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A new proposal for the classification of watermarks motifs

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Abstract

The growing creation of online corpus of watermarks and the lack of adopting a single standardised system of classification highlights the urgent need for a new classification system of watermarks that allows the use of a common language among researchers.

This article is a conceptual proposal in order to rekindle the interest and the necessary discussion for the research community to agree on a classification system of the iconographic motifs of watermarks.

Scholars in order to organize and classify watermarks have studied all resources used throughout the history. It has been specifically analyzed the encoding system offered by the International Association of Paper Historians (1997), the systems of prototype icons of motifs and the qualifying treelike diagrams designed by Hauptstaatsarchiv Stuttgart, POL, the Watermarks in Incunabula printed in Spain, WIES; the Koninklijke Bibliotheek, WILC, the Wasserzeichen des Mittelalters, WZMA. And the terminology given in the Bernstein Systematics and the Watermark - Terms (2009).

Specialists from different fields revised the proposed system of encoding watermarks: papermakers' museums, libraries, archives and restoration centers; this work culminated in a meeting of researchers held in the School of Historical Heritage of Nájera (2011).

To verify the validity of the various drafts of encoding, we worked with approximately a group of 56,000 watermarks. As a conclusion, It has been designed a dynamic encoding that is formed by 24 families that are divided into groups and into subgroups incorporating auxiliary, which can be updated as you grow the number of records and new needs arise.

Résumé

Le développement des corpus de filigranes mis en ligne rend urgent le besoin d'un nouveau système de classification des filigranes qui permette l'usage d'un langage commun entre les chercheurs.

Cet article est une proposition conceptuelle pour relancer l'intérêt et la discussion au sein de la communauté des spécialistes, afin de s'accorder sur un système de classification des motifs iconographiques des filigranes. Nous avons étudié toutes les ressources utilisées par les chercheurs au long de l'histoire afin d'organiser et de classer des filigranes. En particulier, nous avons analysé le système d'encodage promu par l'association Internationale des Historiens du Papier (1997), ainsi que le prototype d'icônes désignant les différents thèmes associées au diagramme en arborescence mis au point par le Hauptstaatsarchiv Stuttgart, POL, les Filigranes dans les Incunables imprimés en Espagne, WIES; la Koninklijke Bibliotheek, WILC, les Filigranes du Moyen Âge, WZMA, ainsi que la terminologie fournie par la classification et la terminologie des filigranes du Bernstein Project (2009).

Le système que nous proposons pour encoder les filigranes a été revu par des spécialistes de différents domaines : des musées du papier, des bibliothèques, des archives et centres de restauration, processus qui a abouti à une rencontre de chercheurs qui s'est tenue à l'Ecole du Patrimoine de Nájera (2011).

Afin de tester la validité des différentes versions temporaires de codage, nous avons travaillé sur 56 000 filigranes. En conclusion, nous avons mis au point un protocole de codage qui consiste en 24 familles divisées en groupes et sous-groupes contenant des éléments auxiliaires, qui peuvent être mis à jour à mesure que l'accroissement du nombre des enregistrements suscitera de nouveaux besoins.

Sommario

La crescente quantità di filigrane presenti ondine sollecita l'urgenza di un nuovo sistema di classificazione che consenta l'utilizzo di un linguaggio comune a tutti i ricercatori.

Questa relazione è una proposta finalizzata a riaccendere l'interesse e il dibattito all'interno della comunità degli studiosi per trovare un accordo su un sistema di classificazione riguardante le iconografie delle filigrane.

Abbiamo studiato tutte le risorse usate nel tempo dagli studiosi per organizzare e classificare le filigrane; in particolare abbiamo analizzato il sistema di codifica predisposto dall'IPH (1997); il prototipo progettato dall'Archivio Centrale di Stoccarda, il POL; il WIES della Spagna; il danese WILC e il WZMA. E infine la terminologia del Bernstein Project.

Il sistema di codifica che si propone è stato analizzato e revisionato da specialisti di varie realtà: musei della carta, biblioteche, archivi e centri di restauro, centri di studio e i risultati sono stati presentati in un convegno di studio tenuto presso la Scuola per il Patrimonio Storico-culturale di Najera (2011).

