


Fig. 103. Attachment of CB-5

A similar case from this group of books in the comparative sample, with the cover attached to the bookblock by means of the endbands only, is that of CB-16. It was sewn

⁵⁴⁸ See Appendix 7.

⁵⁴⁹ See Appendix 7.

on two alum-tawed supports, the slips of which were cut off at the joints. There is an added slip glued over each of the sewing supports, of the slips of which are trapped between the inside of the cover and the pastedowns, which are adhered overall to the inside of the cover (*Fig. 104c*). The slips could be missing for a variety of reasons, of which the most likely are either that they were intentionally cut off at the joints or that they were broken as the book was used. In general terms, it could be said that added sewing-support slips are supplied in order to attach a cover to a bookblock by being laced through it. Although it could be assumed that in this case the added slips are there to reinforce the attachment between the cover and the bookblock, it is clear that the endband-core slips and the pastedowns supply most of the attachment between these two elements,⁵⁵⁰ as the added-slips are glued over the sewing supports and they would add little to the strength of the attachment because they are unlikely to remain glued in place for long, as is the case in this example.

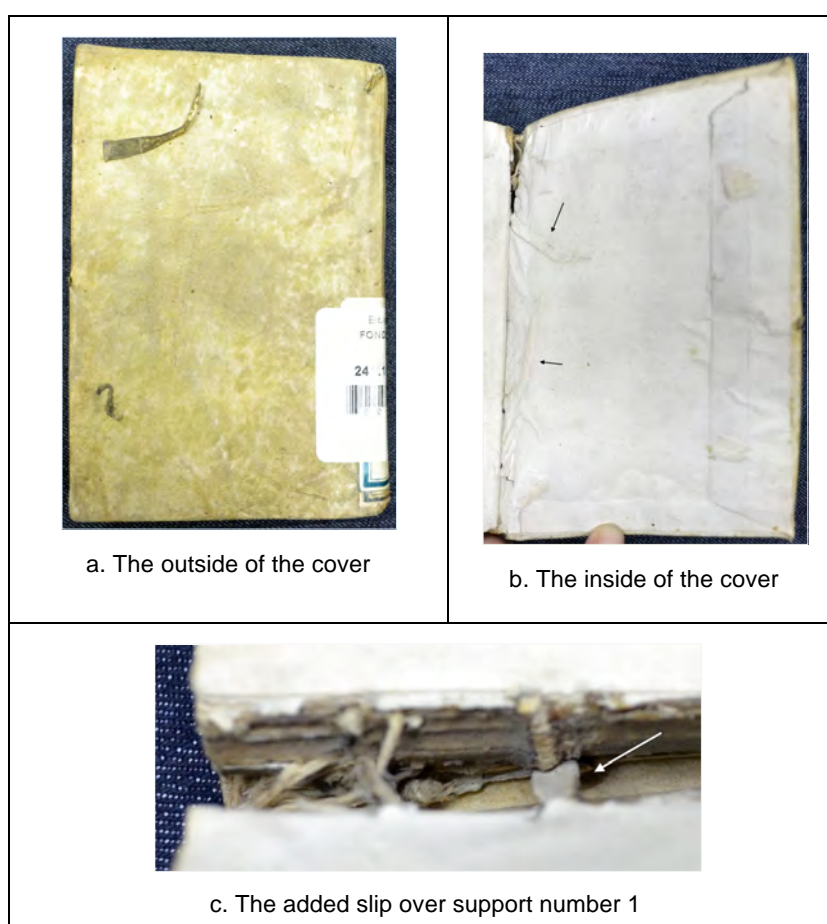


Fig. 104. Attachment of CB-16

⁵⁵⁰ Although there is linings in all panels, it was not possible identify the type of lining.

Another interesting example of a cover attached to the bookblock by the endband-core slips only in the comparative sample is CB-43. It has an added endband-core slip of alum-tawed skin at each end of each endband-core stabbed through the spine toward the head- and tail-edges respectively, and laced through the cover and turn-ins (*Fig. 105*). Although it has transverse linings at head and tail, the lining joints are adhered over the added endband-core slips and the endleaves. The attachment is, therefore, only reinforced by the pastedowns. It would appear that the transverse-lining joints at head and tail were used to hold the added slips in place, rather than as a reinforcement of the attachment between the cover and the bookblock. It should be remembered that the primary endbands on this book were worked with two threads of different colours, a practice that was not identified in the endbands of the main sample. In addition, the textblock is sewn on four double-supports, a feature identified in the majority of the books in the comparative sample. The evidence might suggest that the binder received the textblock already sewn, with the endbands in place, with both the sewing-support and the endband-core slips cut off, or more probably broken, at the joints. In order to attach the new cover to the bookblock, he supplied added slips to the endbands. It is therefore possible that the bookblock was covered in Mexico.



Fig. 105. Added endband-core slips at the tail on CB-43

3.7.2 Attachment by means of the sewing-support slips only

B-19 and B-26 are the books identified in Group A in which the cover is attached to the bookblock by means of the sewing supports only. In both cases, the bookblock was sewn on three alum-tawed supports, with each of the sewing-support slips laced through two holes arranged at right-angles to the spine. B-19 has joint-creases made in the cover, with the lacing holes pierced through them (*Fig. 164e*), while B-26 has no joint-creases (*Fig. 2 164d*). The lengths of the sewing-supports slips visible from the outside of the cover are

approximately 7 and 10 mm respectively. Although B-26 has transverse linings, the damage to the endleaves where the spine-lining joints were originally adhered to the endleaves makes it impossible to determine whether it ever had pastedowns. It is worth noting that the textblock in B-19 has neither endleaves nor endbands, with the edges cut to show proof and with an animal-based adhesive and no linings on the spine. The structural features of the binding appear, therefore, somewhat contradictory. The well-worked sewing and lack of endbands and spine linings might suggest some sort of temporary status, but the cover, with turn-ins, fore-edge cover extensions and a type 2 tie lacing,⁵⁵¹ seems unlikely to have been added as a temporary protection of the textblock until a more complex cover was added (Pickwoad, 1994). A possible explanation is that the textblock was sold already sewn without a cover and the binder was asked to supply a permanent cover without adding the missing elements of the binding. However, the absence of endleaves in all but the very cheapest bindings is uncommon, as even when books were sold as sewn bookblocks, they were typically provided with endleaves in order to protect the textblock (Pickwoad, 1994). Furthermore, if a permanent cover was subsequently added to a textblock that had, for some reason, no endleaves, they would be added in addition to the cover; the absence of endleaves, therefore, in B-19 is difficult to understand.

Two similar cases, B-7 and B-27, were identified in Group C which are attached to the textblock by means of the sewing supports only, none of them has joint-creases made in the cover (*Fig. 164d* and *164f* respectively). In both cases, the length of the sewing-supports slips visible on the outside of the cover is approximately 10 mm. Book B-7 was sewn on three single supports from which each of the sewing-support slips at the left side are broken at the joints and have been repaired with added slips; the cover is attached to the bookblock by means of two sets of three sewing-support slips, one added and one original, laced through two holes arranged at right-angles to the spine (*Fig. 106*). This book has neither endbands nor linings; in addition, the endleaves are sewn, single-leaf text hooks of plain, handmade paper apparently of the same paper that was used for the textleaves,⁵⁵² and which are not adhered to the inside of the cover (type 4).⁵⁵³ It must be remembered that the purpose of the added slips, as has been mentioned before, is to supply replacement sewing-support slips with which to attach the cover. The evidence suggests that the binder received the bookblock already sewn, but with the sewing-supports slips broken at the joint on the left side and, in order to attach the new cover to the bookblock, added new slips to the sewing supports. Although the features of the binding suggest that the cover might have been supplied as a temporary protection, other

⁵⁵¹ See Appendix 11.

⁵⁵² The characteristics of colour, texture and thickness determined by a visual examination show marked similarities.

⁵⁵³ This type of endleaf indicates low-cost work because, as has been mentioned before, its construction requires the least amount of time and material. See section 3.1 Endleaves (page 63) and Appendix 7.

characteristics, such as the fore-edge cover extensions and ties laced through the cover (type 2),⁵⁵⁴ in addition to the decorated edges, all of which could be interpreted as belonging to a more elaborate cover, contradict this view. A possible explanation for this contradiction is that cover was intended as permanent and that the added slips were supplied only to repair the attachment.

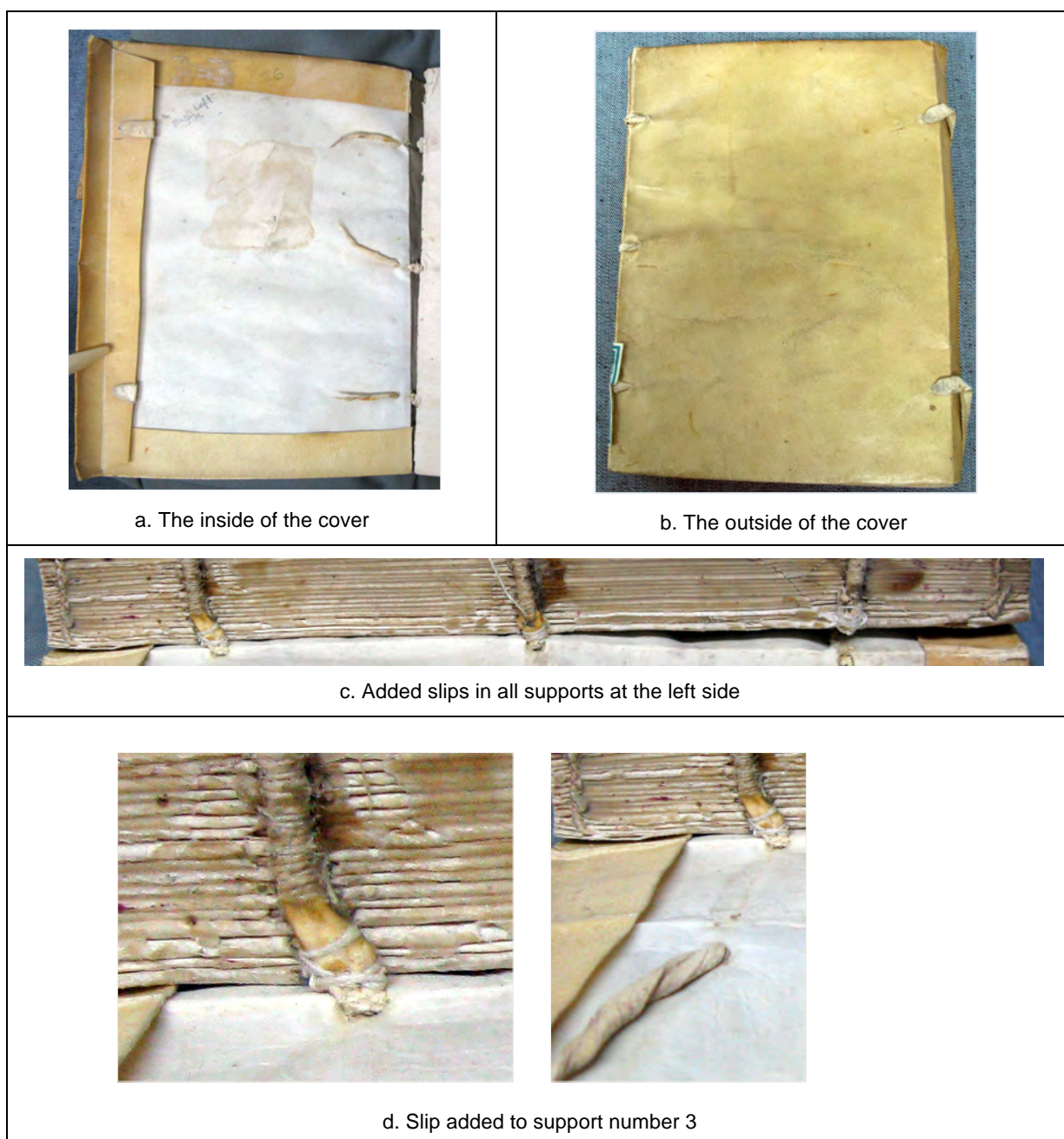


Fig. 106. Attachment of B-7

In B-27 in Group C, which was sewn on four single supports with each of the sewing-supports slips laced through two holes arranged at right-angles to the spine and with the slips trapped inside the cover by the pastedowns, the edges are decorated and there are

⁵⁵⁴ See Appendix 11.

neither endbands nor linings. Although the evidence suggests that the cover was intended to be permanent, the repair of the left endleaves and the damage to the right endleaves makes it impossible to draw firm conclusions from this example.

Only CB-13 and CB-29 in the comparative sample show the cover attached to the bookblock by means of the sewing-supports slips only. The length of the sewing-support slips visible on the outside of the covers is approximately 13 mm and 10 mm respectively. CB-13 has joint-creases and the entry lacing-holes were pierced through it, whereas CB-29 has no joint-creases. In CB-13, as has been explained before, although there is some evidence that the bookblock had endbands once, it would appear that the existing cover is a replacement of a lost earlier cover, made when the endbands were already lost and had not been replaced by the binder.⁵⁵⁵ There are no pierced holes that could suggest that the endband-core slips were ever laced in. The cover is attached to the bookblock by means of a select-lacing of the sewing-support slips, which is to say that, although it was sewn on three double supports, only the slips of sewing supports numbers 1 and 3 were laced through the cover, whilst the slips of sewing support number 2 were left free inside the cover (*Fig. 107a*). There are possible structural and economic explanations for this arrangement. The attachment between the cover and the bookblock by means of select-lacing is a cheaper option than lacing all the sewing-support slips through the cover, but a stronger one than cutting off those slips that are not laced in, as they can then not be adhered to the inside of the cover with the pastedowns. This economic status is supported by the fact that the binding has neither endbands nor linings, and the cover was made from a second-use parchment which was previously used as the cover of another book. The attachment, in this case, is reinforced by the pastedown at each side adhered around its perimeter to the inside of the cover. The lacing pattern of the sewing-support slips used for the attachment is also of interest. The left cover is attached to the bookblock by a split-lacing in which the two slips from each element of double supports numbers 1 and 3 emerge at each joint individually through separate exit holes close to the spine, to return through a single entry hole placed at a right-angles to the spine and at an oblique angle downwards and upwards to the entry holes. The right cover, in contrast, is attached by the same split-lacing pattern, described above, as is used for the slips of sewing support number 1, but the slips of sewing support number three are laced in a different manner. In this case, both elements of the double support are laced together through both the same exit and entry holes (*Fig. 164t* and *Fig. 107b.*). A possible explanation for this arrangement is that the binder made a mistake when he pierced the holes for support number 3 in the right cover.

⁵⁵⁵ See section 3.5 Endbands (page 132) and section 3.6 Cover (page 177).

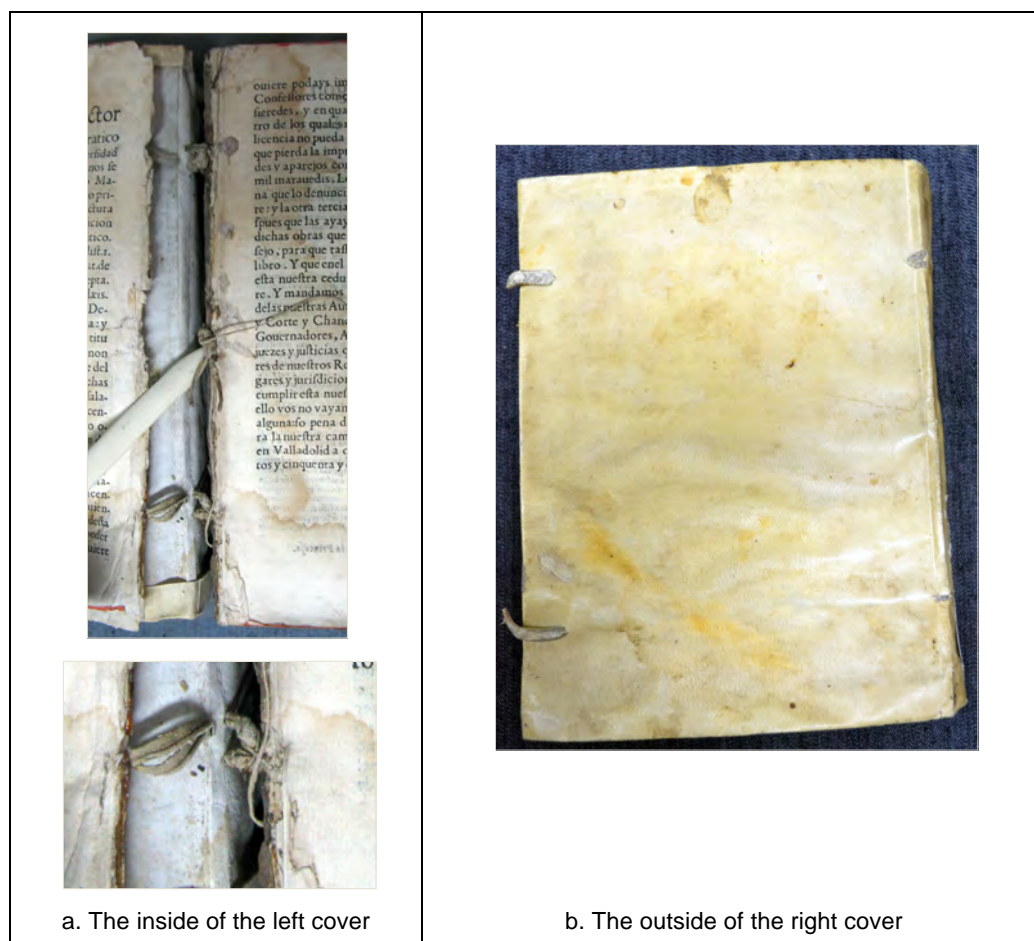


Fig. 107. Attachment of CB-13

So far as the attachment of CB-29 is concerned, each of the three sewing-supports slips is laced through two holes arranged at right-angles to the spine (*Fig. 164d* and *Fig. 108*). As there are neither endbands nor linings, the attachment is reinforced only by the pastedowns, adhered around their perimeters (head-, tail- and fore-edges) to the inside of the covers. It must be remembered that the right endleaf is an integral endleaf of type 11, in which the outer leaf of the gathering was used as pastedown, while the left endleaf is of type 4, which consists of a sewn single-leaf text-hook endleaf. As was explained in the section 3.1 Endleaves,⁵⁵⁶ each endleaf has the same number of leaves at each end of the bookblock and both are used as pastedowns. The features of the endleaves, in addition to those of the cover which was carefully made of a first-use parchment with turn-ins of approximately the same width, as is also shown by the covers in the main sample, might suggest that the bookblock arrived in New Spain already sewn and the cover only was supplied, and therefore, attached in Mexico.

⁵⁵⁶ See page 63.



Fig. 108. The attachment of CB-29 on the right cover

3.7.3 Attachment by means of the endband-core slips and sewing-support slips

The covers in the remaining six books in Group A are attached to the bookblock by means of the endband-core slips and each of the two sewing-support slips in two books (*Fig. 164i* and *164h* respectively) and each of the three sewing-supports slips in four books (*Fig. 164j*).⁵⁵⁷ In all of the cases, each of the endband-core slips is laced through two holes arranged at an oblique angle of approximately of 45 degrees from the spine, except for B-8 in which the lacing is at an angle of approximately 60 degrees from the spine, and B-20 in which the lacing is at angle of approximately 50 degrees from the spine, whereas in all of the cases, each of the sewing-support slips is laced through two holes arranged at right-angles to the spine (*Fig. 109*). The length of the slips visible on the outside of the covers is approximately 10 mm. From this group of six books, B-8 is the only one that has joint-creases and the entry lacing-holes were pierced through it. It should be remembered that the attachment between the cover and the bookblock by means of both the endband-core and the sewing-supports slips is stronger than that achieved by either the endband-core slips only or the sewing-support slips only. In addition, the attachment could be reinforced by adhering the pastedowns to the cover, as in three books.⁵⁵⁸ The pattern in which the endband-core slips are laced in at an oblique angle from the spine whilst the sewing-support slips are laced at right-angles to the spine is a typical European practice and, therefore, its presence in these books in the sample is to be expected.⁵⁵⁹

⁵⁵⁷ Cover attached to the bookblock by means of the endband-core slips and each of the two sewing-support slips: B-8 and B-38. Cover attached to the bookblock by means of the endband-core slips and each of the three sewing-supports slips: B-3, B-9, B-20 and B-23.

⁵⁵⁸ Attachment reinforced by the pastedowns: B-3, B-8 and B-20. B-9 and B-23 have endleaves without pastedowns whereas the endleaves in B-38 are lost. B-8 is the only book in this group of three that has transverse linings at head and tail, but I have no record whether the lining-joints were adhered to the inside of the cover or to the endleaves. Because of this, it is not possible to state whether the lining-joint slips were used to reinforce the attachment. See Appendix 4a for details.

⁵⁵⁹ Information obtained from the course: *HEB 1500-1800*.



Fig. 109. Attachment by means of both the endband-core and all of the sewing-support slips in books in the main sample

Another interesting feature that appears within this group of covers is found on books B-3 and B-20 (*Fig. 109a* and *109b* respectively), both of which have dark-brown tanned leather straps stretched across the spine, the ends of which are secured by the sewing-support slips. In B-3, each of the sewing-support slips emerges from an exit hole in the cover and through a single hole at the end of the leather strap before being laced back into the cover over the end of the strap, whereas in B-20, each of the sewing-support slips was laced through two holes within the length of the straps (*Fig. 84* and *Fig. 109b*).⁵⁶⁰ As has already been mentioned, the use of leather spine straps was a particularly Spanish practice that appears to have gone out of use before the end of the sixteenth century.⁵⁶¹ This therefore suggests that the covers of these two books were made in Mexico also in the sixteenth century, under Spanish influence.

One book in the comparative sample, CB-25, described before, printed in 1549 in Spain,⁵⁶² also has leather straps across the spine, with the difference that the cover is attached to the bookblock, by means of split-lacing⁵⁶³ of the four double, tanned-leather sewing supports over the ends of the straps (*Fig. 164q*. and *Fig. 110*). The endband slips are laced at an oblique angle of approximately 40 degrees from the spine. The covers have no joint-creases and the length of the slips visible on the outside of the covers is approximately 9 mm. In addition, as has been described above, each of the first and last tiedowns of the endbands was secured with a knot at the exit hole on the spine and the ties in this book are laced though the cover using a pattern that was not identified in the

⁵⁶⁰ In both cases there are pastedowns, however, given that the endleaves has been either replaced or repaired, it is not possible to determine if the attachment of the textblock to the cover was first reinforced by this element.

⁵⁶¹ See section 3.6 Cover (pages 164-165).

⁵⁶² See Appendix 5a.

⁵⁶³ See Glossary.

sample (type 5),⁵⁶⁴ Although the features of this binding all fit within the typical Spanish tradition of binding, and could therefore suggest that the book was bound in Spain, all of these Spanish features (such as the split lacing, the presence of spine straps and the way in which the tiedowns are secured) were also identified in the books in the main sample, with the exception of the lacing pattern of the ties (a fact that does not necessarily mean that it was not used in Mexico). Based on the currently available evidence, it would appear from this particular case that Mexican bookbinding practices in the sixteenth century share, not surprisingly, clear similarities with those found in Spain in the same period.

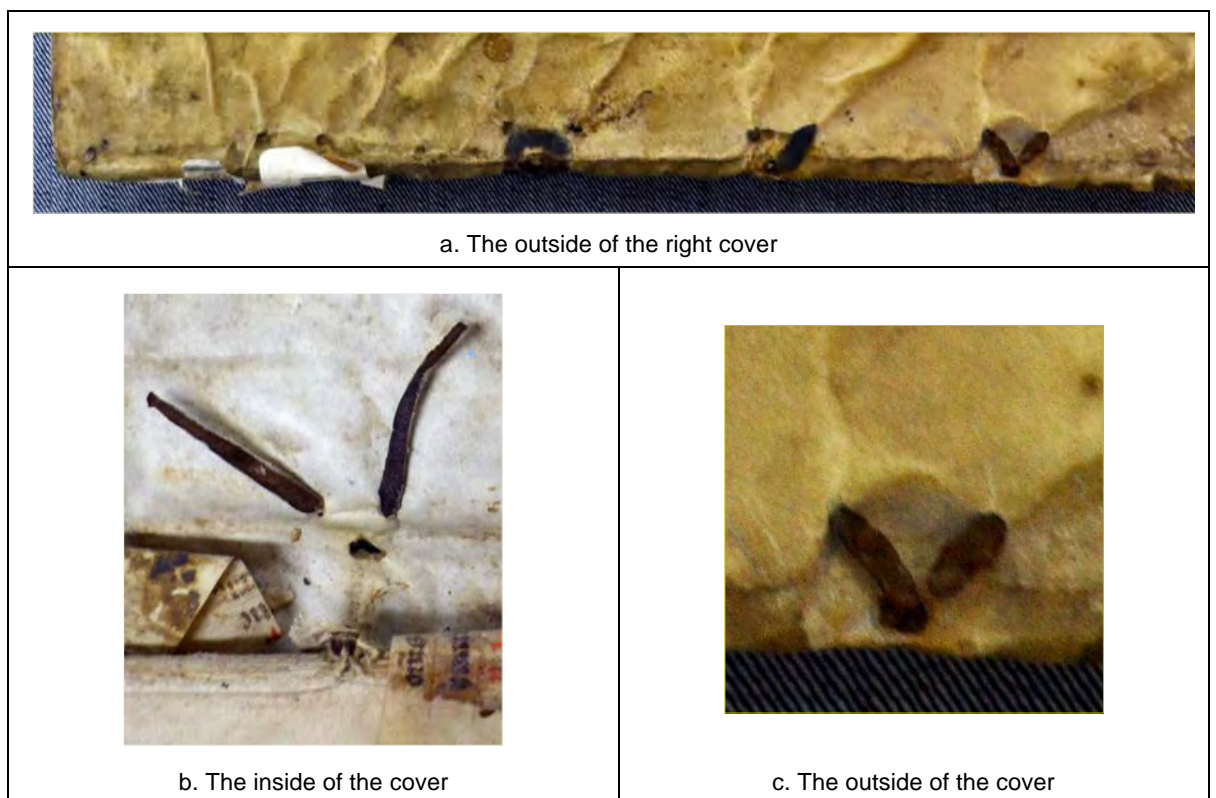


Fig. 110. Split-lacing through the right cover of CB-25

There is one book in Group C, B-30, that shares the same type of endband and sewing-support slip-lacing, in which the cover was attached to the bookblock by means of lacing each of the endband-core slips at an oblique angle to the spine and each of the sewing-support slips at right-angles (*Fig. 164j* and *Fig. 111*). Although the slips are now left free inside the cover, it is not possible to know whether the book once had pastedowns because of later repairs.⁵⁶⁵

⁵⁶⁴ See Appendix 9.