Per verificare la validità del progetto abbiamo lavorato su un corpus di circa 56.000 filigrane. Al termine abbiamo progettato un sistema di codifica di 24 famiglie, divise in gruppi e sottogruppi (che incluso un assistente), in grado di essere continuamente implementato sia in quantità sia in relazione a specifiche necessità.

A new proposal for the classification of watermarks motifs

[0] Introduction

Watermarks allow differentiating between papers. A watermark "è un qualsiasi segno significativo intenzionalmente impresso sul foglio di carta nel corso della sua formazione, allo scopo di identificarlo e di differenziarlo dagli altri" (Gasparinetti, 1964, pg. 7). Several systems of classification and codification of watermarks have been tested throughout history; none of those systems, nowadays, is able to classify all found watermarks. With this article a new proposal for the classification - codification of watermarks is proposed, it is offered a working method and it is aimed to rekindle the necessary discussion in order to reach a consensus on a system of watermark's classification by researchers.

[1] Organisation and encoding of watermarks

[1.1] Precedents of the organisation and classification of watermarks

The codification of watermarks is preceded by several resources, which, have been used by researchers to organise and classify watermarks for their own research work throughout history. In order to analyse the motifs of watermarks, the motifs are grouped by the different classifying proceedings used, these proceedings are exemplified by relevant collections1. Therefore, there are:

Fig. 1. Freehand draws of watermarks by Gerard Meerman (1761-1763). Museum Meermanno-Westreenianum. Archief. Meerman, Sig. 036 A 002.

- Works whose main aim is not the research into watermarks. These works are the first proofs of watermarks descriptions. Watermarks are described in a literary way, reproduced, or a combination of both. As it can be observed on Gerard Meerman's work in the half of the 18th century, he included a freehand draw of the watermark and the indication of its location in the document within the manuscript text (see Fig. 1). Nowadays, it is a proceeding that still used, although it is not common. In the research field of documentation sciences, it can be found reports as: hand with star, hand with flower, scissors... etc. written by Carlos Romero de Lacea (1982, pp. 7-90) or Guillermo de Sosa (1982, pp. 361-490), in his studies of the origin of printing included in his work Historia de la imprenta hispana. It is a study of the beginning of typographical arts within which other authors included the reproduction of watermarks in their reports, as Serrano Morales did in his work regarding the beginning of printing in Valencia (1888-1889). This second option is frequently used in codicological analysis of manuscripts or in conservation processes (Díaz de Miranda, 2007, pp. 146-148; López y Durán, 2010, pp. 355-358).

There is not intention of classifying or organising watermarks in this type of analysis. Watermarks appear in the same order as they are found in the document. However, this kind of work does not require it.

- Studies that groups watermarks by geographi-

cal zones according to the place of appearance. The Jesuit Carlos Antonio de Laserna Santander was the first European scholar to publish a study of watermarks that he included it in his second edition of the catalogue of the books that he had at his library (1803). He reproduced eight illustrations of the watermarks found within the incunabulars of his catalogue, he organised the watermarks by place of print, and those places by countries. As we understand, this way of classifying watermarks has the disadvantage of separating the watermarks that have the same typology, which makes difficult to associate them. This system is unsuitable for big watermarks collections.

- Organisation of watermarks, which belong to a concrete chronological periods, by groups of motifs. These groups have not a rational order. Étienne Midoux and Auguste Matton (1868) published 600 French watermarks of the 14th and 15th century grouped by motif but there was not a rational order between groups (each century has tables with the number of the watermark, its descriptive report, date of use and allocation in the archive or the library to which the watermark belongs).

Paul Heitz (1903) introduced to the previous method (for the study of the incunabular watermarks from the Imperial Library of Strasbourg) the organisation of the motifs by printer within the grouping of motifs of each group. Aurelio Zonghi (1953), who is the most important watermarks researcher of Italy, organised watermarks by iconographical motifs and, regarding their function, by chronological origin. This organisation allows observing the period of use of motifs and their development throughout time.

- Organisation of watermarks by groups in accordance with motifs, these groups have not a rational order within the same subject. Los animales en las marcas del papel by Francisco Bofarull (1959) is an example of this type of classification. In his work, Bofarull, grouped watermarks by animals; although these groups have a presentation order (the sequence is done by four-legged animals, birds, reptiles, fishes, insects and mythological and fantastic animals), the groups of animals are arbitrarily arranged in sequence in each subject.

- Watermarks organisation according to the alphabetical order of iconographical motifs is the most chosen choice. According to this organisation, it can be found: Les Filigranes… by Briquet (1907), La historia del papel en España by Oriol Valls (1978-1982), Filigranes et autres caractéristiques des papiers fabriqués en france aux XVIIe et XVIIIIe siècles by Raymons Gaudriault (1995) or Paper comes to the North. Sources and Trade Routes of Paper in the Baltic Sea Region 1350-1700 by Nils J. Lindberg (1998), between others.

Oriol Valls i Subirà published 1.891 watermarks in his work Paper and Watermarks in Catalonia (1970). He organised the first 1.119 by manufacturers in alphabetical order, and the rest was organised by motifs in alphabetical order. Carmen Hidalgo also organised watermarks by manufacturers in alphabetical order in her doctoral thesis (1986).

This way of classification is considered the most useful and valid to be used in works with a great number of reproductions because it allows watermarks published by different authors to be easily compared by iconographical motifs.

- The organisation of motifs according to the author's personal judgement. As an example there is the huge work of Gerhard Picard, which was published in 17 volumes (1961-1997). He classifies 92.000 watermarks in 38 groups that are also organised in 4.540 types of watermarks (see Fig. 2).

This subjective criteria of classification do not makes difficult to study a work of this dimension, but it is not practical to use it with smaller works.

Finally, within the organisation by the iconographical organisation of watermarks, there is the organisation of motifs by big groups according to the

Fig. 2. The director of the Hauptstaatsarchiv from Stuttgart, Peter Rückert, shows Piccard's originals to the participants of the commemorative meeting of the centennial of his birth.

iconographical subject (animal kingdom, vegetal, arms, tools, etc.). Several authors follow this option, such as Pickosinski, Kirschner o Keinz. This could be the forerunner of the current classifying systems that are in vogue by information resources.

- In the case of grouping watermarks according to their function in creating a paper history, different guidelines are followed in each country. The work Historia del papel en España (1994) by Gonzalo Gayoso, which has three volumes, is an example. He came up with the paper history in Spain according to an alphabetical order of the areas, provinces and towns; within his text he made continuous numerical reference to watermarks that he placed in the third

Fig. 3. Prototype icons used by WZMA.
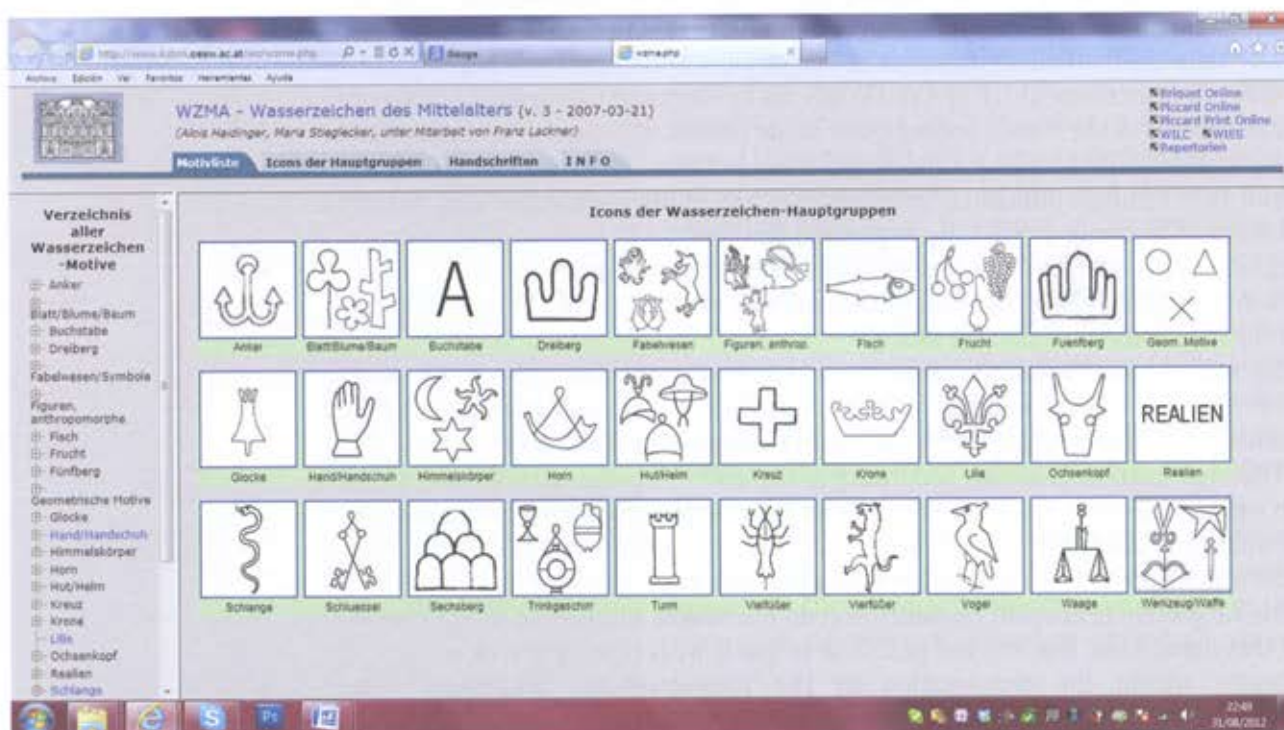
volume of his work by this order of quotation. In Watermarks in Paper in Holland, England, France, etc., in the XVII and XVIII Centuries and their Interconnection (1935), William Algernon Churchill reproduced 578 exact replicas of watermarks and it can be said that he did more than collecting watermarks from those countries, he brought watermarks together by geographical order, and, within it, by chronological order in order to build up the history of paper in Holland.