⁵⁶⁵ See description in Appendix 4a for details.



Fig. 111. Attachment by means of endband-core slips and sewing-support slips of B-30, arranged at right-angles to the spine

Three book in the comparative sample also show the same oblique angle of lacing the endband-core slips with the sewing-support slips laced at right-angles to the spine (*Fig. 112*).⁵⁶⁶ In all of the cases, each of the endband-core slips is laced through two holes arranged at an oblique angle of approximately 45 degrees, except for B-10 in which the lacing is at an angle of approximately 50 degrees from the spine, whereas in all of them, each of the three sewing-support slips is laced through two holes arranged at right-angles to the spine. The length of the slips visible on the outside of the cover is approximately 10 mm. None of them has joint-creases (*Fig. 164j*). All the books have transverse-lining joints adhered to the endleaves.⁵⁶⁷ In the cases of CB-10 and CB-47 cases, the outer leaf at each end was used as a pastedown adhered around their perimeter only (head-, tail- and fore-edge) to the inside of the cover. The attachment, therefore, is reinforced only by the pastedowns. In contrast, CB-15 has no pastedowns, with the lining-joints adhered to the outermost endleaves. The attachment is, therefore, by means only of both the sewing-support and endband-core slips. In this case, as was explained in the 3.4 Spine and Lining section, the cover could be removed and replaced by another cover or by boards and leather without disturbing the endleaves, endbands and the sewing structure.⁵⁶⁸

⁵⁶⁶ Cover attached to the bookblock by means of lacing each of the endband-core slips at an oblique angle to the spine and each of the sewing-support slips at right-angles: CB-10, CB-15 and CB-47.

⁵⁶⁷ Although CB-10 has transverse linings in all panels, it was not possible to determine whether the linings were adhered to the endleaves or to the cover.

⁵⁶⁸ See 3.1 Endleaves section (page 126).



Fig. 112. Attachment by means of both the endband-core and all of the sewing-support slips in books in the comparative sample

From this last group of three books in the comparative sample, CB-10 is of interest since the sewing support are made of tanned leather, whilst the endband cores are of alum-tawed skin. As a consequence of lacing the endband-core and the sewing-supports slips, the outside of the cover shows a combination of tanned leather and alum-tawed skin (*Fig. 113*). As has been mentioned before, this combination is an Italian practice, probably Spanish also, which was also identified in the books in the main sample,⁵⁶⁹ a fact that raises the possibility that this book could be bound in Mexico.

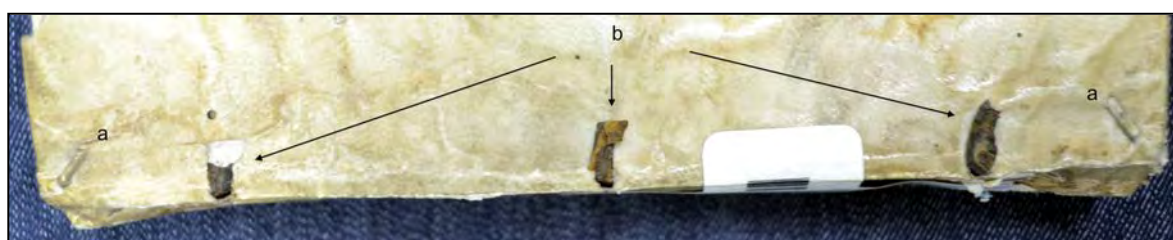


Fig. 113. Appearance of the attachment by means of alum-tawed skin endband-cores (a) and tanned-leather sewing-support (b) slips, on the outside of the cover in CB-10

There are some features that are found only in Group C: the cover in book B-17 is attached to the bookblock by means of the endband-core slips and a select-lacing of the sewing-support slips, which is to say that although it was sewn on three single supports, only the slips of sewing support number 2 were laced through the cover (through two holes arranged at right-angles to the spine), whereas the slips of sewing supports numbers 1 and 3 were cut off at the joint (*Fig. 164g*). As has been said before, there are possible structural and economic explanations for this arrangement. It must first be

⁵⁶⁹ See sections 3.2 Structure (page 83) and 3.5 Endbands (page 135).

remembered that the attachment between the bookblock and the cover by means of both the endband-core and the sewing-support slips is stronger and more stable than that of the endband-core slips only;⁵⁷⁰ with this in mind, it is possible that the binder decided to achieve a more stable and stronger attachment by lacing in the slips of sewing support number 2 only, in addition to the endband-core slips, as a cheaper option than lacing all the sewing-support slips through the cover, but a stronger one than cutting them all off. He then further reinforced the attachment by adhering both the spine-lining joints and the pastedowns to the inside of the cover. The practice of select-lacing accelerates the time-consuming process of cover-attachment while retaining some of the strength of sewing-support slip lacing and avoiding the risks inherent in lacing in only the endband-core slips; by lacing selected sewing-support slips, the movement of the cover is controlled and the bookblock and the cover are held more closely together. It is also possible, of course, that this extra reinforcement would impact on the cost of the work. The cover has joint-creases, with the entry lacing-holes pierced through them. The length of the slips visible on the outside of the cover is approximately 8 mm (*Fig. 114*).

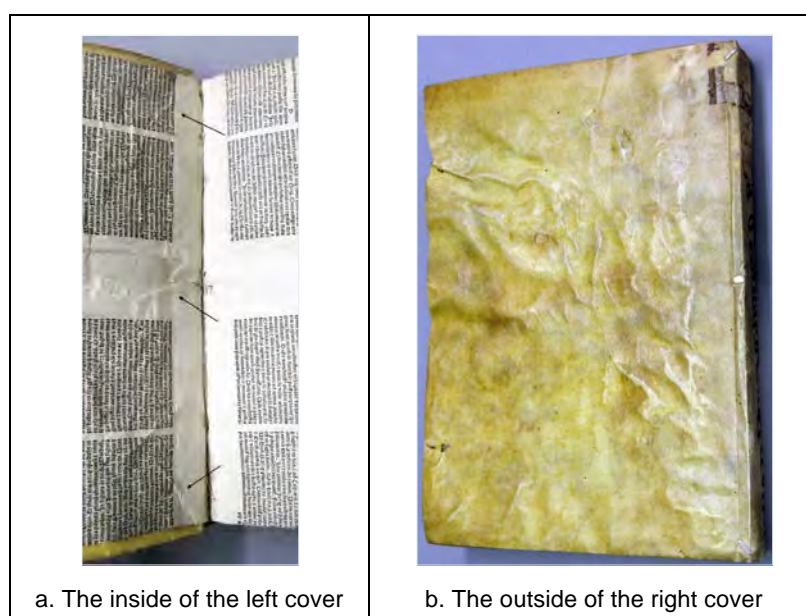


Fig. 114. Attachment of the cover of B-17

Attachment by means of the endband-core slips (laced in at an oblique angle of approximately 60 degrees from the spine) and a select-lacing of the sewing-support slips was also identified in CB-21 in the comparative sample. In comparison with B-17 in the main sample, in CB-21, the bookblock was sewn on three double tawed-skin supports, of which the two slips from each element of the double supports numbers 1 and 3 are trapped between the cover and pastedowns, whereas the slips from the upper element of

⁵⁷⁰ See page 187 in this section.

the double support number 2 are trapped between the cover and the pastedown, and the slips from the lower element are laced through the cover through two holes arranged at right-angles to the spine. The covers have joint-creases and the entry lacing-holes were pierced through them (*Fig. 164g and Fig. 115*). The length of the slips visible on the outside of the cover is approximately 9 mm. Although the attachment between the cover and the bookblock of both B-17 in the main sample and CB-21 in the comparative sample is reinforced by the transverse-lining joints and pastedowns both of which adhered to the inside of the covers, the stronger attachment is that of CB-21, where the slips that are not laced in were adhered to the inside of the cover, in contrast with B-17, in which the slips that were not laced in, were cut off at the joints.



Fig. 115. Attachment at the outside of the right cover of CB-21

B-41, from Group C, is the only instance that shows split-lacing, a practice that was common in Spanish bindings of the sixteenth century and survived well into the eighteenth century (Ligatus, 2013); the influence of such books is therefore reflected in this book (*Fig. 164o.*). The covers have no joint-creases and the length of the slips visible on the outside of the cover is approximately 8 mm. The endband-core slips were laced through two holes arranged at an oblique angle of approximately 65 degrees from the spine (*Fig. 116*).

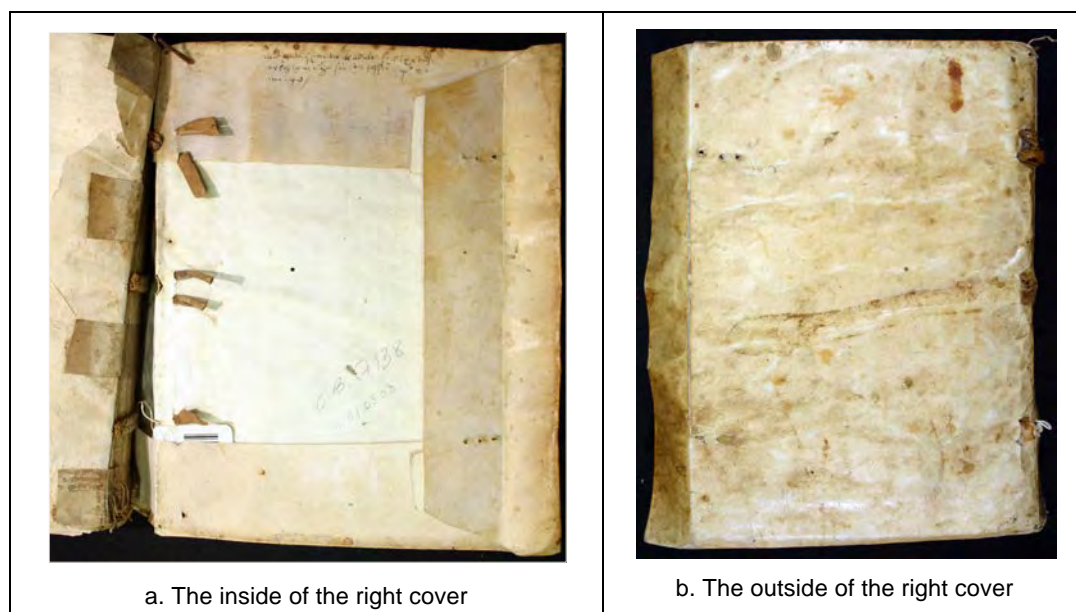


Fig. 116. Attachment of the cover by means of split-lacing of B-41

In addition to CB-25 in the comparative sample, described above, CB-23 and CB-41, both printed in Spain, also show the cover and the bookblock attached by means of split-lacing (*Fig. 117*). The cover of these books are attached by means of the endband-core slips, laced in at an oblique angle of approximately 45 degrees from the spine, and each of the three double sewing-support slips in CB-23 and each of the four double sewing-supports slips in CB-41. Both covers have joint-creases and the entry holes were pierced through them (*Fig. 164p* and *164r* respectively). The length of the slips visible on the outside of the cover is approximately 9 mm. In CB-23, the attachment is reinforced by the transverse-lining joints and the pastedowns which are adhered overall to the inside of the covers,⁵⁷¹ but the damage to the endleaves in CB-41 makes it impossible to determine whether it ever had pastedowns; the transverse-lining joints are still adhered to the outer leaf of the endleaves. Unfortunately, there is not enough evidence to draw conclusions about the reinforcement of the attachment of CB-41.

⁵⁷¹ Although the right endleaves of CB-23 have been repaired, it is possible to see that the pastedown was originally adhered around the perimeter of the cover and the spine-lining joints.

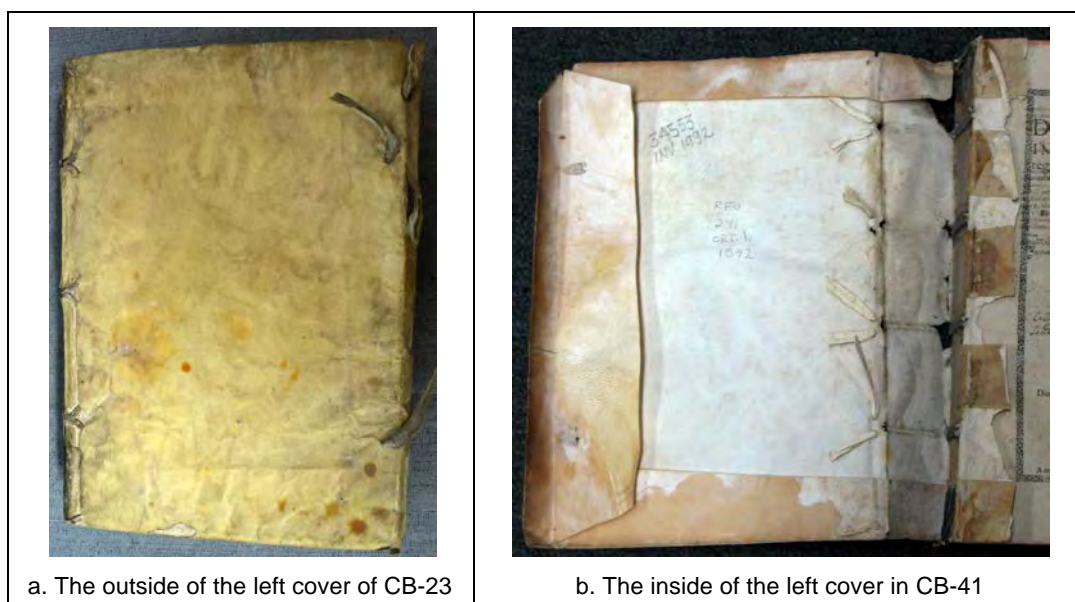


Fig. 117. Attachment of the cover by means of split-lacing in CB-23 and CB-41

From the remaining seven books within group C, there is a small group of six books in which the covers are attached to the bookblock by means of the endband slips (at an oblique angle of approximately 45 degrees (four books) and 50 degrees (two books) from the spine) and added sewing-support slips.⁵⁷² B-32 and B-35 are sewn on three tawed-skin supports, of which supports 1 and 3 have added slips at each end laced under each support and then laced through the cover. In B-32, the sewing-support slips have been repaired: support number 1 has an added slip of tanned leather at the left end, whilst support number 3 has an added slip of tanned leather at the right end (*Fig. 118a.1*). Each of the slips (added and original) of support number 1 was laced through two holes angled downwards, whereas each of the slips (added and original) of support number 3 was laced through two holes angled upwards. Although a combination of tanned leather and alum-tawed skin can be seen on the outside of the covers, the appearance outside the covers is the result of the repair of the sewing-support slips, perhaps with the only material available, rather than a desire to achieve a particular external appearance (*Fig. 118a.2* and *118a.3*). The slips in B-35, in contrast, were cut off at the joints, but with tawed-skin added-slips at each end of supports numbers 1 and 3 (*Fig. 118b*). The covers of both books have joint-creases, with the entry lacing-holes pierced through them (*Fig. 164n*). The length of the slips visible on the outside of the covers is approximately 10 mm. The attachment between the covers and the bookblocks was reinforced by the pastedowns, since the transverse-lining joints in both books were adhered to the outermost endleaves.

⁵⁷² Covers attached to the bookblock by means of the endband slips and added sewing-support slips: B-32, B-33, B-35, B-36, B-37 and B-46. Endband-core slips laced at an oblique angle of 45 degrees: B-33, B-36, B-37 and B-46. Endband-core slips laced at an oblique angle of approximately 50 degrees: B-32 and B-35.

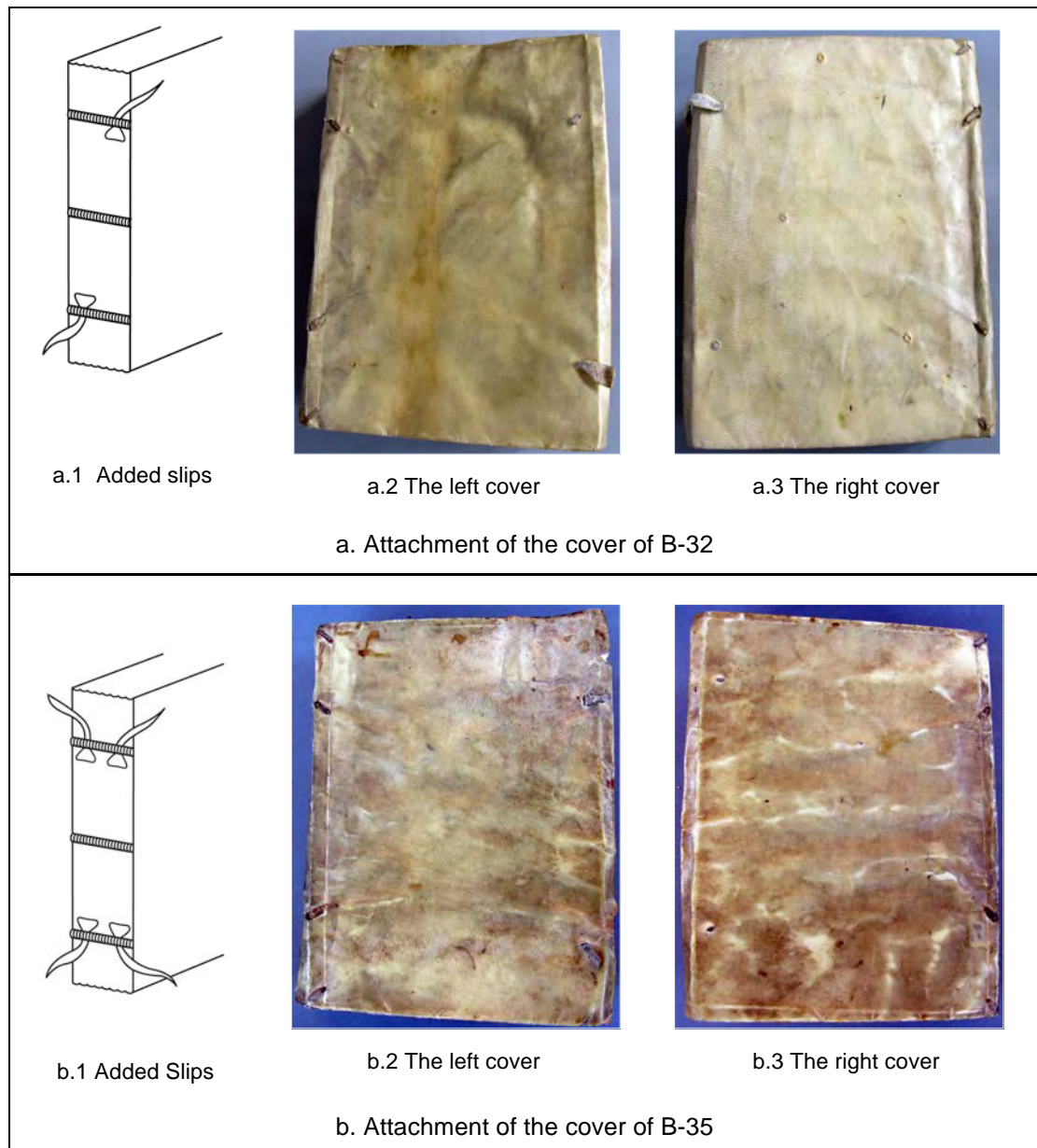


Fig. 118. Attachment of the cover by means of endband slips and added sewing-support slips of B-32 and B-35

The cover in B-36, is attached to the bookblock by the endband slips (at an oblique angle of approximately 45 degrees from the spine) and added sewing-support slips, added following the same technique identified in B-32 and B-35, the difference being that in this instance, the bookblock was sewn on two supports, both of which have added slips at each end laced under each support and then laced through the cover, as follows: each of the slips of support number 1 was laced through two holes angled upwards, whilst each of the slips of support number 2 was laced through holes angled downwards (*Fig. 119*). The covers have joint-creases, with the entry lacing-holes pierced through them (*Fig. 164I* and *Fig. 119*). The length of the slips visible on the outside of the cover is approximately 8 mm. The attachment between the cover and the bookblock was reinforced by the transverse-joints and the pastedowns. It should also be mentioned that B-32 and B-35

belonged to the *Convento de San Francisco de Guadalajara* (Jalisco), whereas B-36 belonged to *Convento de San Agustín de Guadalajara* (Jalisco), which suggests that adding the sewing-support slips in this manner may have been in use in Guadalajara.

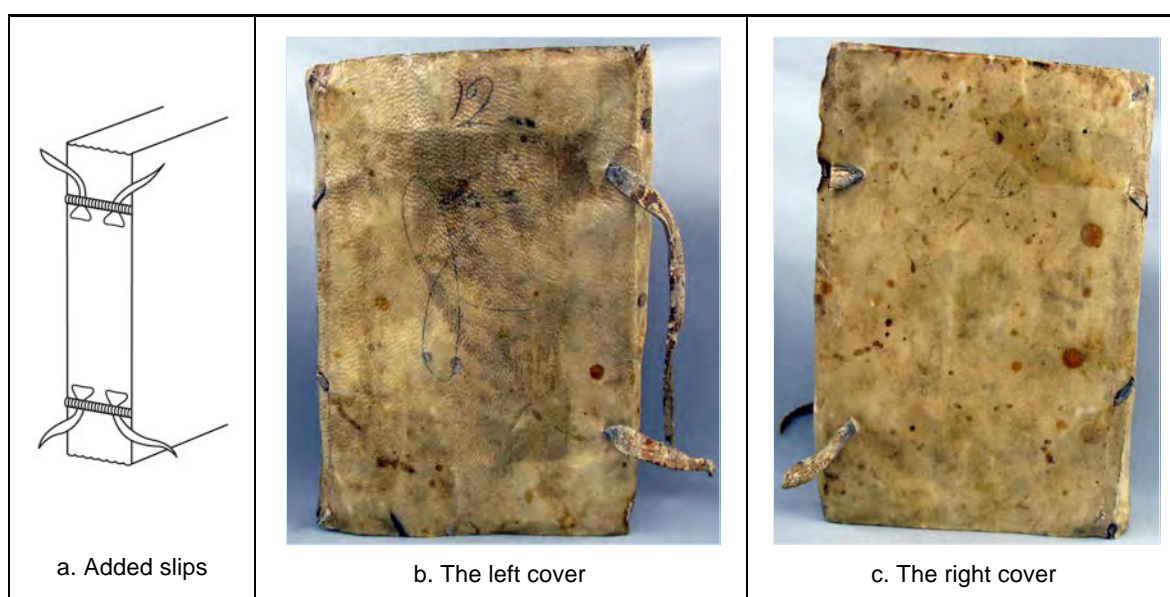


Fig. 119. Attachment of the cover by means of endband slips and added sewing-support slips of B-36

A similar technique for attaching added sewing-support slips by lacing them under the sewing-supports was identified in CB-9 in the comparative sample. The bookblock was sewn on six double, tanned-leather supports, with the slips cut at the joints. Support numbers 2 and 5 have added alum-tawed slips at each end laced under each support and then through the cover (*Fig. 120a*). Similarly, there is an added slip of alum-tawed skin at each end of each endband-core, stabbed through the spine toward the head- and tail-edge respectively (*Fig. 120b*). The attachment between the cover and the textblock is by means of the added endbands slips (laced at an oblique angle of approximately 45 degrees from the spine) and each of the added slips of supports number 2 and 5 that are laced through two holes arranged at right-angles to the spine. The covers have joint-creases and the entry lacing-holes are pierced through it (*Fig. 164i*). The length of the slips visible on the outside of the covers approximately 15 mm. In addition to the added slips, as has been mentioned in sections 3.1 Endleaves and 3.5 Endbands, there is evidence (such as the primary endband worked in two colours and the some fibres of tanned-leather adhered to the spine, among others) that might suggest that this book arrived From Europe already sewn, with the endbands in place and was, apparently, given covers in Mexico.⁵⁷³ Although it has transverse linings in all panels, the lining-joints are adhered over the added endband-core slips and the endleaves. The attachment is,

⁵⁷³ See sections 3.2 Structure (page 84) and 3.5 Endbands (page 148).

therefore, only reinforced by the pastedowns, adhered around their perimeters (head-, tail, and fore-edge) to the inside of the cover. It would appear that the transverse-lining joints at head and tail were used to hold the added slips in place, rather than as a reinforcement of the attachment between the cover and the bookblock.