This way of organising watermarks is considered the most suitable method for the historic studies of paper.

[2] Encoding of watermarks: current proposals and resources in information systems

The International Association of Paper Historians –IPH– introduced, in 1997, a new proposal of alphanumerical encoding for watermarks based on the organisation of the iconographical motifs into three categories: the first one, "types" according to an alphabetical order; the second one, "subtypes" that follows the order of Arabic numbering; and the third one, a new "subclassification" separated from the previous one with a virgule and the Arabic numbering continues. The information regarding additional figures or secondary signs and its position with regard to watermarks is included by an auxiliary code. For example,

A is the type of the "human figures". "man": "parts of the body"

A1	man		
A2	child		
		A2/1	child (general)
		A2/2	baby Jesus
A3	two men		
A3/1	couple		
A3/2	twins		
A4	man		
		A4/1	man (general)
		A4/2	blacksmith
		A4/4	knight
			A4/4/1 cavalryman / rider
			A4/4/2 messenger
			A4/4/3 picador
A5	hunter, etc.		

Nearly a decade ago, the relevance of the information resources regarding the diffusion of watermarks proposes the use of the prototype icons of types, groups, subgroups, etc. of watermarks, as the most useful and efficient method for the classification of watermarks. It can be observed on several websites such as the Hauptstaatsarchiv from Stuttgart (POL) website or the Wasserzeichen des Mittelalters (WZMA) website (see Fig. 3).

The portal (Bernstein The Memory of paper) proposes the classification of motifs according to the system of prototype icons that is composed by twelve groups (main motifs) and three levels of subgroups (submotifs), (see Fig. 4). This classification was adopted by the WZIS project and it has been developed until a maximum of 10 levels of subgroups. As Emanuel Wegner observes «the classification is not finished and there still are work in progress and a subject of discussion for so many years» (Wenge and Ferrando 2013, 187). If this classification is compared with the one of the IPH, it can be observed that Bernstein takes it as a pattern to arrange and group the motifs of watermarks.
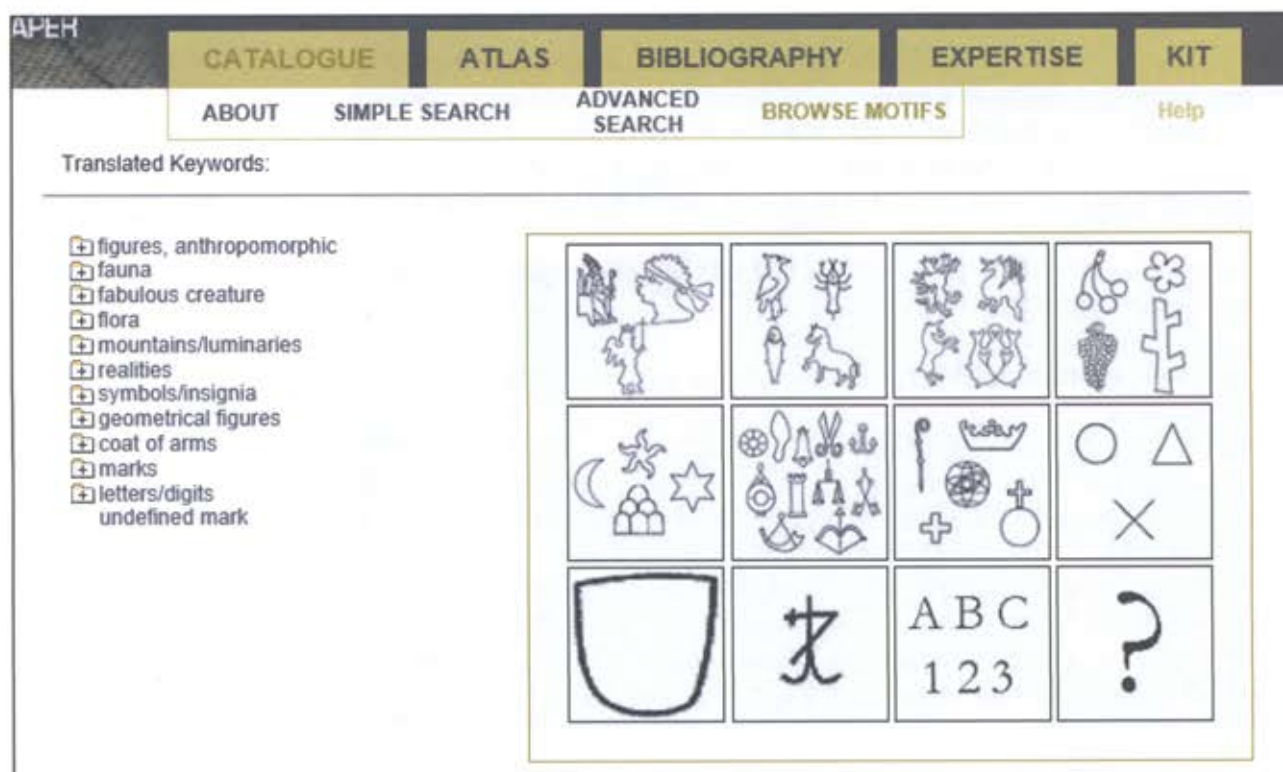
Fig. 4. Prototype icons used by portal Bernstein's portal.

The most distinguished difference between them is that Bernstein groups two or more types of the IPH's into one, as it can be observed on the comparative table in Figure No. 4. The twelve mentioned groups are:

[1]. figures, anthropomorphic
[2]. fauna
[3]. fabulous creatures
[4]. flora
[5]. mountains/heavenly bodies
[6]. objects
[7]. symbols/insignia
[8]. geometrical figures
[9]. coat of arms
[10]. marks
[11]. letters/figures
[12]. undefined signs

There are other websites that use the index of typology of the IPH: FAT, Local Archives of Toulouse; TGWC, Thomas Gravell's watermarks collection; BGE, Briquet's Digital Archive of Watermarks of the Library of Geneva; and the BCD, Digital Catalogue of Briquet's watermarks. There are also websites that take from the IPH's typological encoding the heading of each family or type such as the WILC of the Koninklijke Bibliotheek, or WIES of the Spanish incunabulum, created by Gerard van Thienen.

[3] A new proposal for the classification of watermarks

This proposal for the classification of watermarks is in keeping with the studies and conclusions of the doctoral thesis of Mª Dolores Díaz de Miranda, which was defended at Universidad de Barcelona in January 2013, and, with

the job of creating a database of the Corpus of Hispanic watermarks asked by the Culture Ministry[2].