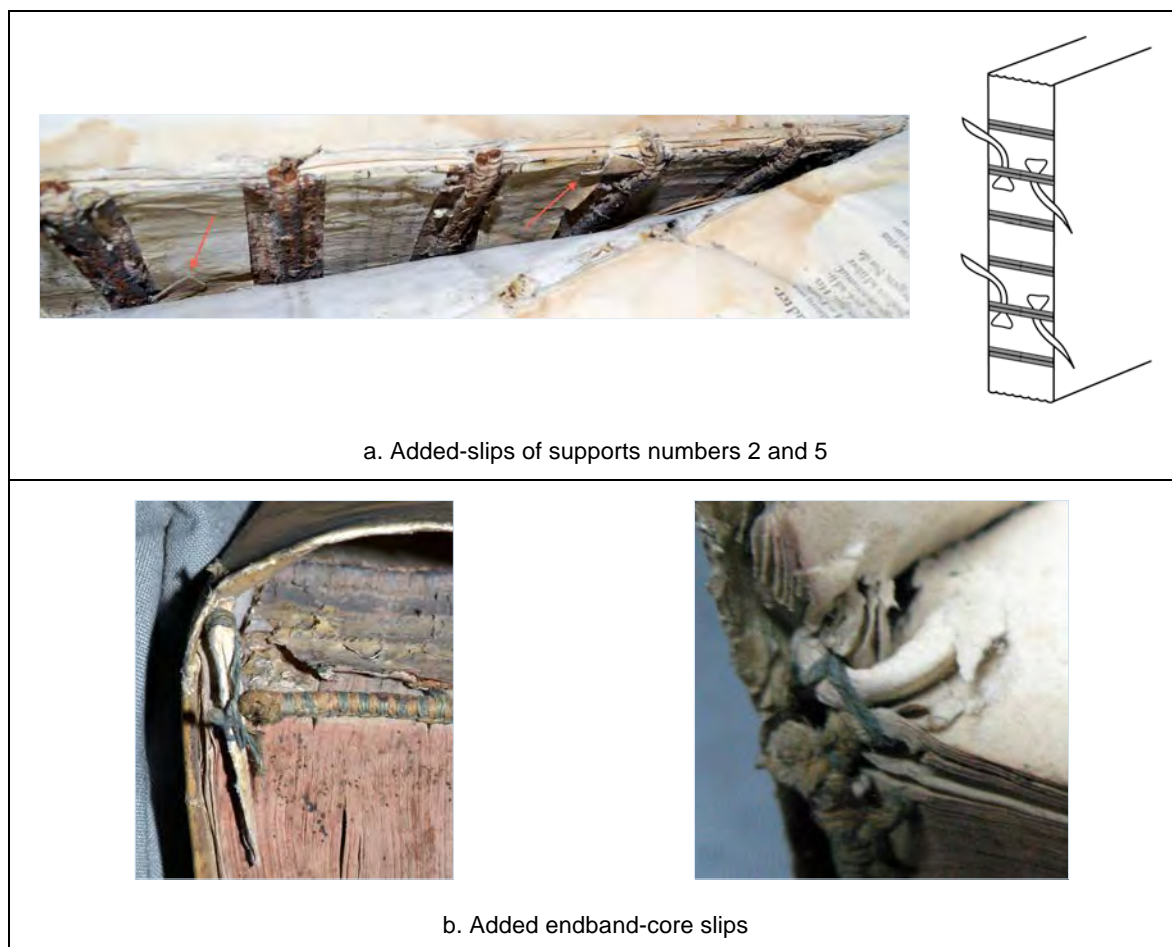


Fig. 120. Attachment by means of added sewing-support and endband-core slips of CB-9

Another instance with added support-slips laced under the sewing-supports and then through the cover is that of CB-22 in the comparative sample. The textblock was sewn on four single supports, of which supports 2 and 3 have added slips. Each added slip was made of a single strip of alum-tawed skin, and each end of this strip is laced under each end of sewing supports 2 and 3 (*Fig. 121a*). The head and tail kettlestitches in this book have also been cut away, and, in order to attach a new cover that fitted to the new size of the bookblock, the binder supplied endbands and added support-slips. The attachment between the cover and the bookblock is by means of the endband slips laced at an oblique angle of approximately 35 degrees from the spine, and each of the added slips of supports numbers 2 and 3 that was laced through two holes arranged at right-angles to the spine (*Fig. 121b*). The cover has joint-creases through which the entry lacing-holes were pierced (*Fig. 164i*). The length of the slips visible on the outside of the cover is

approximately 10 mm. The attachment is reinforced by the transverse-lining joints and the pastedowns adhered overall to the inside of the cover.

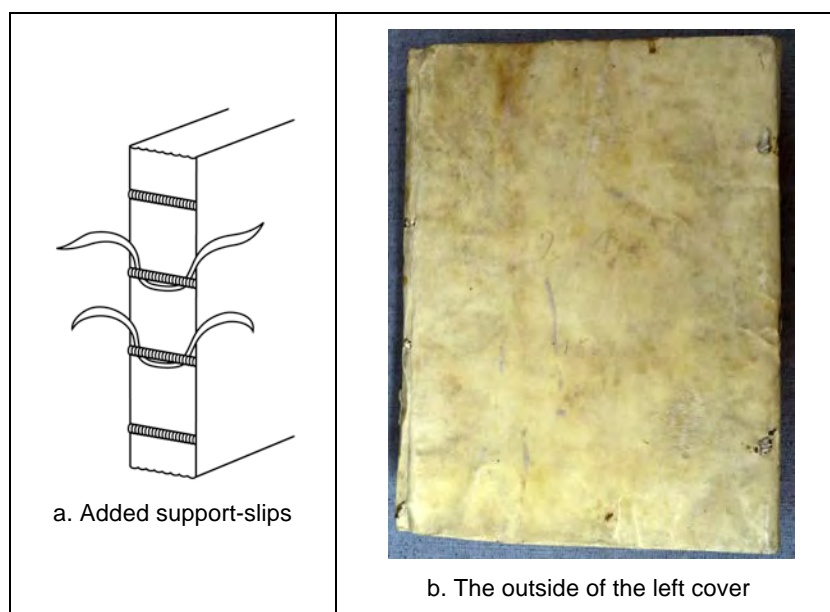


Fig. 121. Attachment of the cover of CB-22

The cover of CB-6 in the comparative sample, which was sewn on three alum-tawed supports, is attached to the bookblock by means of the endband slips (laced at an oblique angle of approximately 45 degrees from the spine), and each of the added-support slips of alum-tawed skin glued to support numbers 1 and 3, following a similar type of lacing of that identified in B-32 and B-35 in the main sample (*Fig. 164n.*). However, the technique of attaching the slips to the supports in CB-6 is different from that used in the books in the main sample: on support number 1, this is done with a single strip of alum-tawed skin adhered along the support across the spine, whilst on support number 3, two separate pieces of the same skin were adhered to the support, one at each end (*Fig. 122a*). The cover, made of a reverse parchment, has joint-creases, with the entry lacing-holes pierced through it. The length of the slips visible on the outside of the cover is approximately of 8 mm (*Fig. 122b*). The attachment between the cover and the bookblock was reinforced by the pastedowns pasted overall to the inside of the cover. It should be observed that, as the added-slips are glued to the sewing supports and are unlikely to remain glued in place, most of the attachment between the cover and the textblock is achieved by means of the endband-core slips and the pastedowns. As was mentioned in sections 3.1 Endleaves and 3.6 Cover, there is some evidence that might suggest that this book arrived from Europe already bound and was subsequently repaired in Mexico, and the cover was preserved and re-attached to the bookblock.⁵⁷⁴

⁵⁷⁴ See sections 3.1 Endleaves (page 72) and 3.6 Cover (page 162).

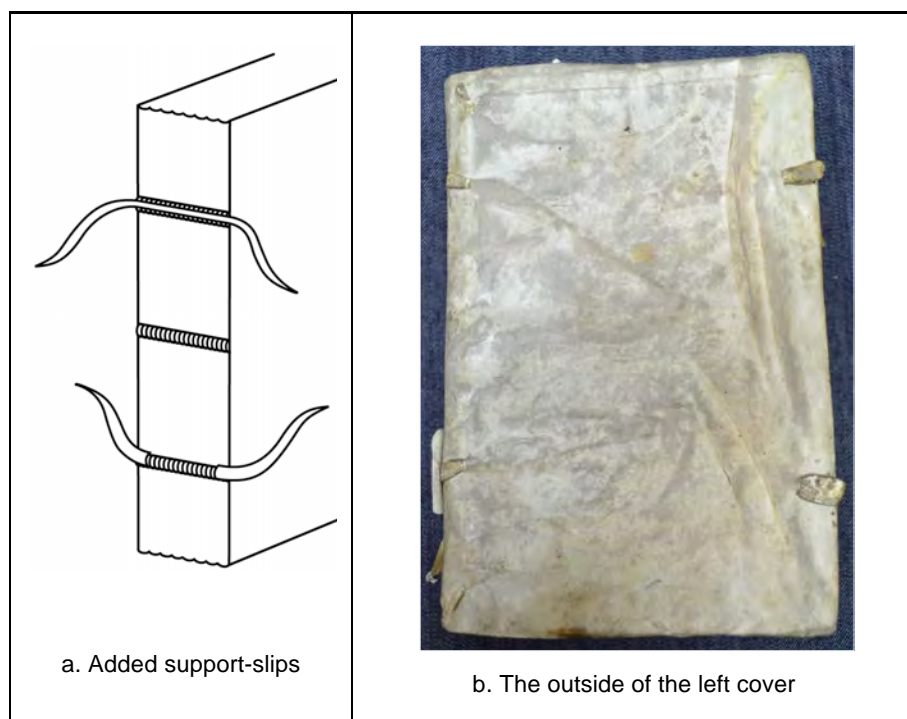


Fig. 122. Attachment of the cover by means of endband slips and added sewing-support slips of CB-6

The cover of B-33 is attached to the bookblock by means of the endband slips (laced at an oblique angle of approximately 45 degrees from the spine) and added slips laced under each of the three sewing supports and then through the cover,⁵⁷⁵ following an unusual pattern: in the left cover, the added slip of support 1 is laced through the cover through two holes in a line angled downwards from the spine whilst the added slips of supports 2 and 3 are laced through the cover through two holes angled upwards from the spine. In the right cover, each of the three added slips is laced through the cover through two holes arranged in a line angled downwards (*Fig. 164s.*). A probable explanation for this arrangement is that the binder pierced the holes for lacing on the right cover and then turned the book over head-to-tail to pierce the holes for lacing on the left cover, and made a mistake when piercing the holes for support 1 (*Fig. 123*). The covers have joint-creases, with the entry lacing-holes pierced through them. The length of the slips visible on the outside of the cover is of approximately 12 mm. In this case, the transverse-lining joints were adhered to the outermost endleaves, which were used in turn as pastedowns adhered around their perimeters only (head-, tail-, and fore-edge) to the inside of the cover.

⁵⁷⁵ I have no record of the technique used to attach the added slips.

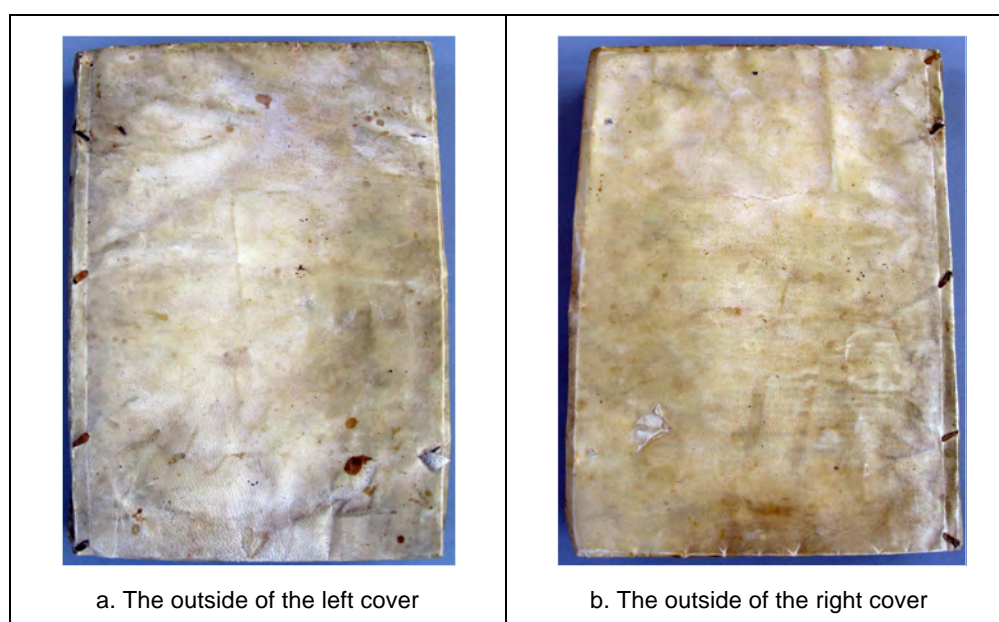


Fig. 123. Attachment of the cover of B-33

In addition to the endband slips laced at an oblique angle of approximately 45 degrees from the spine, the cover on B-37 is attached by means of slips stabbed through each joint which are arranged as follows: there are two pairs of slips of alum-tawed skin placed between sewing supports 1 and 2 and between supports 3 and 4 (*Fig. 124a*), and each of the stabbed slips closer to the head is laced through two holes angled downwards and each of the stabbed slips closer to the tail is laced through two holes angled upwards (*Fig. 164m*.) It should be mentioned that the endband cores are of tanned leather whilst the added supports are of tawed-skin, both laced through the cover. As a consequence, the outside of the cover shows a combination of tanned leather and alum-tawed skin, a common Italian practice, but also found in Spain⁵⁷⁶ that is reflected in this book. Although it is possible that the binder was looking for a specific appearance outside the cover, it is also possible that the stabbed-slips and the endbands were worked at different times, should also be consider.⁵⁷⁷ The attachment is reinforced by means of the spine-lining joints and the pastedowns both of which are pasted to the inside of the cover; however, the endleaves have been replaced and the arrangement of the spine lining is unusual, making it difficult to determine if the attachment was reinforced from the moment that the book was first bound.⁵⁷⁸ The covers have joint-creases, with the entry lacing-holes pierced through them. The length of the slips visible on the outside of the covers is approximately 10 mm (*Fig. 124*).

⁵⁷⁶ Information obtained from the course: *HEB 1500-1800*.

⁵⁷⁷ See section 3.5 Endbands (page 134).

⁵⁷⁸ See section 3.4 Spine and Lining (page 127) and Appendix 4a for details.

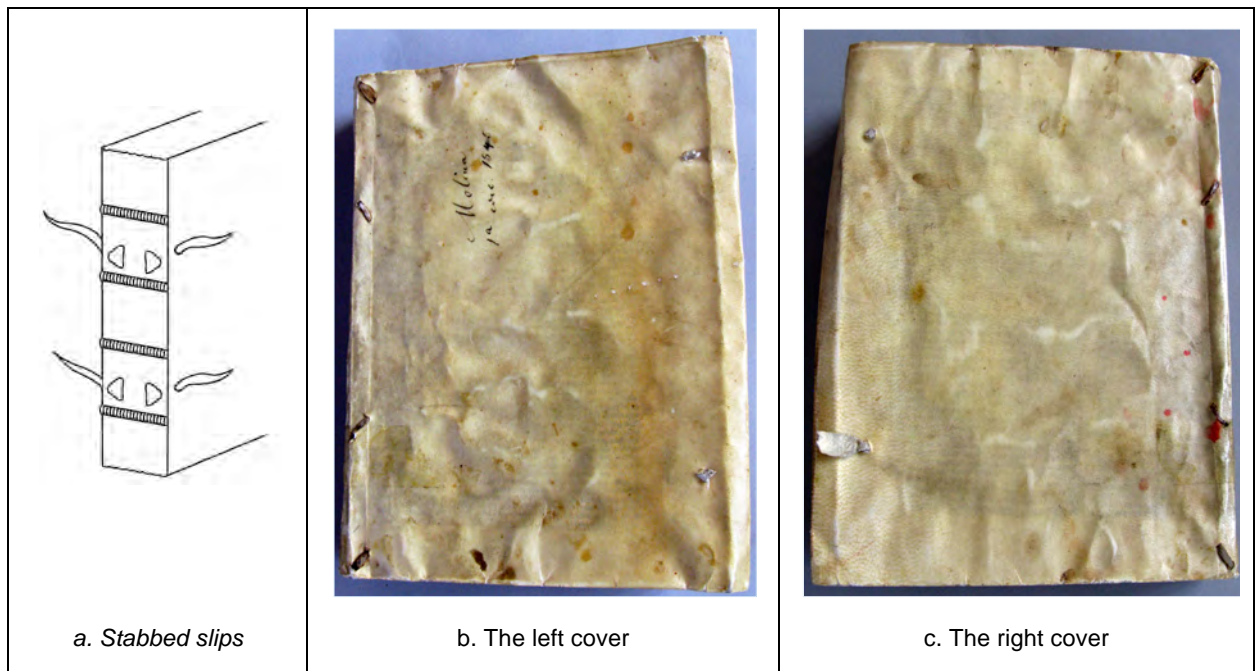


Fig. 124. Attachment of the cover by means of endband slips and stabbed slips of B-37

A similar instance is that of B-46, which was sewn on three supports with the slips cut at the joints; in this case, the cover is attached by means of the endband-core slips which are laced through two holes arranged at an oblique angle of approximately 45 from the spine and each of the slips of an added slip glued across the centre of the spine (Fig. 125), laced through the cover through two holes arranged at right-angles to the spine (Fig. 164g). It can only be assumed that the added slips are there to reinforce the attachment between the cover and the bookblock. It is clear that the spine-lining joints and the pastedowns supply most of the attachment between the cover and the bookblock, as the added slip is glued over the spine lining and can, therefore, by definition add little to the strength of the attachment and can only do so while the added slip remains glued to the textblock.⁵⁷⁹ It is, in fact, possible that the slip was added more for aesthetic than practical reasons. The covers have joint-creases, with the entry lacing-holes pierced through them. The length of the slips visible on the outside of the cover is approximately 10 mm.

⁵⁷⁹ The added slip is still attached to the textblock, therefore, it is still working.

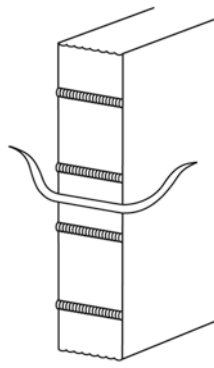


Fig. 125. Added slip in B-46

CB-30 and CB-45 in the comparative sample present two similar cases, in which the added slips were apparently supplied for an aesthetic reason, and could be described as sort of false slip since they were never attached to either the sewing supports or the bookblock. CB-30 was sewn on four single supports, and a false slip of alum-tawed skin has been laced through the cover at the same height as, and at each end of each sewing support, but none of them is attached to the sewing supports (*Fig. 126a*). Each of these false slips was laced through two holes arranged at right-angles to the spine. All the genuine slips at the right side and those of supports numbers 1 and 2 at the left side were cut off, or more probably broken, at the joints. Although the slips of supports numbers 3 and 4 survive at the left side, they are not used to attach the cover. Even though the appearance on the outside of the covers gives the impression that all the slips (i.e. of the endband cores and the sewing supports) were laced-in to attach the cover to the bookblock (*Fig. 126*), the attachment between these two elements, in fact, is by means of the endband-slips only (laced at an oblique angle of approximately 40 degrees from the spine), reinforced by the transverse-lining joints and the pastedowns adhered around the perimeter of the cover and the lining-joints. The inner ends of all the slips, both genuine and false, are trapped between the cover and the pastedowns. From an economic point of view, a possible explanation for this phenomenon is that the binder received the textblock already sewn, with some of the sewing-support slips broken at the joints, but with the cover in good condition. In order to re-attach the cover to the bookblock, he replaced the endleaves,⁵⁸⁰ and probably worked the endbands. The binder saved some time in the re-attachment processes, by lacing in a false slip through each of the entry lacing-holes already pierced in the cover, and secured them in place by adhering the endleaves and the lining joints inside the cover. This would have been less time-consuming work than would have been required to add slips to each of the six ends of the sewing supports where the slips were broken. In terms of the strength of the attachment, it is clear that the

⁵⁸⁰ The replacement endleaves are of type 1 of a seventeenth-century plain paper. This type of endleaves, which consist of a tipped single fold, can be added to the textblock by applying adhesive to the joints without disturbing any other element in the binding that is still functional.

false slips in this book do not contribute to it. The covers have joint-creases, with the entry lacing-holes pierced through them (*Fig. 164k*). The length of the slips visible on the outside of the cover is approximately 9 mm.

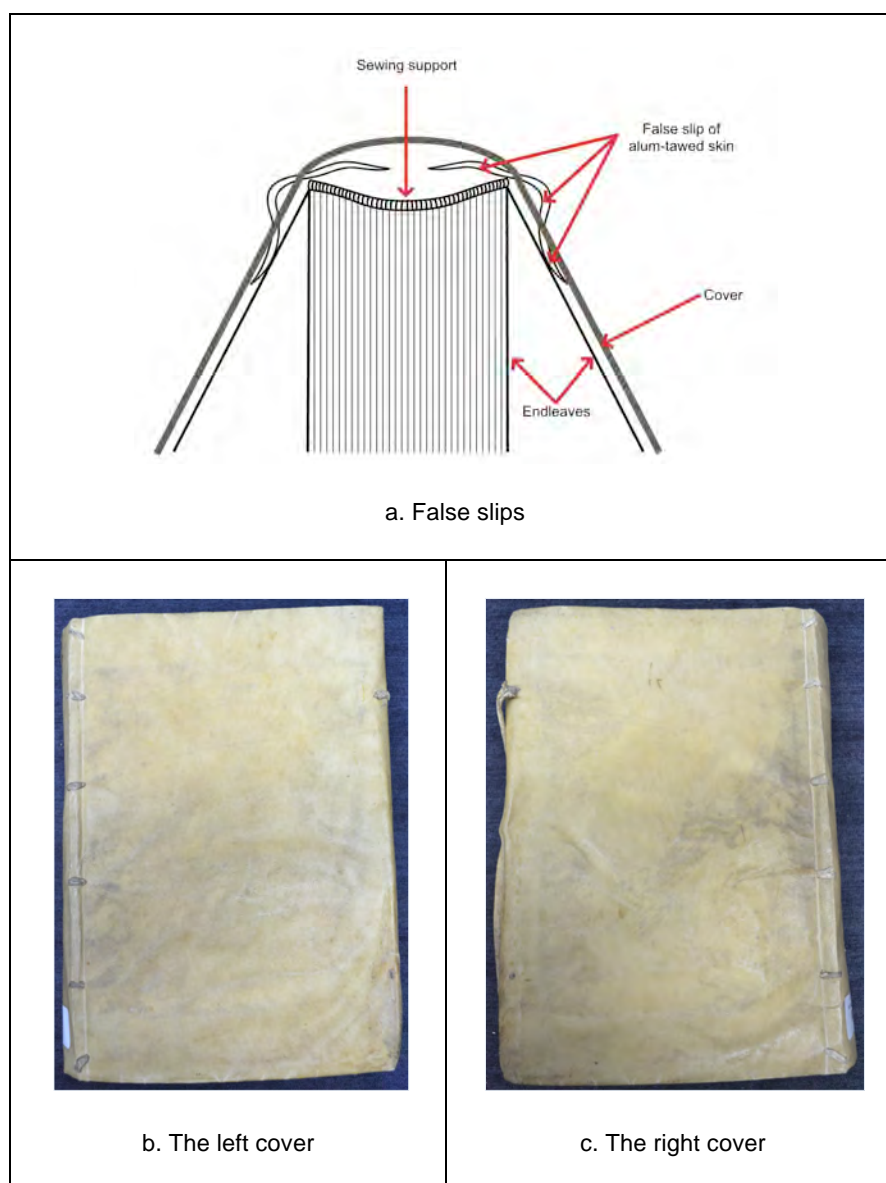


Fig. 126. The appearance outside the covers of CB-30

CB-45, by contrast, was sewn on four double alum-tawed supports, the slips of which were cut off at the joint. There are two strips of alum-tawed skin, each placed across the centre of panels 3 and 4 respectively. Each of the ends of the strip in panel 2 is laced through two holes angled downwards, whilst each of the ends of the strip in panel 4 is laced through two holes angled upwards. Each constitutes a sort of false band, as was described above, as they are not and never were attached to the bookblock. They are secured in place by the pastedowns. The attachment between the cover and the bookblock is by means of the endband-core slips lace through two holes arranged at an

oblique angle of approximately 50 degrees from the spine. It is reinforced by the pastedowns adhered overall to the inside of the cover. The covers have joint-creases and the entry lacing-holes are pierced through them. The length of the slips visible on the outside of the covers is approximately 10 mm (*Fig. 127* and *Fig. 164n*).