[3.1.] Methodology followed in order to classify watermarks

The main difficulty that we have found creating an encoding system for watermarks was that the Corpus of existing watermarks does not go over the 18th century, the new encoding gets from the first classification of watermarks until the 20th century. For this encoding, the encoding system offered by the International Association of Paper Historians (IPH, 2013) and the systems of prototype icons of motifs and qualifying trees designed by Hauptstaatsarchiv from Stuttgart, POL; Watermarks in Incunabula printed in Spain, WIES; Koninklijke Bibliotheek, WILC; Wasserzeichen des Mittelalters, WZMA; have been examined. It was also examined the terminology offered by Bernstein Systematics (Frauenknecht, Rückert and Stieglecker, 2009) and Watermark-Terms (Frauenknecht, Kämmerer, Rückert y Stieglecker, 2012). A provisional encoding tree with the corresponding prototype of watermarks was built based on the classification offered by the IPH and the contribution of all the other databases.

This encoding draft was presented at the I Conference of Watermarks that was organised and took place at the IPCE in May 2010 (CAHIP 2010). From that moment Mª Dolores Díaz de Miranda was in charge of creating the database of the Corpus of Hispanic Watermarks and of coordinating the different works that it implied. For this purpose, a consultation and trial run period was opened for eight months. Twenty experts from different fields (archives, libraries, museums, Fine Arts Faculties, Documentation Science and History, Conservation Institutes, conservation schools, scientific police, centres of paper studies, paper museum-mills, paper manufacturers, etc.) from different places from Spain and also from Latin America and Europe participated during that period.

Since that moment, the methodology was to check if the existing watermarks could be really encoded with the built encoding system. For that, different published collections and websites were analysed in order to check that the encoding was adequate to each watermark.

The validity test of the first draft was worked with 3.000 watermarks and the validation of the following versions was tested with 9.500 watermarks that belonged to the Spanish Watermarks database of the old IPHE, and to the database that was being built for the doctoral thesis of Mº D. Díaz de Miranda. Once the appropriate changes and modifications were done, the validity of the new versions of the draft were corroborated with: 1.330 Heitz watermarks (1903), 16.112 of Briquet (1907), 772 of Bofarull (1959), 578 of Churchill (1935), 1.891 of Valls (1970), 506 of Gonzalo Gayoso (1994), 4.326 of Gaudriault (1995), 810 of Lindberg (1998), 11.000 of the work coordinated by Basanta (1996-2002) and 5.000 of Gerard van Thienen (WIES). The current encoding is designed in a way that it can be updated as new iconographical motifs of watermarks are found.

[3.2.] Suggested modifications in the face of IPH's encoding

As the IPH's classification is the most used by authors, all the proposed changes are based on this classification. Regarding the "families or types" of the IPH,

it has been searching for each big group (family or type) to have a consistent content and an extension that do not force to do infinite subtypes or to be too limited. The changes and extensions proposed are mentioned as follows:

1°. A (Human figures, man…) and B (Woman) are unified, because the number of woman figures is very limited and, often, the gender of the human figures cannot be identified.

2°. The term crustacean is included in E (Fish; reptiles; insects; molluscs).

3°. The creation of a new field: "Hand", because it is a majority group in Spanish and Italian documentation.

4° "Fantastic creatures" was inserted in F (Mythological figures) as not all the included figures are fantastic.

5°. Unification of G (General plants; flowers; herbs) and H (Trees; shrubs; vines) in one field: "Flora", due to the same causes exposed on the 1st point.

6° The family "earth" is distinguished from J (Sky; earth; water) that becomes "Heavenly bodies" in order to keep the same alphanumerical classification of the IPH's groups.

7° The name of H (Trees; shrubs; vines) is changed for "Hills", and the group is unified with G.

8° Distinction of two fields in N family (Tools; clothes fittings). "Tools" is distinguished from "Clothes fittings" in order to avoid increasing the subtypes and subdivisions of this group.

9° K (Buildings: parts of the building) is broaden to "Architectural structures" including bridges, churches, wells, …

10° Q (Several objects) is specified as "Clothes equipment and attires".

11° The terminological name of R (Insignias of rank; sceptre; mace; jewels) is simplified to "Insignias of rank".

12° Deletion of the field "magic" in S (Religious or magical signs) as all signs have a clear religious meaning.

13° T (Heraldry; emblems; stonemason's marks or manufacturer's marks) is split into "Stonemason's marks or manufacturer's marks" and "Heraldry and shields" because of the extension and iconographical coherence of the second one. All the representations of watermarks with shields or elements that are not exactly heraldic but may have a heraldic connotation are included in "Heraldry and shields".

14° V (Numbers), W (Isolated letters), X (Monogram; abbreviations) and Y (Names; words) are grouped into two sections: "Numbers. Isolated letters. Monograms" and "Names, surnames, toponyms and words", because numbers usually take part of watermarks that have letters; while names, surnames, toponyms and words appear mixed.

15° "Triple O and coat of arms of Genoa" is included in U (Geometric figures) due to the amount of papers that we find with this watermark.

16° The creation of a new type: "Manufacturer's marks or personalised marks". It is created due to the huge amount of watermarks created since the end of the 19th century according to this field. "Craftsman's marks" is included in this subject and substitutes "Stonemason's marks or manufacturer's marks" of T family. A new type is also included: "Types and qualities of paper".

17° The name of the Z family (Unclassified watermarks) is changed for "Undefined watermarks", because, generally, it is not possible to associate the figure with a well-known element. This family or type occupies the letter Y because it is left free.

These modifications are schematised into two parallel columns (see Fig. 5).

IPH's Proposal	New proposal	Bernstein
A Human figures; men; parts of the human body	A Human figures and parts of the human body	Figures, anthropomorphic
B Women		
	B Hand	
C Mammalian	C Mammalian (quadruped).	Fauna
D Birds	D Birds.	
E Fish; reptiles; insects; mollusc	E Fish, reptiles, insects, molluscs and crustacean.	
F Mythological figures	F Mythological or fantastic figures	Fabulous creature
G Plants (general); flowers; herbs	G Flora.	Flora
H Trees; shrubs; wines		
	H Hills	
J Sky; earth, water	J Heavenly bodies: sun, moon, star and earth.	Mountains/heavenly bodies
K Buildings; parts of the building	K Architectural structures.	Objects
L Transport; vehicles	L Air/sea transport; rail/road transport	
M Defence and arms	M Flags. Arms and defence	
N Utensils, clothes fittings	N Tools and implements	
O Musical instruments	O Musical instruments	
P Glasses; receptacles	P Receptacle for drinking; kitchen or cooking utensils; ornamental utensils	
Q Several objects	Q Clothes and attire equipment	
R Insignia of rank; sceptre; mace; jewels	R Insignia of rank	Symbols/insignias
S Religious or magic signs	S Religious symbols	
T Heraldry; shield; stonemason's marks; manufacturer's marks	T Fleur-de-lis. Heraldic emblems and shields.	Coat of arms
U Geometric figures	U Geometric figures. Triple O and Coat of Genoa.	Geometric figures
V Numbers	V Isolated letters. Monograms. Numbers.	
W Isolated letters	W Names, surnames, toponyms and words	Letters and numbers
X Monograms; abbreviations	X Manufacturer's marks; personalised marks; craftsmen's marks. Types and qualities of paper	Marks
Y Names; words		

Fig. 5. Comparative table of classifications: IPH, New classification and Bernstein.

[3.3.] New proposal for encoding watermarks

The aim of creating an encoded qualifying system is, in one hand, to formulate a research system of watermarks, easy to use and effective; and, on the other hand, to mediate its communication by a sign system that could be internationally decoded.

Therefore, it is an alphanumerical encoding proposal by whose treelike disposition – family, group(s) and subgroup(s) – the representations of watermarks corresponding to a corpus of motifs, which are considered as a representative sample, are iconographical, systematically and hierarchically classified; for this, the quantitative taxonomical criteria prevails over the iconographical criteria. So when a motif frequently appears represented in watermarks – p. e.: hand, fleur-du-lis or coat of arms of Genoa – is classified out of the family, group and subgroup which was supposed to be classified in, if it was not frequent according to a priori iconographical criterion – motif "hand" in > "Human figures and parts of the body"; motifs "coat of arms of Genoa" and "fleur-du-lis" in > "Heraldic emblems and shields" –, as, for example, the motif "Coat of arms od Genoa", which is geometrically categorized, is frequently represented with the motif "Triple O":

· A priori iconographical criteria: motif "Coat of arms of Genoa" < family "Fleur-du-lis. Heraldic emblems and shields".

·Iconographical criteria [motif = element] + quantitative criteria [frequency = motif that gives name to the family]: motif "Coat of arms of Genoa" > Family "Fleur-du-lis. Coat of arms of Genoa. Heraldic emblems and shields".