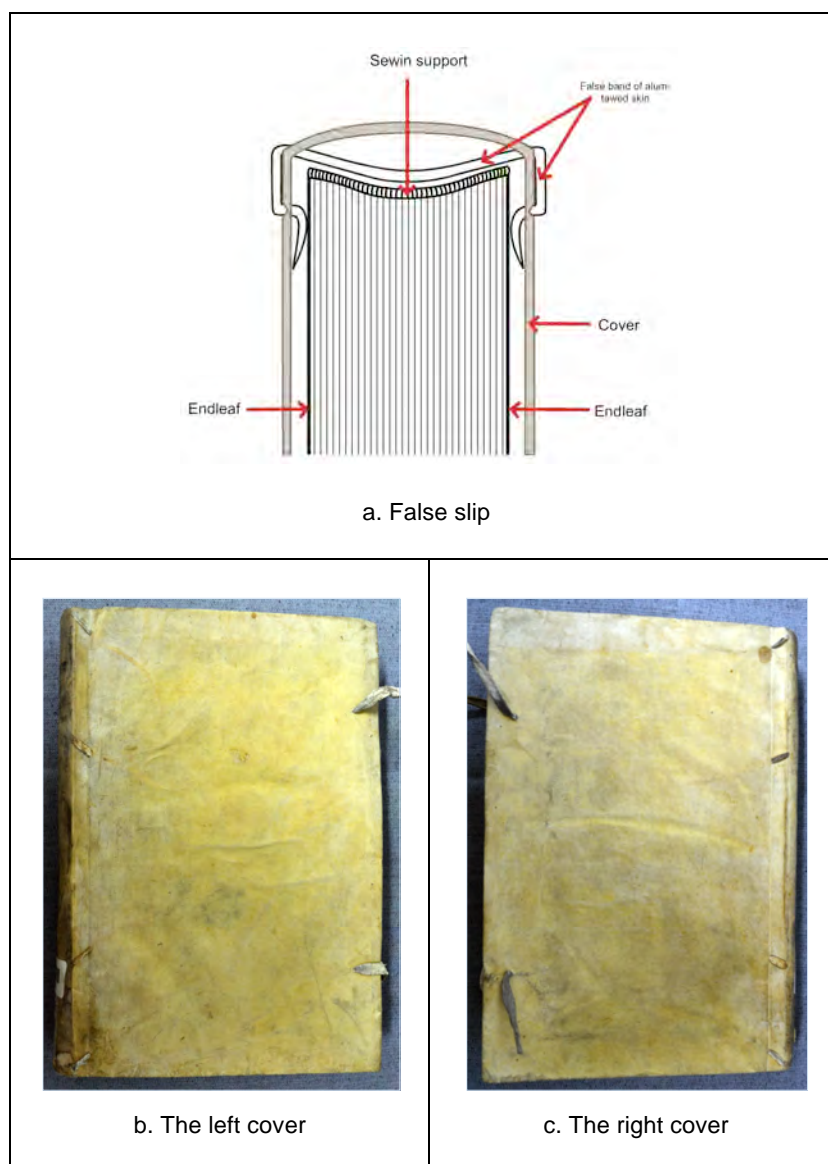


Fig. 127. Attachment of the cover by means of endband slips and false sewing-support slips of CB-45

It is worth noting that in five out of the six books in the main sample in which the cover is attached to the texblock by means of the endband-core slips and added supports,⁵⁸¹ the latter are laced at an oblique angle and not at right-angles to the spine, as is the case in all the examples in Groups A and B, which suggests that the covers on these books are likely to be later replacements, as the use of angled lacing appears to be a later

⁵⁸¹ Sewing-support slips laced at an oblique angle: B-32, B-33, B-35, B-36, and B-37.

development.⁵⁸² In addition, in B-36 and B-37, the attachment between the cover and the bookblock was reinforced by means of the joints of the transverse, parchment spine-linings, whereas in B-32, B-33 and B-35, the transverse-lining joints are adhered to the outermost endleaves, which were used in turn as pastedowns, adhered around their perimeters to the inside of the cover. The reinforcement of the cover attachment in these three books is supplied by the pastedowns only. However, in order to confirm when this type of attachment began to be used in Mexico, it would be necessary to analyse a larger number of books bound there after the sixteenth century.

Finally, in B-25, which was sewn on three single supports, the primary cover of parchment is attached to the bookblock by means of each of the slips of sewing supports 1 and 3 (select lacing) through four holes arranged as follows (*Fig. 128*): an exit hole close to the spine (1) and an entry hole (2), both at the same height as the sewing supports. The re-exit hole (3) and re-entry hole (4) were made in a line angled downwards from the exit hole (2). The lacing type, in addition to the fact that the primary cover of parchment has no turn-ins, suggests that covering the parchment cover with a full tanned leather might have been planned from the beginning. As has been said above, it is possible that the work was done by someone who was not trained as a binder, and who therefore used unconventional techniques to attach the primary cover of parchment and then cover it with tanned leather in order to give a higher status appearance to the book. The traditional relationship between the status, and therefore the cost, of the binding and the covering material comes from Europe. During medieval times, books bound in boards were, generally speaking, covered in leather or alum tawed skin; the cost of this kind of binding, as has been explained before, is the result of the complex processes needed to bind the book, which would have included the time taken to cut and shape the boards. When the printing press was introduced, the binding process changed to provide bindings that were easier and cheaper to construct, such as limp parchment covers (although it is possible to find limp parchment covers of high quality) (Pickwoad, 1994).

As has been explained above, the presence of a full leather cover on this book, over a parchment primary cover, might be explained as the preference by the owner of the book, who was, perhaps, closer to European practice in terms of the choice of covering material.⁵⁸³ Another possible explanation is that the relative cost of the materials changed at some point in New Spain.

⁵⁸² Information obtained from the course: *HEB 1500-1800*.

⁵⁸³ See section 3.6 Cover (page 179).

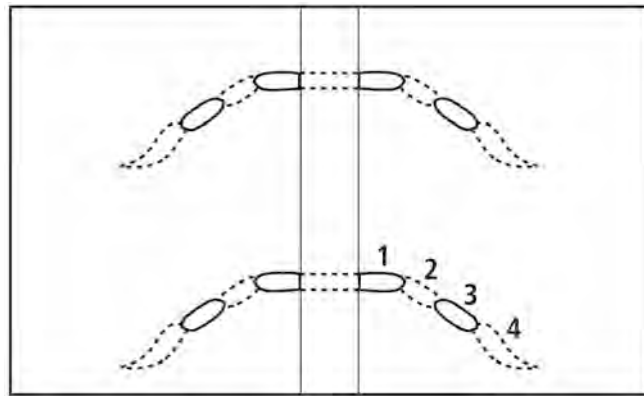


Fig. 128. Lacing pattern in B-25

As it has been shown, in order to attach the bookblock to the cover, three types of lacing were identified in those covers most probably made in the sixteenth century (Group A): the first is that in which the cover is attached by each of the endband-core slips through two holes arranged, in the majority of the cases, at an oblique angle of approximately 40 to 65 degrees from the spine. The second type is that in which the cover is attached to the textblock by the sewing-support slips only and, finally, the third type is that in which the cover is attached to the bookblock by means of both the endband-core and sewing-support slips; in this last, the endband-core slips were laced at oblique angles whereas the sewing-support slips were laced at right-angles to the spine, following a lacing pattern used across Europe during the sixteenth century. The attachment between the cover and the bookblock is, in the majority of cases, reinforced by the pastedowns and occasionally by the spine-lining joints. Finally, it is possible to find leather straps across the spine between the cover and the sewing-support slips, a distinctive feature of Spanish bindings in the sixteenth century and it is likely to be also a Mexican practice in the same period.

The features in the covers in Group B and C are markedly similar to those identified in Group A; although this suggests that the techniques used to make the covers remained without variation over a long period, the details identified in Group C, such as the presence of added slips and the lacing patterns used in Italy and Spain to attach the covers to the bookblock after the sixteenth century (sewing-support slips laced at either an upward or downward angle or in a combination of both), suggest that the covers were replacements added after the sixteenth century and raise the question of when bookbinding practices started to change in Mexico and when these particular changes became common.

It must also be considered, given the extensive use to which these books were subjected, that the covers may have been replaced more than once in later centuries; although the evidence could support this argument, especially in the case of those books in which the endleaves are also replaced, it would, once again, be necessary to analyse a larger

selection of books bound in Mexico during the sixteenth century and after in order to identify if there is any specific feature that could help to determine when the cover might have been made.

The three types of lacing identified in the main sample were also identified in the attachment between the cover and the bookblock in the comparative sample, the difference being that the endband-core slips are laced through two holes arranged within the range of approximately 45 to 60 degrees from the spine, a slight difference of approximately 5 degrees more at the lower limit than that of the range of lacing angles of the main sample. As was said in section 3.6 Cover, the covers of the books in both sets of samples show similar features. In addition, the approximately similar techniques used to attach the covers to the bookblocks in both sets of samples make it difficult to draw firm conclusions about when or where the books were covered. However, it should be remembered that there is one book in which the cover is made of a reverse parchment, a practice that was not identified in the main sample, attached to the bookblock by means of added slips and replaced right-endleaves, raising the possibility that this book arrived from Europe already bound and that the cover was re-attached in Mexico. Similarly there are three books in the comparative sample where the cover is attached to the bookblock by means of split-lacing, all of them printed in Spain where this type of lacing was in use from the sixteenth to the eighteenth century (Ligatus, 2013). It is therefore quite possible that these books arrived in New Spain already bound.

3.8 FASTENING

All of the thirty-nine books bound in limp, laced-case bindings in the main sample show one of the four types of laced fastening shown in Appendix 11. The ties are made of either alum-tawed (thirty-one books) or tanned leather (one book), laced through one or three holes pierced on the fore-edge through the covers. Finally, there are six books in which all the ties are missing which made it impossible to determine the material from which the ties were made.⁵⁸⁴ In the cases in which the ties have survived intact, it is possible to see that they were cut outside the cover to a long, tapered point.

⁵⁸⁴ Alum-tawed skin ties: B-1, B-2, B-3, B-7, B-8, B-9, B-10, B-11, B-13, B-18, B-19, B-20, B-22, B-23, B-24, B-26, B-30, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-41, B-42, B-44, B-45, B-46 and B-47. Tanned-leather ties: B-17. Missing ties: B-5, B-6, B-15, B-25, B-29, and B-43. Although the inner end of each tie survives in B-27, it was not possible to determine the material from which the ties were made.

All of the thirty-seven books in the comparative sample are fastened with ties, of which types 1 and 2 identified in the main sample were also identified in the comparative sample, whereas types 5 and 6 were only identified in the books in the comparative sample,⁵⁸⁵ as will be discussed below. In all the cases where all or part of the ties survive, they were made of alum-tawed skin. Finally, in two book, the ties are missing, making it impossible to determine the material from which they were made.⁵⁸⁶

The simplest lacing pattern is type 1, in which each tie is laced through a single pierced hole in the turn-in and the outer part of the cover (*Fig. 129a*). In some cases it was possible to see that the ties were adhered inside the cover in order to secure them in place. This type of fastening is present in twenty-two books.⁵⁸⁷ Of these books, eight had lost some or all their ties, leaving only the inner ends of the ties inside the cover, but enough to show that the type 1 pattern was used in these cases. Book B-17 is the only example in which the ties are of tanned leather and these use the type 1 lacing pattern already described. As the sewing supports and the endband cores are of alum-tawed skin and the endleaves are replacements, it is possible that the tanned-leather ties are also either replacements or were added at the same time as the endleaves were replaced to a binding originally without ties (*Fig. 129b*).

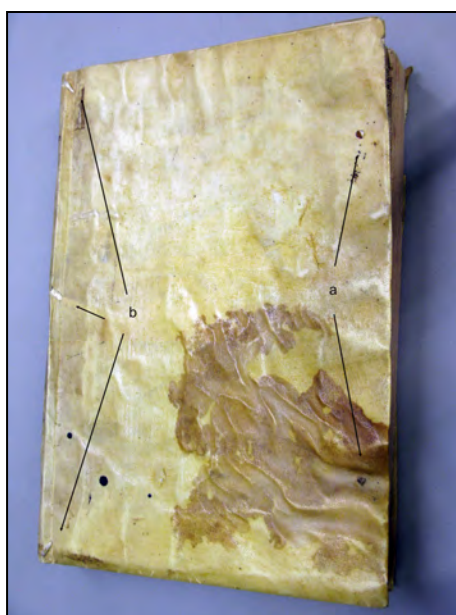


Fig. 129. Tanned-leather ties (a) and endband cores and sewing support of alum-tawed skin (b) in B-17

⁵⁸⁵ See Appendix 11.

⁵⁸⁶ Missing ties: CB-8 and CB-47.

⁵⁸⁷ Type 1: B-1, B-2, B-8, B-10, B-11, B-13, B-17, B-22, B-23, B-24, B-27, B-31, B-32, B-33, B-35, B-36, B-37, B-42, B-44, B-45, B-46 and B-47.

Twenty-six out of the thirty-seven books bound in limp, laced-case covers from the comparative sample also consists of two pairs of tapered, alum-tawed ties laced according to the type 1 pattern (*Fig. 130b*). From this group of twenty-six books, eight were printed in France, two in Italy, one in the Low Countries, one in Germany and the remaining fourteen in Spain.⁵⁸⁸ The results are not surprising because this type of lacing is commonly found on books printed in France and Italy (Pickwoad, 1995) and also appears to have been commonly used in Spain. However, it must be considered possible that the textblocks of these books arrived from Europe sewn, because in Europe it appears to have been a common practice to sell books as sewn bookblocks without covers (Pickwoad, 1994) and it may be that this practice is reflected in the sewing of the books of the comparative sample.⁵⁸⁹ It is evident that the covers of these books have very similar features to those found on the Mexican books, which suggests the possibility that the covers of these European books were made in Mexico, and with them, their ties.

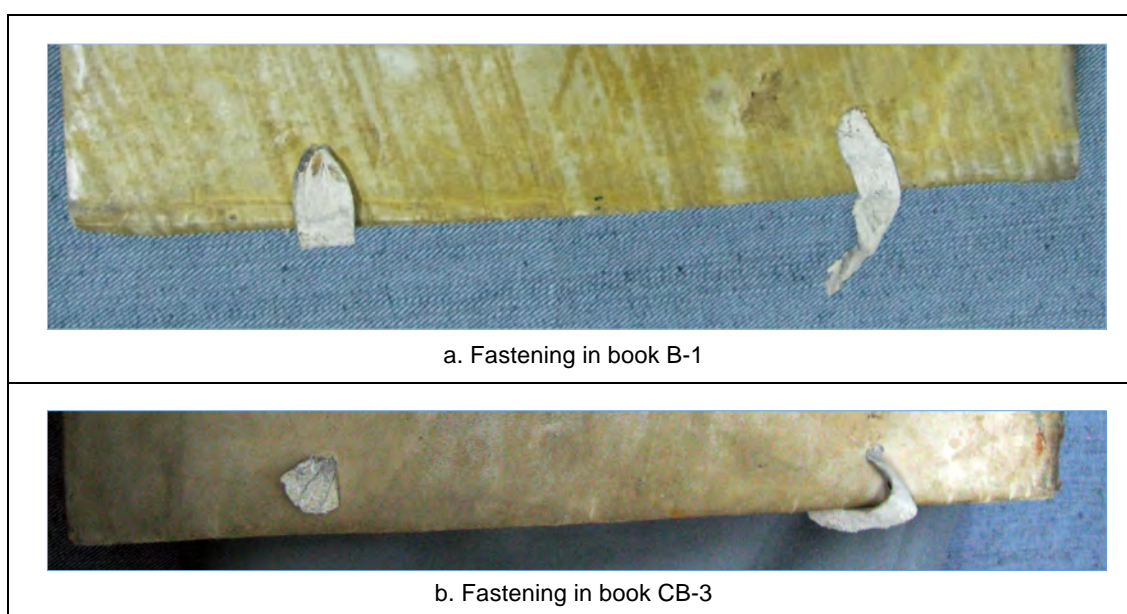


Fig. 130. Fastening type 1 pattern in B-1 and CB-3

The next most frequent type of fastening is number 2, which is found in seven books in the main sample (*Fig. 131*).⁵⁹⁰ In this type of laced-fastening, the inner end of the tie is placed between the turn-in and the outer part of the cover and the tie is brought around the edge of the turn-in and laced through the turn-in, the inner end of the tie and the

⁵⁸⁸ Printed in France: CB-1, CB-2, CB-3, CB-5, CB-6, CB-9, CB-17 and CB-43. Printed in Italy: CB-28 and CB-45. Printed in the Low Countries: CB-7. Printed in Germany: CB-18. Printed in Spain: CB-11, CB-12, CB-13, CB-16, CB-19, CB-21, CB-22, CB-23, CB-26, CB-27, CB-32, CB-33, CB-35 and CB-39.

⁵⁸⁹ The main difference identified between Mexican books and those from the comparative sample is that in the European books, independently of the place of printing, the use of double sewing supports of tanned leather is preferred, whereas the majority of the Mexican books is sewn on single, alum-tawed supports. This fact helps to support the idea that the European books retain their first structures and therefore, possibly their first covers. See section 3.2 Structure.

⁵⁹⁰ Type 2: B-7, B-18, B-19, B-26, B-30, B-34 and B-38.

cover. This kind of fastening is also found in seven books from the comparative sample, from which two were printed in France and five are Spanish editions.⁵⁹¹ This can be read as the clear influence of a French and Spanish lacing technique reflected in the Mexican books (Pickwoad, 1995). It should be mentioned that this type of lacing was popular in Spain and therefore its presence in Mexican books can be explained.

There are six books in the main sample and two books in the comparative sample in which there are two pairs of single holes pierced on the fore-edge but without any part of the ties surviving.⁵⁹² It was therefore not possible to determine exactly how the ties were laced-in, because both the type 1 and 2 lacing patterns make use of a single hole.

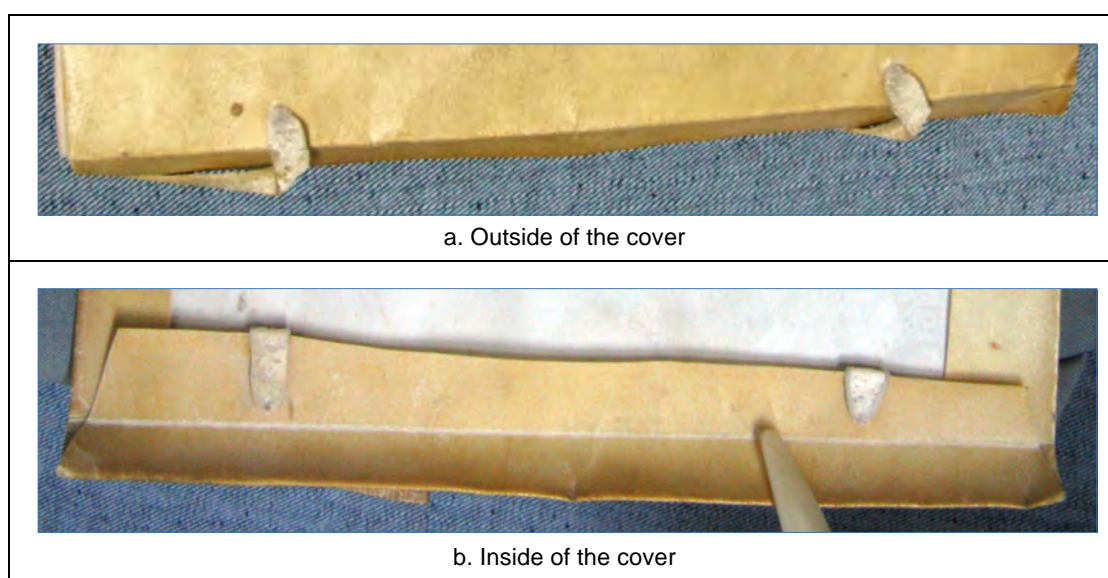


Fig. 131. Fastening type 2 pattern in B-7

The lacing patterns least often found in the books in the main sample are types 3 and 4, that consist of two pairs of ties, each laced through three holes arranged in a straight line at right-angles to the fore-edges. Types 3 and 4 show different lacing routes through the three holes, and both are commonly found on Italian and Spanish binding (Discussion with Professor Nicholas Pickwoad, following the visit to the Biblioteca El Escorial and the Real Biblioteca in Madrid, 2011. pers. comm.). The presence of these lacing patterns in books bound in Mexico is likely be due to a Spanish practice reflected in the books. Book B-9 uses lacing type 3 and the type 4 lacing path is found on B-41 (*Fig. 132*). In the case of books B-3 and B-20, the lacing route cannot be determined precisely, but the appearance

⁵⁹¹ Printed in France: CB-10 and CB-46. Printed in Spain: CB-15, CB-29, CB-30, CB-31 and CB-36.

⁵⁹² Two pairs of holes pierced on the fore-edge but without any part of the ties surviving: main sample: B-5, B-6, B-15, B-25, B-29 and B-43. Comparative sample: CB-8 and CB-47.

of the tie on the outside of the cover is the same as that created by both these types of lacing. Neither fastening types 3 nor 4 were identified in the comparative sample.

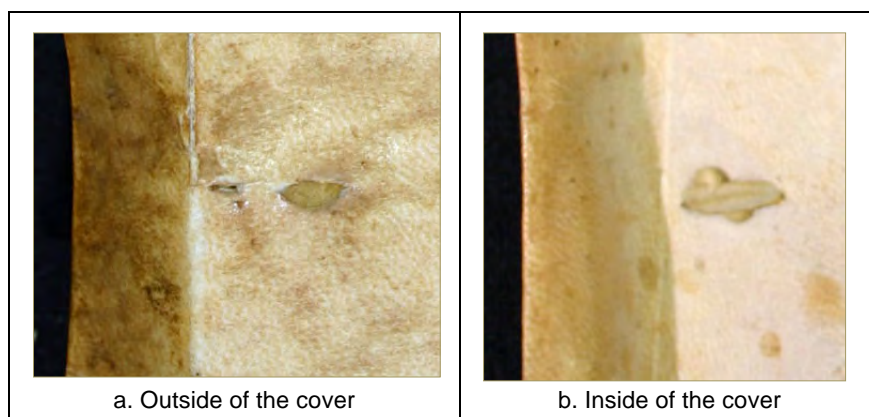


Fig. 132. Fastening type 4 pattern in B-41

There is one book, B-34, that clearly has replacement ties. These are laced according to the type 1 pattern, but it was possible to determine their status as replacements because there are two pairs of three holes arranged according to the type 3 and 4 lacing pattern in each cover. Each of the replacement ties is laced only through the hole closest to the fore-edge and the rest of the holes are not used. It is possible that in this case, the binder followed the practice that he was familiar with to replace the missing ties (*Fig. 133*).



Fig. 133. Replacement ties in B-34

Finally, CB-25 and CB-41 in the comparative sample show type 5 and type 6 patterns respectively, that were not found in the main sample. In the type 5 pattern, each tie was laced through two holes arranged in line at a right-angle to the spine (*Fig. 134a*), whereas in type 6 pattern, each tie was laced through a single hole through the cover and through two holes on the fore-edge turn-in (*Fig. 134b*). It should be noticed that both books are Spanish editions and their covers show some features that are typical of Spanish books in the sixteenth century: in the case of CB-25 the cover was made of a first-use parchment, with the hairside outside, with turn-ins at head-, tail- and fore-edges and cover extensions at the fore-edge that almost meet when folded over the fore-edge. Originally it had dark-brown tanned leather straps across the spine of which only small pieces remain between the cover and the sewing supports slips nearest to the head and across the spine. The

cover is attached to the bookblock by means of the endband-core slips and the sewing-support slips laced in a split-lacing pattern.⁵⁹³ This same features are shown by book CB-41 with the exception of the dark-brown tanned leather straps across the spine. This fact raises the possibility that these books arrived from Europe already bound.

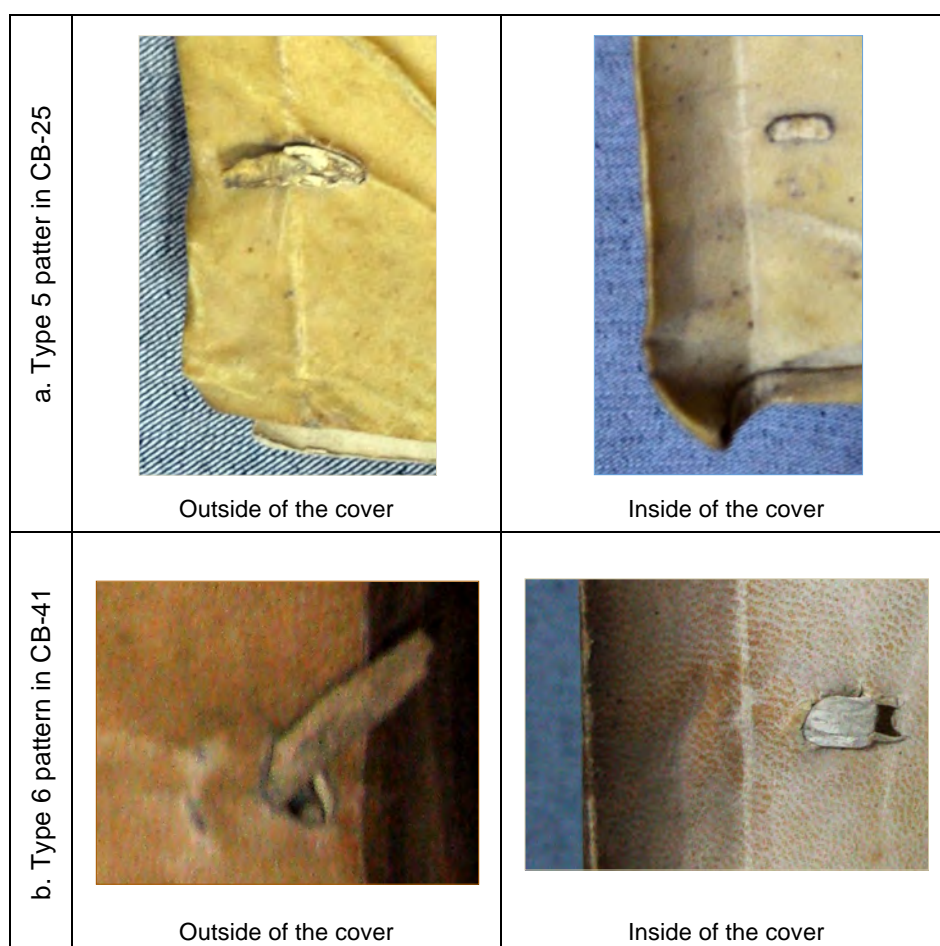


Fig. 134. Fastening type 5 and type 6 patterns

The examples recorded show that in most cases, the option chosen was a type 1 fastening, that was easy to carry out and therefore relatively inexpensive, whilst still fulfilling its primary function of holding the book shut. As said above, it was in common use throughout Europe.

With regard to the comparative sample, the books that have laced-fastenings show the same techniques and materials used on the Mexican sample, except for the use of tanned leather ties, which are not found in the comparative sample. The fact that the techniques used for fastenings in both sets of samples are essentially the same means that it is possible that the books from the comparative sample may have been covered in Mexico.

⁵⁹³ See section 3.7 Cover Attachment (pag 196).

However, the possibility that CB-25 and CB-41 in the comparative sample arrived from Europe already sewn should be considered.

It must be mentioned that when, in any bookbinding workshop, it was necessary to bind a large number of books with the same characteristics, the binding techniques were likely to remain the same for all of them; that is to say, the work of binding became to some extent mechanical in order to accelerate the binding process and, therefore, to bring economic benefits. This would suggest that the great variety of different lacing techniques used to secure the fastenings identified in the sample indicates that at least an equal number of bookbinding workshops had been established in Mexico.

3.9 TITLING

Thirty-five books in the main sample (89.74% of the books) show manuscript titling on the spine. The titles on most of the books run from head to tail (twenty-three books) and in four of them, from tail to head. In five of them the title was written from left to right across spine (*Fig. 135*), and in the remaining three books, the direction of the writing could not be identified.⁵⁹⁴

Thirty-five books from the comparative sample show manuscript titling on the spine (94.5% of the books), of which twenty-one have titles written from head to tail, including thirteen Spanish editions.⁵⁹⁵ In one book, printed in France, the direction of the title is from tail to head along the spine, and in nine books the title was written across the head-edge of the spine (*Fig. 135*). The books of this last group were printed in diverse countries: the Low Countries, France, Italy and Spain. Finally, the direction of the writing could not be identified in four books.⁵⁹⁶ Comparing both sets of samples, the results are similar in both cases: titles written from head to tail along the spine are preferred and it might be seen as reflecting Spanish influence in the Mexican books. However, the features of the cover and its attachment to the bookblock⁵⁹⁷ are so similar in both groups of samples that it is difficult to determine if those books in the comparative sample arrived from Europe with their covers or if they were covered and titled in Mexico.

⁵⁹⁴ From head to tail: B-3, B-6, B-7, B-10, B-11 B-13, B-15, B-17, B-22, B-23, B-24, B-27, B-30, B-31, B-32, B-35, B-37, B-38, B-42, B-43, B-44, B-45 and B-46. From tail to head: B-29, B-33, B-34 and B-36. From left to right across the spine: B-1, B-2, B-8, B-18 and B-47. Direction not identified: B-5, B-9, and B-19.

⁵⁹⁵ From head to tail: CB-1, CB-2, CB-5, CB-9, CB-10, CB-11, CB-12, CB-13, CB-21, CB-22, CB-23, CB-26, CB-28, CB-29, CB-30, CB-33, CB-35, CB-41, CB-43, CB-46 and CB-47. Spanish edition: CB-11, CB-12, CB-13, CB-21, CB-22, CB-23, CB-26, CB-29, CB-30, CB-33, CB-35, CB-41 and CB-47.

⁵⁹⁶ From tail to head: CB-3. From left to right across the spine: CB-7, CB-17, CB-19, CB-25, CB-27, CB-32, CB-36, CB-39 and CB-45. Direction not identified: CB-6, CB-8, CB-18 and CB-31.

⁵⁹⁷ Limp, laced-case cover, with the hairside outside, lapped mitres at the corners, with the fore-edge turn-in over the head and tail turn-ins, attached to the bookblock by the endband-core slips and/or sewing-support slips laced through the cover.










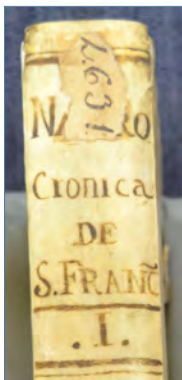
a. FROM HEAD TO TAIL					
Main Sample			Comparative Sample		
					
B-15	B-31	B-35	CB-9	CB-22	CB-23
b. FROM TAIL TO HEAD					
					
B-36			CB-3		
c. FROM LEFT TO RIGHT ACROSS THE SPINE					
					
B-2			CB-32		

Fig. 135. Examples of the direction of the titling in both sets of samples

It is also interesting to note that books four from the comparative sample, shows the title of the work written across the fore-edge,⁵⁹⁸ which suggests that this book belonged to a library in Europe before it arrived in Mexico (*Fig. 136*).



Fig. 136. Titling on the fore-edges in the books in the comparative sample

These books show that there were some instances of titles written on the fore-edge in Mexico, even though there are no books in the main sample with the title written in this way. Once again, the characteristics of the covers of these books and their attachment to the bookblock are so similar to those of the Mexican books that it is possible that the covers are replacements made in Mexico.⁵⁹⁹ This view could be supported by the fact that the covers of CB-2 and CB-9 are certainly replacements. In CB-2, the left side of the title

⁵⁹⁸ Titling on the fore-edge: CB-1, CB-2, CB-9 and CB-43.

⁵⁹⁹ Although the structural features of these bindings (i.e. all-along sewing on double supports of either tanned leather or cord) appear to be the first that the books received and are not typical of Mexican binding, the characteristics of the covers (limp, laced-case covers of parchment, with the hairside outside, with lapped mitres at the corners with the fore-edge turn-ins over the head and tail turn-ins) resemble those of the Mexican covers in the main sample. The bookblock is attached to the cover by the endband-core slips which are laced through the cover. In CB-9, although the sewing supports were cut off at the joints, supports 2 and 5 have added slips laced through the cover.

is written across the fore-edge, showing that only the first part of a thicker textblock has survived (*Fig. 136b*). The full title would have read: *Operum D. Basilii Magni* (the rest cannot be worked out). In this case, the cover is made of a first-use parchment that suggests that the binder made a new cover that fitted to the reduced thickness of the textblock; however, it is not possible to determine whether the text was split in Mexico or in Europe. In the case of CB-9, the linings have been repaired and the new transverse linings are adhered over the original linings. It is also possible to see some leather fibres attached to the spine, in addition, both the endband cores and the sewing supports have added slips by which the limp, laced-case cover of parchment have been attached to the bookblock.⁶⁰⁰ It is clear, therefore, that this book was previously bound with a leather cover over boards and the present cover is a replacement.

Once the features of the letters used for the titles were analysed, it was possible to identify three styles of lettering:⁶⁰¹ black-letter, gothica in two books, gothica rotunda in six books, and uncial in three books (*Fig. 138a*),⁶⁰² styles which can be found among those published by Whalley (1982) and Brown (2007).⁶⁰³ It is worth noting that none of the cases show a pure style of writing, which suggests that those who were responsible for the lettering were influenced by existing models, but that they did not copy them accurately. For example, the lettering on book B-17, is in the style known as gothica rotunda, which was, perhaps coincidentally, the style that was used in the printing of the title-page of the book (*Fig. 137*).

⁶⁰⁰ See section 3.2 Structure (page 84).

⁶⁰¹ In order to determine the chronological use of each style of lettering used in the Mexican bindings, it is necessary to extend the study of the titling over the following centuries until they fell out of use. At the same time it is necessary to have a comparative sample of books that are known to have been bound in Spain and follow the use of these different styles of lettering over a long period so they can be compared with the Mexican books and establish precisely the influences of the lettering.

⁶⁰² Black-letter, gothica: B-6 and B-17. Gothica rotunda: B-15, B-32, B-33, B-34, B-35 and B-37. Uncial: B-13, B-36 and B-38.

⁶⁰³ With additional information from Garone Gravier (Historian of typography, IIB-UNAM, 2010. pers. comm.).

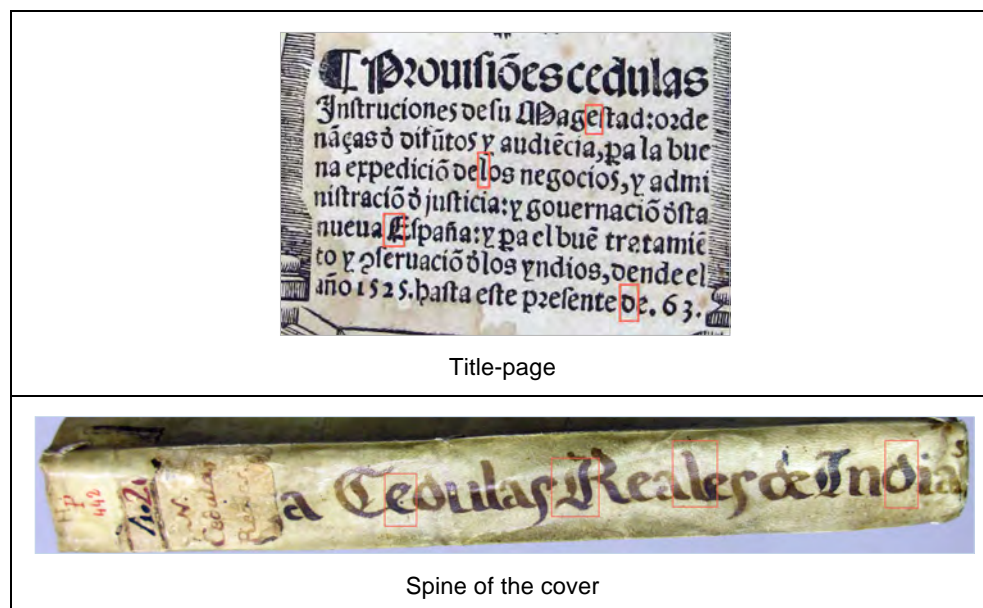


Fig. 137. Lettering in B-17

The style of lettering was also investigated in the books in the comparative sample, and the three styles of lettering identified in the books in the main sample were also identified in the books in the comparative sample: black-letter, gothica and gothica rotunda are each represented by eight books, whereas uncial style was identified in two books (Fig. 138b).⁶⁰⁴ If a comparison is made in terms of the style of lettering used in both sets of sample, it is possible to observe that gothica rotunda was preferred for the titling of the books in the main sample, in contrast with the titling of the books in the comparative sample, where black-letter, gothica and gothica rotunda were used in the same proportion.

⁶⁰⁴ Black-letter, gothica: CB-2, CB-5, CB-10, CB-21, CB-22, CB-26, CB-28 and CB-43. Gothica rotunda: CB-9, CB-11, CB-12, CB-13, CB-23, CB-29, CB-30 and CB-46. Uncial: CB-25 and CB-41.

	a. MAIN SAMPLE	b. COMPARATIVE SAMPLE
Black-letter, gothica	 B-6	 CB-5
Gothica rotunda	 B-15	 CB-23
Uncial	 B-36	 CB-41

Fig. 138. Styles of lettering used in the titling of the books in both sets of samples

In the cases of books B-33, B-35 and B-37 in the main sample, identified as belonging to the *Convento de San Francisco de Guadalajara* (Jalisco), the type of lettering used on all three is the same (gothica rotunda) with the same letterforms, something that suggests that they could have been written either by the same person or that the monastery had an established style of titling. (Fig. 139)

a. B-33	
b. B-35	
c. B-37	

Fig. 139. Gothica rotunda lettering in B-33, B-35 and B-37

This same phenomenon was observed in books CB-17 and CB-19 in the comparative sample, but this time, the titles in both books run from right to left across the head-edge of the spine, with seventeenth- or eighteenth-century lettering (*Fig. 140*).

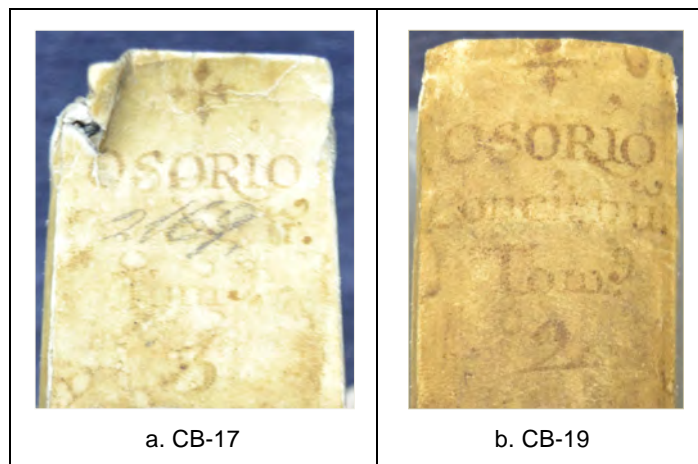


Fig. 140. Ttiling in CB-17 and CB-19

Another interesting case is book B-20 in the main sample, in which the titling is written across the left cover from the spine to the fore-edge. This style of titling was used in Italy and, given that Italian and Spanish bindings share many very similar features during the sixteenth century,⁶⁰⁵ it is possible that this kind of titling was also used in Spain and that is why it is also found on Mexican books.⁶⁰⁶ With regard to the style of lettering, only the thicker trace of each letter can be seen, whereas the thinner traces can only be guessed at. Because of the regular pattern of the vertical lines of the letters, and the density of the text, it would appear that the style of the lettering is a form of gothica rotunda (Italian Bolognese gothic or textualis rotunda) (Brown, 2007), with Spanish or Italian influence (*Fig. 141a*).⁶⁰⁷ This type of titling written across the left cover from the spine to the fore-edge was also identified in book CB-5 in the comparative sample, but in this case, the lettering is of the seventeenth- or eighteenth-century, a fact that might suggest that the lettering was written in Mexico (*Fig. 141b*).

⁶⁰⁵ Information obtained from the course: *HEB 1500-1800*.

⁶⁰⁶ In order to determine if this type of titling was in common use in Spain, it would be necessary to examine a large number of books bound in Spain.

⁶⁰⁷ With additional information from Garone Gravier, Historian of typography, IIB-UNAM, 2010. pers. comm.



Fig. 141. Titling written across the left cover from the spine to the fore-edge on B-20 and CB-5

In four books in the main sample, the titling is written from left to right across the spine.⁶⁰⁸ As is shown in *Fig. 142*, the lettering used for the title in book B-2 uses roman upper and lower case letterforms, with flat, sharp serifs (Updike, 1962). In the remaining three books, the style of lettering could not be identified. There are nine books in the comparative sample where the titling is also written from left to right across the spine, of which six books use seventeenth- or eighteenth-century lettering, one book uses an uncial style, whereas the style of lettering in the remaining two books could not be identified.⁶⁰⁹

It should be noted that the second half of the sixteenth century saw the introduction of bookcases with shelves designed to store the books vertically, and because of the advantages that this new method of storage offered to librarians and readers, in terms of more space for storage and easier access to the books, this practice spread rapidly through Europe. When the practice of storing the books vertically became common in each country, the direction of the titling might be changed, that is to say, instead of writing the titles along the spine, either from head to tail or vice-versa, they started to be written from left to right across the spine; therefore, dating precisely when the direction of the titles change is often difficult because it would depend on when the change was made in

⁶⁰⁸ Titling written from left to right across the spine: B-1, B-2, B-18 and B-47.

⁶⁰⁹ Seventeenth- or eighteenth-century lettering: CB-17, CB-27, CB-32, CB-36, CB-39 and CB-45. *Uncial*: CB-5. No identified: CB-7 and CB-19.

individual countries and libraries. The only firm conclusion that could be drawn from the change is that at some point in the history of the book in each country, books started to be stored vertically rather than horizontally. Based on the evidence, the titling written across the spine from left to right in the books in the main sample suggests that vertical storage was in practice in the Mexican libraries; however, when it became common can only be determined by the examination of a much larger number of books kept in Mexican libraries from the sixteenth century onwards.

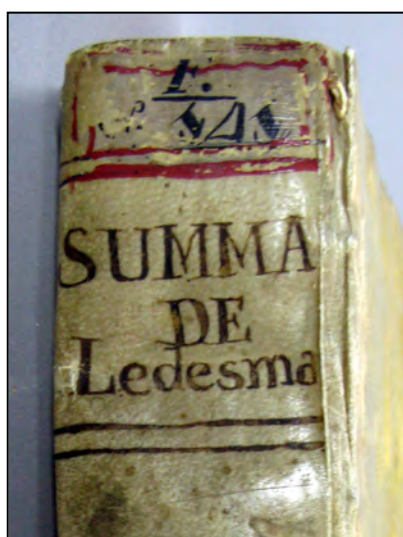


Fig. 142. Titling written from left to right across the spine on B-2

So far as the colour of the ink used for the titling of the books in the main sample is concerned, it can be said that the preference was for sepia and other dark colours, such as black, and dark-brown.⁶¹⁰ The comparative sample shows a similar preference, with sepia and black inks predominating (*Fig. 143*).⁶¹¹

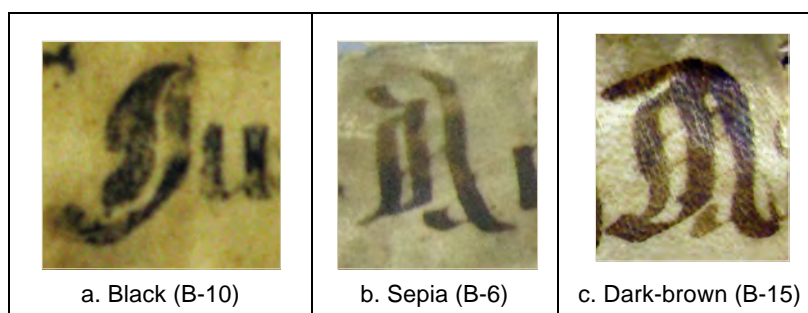


Fig. 143. Colours of ink used for the titling

⁶¹⁰ Sepia: B-1, B-2, B-3, B-6, B-7, B-8, B-9, B-11, B-13, B-18, B-19, B-20, B-27, B-30, B-31, B-35, B-36, B-37, B-42, B-44, and B-46. Black: B-10, B-23, B-24, B-29, B-32, B-33, B-34, B-38, B-43 and B-45. Dark-brown: B-15, B-17, B-22 and B-47.

⁶¹¹ Sepia: CB-2, CB-7, CB-9, CB-11, CB-13, CB-17, CB-19, CB-21, CB-25, CB-29, CB-30, CB-32, CB-33, CB-43, and CB-46. Black: CB-1, CB-3, CB-5, CB-10, CB-12, CB-22, CB-23, CB-26, CB-27, CB-28, CB-35, CB-36, CB-37, CB-41, CB-45 and CB-47.

As has been mentioned, the great majority of the Mexican printed books shows manuscript titling, written from head to tail along the spine in sepia or black colours, in black-letter gothic, gothica rotunda or uncial lettering. Finally, it should be observed that the titling must have been written after the cover was made, either before or after the cover was finally attached to the bookblock; in addition, a cover could receive one or more titles throughout its history and, in some cases, when the books were shipped already covered, the titling could be added in a different place from where it was bound. Therefore, it can be difficult to find a clear relationship between the date and place of printing and the titling, as is the case with the comparative sample. The features of the bindings of the books in the comparative sample are so similar to those of the Mexican books that it is not possible to determine if the books were bound in Mexico and if the titling in these books can offer any evidence that could be used to draw conclusions.

3.10 BRANDS⁶¹²

Of the thirty-nine books bound in limp, laced-cover of parchment, twenty-eight, or 71.8% of the books, are branded on one or more of their edges (*Fig. 144*). Eighteen were branded on the head-edge and three on the tail-edge whereas three are branded on all their edges and four have brands on two edges. All of the books in this last group contain the brands on the head- and tail-edges. Finally, there are eleven books that have no brands at all.⁶¹³

The use of brands was also investigated in the comparative sample: of the thirty-seven books, thirty, or 81% of them, are branded on one or more of their edges. Twenty were branded on the head-edge and five on the tail-edge, whilst only one book is branded on all its edges and four have brands on two edges. Of the last group of books, there are three that are branded on head- and tail-edges, whereas only one book is branded on the head- and fore-edges. The remaining seven books have no brands at all.⁶¹⁴

⁶¹² See Glossary.

⁶¹³ Branded books: on the head-edge: B-1, B-3, B-5, B-8, B-17, B-18, B-19, B-20, B-22, B-24, B-31, B-32, B-33, B-35, B-36, B-37, B-41 and B-47. On the tail-edge: B-10, B-38 and B-43. On all edges: B-44, B-45 and B-46. On tail- and head-edges: B-2, B-15, B-27 and B-42. Without brands: B-6, B-7, B-9, B-11, B-13, B-23, B-25, B-26, B-29, B-30 and B-34.

⁶¹⁴ Branded books: on the head-edge: CB-1, CB-6, CB-7, CB-8, CB-9, CB-11, CB-16, CB-17, CB-18, CB-19, CB-21, CB-23, CB-25, CB-27, CB-28, CB-30, CB-32, CB-33, CB-41 and CB-46. On the tail-edge: CB-5, CB-35, CB-36, CB-43 and CB-45. On all edges: CB-15. On tail- and head-edges: CB-13, CB-31 and CB-39. On head- and fore-edges: CB-26. Without brands: CB-2, CB-3, CB-10, CB-12, CB-22, CB-29 and CB-47.



Fig. 144. Branded edges in B-15, B-18 and B-31 (from left to right)

Book B-2 in the main sample, which belonged to the *Convento de San Gabriel de Tacuba*, (Miguel Hidalgo, Mexico City) is of interest because it is branded on the head-edge whereas the mark on the tail-edge was drawn in ink (Fig. 145a and 145b respectively). This could be explained by the kettlestitch at the tail end of the spine that has been cut away.⁶¹⁵ It is therefore possible that the margin at the tail edge was so narrow that in order to avoid burning the text by branding the edge, marking it with ink was preferred.

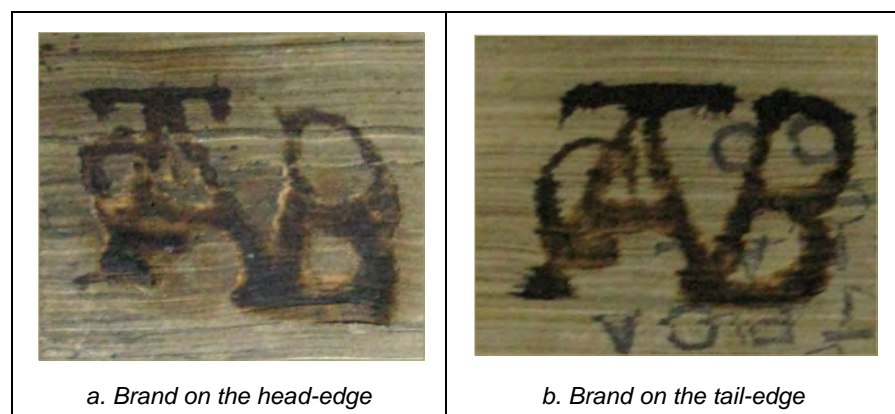


Fig. 145. Brands of the Convento de San Miguel de Tacuba, Mexico City, on the head- and tail-edges of B-2

⁶¹⁵ See section 3.3 Edges (page 107).

The main sample contains one book, B-15, whose brands belong to two different monasteries, that of *Convento de San Juan Teotihuacán* (Estado de México), whose brand is on the head-edge (*Fig. 146a.*), and that of the *Convento Grande de San Francisco de México* (Mexico City), whose brand is located on the tail-edge (*Fig. 146b.*)⁶¹⁶ The reason for this was that the senior monks were allowed to keep some books in their cells and when they were transferred to another convent or college, they were allowed to take with them the books which they happened to be studying at the time (González Ordáz, 2006).



Fig. 146. Brands on the head- and tail-edges of B-15

Another interesting example is that of book B-17, which has two different brands of *Convento Grande de San Francisco de México*, in Mexico City, on both the head- and tail-edges. Although it appears that the design of the brand changed over the time, there is no evidence, for the moment, that could explain the reason for such a phenomenon. There are five books in the comparative sample that share these two brands, of which CB-1, CB-7, CB-33 and CB-39 are branded on the head-edge only (*Fig. 147a.*) CB-13 also has these two brands, but in this case, one of them is on the head-edge and the other one is on the tail-edge (*Fig. 147b.*).

⁶¹⁶ See Appendix 13, Map 3.



Fig. 147. Two different brands of Convento Grande de San Francisco de México, Mexico City, on the edges of CB-33 and CB-13

Another example that has two different brands from the same monastery is CB-31, but this time the book belonged to the *Convento de Nuestra Señora de la Consolación de San Cosme*, in Mexico City. One of the two brands is on the head-edge, whilst the other is on the tail-edge (*Fig. 148*).

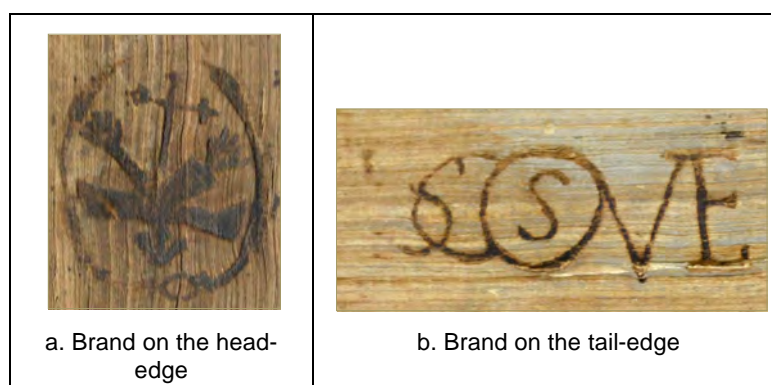


Fig. 148. Two different brands of the Convento de Nuestra Señora de la Consolación de San Cosme, Mexico City, on CB-31

The brands have been studied by librarians and book historians, though not all of them have been identified. By comparing the brands on the books studied against those that have been published in the catalogues by Krausse Rodríguez (1989), González Ordáz

(2006) and the *Catálogo de Marcas de Fuego* (2013) edited by the Benemérita Universidad de Puebla, in Table 6 can be shown that the following monasteries, colleges and seminaries are represented in both sets of samples.⁶¹⁷ Five brands were also found on books in the main sample and one on some books in the comparative sample that have not yet been identified.

MONASTERY	PLACE (State)	MAIN SAMPLE	COMPARATIVE SAMPLE
Convento de San Gabriel de Tacuba	Mexico City	X	—
Convento de Nuestra Señora de la Consolación de San Cosme	Mexico City	X	X
Convento Grande de San Francisco de México	Mexico City	X	X
Convento Grande de Nuestra Señora de la Merced	Mexico City		X
Convento de San Cosme de Recolectión de los Padres de San Francisco	Mexico City	X	—
Convento de Santo Domingo de la Ciudad de México	Mexico City	X	—
Convento de San Diego de México	Mexico City	—	X
Convento de San Agustín de México	Mexico City	—	X
Convento de San Sebastián de la Ciudad de México	Mexico City	—	X
Convento de Santa Ana de Coyoacán	Mexico City	—	X
Seminario Conciliar de México	Mexico City	X	—
Colegio de San Angel de Carmelitas Descalzos de Coyoacán	Mexico City	—	X
Colegio Apostólico de Propaganda Fide de San Fernando de México	Mexico City	—	X
Real Colegio Agustino de San Pablo de México	México City	—	X
Colegio Máximo de San Pedro y San Pablo	Mexico City	—	X
Hospicio de San Felipe Neri de la Ciudad de México	Mexico City	—	X
Convento de San Juan Teotihuacán	Estado de México	X	—
Convento del Santo Desierto del Monte Carmelo de Tenancingo	Estado de México	X	—
Convento de San Francisco de la Puebla de los Ángeles	Puebla	X	—
Congregación del Oratorio de San Felipe Neri	Puebla	X	—
Convento de San Agustín de Puebla	Puebla	—	X
Convento de San Agustín de Celaya	Guanajuato	X	—
Convento de San Pedro Alcántara de Guanajuato	Guanajuato	X	—
Convento de San Buenaventura de Valladolid	Michoacán	X	—
Convento de San Francisco de Guadalajara	Jalisco	X	—
Convento de San Agustín de Guadalajara	Jalisco	X	—

Table 6. Monasteries, colleges and seminars identified by brands

⁶¹⁷ See Appendix 12.

CONCLUSIONS

The cultural and technical exchanges that were taking place in New Spain, and therefore in Mexico, as a consequence of the arrival of the Spaniards, were reflected in all aspects of daily life and work, and new crafts that were unknown to the indigenous were introduced in order to satisfy the requirements of the manufactured goods needed in the daily life of the European settlers. From this perspective, the craft of bookbinding can be considered as evidence of these circumstances, that is to say, the craft was introduced in Mexico by the Spaniards in the sixteenth century and both its technical and commercial traditions were brought over from Europe.

The practice of the craft of bookbinding in Mexico was made necessary by the production of both archival and teaching materials that needed to be bound, the existence of books that came from Europe, both bound and unbound, and the formation of libraries, in addition to the introduction of the printing press in 1539. It can be concluded that the craft of bookbinding, as it was carried out in Europe, arrived in Mexico before the printing press, and was developed under the pressure of rapid changes that were occurring in New Spain. The newborn craft of bookbinding that started with the binding of archival material, needed to change in order to face the increasing demand for bound printed books. This was the consequence of two main facts: firstly that the booktrade was well established by the middle of the sixteenth century and secondly the establishment of the printing press only eighteen years after the Aztec capital was captured. These two factors impacted on the evolution of the craft in an accelerated manner, in contrast to the evolution of this same craft in Europe, where bookbinding had already a long tradition. Changes in bookbinding techniques in Europe, therefore, have followed a somewhat slower process of adaptation and transition in response to the demands of the booktrade and market for books in each particular period.

The books in the main sample show the results of these rapid changes of the craft in Mexico that are reflected also in the profusion of techniques which themselves, at the same time, reflect the search for local production methods that involved adapting technical knowledge to the available materials and labour. This interpretation is supported by the fact that the production of sixteenth-century printed Mexican books was presumably relatively expensive compared to European equivalents and they were, therefore, perceived as valuable books; in addition, the parchment used for their covers was, apparently, a relatively expensive material in Mexico in that period. On the other hand, however, these books were of a sort that was likely to be in regular, everyday use in the new society created in Mexico and they may therefore have been bound in limp, laced-case bindings following a well-established European tradition of binding such books in this

way. Similarly, the presence of materials of both Mexican and European origin that were used to bind books in Mexico during the sixteenth century, in addition to the intelligent, methodical and careful use of materials, reflect how binders faced the scarcity of the materials that were traditionally used to bind books, and made the best use of those available, of which, at the same time, those that were imported from Europe, were probably expensive.

So far as the techniques used to bind the Mexican printed books are concerned, the books in the main sample show, as is to be expected, the influence of Spanish bookbinding practices, but bookbinding in Mexico was influenced also by a wider area that includes Italy, France, Germany, Sicily and the Low Countries. The influences identified from each particular country in the Mexican limp, laced-case binding of parchment analyzed in this research are as follows:

From Spain:

- The use of animal-based adhesive on the spine of the bookblock
- To secure the first and last tiedowns of the endbands with a knot at the bottom of the tiedowns at the exit hole on the spine
- The use of dark-brown tanned straps across the spines of parchment covers

From Italy:

- The practice of adhering the perimeters and centre of the pastedowns
- The combination of tanned-leather supports and alum-tawed skin endband-cores
- The combination of plain and printed paper to make the spine linings within the same book
- To sew the endband tiedowns immediately below the linings
- The corners formed by folding first head- and tail-edges and then the fore-edge, without any mitering, resulting in four thicknesses at each corner
- The attachment of the cover to the bookblock by means of lacing the endband-core slips only
- The titling written across the left cover from the spine to the fore-edge

As the bookbinding practices were similar in the sixteenth century, it was not possible to determine whether the following features were of Italian or Spanish influence:

- To sew the textblock from left to right
- To adhere transverse-lining joints to the outermost endleaves
- The use of spine linings that fill approximately the entire height of the panels in which they are found

- The lacing patterns to attach the cover to the bookblock in which the sewing-support slips are laced at an angle either upwards or downwards or in a combination of both
- The types of lacing 3 and 4 (shown in Appendix 11)

From France:

- The use of linked-sewing on alum-tawed supports

From Germany and the Low Countries:

- The use of sewing supports of cord
- The use of narrow transverse spine-linings

From Sicily:

- The use of a reinforcement on the inside of the spine of the cover, made of the same height and width as the spine and held in place by tucking it under the head and tail turn-ins

The influence of Sicily and the Low Countries identified in the Mexican books might suggest that there were mobility and circulation of ideas and people among the Spanish colonies around the world, as was stated by Mazin (2007) and Thomas (2009). Both, Sicily and the Low countries, as well as Mexico, were under the control of the Spanish Crown in the sixteenth century. However, in order to determine how often this was reflected in bookbinding practices in Mexico, it would be necessary to analyze a large number of books that were bound in each of the Spanish colonies and compare the features of the bindings.

This diversity of techniques indicates that there were several binders working in New Spain and, possibly, of different origins. Furthermore, some books in the sample show differences in the quality of the components of the binding within the same book, which indicates that more than one binder may have worked on the binding of these books. Even though the methodology of archaeology applied to the analysis of the books in both sets of samples was thorough and complete, the limited size of the sample, in addition to the repairs carried out through the years, made it difficult to draw firm conclusions about all aspects the practise of bookbinding in Mexico in the sixteenth century; however, it allowed some patterns that started to emerge to be identified as typical of Mexican work, such as:

Structure:

- To sew on single supports of alum-tawed skin
- The use all-along sewing, both packed and not-packed
- To sew the bookblock from left to right

Edges:

- Solid colouring and sprinkling in red colour were preferred

Spine and lining:

- Slight-round and flat spines
- The use of animal-based adhesive on the spine of the bookblock
- The use of transverse spine-linings is preferred, but panel spine-lings can also be found
- Linings of both types that fill approximately the entire of the height of the panel

Endbands:

- To work the endbands with back beads, pack-sewn, over either crushed or twisted alum-tawed cores, with the slips laced in.
- To work the tiedowns below the kettlestitches, through the linings and placed in random positions in the bookblock.
- To secure the first and last tiedowns of the endbands with a knot at the bottom of the tiedowns at the exit hole on the spine

Cover:

- Made of parchment, with the hairside outside, either with or without joint-creases
- Turn-ins at head, tail and fore-edge
- Cover extensions folded over the fore-edge of the bookblock at an oblique angle with square ends
- Turn-ins with lapped mitres at the corners, with the fore-edge turn-ins over the head and tail turn-ins

Cover attachment:

- The cover could be attached to the bookblock by three types of lacing:
 - a. By means of the endband-core slips laced through two holes arranged, in the majority of the cases, at an oblique angle of approximately 40 to 65 degrees from the spine.
 - b. By means of the sewing-support slips only laced through two holes arranged at right-angles to the spine
 - c. By means of the endband-core and sewing-support slips, in which the endband-core slips were laced at oblique angles whereas the sewing-supports slips were laced at right angles to the spine
- To reinforce the attachment between the cover and the textblock by means of the adhesion of the pastedowns and/or spine-lining joints. This reinforcement is more frequent when the attachment is by means of the endband-core slips only, but can be found in the other two types of attachment.

Fastening:

- Laced-fastening of type 1 (shown in Appendix 11)
- The use of tapered, alum-tawed ties.

Titling:

- The use of manuscript titling on the spine of the cover running from head to tail along the spine, in sepia or black colours, in black-letter gothic, gothica rotunda or uncial lettering

In the case of the *endleaves*, although it was possible to determine that they mostly consist of a single component, in which, if there were two or more leaves, the outer leaf at each side could be used as a pastedown, either adhered overall to the inside of the cover or adhered to the cover around the perimeter only. They are made either of re-used printed paper from European editions or plain, handmade paper, also of European origin. However, the variety of endleaf types identified in such a small sample makes it impossible to establish which of them represents a common practice in Mexico.

The possibility that books that arrived in Mexico already bound could have been used as models to be followed by the binders who were working in Mexico was also considered in this research, but although the bindings of the books analysed in the comparative sample were found to share similarities with the Mexican bindings, it was impossible to draw firm conclusions to support this hypothesis. However, through the analysis of the bindings of the books in the comparative sample, it was possible to identify the following features that were not identified in the books in the main sample:

- Sewing-support slips that were not laced in, were left inside the cover trapped by the pastedowns
- A combination of parchment spine-linings at head and tail and paper linings in the rest of the panels
- Transverse spine-linings placed in select panels within the same book
- A combination of panel and transverse spine-linings within the same book
- The use of printed parchment to make the panels
- Primary endbands sewn without beads but with front beads and tiedowns, using two threads of different colours
- Endbands with a secondary sewing worked with two threads of different colour, over the primary sewing
- The use of reverse parchment to make the covers
- Covers attached to the bookblock by means of split-lacing either with or without dark-brown straps of tanned leather across the spines of limp, laced-case parchment covers
- Laced fastening of types 5 and 6 (shown in Appendix 11)

The features mentioned above, in addition to the covers that are similar to those shown by the books in the main sample, raise the possibility that the books in which they were found arrived from Europe either as sewn bookblocks and were covered in Mexico or arrived already bound and were repaired in Mexico. This interpretation is supported by the fact that the bindings of two books printed in France and three books printed in Spain⁶¹⁸ show typical bookbinding practices of the sixteenth century in the countries where they were printed.

In order to determine precisely the features of Mexican bookbinding practise in this period, it is necessary to continue with the analysis of a larger number of books, starting with those which arrived from Europe and were bound in Mexico. It will already be apparent that this study also raises a great many questions about the craft of bookbinding in Mexico that cannot be answered until further research is carried out and the results are published. As an example, there is still no answer for:

- Which type or types of endleaves could represent a typical Mexican pattern?
- How common was the used of silk thread to sew the textblock ?
- How and when the practice of the use of cord sewing-supports became common in Mexico?
- When the plough was introduced?
- Was there a tendency to use one specific technique and colour for the decoration of the edges of the books that belonged to a specific monastery?
- When the use of tanned-leather endband-cores was introduced?
- When the technique of making parchment was introduced in Mexico?
- When the practice of reinforcing the inside of the spine of the limp, laced-case covers with a piece of parchment?
- Are there any specific features in the preparation and use of limp parchment laced-case covers that could help to determine the date when they were made?
- When the attachment of the cover to the bookblock by means of lacing the sewing-support slips at either an upward or downward angle or in a combination of both was introduced?
- When books started to be stored vertically?
- What was the cost and the availability of the materials used to bind books?
- Whether the practices only identified in the comparative sample were introduced in Mexico?

⁶¹⁸ Printed in France: CB-9 and CB-43. Printed in Spain: CB-23, CB-25 and CB-41.

The present work also suggested new avenues for the research in the subject, such as:

- Which features of Spanish bindings could represent the typical practices of that country?
- Is the mobility and circulation of ideas and techniques that took place among the Spanish colonies reflected in bookbinding practice of each country that was under the control of the Spanish Crown?

Similarly, some of the more speculative interpretations of the evidence shown by the books in the books in both sets of samples studied in this thesis could change in the light of further research into the history of bookbinding in general and the history of Mexican bookbinding in particular.

BIBLIOGRAPHY

- Acosta, J. de (1985) *Historia natural y moral de las Indias*. Mexico City: Fondo de Cultura Económica.
- Ahuja Ormaechea, G. (1989) Fibras, hilados y tejidos. In: C. Valles Septién and G. Romandía de Cantú (eds.). *Los textiles de México: panorama histórico desde su inicio hasta nuestros días*. Mexico City: Celanese Mexicana, 43-64.
- Alfonso Mola, M. and Martínez Shaw, C. (2000) *El Galeón de Manila*. Sevilla: Aldesa / Ministerio de Educación, Cultrua y Deporte.
- Álvarez Peláez, R. (2000) La historia natural en tiempos del emperador Carlos V: La importancia de la conquista del Nuevo Mundo. *Revista de Indias*, **LX** (218), 13-31.
- Anders, F. et al., (1994) *El libro de Tezcatlipoca, señor del tiempo, libro explicativo del llamado códice Fejérváry-Mayer*. Mexico City: Fondo de Cultura Económica.
- Arellano Hoffmann, C. (2002) La posición social del escriba antes y después de la conquista española: el escriba mesoamericano y sus utensilios de trabajo. In: C. Arellano Hoffmann, *Libros y escritura de tradición indígena: ensayos sobre los códices prehispánicos y coloniales de México*. Zinacantepec, Estado de México: El Colegio Mexiquense, A.C. / Universidad Católica de Eichstat, 217-256.
- Arenas Frutos, I. (1994) El alumbre: un elemento poco conocido en la economía del México colonial. In: M. Castillo Martos (ed.). *Minería y metalurgia: intercambio tecnológico y cultural entre América y Europa durante el periodo colonial español*. Sevilla: Muñoz Montoya y Montraveta, 235-244.
- Arroyo Ortiz, L. (2008) *Tintes naturales mexicanos: su aplicación en algodón, henequén y lana*. Mexico City: UNAM-Escuela Nacional de Artes Plásticas.
- Asociación de Bibliotecas Nacionales de Iberoamérica (1995) *Historia de las bibliotecas nacionales de Iberoamérica: pasado y presente*. 2nd ed., Mexico City: UNAM.
- Banister, M. (1986) *Bookbinding as a handcraft*. New York : Sterling.
- Barbosa Cano, M. (2001) La industria textil prehispánica en Puebla. [Online]. *Arqueología industrial*, **4** (9) 3-5. Available from <<http://morgan.iaa.unam.mx>> [Accessed 26 April 2010].
- Barranco. M. M. (1999) Principales tipos y acabados de las pieles usadas en nuestros talleres. *Encuadernación de arte. Boletín de la Asociación para el Fomento de la Encuadernación*, **13**, 59-69.
- Barrio Lorenzot, J. F. del. (1920) *El trabajo en México durante la época colonial*. Mexico: Talleres Gráficos de la Nación.
- Barrio Lorenzot, J. F. del. (1921) *El trabajo en México durante la época colonial: ordenanzas de gremios de la Nueva España; compendio de los tres tomos de la compilación nueva de ordenanzas de la muy noble, insigne y muy leal e imperial ciudad de México*. Mexico City: Secretaría de Gobernación / Dirección de Talleres Gráficos.
- Barrios Peña, J. (1989) *Arte mestizo en América Latina: discurso y mutación cultural*. Buenos Aires: Fénix Editorial.

- Basabe Benítez, A. F. (2002) *México mestizo: análisis del nacionalismo mexicano en torno a la mestizofilia de Andrés Molina Enríquez*. Mexico City: Fondo de Cultura Económica.
- Basanta Campos, J. L. (ed). (1996) *Marcas de agua en documentos de los archivos de Galicia. Hasta 1600*. La Coruña: Fundación Pedro Barrié de la Maza / Conde de Fenosa.
- Becerra López, J. L. (1963) *La organización de los estudios en la Nueva España*. Mexico City: Editorial Cultura.
- Benemérita Universidad de Puebla. (2013) *Marcas de fuego de la Biblioteca "José María Lafragua" de la BUAP*. [Online]. Available from: <<http://www.marcasdefuego.buap.mx>> [Accessed 17 May 2010]
- Benítez, F. (1989) *La Nao de China*. Mexico: Cal y Arena.
- Benítez, F. (1991) *Los primeros mexicanos*. Mexico City: Ediciones Era.
- Bergallo, M. (1955) *La minería y la metalurgia en la América española durante la época colonial: con un apéndice sobre la industria del hierro en México desde la iniciación de la Independencia hasta el presente*. Mexico City: Fondo de Cultural Económica.
- Bermejo Martín, J. B. (ed.) (1998) *Enciclopedia de la Encuadernación*. Madrid: Ollero y Ramos Editores.
- Biblioteca Nacional de España (1992) *Encuadernaciones españolas en la Biblioteca Nacional*. Madrid: Biblioteca Nacional / Julio Ollero.
- Biblioteca Wittockiana. (1985) *Ocho siglos de encuadernación española*. Brussels: Wittockian Library.
- Bixler, P. (1969) *The Mexican library*. Metuchen: The Scarecrow Press.
- Blaser, L. (1994) The development of endpapers. *Guild of Book Workers Journal*, **32** (1), 1-29.
- Borgia Steck, F. (1944) *El primer colegio de América: Santa Cruz de Tlatelolco*. Mexico City: Centro de Estudios Franciscanos.
- Boudalis, Georgios (2004) The evolution of a craft : post-Byzantine bookbinding between the late fifteenth and the early eighteenth century from the libraries of the Iviron monastery in Mount Athos / Greece and St Catherine's monastery in Sinai / Egypt. PhD, University of the Arts London.
- Boudot, G. (1983) *La vida cotidiana en la América española en tiempos de Felipe II: siglo XVI*. Mexico City: Fondo de Cultura Económica.
- Briquet, Ch. M. (1985) *Les filigranes: dictionnaire historique des marques de papier: dès leur apparition vers 1282 jusqu'en 1600*. 2nd ed., New York: Hacker Art Books.
- Briquet, Ch. M. (2000) *Les filigranes: dictionnaire historique des marques de papier: dès leur apparition vers 1282 jusqu'en 1600*. Connecticut: Mansfield Centre / Martino Publishing, .
- British Jute Trade Federal Council (England) (1953) *Jute. The fibre of 101 uses*. Dundee.
- Brown, M. P. (2007) *A guide to Western historical script from antiquity to 1600*. The London: British Library.

Canudas Sandoval, E. (2005) *Las venas de plata en la historia de México : síntesis de historia económica, siglo XIX, vol.2*. Villahermosa, Tabasco: Universidad Juárez Autónoma de Tabasco.

Carpallo Bautista, A. (2000) *Análisis documental de la encuadernación española: repertorio bibliográfico, tesauro, ficha descriptiva*. Madrid: Asociación para el Fomento de la Encuadernación de Arte.

Carmona, C. and Juián, V. (2008) *Repertorio de impresos mexicanos en la Biblioteca Nacional de España, siglos XVI-XVII*. Mexico City: Colegio de México.

Carreño, A. M. (1944) *Un desconocido cedulaario del siglo XVI*. Mexico City: Imprenta M. León Sánchez.

Carrera Estampa, M. (1949) The evolution of weights and measures in New Spain. *The Hispanic American Historical Review*, **29** (1), 2-24.

Carrera Estampa, M. (1954) *Los gremios mexicanos: la organización gremial en Nueva España 1521-1861*. Mexico City: EDIAPSA.

Carrera Estampa, M. (1961) El obraje novohispano. *Memorias de la Academia Mexicana de Historia*, **20**, 148-171.

Carrión Gutiérrez, M. (1994) La encuadernación española en los siglos XVI, XVII y XVIII. In: H. Escolar (ed.). *De los incunables al siglo XVIII: historia ilustrada del libro español*. Madrid: Fundación Germán Sánchez Ruipérez / Pirámide, 345-386.

Carrión Gutiérrez, M. (1999) Encuadernación. In: *Summa Artis: Historia general del arte, tomo II*. Madrid: Espasa Calpe.

Castany Saladrigas, F. (1949) *Diccionario de tejidos*. Barcelona: Editorial Gustavo Gili.

Castañeda, V. (1949) Antecedentes y notas sobre la encuadernación valenciana en los siglos XVI y XVII. *Boletín de la Real Academia de Historia*, **CXXIV**, (2), 305-342.

Castillo Martos, M. (ed.) (1994) *Minería y metalurgia: intercambio tecnológico y cultural entre América y Europa durante el periodo colonial español*. Sevilla: Montraveta.

Castro Gutiérrez, F. (1986) *La extinción de la artesanía gremial*. Mexico City: UNAM-Instituto de Investigaciones Históricas-UNAM.

Cerda Farías, I. (2005) *En el pueblo de Tiripetio, en la provincia de Michoacán: la edad dorada... El siglo XVI*. Morelia: Universidad Michoacana de San Nicolás de Hidalgo.

Cervantes, E. A. (1933) *Hierros y forjadores poblanos*. Mexico City: Manuel Casas.

Cervantes, L. E. (1982) *El cobre y el hierro en la artesanía mexicana*. Mexico City: FONART / FONAPAS.

Cervera Xicotencatl, Ariadna and López Ortiz, María del Carmen (2000) *Identificación de materiales constitutivos y técnica de manufactura de los códices prehispánicos a través del análisis de las fuentes del siglo XVI*. BA, Escuela Nacional de Conservación, Restauración y Museografía, INAH.

Chávez, E. A. (1934) *El primero de los grandes educadores de la América, Fray Pedro de Gante*. Mexico City: Imprenta Mundial.

- Checa Cremades, J. L. (1998) *La encuadernación renacentista en la Biblioteca del Escorial*. Madrid: Ollero & Ramos.
- Churchill, W. A. (1935) *Watermarks in paper in Holland, England, France, etc., in the XVII and XVIII centuries, and their interaction*. Amsterdam: Hertzberger & Co.
- Cid Carmona, V. J. (2006) *Antonio Ricardo: impresor de dos ciudades, México y la ciudad de los Reyes*. MA. Facultad de Filosofía y Letras, posgrado en Bibliotecología y Estudios de la Información, UNAM.
- Ciudades mestizas: intercambio y cotidianidades en la expansión occidental. Siglos XVI al XIX: Actas del 3er Congreso Internacional de Mediadores Culturales*. (2001) Mexico City: Centro de Estudios de Historia de México, CONDUMEX.
- Clarkson, Ch. (1975) Limp vellum binding and its potential as a conservation type structure for the rebinding of early printed books: a break with 19th and 20th century rebinding attitudes and practices. In: *ICOM Committee for Conservation. 4th Triennial Meeting*. Venice: ICOM.
- Clarkson, Ch. (1994) Rediscovering parchment: the nature of the beast. In: N. Hadgraft and K. Swift (eds.). *Conservation and preservation in small libraries*. Cambridge: Parker Library Publications.
- Three classics of Italian calligraphy: an unabridged reissue of the writing books of Arrighi, Tagliente, Palatino*. (1953). New York: Dover Publications.
- Clavería, C. (2006) *Reconocimiento y descripción de encuadernaciones antiguas*. Madrid: Arco Libros.
- Clavijero, F. J. (2003) *Historia antigua de México*. Mexico City: Porrúa.
- Códice Mendieta: documentos franciscanos siglos XVI y XVII* (1892). Mexico City: Francisco Díaz de León.
- Códice Osuna: reproducción facsimilar del la obra del mismo título* (1947). Mexico City: Instituto Indigenista Interamericano.
- Conde y Díaz Rubín, J. I. (1970) El libro en México. *Artes de México*, **17** (131), 4-6.
- Consejo Superior de Investigaciones Científicas. (1991) *Documentos sobre política lingüística en Hispanoamérica*. Madrid.
- Contreras Sánchez, A del C. (1996) *Capital comercial y colorantes en la Nueva España*. Michoacán: El Colegio de Michoacán.
- Cortés, H. (2007) *Cartas de relación*. Mexico City: Porrúa.
- Cortés, A. (1935) *Hierros Forjados*. Mexico City: Museo Nacional de Arqueología, Historia y Etnografía.
- Cosío Villegas, D. (ed.) (1994) *Historia mínima de México*. Mexico City: El Colegio de México.
- Crosby, A. W. (1991) *El intercambio transoceánicos: consecuencias biológicas y culturales a partir de 1492*. Mexico City: UNAM-Instituto de Investigaciones Históricas. Mexico.

Cruz Cahgoyán, G., Olvera Coronel, L. P. and Velasco Figueroa, I. (2009) *Identificación de maderas utilizadas en las manufacturas de esculturas del siglo XVI al XX*. Paper presented at the 2º Foro Académico, ENCRyM-INAH, Mexico City, Mexico, 20 March. unpublished.

Daintith, J. (2008) *A Dictionary of Chemistry*. Oxford: Oxford University Press.

Day, L. F. (1978) *Penmanship of the XVI, XVII & XVIIIth centuries: a series of typical examples from English and foreign writing books*. London: Batsford.

Díaz del Castillo, B. (1961) *Aquí comienza la historia verdadera de la conquista de la Nueva España*. Mexico City: Fernández Editores.

Diehl, E. (1980) *Bookbinding: its background and technique*. New York: Dover Publications.

Durand, J. (1953) *La transformación social del conquistador*. Mexico City: Porrúa y Obregón.

Durand-Forest, J. (2002) Los oficios en la religión mexicana. *Estudios de Cultura Náhuatl*, **33**, 15-24.

Duverger, Ch. (1987) *La conversión de los indios de Nueva España*. Mexico City: Fondo de Cultrua Económica.

Edmondson, R. (2002) *Memoria del mundo. Directrices para la salvaguardia del patrimonio documental*. [Online]. UNESCO. Available from <<http://unesdoc.unesco.org>> [Accessed 2010]

Endean Gamboa, Robert (2008) *Entre lo temporal y lo espiritual: la biblioteca del convento Grande de San Francisco de México*. MA. Facultad de Filosofía y Letras, posgrado en Bibliotecología y Estudios de la Información, UNAM.

Escalante Gonzalbo, P. (2008) El Colegio de la Santa Cruz de Tlatelolco. *Arqueología Mexicana*, **XV** (89), 57-61.

Escolar Sobrino, H. (1998) *Historia del libro español*. Madrid: Gredos.

Escolar Sobrino, H. (ed.) (1994) *De los incunables al siglo XVIII: historia ilustrada del libro español*. Madrid: Fundación Germán Sánchez Ruipérez / Pirámide.

Esparza Lara, S. (1998) *Teoría de los hilados*. Mexico City: Limusa.

Esteva Fábregat, C. (1988) *El mestizaje en Iberoamérica*. Madrid: Alhambra.

Febvre, L. and Martin, H. J. (2000) *La aparición del libro*. Mexico: Ediciones del Castor.

Fernández del Castillo, F. (1982) *Libros y libreros en el siglo XVI*. Mexico: Fondo de Cultura Económica.

Fernández de Zamora, R. M. and Alfaro López, H. G. (2007) Reflexiones en torno de la bibliofilia y el patrimonio cultural: El caso de los impresos mexicanos del siglo XVI. *Infodiversidad*, **011**, 41-64

Fernández de Zamora, R. M. (2009) *Los impresos mexicanos del siglo XVI: su presencia en el patrimonio cultural del nuevo siglo*. Mexico City: UNAM-Centro Universitario de Investigaciones Bibliotecológicas-UNAM.

- Fernández Ledesma, G. (1930) *Calzado mexicano: cactlis y huarches*. Mexico City: Secretaría de Educación Pública.
- Fernández Serna, G. and Vite Bonilla, O. (1986) *La evolución del libro*. Mexico City: Instituto Politécnico Nacional.
- Ferredis Torres, J. (1955) *Cordobanes y guadamecies*. Madrid: Sociedad Española de Amigos del Arte.
- Florescano, E. and García Acosta V. (eds.) (2004) *Mestizajes tecnológicos y cambios culturales en México*. Mexico City: Centro de Investigaciones y Estudios Superiores de Antropología Social.
- Florescano, E. (2004) Introduction. In: E. Florescano and V. García Acosta (eds.). *Mestizajes tecnológicos y cambios culturales en México*. Mexico City: Centro de Investigaciones y Estudios Superiores de Antropología Social, 7-18.
- Florescano, E. (1981) La formación de los trabajadores en la época colonial, 1521-1750. In: P. González Casanova (ed.). *La clase obrera en la historia de México: de la colonia al imperio*. Mexico City: UNAM-Instituto de Investigaciones Sociales /Siglo XXI, 9-24.
- Foot, M. (2006) *Bookbinders at work: their roles and methods*. London: The British Library / New Castle, DE: Oak Knoll Press.
- Foot, M. (1998) *The history of bookbinding as a mirror of society*. London: The British Library.
- Fryer, C. A. et. al., (2000) Spanish and Italian watermarks in colonial Guatemala books. In: International conference on the history, function and study of watermarks. *Puzzles in paper: concepts in historical watermarks: essays from the International Conference on the History, Function and Study of Watermarks*. New Castle, DE: Oak Knoll Press / London: The British Library, 37-56.
- Galarza, J. (1990) *Amatl, Amoxtlí: el papel, el libro*. Mexico City: Editorial Tava.
- García Acosta, V. (ed.) (1995) *Los precios de los alimentos y manufacturas novohispanas*. Mexico City: CIESAS.
- García Aguilar, I. and Rueda Ramírez, P. (ed.) (2010) *Leer en tiempos de la Colonia: bibliotecas y lectores en la Nueva España*. Mexico City: UNAM-Centro Universitario de Investigaciones Bibliotecológicas.
- García Icazbalceta, J. (1886) *Bibliografía mexicana del siglo XVI: primera parte. Catálogo razonado de los libros impresos en México de 1539 a 1600. Con biografías de autores y otras ilustraciones: precedido de una noticia acerca de la introducción de la imprenta en México*. Mexico City: Librería de Andrade y Morales Suc.
- García Icazbalceta, J. (1889) *Nueva colección de documentos para la historia de México: Códice Franciscano, siglo XVI*. Mexico City: Antigua librería de Andrade y Morales Sucesores.
- García Icazbalceta, J. (1892) Códice Tlatelolco. In: J. García Icazbalceta. *Documentos franciscanos siglo XVI al XVII*. Mexico City: Imprenta de Francisco Díaz de León.
- García Icazbalceta, J. (1947) *Fray Juan de Zumárraga: primer obispo y arzobispo de México*. Mexico City: Porrúa.

- García Icazbalceta, J. (1963) *Relación de viajeros ingleses en la ciudad de México y otros lugares en la Nueva España: Siglo XVI*. Madrid: Ediciones José Porrúa Turanzas.
- García Icazbalceta, J. (1971) *Códice Mendieta: documentos franciscanos siglos XVI y XVII, tomo I*. Guadalajara: Edmundo Aviña Levy.
- García Martínez, B. (2001) La naciente Nueva España. In: J. Z. Vázquez (ed.). *Gran Historia de México Ilustrada*. Mexico City: Planeta, CONACULTA / INAH, 21-40.
- García Sánchez, M. (2004) El modo de vida lacustre en el Valle de México. In E. Florescano and V. García Acosta (eds.), *Mestizajes tecnológicos y cambios culturales en México*. Mexico City: Centro de Investigaciones y Estudios Superiores de Antropología Social. 19-90.
- Garone Gravier, Marina (2009) *Historia de la tipografía colonial para lenguas indígenas*. PhD. Facultad de Filosofía y Letras, UNAM.
- Gayoso Carreira, G. (1994) *Historia del papel en España*. Lugo: Diputación Provincial.
- Gibson, Ch. (1977) *España en América*. Barcelona: Grijalbo.
- Gibson, Ch. (2003) *Los aztecas bajo el dominio español 1519-1810*. Mexico City: Siglo XXI.
- Gil, F. (1993) *Primeras doctrinas del Nuevo Mundo: estudio histórico-teológico de las obras de Fray Juan de Zumárraga*. Buenos Aires: Publicaciones de la Facultad de Teología-Universidad de Argentina.
- Goffe, G. (c.1994) *Calligraphy made easy: a complete beginner's guide*. Bristol: Parragon.
- Gómez Álvarez, C. (2013) Comercio y comerciantes del libro en la carrera de Indias: Cádiz-Veracruz, 1750-1778. *Historia Mexicana*, **LVII**, (3), 621-667.
- Gómez Canedo, L. (1982) *La educación de los marginados durante la época colonial*. Mexico City: Editorial Porrúa.
- Gómez Canedo, L. (1993) *Evangelización, cultura y promoción social: ensayos sobre la contribución franciscana a los orígenes cristianos de México: siglos XVI-XVIII*. Mexico City: Porrúa.
- Gómez de Orozco, F. Mexican Books in the Sixteenth Century. *Mexican Art & Life*, **7**.
- Gómez Martínez, A. P. (2000) *Artes y oficios en la Nueva España*. Mexico City: CONACULTA.
- Gonzalbo Aizpuru, P. (1990) *Historia de la educación en la época colonial: la educación de los criollos y la vida urbana*. Mexico City: El Colegio de México.
- Gonzalbo Aizpuru, P. (2000) *Historia de la educación en la época colonial: el mundo indígena*. Mexico City: El Colegio de México.
- Gonzalbo Aizpuru, P. (2001) Convivencia, segregación y promiscuidad en la capital de la Nueva España. In: *Ciudades mestizas: intercambio y cotidianidades en la expansión occidental. Siglos XVI al XIX : Actas del 3er Congreso Internacional de Mediadores Culturales*. Mexico City: Centro de Estudios de Historia de México, CONDUMEX, 124-138

- González Angulo Aguirre, J. (1983) *Artesanado y ciudad a finales del siglo XVIII*. Mexico City: Fondo de Cultura Económica.
- González Arce, J. D. (2000) *Gremios, producción artesanal y mercado: Murcia, siglos XIV y XV*. Murcia: Universidad de Murcia.
- González Casanova, P. (ed.) *La clase obrera en la historia de México: de la colonia al imperio*. Mexico City: UNAM-Instituto de Investigaciones Sociales / Siglo XXI.
- González Ordáz, Cintia Elizabeth (2006) *Catálogo de Marcas de Fuego del Fondo Antiguo y Colecciones Especiales de la Biblioteca Central de la DGB de la UNAM*. BA. Facultad de Filosofía y Letras, Colegio de Bibliotecología y Estudios de la Información, UNAM.
- González Sánchez, C. A. (1999) *Los mundos del libro. Medios de difusión de la cultura occidental en las Indias de los siglos XVI y XVII*. Sevilla: Universidad de Sevilla.
- González Uribe, M. L. (1999) *Códice Techialoyan de San Pedro Tototepec (Estado de México)*. Estado de México: El Colegio Mexiquense.
- Granados Sánchez, D. (1993) *Los agaves en México*. Mexico City: Universidad Autónoma de Chapingo.
- Grañen Porrúa, María Isabel (1994) *El grabado y su finalidad en los libros novohispanos del siglo XVI*. PhD, Universidad de Sevilla.
- Green, O. H. and Leonard, I. A. (1941) On the Mexican Trade in 1600: A Chapter in Cultural History. *Hispanic Review*, **9** (1), 1-40.
- Greenfield, J. (1998) *ABC of Bookbinding*. New Castel: Oak Knoll Press.
- Greenleaf, R. E. (1986) San Juan de Letrán: colonial Mexico's royal college for mestizos. *Research and Reflections in Archaeology and History*, **47**, 113-148.
- Gremio de Encuadernadores de la Comunidad de Valencia (1992) *Encuadernadores valencianos: siete Siglos de artesanía*. Valencia.
- Griffin, C. (1991) *Los Cromberger: la historia de una imprenta del siglo XVI en Sevilla y Méjico*. Mexico City: Instituto de Cooperación Iberoamericana.
- Griffin, C. (2010) La primera imprenta en México y sus oficiales. In: I. García Aguilar (ed.). *Leer en tiempos de la Colonia: bibliotecas y lectores en la Nueva España*. Mexico City: UNAM-Centro Universitario de Investigaciones Bibliotecológicas, 3-20.
- Gruzinski, S. (1988) *La colonización de lo imaginario. Sociedades indígenas y occidentalización en el México español. Siglos XVI-XVIII*. Mexico City: Fondo de Cultura Económica.
- Gruzinski, S. (2001) La ciudad mestiza y los mestizajes de la vida intelectual. El caso de la ciudad de México, 1560-1640. In: *Ciudades mestizas: intercambio y cotidianidades en la expansión occidental. Siglos XVI al XIX: Actas del 3er Congreso Internacional de Mediadores Culturales*. Mexico City: Centro de Estudios de Historia de México, CONDUMEX, 201-220.
- Gruzinski, S. (2002) *The mestizo mind : the intellectual dynamics of colonization and globalization*. Ne York, London: Routledge.

- Haines, B. M. (1999) *Parchment. The physical and chemical characteristics of parchment and the materials used in its conservation*. Northampton: The Leather Conservation Centre.
- Hampe Martínez, T. (2010) La historiografía del libro en América hispana: un estado de la cuestión. In: I. García Aguilar (ed.). *Leer en tiempos de la Colonia: bibliotecas y lectores en la Nueva España*. Mexico City: UNAM-Centro Universitario de Investigaciones Bibliotecológicas, 55-72.
- Haring, C. (1984) *Comercio y navegación entre España y las Indias*. Mexico City: Fondo de Cultura Económica.
- Heawood, E. (1950) *Watermarks: mainly of the 17th and 18th centuries*. Hilversum: Paper Publications Society.
- Hellinga, L. (2000) Fragments found in binding and their roles as bibliographical evidence. In: D. Pearson (ed.). *For the love of the binding : studies in bookbinding history presented to Mirjam Foot*. London: The British Library / Oak Knoll Press, 13-34.
- Henestrosa, C. (2005) *Espinosa, rescate de una tipografía novohispana*. Mexico City: Editorial Designio.
- Hill, J. H. and Hill, K. C. (1995) *Hablando mexicano. La dinámica de la lengua sincrética en el centro de México*. Mexico City: CIESAS.
- Hosler, D. (1988) Ancient West metallurgy: South and Central American origins and West Mexican transformations. *American Anthropologist*, **90** (4), 832-855
- Hosler, D. & Macfarlane, A. (1996) Cooper sources, metal production, and metals in late Mesoamerica. *Science New Series*, **273** (5283), 1819-1824.
- Hospital de los venerables, Museo Franz Mayer and Museo de Historia de Acapulco (2000) *El Galeón de Manila. Catálogo*. Sevilla: Aldesa Ministerio de Educación, Cultura y Deporte.
- Hueso Rolland, F. (1934) *Exposición de encuadernaciones españolas. Catálogo general ilustrado*. Madrid: Sociedad Española de Amigos del Arte.
- Hurton, R. W. (1997) *A small book of Practical sewing*. Westfield.
- Jacobs, A. P. (1991) Migraciones laborales entre España y América. La procedencia de marineros en la Carrera de Indias, 1598-1610. *Revista de Indias*, **LI**, (193), 523-543.
- Iciar, J. de (2007) *Arte sutilísima, por la cual se enseña a escribir perfectamente (1550). Reproducción facsimilar del la obra del mismo título*. Madrid: Editorial Complutense.
- Islas García, L. (1948) *Hierros forjados*. Mexico City: Ediciones de Arte.
- Iguíniz, J. B. (1938) *La imprenta en la Nueva España*. Mexico City: Porrúa Hermanso y Cia.
- Iguíniz, J. B. (1946) *El Libro: epítome de bibliología*. Mexico City: Porrúa.
- Jarde, J. (1992) *Enciclopedia of textiles*. New York: Fact On File.
- Jiménez, N. (2007) Comerciantes de libros en Nueva España en el siglo XVI. Perfiles y estrategias. In: M. del P. Gutiérrez Lorenzo (ed.). *Impresos y libros en la historia económica de México (siglos XVI-XIX)*. Guadalajara: Universidad de Guadalajara, Centro Universitario de Ciencias Sociales y Humanidades, 17-41.

- Jonson, A. W. (1978) *Manual de encuadernación*. Madrid: Hermann Blume Central.
- Juárez y Farías, C. (1989) El impacto de la conquista. In: Instituto Nacional de Antropología e Historia. *Los textiles rituales indígenas de México*. Mexico City: CONACULTA / INAH / Museo del Carmen, 65-77.
- Kemper, R. V. (1995) Desde Colón hasta el colonialismo: reflexiones de los cambios en las instituciones sociales en América. In: L. Ochoa (ed.). *Conquista, transculturación y mestizaje: raíz y origen de México*. Mexico City: UNAM-Instituto de Investigaciones Antropológicas, 24-38.
- Kite, M. and Thomson, R. (2007) *Conservation of Leather and related materials*. London: Elsevier Butterworth-Heinemann.
- Kobayashi, J. M. (1985) *La educación como conquista*. Mexico City: El Colegio de México.
- Krausse Rodríguez, C. M. (1989) *Marcas de Fuego*. Mexico City: Biblioteca Nacional de Antropología e Historia / CONACULTA.
- La clase obrera en la historia de México: De la colonia al imperio* (1981). Mexico City: UNAM-Instituto de Investigaciones Sociales / Siglo XXI.
- Durán, J. (ed.) (1953) *La transformación social del conquistador*. Mexico City: Porrúa y Obregón.
- Lechuga, R. D. (1991) Significado ritual y ceremonia textil. In: Instituto Nacional de Antropología e Historia. *Los textiles rituales indígenas de México*. Mexico City: CONACULTA / INAH / Museo del Carmen, 17-24.
- Lenz, H. and Gómez de Orozco, F. (1940) *La industria papelera en México*. Mexico City: Editorial Cultura.
- Lenz, H. (1948) *El papel indígena mexicano: historia y supervivencia*. Mexico City: Editorial Cultura, Mexico.
- Lenz, H. (1973) *El papel indígena mexicano*. Mexico City: Secretaría de Educación Pública.
- Lenz, H. (1984) *Cosas de papel en Mesoamérica*. Mexico City.
- Lenz, H. (1990) *Historia del papel en México y cosas relacionadas 1525-1950*. Mexico City: Editorial Porrúa.
- León, N. (1902) Lo que puede encontrarse en las pastas de los libros viejos de México. *Boletín del Instituto Bibliográfico Mexicano*, 3.
- León, N. (1918) *Notas de las lecciones orales del profesor Nicolás León en la Escuela Nacional de Bibliotecarios y Archiveros*. Mexico City: Antigua imprenta de Murguía.
- León, N. (1982) *Correspondencia de Nicolás León con Joaquín García Icazbalceta*. Mexico City: UNAM-Instituto de Investigaciones Antropológicas.
- León Portilla, M. (2003) *Códices. Los antiguos libros del Nuevo Mundo*. Mexico City: Editorial Aguilar.

Leonard, I. A. (1996) *Los libros del conquistador*. Mexico City: Fondo de Cultura Económica.

Ligatus Bookbinding Glossary. (2013) [Online]. Available from: <<http://www.ligatus.org.uk>> [Accessed 1013]

Lockhart, J. (1988) *Letters and people of the Spanish Indies sixteenth century*. Cambridge: Cambridge University Press.

López Serrano, M. (1942) *La encuadernación en España*. Madrid: Escuela de Artes y Oficios de Madrid.

López Serrano, M. (1972) *La encuadernación española: breve historia*. Madrid: Asociación Nacional de Bibliotecarios, Archiveros y Arqueólogos.

Lytle Schurz, W. (1985) *The Manila Galleon*. Manila: Historical Conservation Society.

Macías, P. G. (1960) *El Colegio de San Nicolás Santuario de la Patria*. Mexico City: Editorial ACASIM.

Maiti Maiti, R. (1995) *Fibras vegetales en el mundo: aspectos botánicos, calidad y utilidad*. Mexico City: Editorial Trillas.

Maldonado Alvarado, M. and Maldonado Alvarado, B. (2004) *La sabiduría de las pieles*. Mexico City: CONACULTA / INAH.

Madurell i Marimón, J. M. (1955) *Documentos para la historia de la imprenta y librería en Barcelona (1474-1553)*. Barcelona: Gremios de editores, de libreros y de maestros Impresores.

Madurell i Marimon, J.M. (1973) *El antiguo arte del guadamecí y sus artífices*. Colomer Munmany, S.S., Vich.

Maniaci, M. and Ornato, E. (1993) Che fare del proprio corpus? I. Costituzione e descrizione de una popolazione di libri a fini statistici. *Gazette du livre médiéval*, **22**, 27-37.

Maniaci, M. and Ornato, E. (1993) Che fare del proprio corpus? II. L'osservazione "sperimentale" e l'interpretazione dei risultati. *Gazette du livre médiéval*, **23**, 18-27.

Maria y Campos, T. de. and Castelló Yturbide, T. (1990) *Historia y arte de la seda en México: siglos XVI-XX*. Mexico City: Fomento Cultural Banamex.

Maris Fernández, S. (1994) El libro en Hispanoamérica. In: H. Escolar (ed.). *De los incunables al siglo XVIII: historia ilustrada del libro español*. Madrid: Fundación Germán Sánchez Ruiperez / Pirámide, 447-498

Márquez Rodiles, I. (2001) *La utopía del Renacimiento en tierras indígenas de América. Pedro Gante. Vasco de Quiroga. Bernardino de Sahagún*. Puebla: Universidad de las Américas/Puebla, Benemérita Universidad de Puebla.

Martin, J. (1993) *The complete guide to calligraphy: techniques and materials*. New Jersey: Chartwell Books.

Martínez, E. (1996) *La obra de Enrico Martínez*. Tacámbaro: Taller Martín Pescador.

Martínez, J. L. (1983) *Pasajeros de Indias. Viajes trasatlánticos en el siglo XVI*. Madrid: Alianza Editorial.

- Martínez Cortés, F. (1970) *Pegamentos, gomas y resinas en el México prehispánico*. Mexico City: Secretaría de Educación Pública.
- Martínez de Sousa, J. M. (2004) *Diccionario de bibliología y ciencias afines*. Asturias: Ediciones Trea.
- Mars, J. (1919) *La Nueva España y los españoles*. Sevilla: Imprenta de M. Carmona.
- Marsal Amenós, F. (1994) *Parametría de hilos*. Barcelona: Universitat Politècnica de Catalunya.
- Matesanz, J. (1965) Introducción de la ganadería en Nueva España 1521-1535. *Historia Mexicana*, **14** (4), 533-566.
- Mathes, M. W. (1982) *Santa Cruz de Tlatelolco: la primera biblioteca académica de las Américas*. México City: Secretaría de Relaciones Exteriores / Banco Nacional de Comercio Exterior, Mexico.
- Matthews, J. M. (1947) *Textile fibres: their physical, microscopic, and chemical properties*. 5th ed., New York: Wiley.
- Mazín, O. (2007) *Iberoamerica. Del descubrimiento a la Independencia*. Mexico City: El Colegio de México.
- Medina, T. (1912) *La imprenta en México (1539-1821)*. Santiago de Chile: Impreso en casa del autor.
- Medina, T. (1989) *La imprenta en México (1539-1821)*. Mexico City: UNAM-Coordinación de Humanidades.
- Mena, R. (1926) *Filigranas o marcas transparentes en papeles de Nueva España del siglo XVI*. Mexico City: Secretaría de Relaciones Exteriores.
- Mendieta, G. de. (1997) *Historia eclesiástica indiana*. Mexico City: CONACULTA.
- Mendizabal, M. O. (1946) Las artes textiles indígenas y la industria mexicana. Época prehispánica y colonial. In *Obras completas, tomo II*. Mexico City: Talleres Gráficos de la Nación, 257-496.
- Mendoza Díaz-Moroto, F. (2002) *La pasión por los libros. Un acercamiento a la bibliofilia*. Mexico City: Espasa Calpe.
- Middleton, B. C. (1996) *A History of English craft bookbinding technique*. London: Oak Knoll Press / The British Library.
- Mirabell Silva, L. (ed.) (2005) *Materiales arqueológicos: tecnología y materia prima*. Mexico City: INAH.
- México, Departamento del Trabajo (1936) *Legislación del trabajo en los siglos XVI, XVII y XVIII. Relación entre la economía, las artes y los oficios en la Nueva España*. Mexico City: D.A.P.P.
- México y su historia, Vol.2. 1519-1600*. (1984). Mexico City: UTEHA.
- Miño Grijalva, M. (1993a) *La manufactura colonial*. Mexico City: El Colegio de México.

- Miño Grijalva, M (1993b) *La protoindustria colonial hispanoamericana*. Mexico City: Fideicomiso Historia de las Américas / Colegio de México / Fondo de Cultura Económica.
- Miquel y Planas, R. (1933) *El arte de la encuadernación*. Barcelona: Cámara Oficial del Libro de Barcelona.
- Miranda, J. (1962) *España y Nueva España en la época de Felipe II*. Mexico City: UNAM-Instituto de Historia.
- Miranda, J. (1952) *El tributo indígena en la Nueva España durante el siglo XVI*. Mexico City: El Colegio de México /Galate /Fondo de Cultura Económica.
- Miranda, F. and Briseño, G. (eds.) (1984) *Vasco de Quiroga: educador de adultos*. Pátzcuaro: CREFAL / COLMICH.
- Miranda, F. (1984) El Pátzcuaro de Don Vasco: un modelo de integración étnica y cultural. In: F. Miranda, and G. Briseño (eds.). *Vasco de Quiroga: educador de adultos*. Pátzcuaro: CREFAL / COLMICH, 78-109.
- Miranda Godínez, F. (1990) *Don Vasco de Quiroga y su Colegio de San Nicolás*. Morelia: Universidad Michoacana de San Nicolás de Hidalgo.
- Mohar Betancurt, L. M. and Fernández Díaz, R. (2006) El estudio de los códices. *Revista de Antropología Social. Los códices y la escritura mesoamericana*, **22**, 9-36.
- Moliner, M. (2007) *Diccionario de uso del español*. Madrid: Editorial Gredos.
- Motolinía, fray T. de. (2007) *Historia de los Indios de la Nueva España*. Mexico City: Editorial Porrúa.
- Motolinía, fray T. de. (1971) *Memoriales o libro de las cosas de la Nueva España y sus naturales de ella*. Mexico City: UNAM-Instituto de Investigaciones Históricas.
- Montgomery, B. (1954) The bast fibres. In: J. M. Matthews. *Textile fibres. their physical, microscopic and chemical properties*. New York: John Wiley & Sons, 257-359.
- Morales, F. and Mazín, O. (2001) La Iglesia en la Nueva España: los modelos fundacionales. In: J. Z. Vázquez (ed.). *Gran Historia de México Ilustrada*. Mexico City: Planeta, CONACULTA / INAH, 121-140.
- Moreno de Alba, J. (1995) Introduction. In: Asociación de Bibliotecas Nacionales de Iberoamérica, *Historia de las bibliotecas nacionales de Iberoamérica: pasado y presente*. 2nd ed., Mexico City: UNAM, XIX-XXIV.
- Moreno Toscano, A. (1994) La era virreinal. In: D. Cosío Villegas (ed.). *Historia mínima de México*. Mexico City: El Colegio de México, 53-76.
- Morner, M. (1995) Spanish historians on Spanish migration to America during the colonial period. *Latin American Research Review*, **30** (2), 251-267.
- Museo Nacional de Historia. (1988) *El Galeón de Manila*. Mexico City: INAH-Museo Nacional de Historia.
- Museo Nacional del Virreinato. (1997) *Gremios y cofradías en la Nueva España*. Mexico City: CNCA-INAH / Museo Nacional del Virreinato.

McAfee, B. and Barlow, R. H. (1948) Unos anales coloniales de Tlatelolco. *Memorias de la Academia Mexicana de Historia correspondiente de la Real de Madrid*, VII (2), 152-158.

McCaa, R. (1995) Fue el siglo XVI una catástrofe para México? Una respuesta basada en la demografía histórica no cuantitativa. *Cuadernos de Historia*, 15, 123-126.

Nickerson, R. F. (1954) Cotton: history, growth and statistics. In: J. M. Matthews. *Textile fibres. their physical, microscopic and chemical properties*. New York: John Wiley & Sons, 102-256

Novelo, V. (2002) Ser indio, artista y artesano en México. *Revista Espiral. Estudios sobre estado y sociedad*, 9 (25), 165-178.

Ocaranza, F. (1934) *El imperial colegio de indios de la Santa Cruz de Santiago Tlatelolco*. Mexico City.

Ochoa, L. (ed) (1995) *Conquista, transculturación y mestizaje: raíz y origen de México*. Mexico City: UNAM-Instituto de Investigaciones Antropológicas.

Olaguibel, M. de. (1991) *Impresiones célebres y libros raros*. Mexico City: UNAM-Instituto de Investigaciones Bibliográficas. Facsimile of the 1st ed., 1878.

Olvera Calvo, M. del C. (2001) Materiales de construcción en la ciudad de México durante la época virreinal: sobre el uso y abuso que se hace de la madera para la construcción. *Boletín de Monumentos Históricos*, 1, 93-104.

Osores, F. de. (1929) *Historia de todos los colegios de la ciudad de México desde la conquista hasta 1780*. Mexico City: Talleres Gráficos de la Nación.

Osorio Romero, I. (1986) *Las bibliotecas novohispanas*. Mexico City: SEP-Dirección General de Bibliotecas.

Otte, E. (1993) *Cartas privadas de emigrantes a Indias 1540-1616*. Mexico City: Fondo de Cultura Económica.

Oxford English Dictionary (2013) Oxford: Oxford University Press. Available from: <<http://www.oed.com/>> [Accessed 2010].

Paredes, I. (1759) *Promptuario manual mexicano: que a la verdad podrá ser utilísimo á los párrocos para la enseñanza: à los necesitados indios para su instrucción; y à los que aprenden la lengua para la expedición/ dispuso el P. Ignacio Paredes de la Compañía de Jesús*. Mexico City: En la Imprenta de la Biblioteca Mexicana.

Payno, M. (2005) *Memoria sobre el maguey mexicano y sus diversos productos: compendio de geografía de México*. Mexico City: CONACULTA-Dirección General de Publicaciones.

Pearson, D. (2005) *English binding styles 1450-1800*. new Castle: The British Library / Oak Knoll Press.

Pérez Carrillo, S. (1989) La tradición indígena en las artes coloniales. In: *Exposición México Colonial*. Alicante: Museo de América-Ministerio de Cultura-Caja de ahorros del Mediterráneo, 31-42.

Pereyra, C. (1986) *La huella de los conquistadores*. Mexico City: Porrúa.

Pereyra, C. (1920) *La obra de España en América*. Madrid: Biblioteca Nueva.

- Perinat, M. de. (2000) *Tecnología de la confección en piel*. Barcelona: Estudios Ediciones y Medios. [Online]. Available from <<http://www.edym.com>> [Acceded 16.10.08]
- Petroski, H. (2001) *Mundolibro*. Barcelona: Edhasa.
- Pettas, W. (1995) *A sixteen-century Spanish bookstore: the Inventory of Juan de Junta*. Philsdelphia: American Philosophical Society.
- Picazo, J. (1833) *Breves y útiles preceptos para las primeras clases de la gramática latina*. Mexico City: Galván.
- Pickwoad, N. (1991) Italian and French sixteenth-century bookbindings. *Gazette of the Grolier Club*, **43**, 55-81.
- Pickwoad, N. (1994) Onward and downward: how binders coped with the printing press before 1800. In: R. Myers and M. Harris (eds.). *A millennium of the book: production, design and illustration in manuscript and print, 900-1900*. New Castle: Oak Knoll Press, 61-106.
- Pickwoad, N. (1995) The interpretation of bookbinding structure: an examination of sixteenth-century bindings in the Ramey collection in the Pierpont Morgan Library. *The Library*, **17** (3), 209-249.
- Pickwoad, N. (2004) The condition survey of the manuscripts in the monastery of Saint Catherine on Mount Sinai. *The Paper Conservator*, **28**, 33-61.
- Pollard, G. (1956) Changes in the style of bookbinding, 1500-1830. *The Library*, **II** (2), 71-94.
- Pompa y Pompa, A. (1988) *450 años de la imprenta tipográfica en México*. Mexico City: Asociación Nacional de Libreros.
- Pompa y Pompa, A. (1952) *El tributo indígena en la Nueva España durante el siglo XVI*. Mexico City: El Colegio de México / Galate / Fondo de Cultura Económica.
- Prieto Molano, C. (1994) *Hasta la tierra es mestiza*. Bogotá: Banco de la República, Santa Fé de Bogotá.
- Qintana, J. M. (1970) Los ex-libris. *Artes de México*, **17** (131), 98-99.
- Quiroga, V. de. (1940) *Reglas y ordenanzas para el gobierno de los hospitales de Santa Fe de México y Michoacán*. Pátzcuaro: Talleres Gráficos de la Nación.
- Ramírez Castañeda, E. (2006) *La educación indígena en México*. Mexico City: UNAM.
- Real Academia Española (2001) *Diccionario de la lengua española* [Online]. Madrid: Espasa Calpe. Available from: <<http://lema.rae.es/drae>> [Accessed 2010].
- Reed, R. (1972) *Ancient Skins, Parchments and Leathers*. London: Seminar Press.
- Reed, R (1975) *The nature and making of parchment*. Leeds: The Elmete Press.
- Renfrew, Ch. (1991) *Archaeology : theories, methods and practice*. London: Thames and Hudson.
- Rees, P. (1976) *Transporte y comercio entre México y Veracruz, 1519-1910*. Mexico City: Secretaría de Educación Pública.

- Rees, P. (1976) Desarrollo de la red colonial de caminos. In: *Transporte y comercio entre México y Veracruz, 1519-1910*. Mexico City: Secretaría de Educación Pública, 17-54.
- Reyes, A. (1948) *Letras de la Nueva España*. Mexico City: Fondo de Cultura Económica.
- Reyes, F. de los. (2000) *El libro en España y América. Legislación y censura (Siglo XV-XVIII)*. Madrid: Arcolibros.
- Richardson, W. A. (1968) *Identificación de fibras textiles*. Barcelona: Editorial Blume.
- Roberts, M. T. and Etherington, D. *Bookbinding and the conservation of books: a dictionary of descriptive terminology*. [Online]. Available from <<http://cool.conservation-us.org>> [Acceded 2010-2011]
- Robles, J. A. (1993/94) Los libros de Euterpe en la Nueva España. *Historias*, **31**, 161-171.
- Rodríguez de Tembeleque, C. (1989) El papel desempeñado por escuelas, gremios y academias en la enseñanza artística. In: *Exposición México Colonial*. Alicante: Museo de América-Ministerio de Cultura / Caja de ahorros del Mediterráneo, 73-84.
- Rodríguez-Sala, M. L. (2002) *Letrados y técnicos de los siglos XVI y XVII*. Mexico City: UNAM-Instituto de Investigaciones Bibliográficas.
- Rojas González, F. (1945) El comercio entre los indios de México. *Revista Mexicana de Sociología*, **7** (1), 123-137.
- Rojas Rabiela, T. and Sanders, W. T. (eds.) *Historia de la agricultura. Época prehispánica. Siglo XVI*. Mexico City: INAH.
- Romandía, G. (1989) Los textiles en el virreinato. In: C. Valles Septién and G. Romandía de Cantú (eds.). *Los textiles de México: panorama histórico desde su inicio hasta nuestros días*. Mexico City: Celanese Mexicana, 91-144.
- Romero de Terreros, M. (1948) Encuadernaciones artísticas por la señora Concepción H. de Izquierdo, una artista de la encuadernación. *Sobretiro de la Revista Militar. Estudios sobre estado y sociedad*, **9** (25), 165-178.
- Romero de Terreros, M. (1943) *Encuadernaciones artísticas mexicanas: siglos XVI al XIX*. Mexico City: Departamento del Distrito Federal.
- Romero de Terreros, M. (1932) *Encuadernaciones artísticas mexicanas: siglos XVI al XIX*. Mexico City: Secretaría de Relaciones Exteriores.
- Romero de Terreros, M. (1923) *Las artes industriales en la Nueva España*. Mexico City: Librería de Pedro Robredo.
- Romero de Terreros de Suinaga, C. (1970) Encuadernaciones artísticas mexicanas. *Artes de México*, **17** (131), 89-95.
- Rosenbalt, A. (1951) *El mestizaje y las castas coloniales*. Buenos Aires: Editorial Nova.
- Rotondo, A. (1863) *Historia descriptiva, artística y pintoresca del Real Monasterio de S. Lorenzo Comunmente llamado del Escorial*. Madrid: Eusebio Aguado.
- Rubial García, A. (1999) *La Nueva España*. Mexico City: CONACULTA.

- Rubial García, A. (2001) Cultura e identidad en Nueva España, siglos XVI y XVII. In: J. Z. Vázquez (ed.). *Gran Historia de México Ilustrada*. Mexico City: Planeta, CONACULTA / INAH, 361-380.
- Rueda Ramírez, P. J. (1995) *Negocio e intercambio cultural: el comercio de libros con América en la carrera de Indias (siglo XVII)*. Sevilla: Universidad de Sevilla.
- Rueda Ramírez, P. J. (1999) La circulación de libros entre el viejo y el nuevo mundo en la Sevilla de finales del siglo XVI y comienzos del siglo XVII. *Cuadernos de Historia Moderna*, **22**, 79-105.
- Rueda Ramírez, P. J. (2010) Las librerías europeas y el Nuevo Mundo: circuitos de distribución atlántica del libro en el mundo moderno. In: I. García Aguilar (ed.). *Leer en tiempos de la Colonia: bibliotecas y lectores en la Nueva España*. Mexico City: UNAM-Centro Universitario de Investigaciones Bibliotecológicas. 113-136.
- Ruíz Guadalajara, J. C. (1991) Presentación. In: Instituto Nacional de Antropología e Historia. *Los textiles rituales indígenas de México*. Mexico City: CONACULTA / INAH / Museo del Carmen, . pp.5-8
- Ruíz Medrano, E. (2001) Las instituciones del poder: la encomienda y el corregimiento. In: J. Z. Vázquez (ed.). *Gran Historia de México Ilustrada, tomo II*. Mexico City: Planeta, CONACULTA / INAH, 41-60.
- Sahagún, B. de. (1999) *Historia general de las cosas de la Nueva España. [Códice Florentino]*. Mexico City: Consejo Nacional para la Cultura y las Artes.
- Salas, A. (1960) *Crónica florida del mestizaje de las Indias. Siglo XVI*. Buenos Aires: Editorial Losada.
- Sánchez Bueno de Bonfil, M. C. (1993) *El papel del papel en la Nueva España*. Mexico City: INAH.
- Sánchez Martínez, F. (2005) Madera. in S. L. Mirabell (ed.). *Materiales arqueológicos: tecnología y materia prima*. Mexico City: INAH, 217-239.
- Sánchez Montañés, E. (1990) *Orfebrería precolombina y colonial. Oro y plata para los dioses*. Mexico City: Ediciones Anaya.
- Santander Rodríguez, T. (1994) La imprenta en el siglo XVI. In: H. Escolar (ed.). *De los incunables al siglo XVIII: historia ilustrada del libro español*. Madrid: Fundación Germán Sánchez Ruipérez / Pirámide, 95-140
- Santiago Cruz, F. (1960) *Las artes y los gremios en la Nueva España*. Mexico City: Jus.
- Santos Zertuche, F. (2000) *Señorío, dinero y arquitectura. El palacio de la Inquisición de México, 1571-1820*. Mexico City: El Colegio de México / UAM Azcapotzalco.
- Sarriá Rueda, A. (1994) Los inicios de la imprenta. In: H. Escolar (ed.). *De los incunables al siglo XVIII: historia ilustrada del libro español*. Madrid: Fundación Germán Sánchez Ruipérez / Pirámide, 35-94.
- Saucedo Montemayor, P. (1984) *Historia de la ganadería en México*. Mexico City: UNAM-Coordinación de la Investigación Científica.
- Schurtz, W. L. (1992) *El Galeón de Manila*. Madrid: Sociedad Estatal Quinto Centenario.
- Schuster, K. (1955) *Materias primas textiles, tomo II*. Barcelona: Imprenta Clarasó.

- Serrano Sánchez, C. (1995) 500 años de historia: la conquista y el mestizaje biológico en México. In: L. Ochoa (ed.). *Conquista, transculturación y mestizaje: raíz y origen de México*. Mexico City: UNAM-Instituto de Investigaciones Antropológicas, 39-49.
- Serrera Contreras, R. M. (1974) *Cultivo y manufactura de lino y cáñamo en Nueva España, 1777-1800*. Sevilla: Escuela de Estudios Hispanoamericanos de Sevilla.
- Sierra Castillo, D. *Textiles indígenas. Patrimonio cultural de México*. Mexico City: Fundación Cultural Serfín.
- Solano, F. de. (1994) *Las voces de la ciudad: México a través de sus impresos (1539-1821)*. Madrid: Consejo Superior de Investigaciones Científicas.
- Solano, F. de. (1991) *Documentos sobre política lingüística en Hispanoamérica*. Madrid: Consejo Superior de Investigaciones Científicas.
- Solano, F. de. (1991a) El español: su aprendizaje y su difusión. In: Solano, F. *Documentos sobre política lingüística en Hispanoamérica*. Madrid: Consejo Superior de Investigaciones Científicas, LIX-XC.
- Solano, F. de. (1991b) Los idiomas de la frontera americana. In: Solano, F. *Documentos sobre política lingüística en Hispanoamérica*. Madrid: Consejo Superior de Investigaciones Científicas, XXIII-XXXIII.
- Solano, F. de. (1991c) Lengua y evangelización. In: Solano, F. *Documentos sobre política lingüística en Hispanoamérica*. Madrid: Consejo Superior de Investigaciones Científicas, XLVII-LVIII.
- Stols, A. A. M. (1990) *Pedro Ocharte: el tercer impresor mexicano*. Mexico City: Editorial Nuevo Mundo.
- Szaszdi Nagy, A. (1984) *Un mundo que descubrió Colón: las rutas del comercio prehispánico de los metales*. Valladolid: Publicaciones de la Casa-Museo de Colón / Seminario Americanista de la Universidad.
- Sudo Shimamura, T. (2001) Navegación y comercio en Nueva España, siglos XVI y XVII. In: J. Z. Vázquez (ed.). *Gran Historia de México Ilustrada*. Mexico City: Planeta, CONACULTA / INAH, 301-320.
- Szirmai, J. A. (1999) *The archeaology of medieval bookbinding*. Burlington: Ashgate Publishing Company.
- Szirmai, J. A. (2000) *The archeaology of medieval bookbinding*. Reprint, Burlington: Ashgate Publishing Company.
- TEPCON International (India) LTD. (2002) *History of Jute*. [Online]. Available from: <<http://www.worldjute.com>> [Accessed 15 March 2013]
- Terán, C. and Cazzaniga, B. (1993) *Técnicas de imaginería en el arte hispanoamericano*. Buenos Aires: Ediciones del Gabinete-Secretaría de Posgrado-Universidad Nacional de Tucuman.
- Thomas, H. (1944) *Shor-title catalogue of Spanish-American books printed before 1601, now in the British Museum*. London: British Museum.
- Thomas, G. (1958) *Thomas Gage's travels in the New World*. Norman: Oklahoma: University of Oklahoma.

- Thomas, W. (2009) La infraestructura de la globalización: la imprenta flamenca y la construcción del imperio hispánico en América. In: P. Collar, M. N. Ubarri and Y. Rodríguez Pérez (eds.). *Encuentros de ayer y reencuentros de hoy. Flandes, Países Bajos y el Mundo Hispánico en los siglos XVI-XVII*. Ghent: Academia Press.
- Tímár Balázs, A. (2002) Methods of investigation used in textile conservation. In: A. Timár Balázs and D. Eastop (eds.). *Chemical principles of textile conservation*. Oxford: Butterworth-Heinemann, 381-405
- Torre Revello, J. (1991) *El libro, la imprenta y el periodismo en América durante la dominación española*. Mexico City: UNAM.
- Torres, B. (1989) Las plantas útiles en el México antiguo según las fuentes del siglo XVI. In: T. Rojas Rabiela and W.T. Sanders (eds.). *Historia de la agricultura. Época prehispánica. Siglo XVI*. Mexico City: INAH, 53-128.
- Trueba, A. (1959) *Fray Pedro de Gante*. Mexico City: Editorial Jus.
- Updike, D. B. (1962) *Printing types: their history, forms and use. A study in survivals*. Cambridge, Mass.: Belknap Press of Harvard University Press / London: Oxford University Press.
- Urquiola Permisán, J. I. (2004) Los textiles bajo el mestizaje tecnológico. In: E. Florescano and V. García Acosta (eds.), *Mestizajes tecnológicos y cambios culturales en México*. Mexico City: Centro de Investigaciones y Estudios Superiores de Antropología Social, 203-257.
- Valle-Arizpe, A. de. (1943) *Cuadros de México*. Mexico City: Editorial JUS.
- Valls i Subirá, O. (1980) *La hisotria del papel en España, tomo II*. Madrid: Empresa Nacional de Celulosa.
- Valton, E. (1935) *Impresos mexicanos del siglo XVI (incunables americanos) en la Biblioteca Nacional de México, el Museo Nacional y el Archivo General de la Nación*. Mexico City: Imprenta Universitaria.
- Vargas Lugo, E. (1987) *Claustro Franciscano de Tlatelolco*. Mexico City: Secretaría de Relaciones Exteriores.
- Vázquez, J. Z. (ed.) (2001) *Gran historia de México ilustrada*. Mexico City: Planeta, CONACULTA / INAH.
- Velasco Castelán, T. E. (2004) *La técnica de manufactura de las encuadernaciones coloniales del Archivo General de la Nación*. Mexico City: Secretaría de Gobernación / Archivo General de la Nación.
- Velasco Rodríguez, G. J. (1995) *Origen del textil en Mesoamérica*. Mexico City: Mexico City: Instituto Politécnico Nacional.
- Ventura Beleña, E. (1981) *Recopilación sumaria de todos los autos acordados de la Real Audiencia y Sala de Crimen de esta Nueva España, y provincias de su Superior Gobierno*. Mexico City: UNAM-Instituto de Investigaciones Jurídicas.
- Victoria, J. G. (1986) *Pintura y sociedad en Nueva España. Siglo XVI*. Mexico City: UNAM-Instituto de Investigaciones Estéticas.

- Villavecchia, G. V. (1935) Fibras textiles, hilados, tejidos. In: G. V. Villavecchia. *Tratado de química analítica aplicada, tomo II*. Barcelona: Gustavo Gil, Barcelona, 607-713.
- Villegas, V. M. (1955) *Hierros coloniales de Zacatecas*. Mexico City: UNAM-Instituto de Investigaciones Estéticas.
- Viqueira, C. and Urquiola, J. I. (1990) *Los obrajes en la Nueva España*. Mexico City: CONACULTA.
- Whalley, J. I. (1982) *The pen's excellencies: a pictorial history of Western calligraphy*. New York: Taplinger Publishing Company.
- Weckmann, L. (1994) *La herencia medieval en México*. Mexico City: Fondo de Cultrua Económica.
- Wong, F. (1980) *The complete calligrapher*. New York: Pitman House / Watson-Guptill Publiactions.
- Woodward, D. (1996) *Catalogue of watermarks in Italian printed maps ca.1540-1600*. Florence: Olshki.
- Wright Carr, D. C. (1998) *Los franciscanos y su labor educativa en la Nueva España*. Mexico City: INAH / EDUVEM.
- Wroth, L. (1945) *Some reflections on the book arts in early Mexico*. Cambridge: Harvard College Library.
- Yhmooff Cabrera, J. (1990) *Los impresos mexicanos del siglo XVI en la Biblioteca Nacional de México*. Mexico City: UNAM-Instituto de Investigaciones Bibliográficas.
- Yhmooff Cabrera, J. (1996) *Catálogo de los impresos europeos del siglo XVI que custodia la Biblioteca Nacional, tomo I*. Mexico City: UNAM-Instituto de Investigaciones.
- Yuste, C. (2000) Un océano de intercambios. In: Hospital de los venerables, Museo Franz Mayer and Museo de Historia de Acapulco. *El Galeón de Manila. Catálogo*. Sevilla: Aldesa Ministerio de Educación, Cultura y Deporte, 139-214.
- Zabala, S. (1991) *El servicio personal de los indios de la Nueva España*. Mexico City: El Colegio de México / El Colegio Nacional.
- Zulaica Garate, R. (1939) *Los franciscanos y la imprenta en México en el siglo XVI*. Mexico City: Editorial Pedro Robredo.