· Iconographical criteria [motif = group] + quantitative criteria [frequency = motif that gives name to the family]: motif "Coat of arms of Genoa", which is frequently represented with "Triple O" motif > family "Geometrical figures. Triple O. Coat of arms of Genoa".

This system of treelike classification differentiates twenty-four families of watermarks, which are branched in groups and subgroups, and are linked, so that within their family or type classification leads to a subclassification of groups as subtypes and, within this subtype, a subgroups as undertypes, including categories within others. However, as in some cases it does not look possible to reflect all types of watermarks, it will be possible to complete its encoding
by using auxiliary elements.
The proposed families, which are encoded by arranging in series using the Spanish alphabet – <I> is omitted because it can be mistaken for number 1, and the spelling <Ñ> is also omitted because it does not exist in European alphabets –, are:
A.- Human figures and parts of the body, except hands
B.- Hand
C.- Mammalian (quadruped)
D.- Birds
E.- Fish, reptiles, insects, arachnid, crustacean and molluscs
F.- Fantastic or mythological creatures
G.- Flora
H.- Hills
J.- Heavenly bodies: sun, moon and star

K.- Architectural structures
L.- Air/sea transport; rail/road transport
M.- Arms and defence
N.- Tools and implements
O.- Musical instruments
P.- Receptacle for drinking; kitchen or cooking utensils; ornamental utensils
Q.- Clothes fittings and attire
R.- Insignia or emblem of rank
S.- Religious symbols
T.- Fleur-du-lis. Heraldic emblems and shields
U.- Geometric figures. Triple O and coat of arms of Genoa
V.- Isolated letters. Monograms. Numbers
W.- Names, surnames, toponyms and words
X.- Manufacturer's marks; personalised marks; craftsmen›s marks. Types and qualities of paper.
Y.- Undefined

Groups and subgroups are classified by following the Arabic numbering, this classification has a joined icon that makes them easier to identify. Due to de limits of this publication it is not possible to show the qualifying tree completely with all groups and subgroups with their icons. As an example see the one corresponding to:

K - Architectural structures
K.01.00.00	**Castle**
K.01.01.00	Generic
K.01.02.00	A secondary motif above
K.01.03.00	With other secondary motifs
K.01.04.00	Within a circle
K.01.99.00	Other castles
K.02.00.00	**Tower**
K.02.01.00	One tower
K.02.01.01	Cone-shape ended
K.02.01.02	A tower with cresting
K.02.01.03	With a turret

Within the created database, in the field "Motif", appears a fold-out of 24 families, once one is chosen if you click on the "code of the motif" field another fold-out will appear with all the groups and subgroups that belong to the chosen motif, as it can be observed in Fig. 6.

[4] Conclusions

- The organisation and classification of watermarks is a work that has been done by all paper researchers throughout history.

- The inclusion of the information systems and the creation of watermarks corpus related among themselves, such as Bernstein's digital platform, urges to create a terminology and a common classifying system in order to speed up the search.

- Watermarks encoding allows organising motifs in a hierarchical way that allows an easier search as it will be fast and efficient if the search is done based on the main motif. For example, if we have a watermark with three iconographic elements: hand, cross and letters; if the main motif is hand, the search by "hand" will be easier tan if the search is done by "cross" or "letter".

Fig. 6. Foldout with groups and subgroups that makes up the chosen family of watermarks.

Even if the search is done by cross, it is possible to not find it.

- The encoding of watermarks, as it has an implicit organisation and classification of motifs, provides us with a common descriptive language of watermarks, which is, from our point of view, the essential element for the study of watermarks.

- In order to adopt a common encoding/classification of watermarks, it would be enough to agree with the adoption of families or types and their subdivision in groups, leaving free the subdivision of subgroups, as there is a big difference of watermarks variety between countries.

- According to what has been exposed, a revision of the classifying systems of watermarks motifs is proposed. This revision could begin with the classification proposed by the IPH, as their classification is a current referent for most of the researchers.

- And finally, in order to achieve that, we propose a methodology presented with this work.

FOOTNOTES

1 All the existing method of classification and arrangement of watermarks are not presented in this work because it would lead to unnecessary and complex casuistry.

2 The Spanish Ministry of Culture financed this Project, and it was executed under the direction of the Instituto del Patrimonio Cultural de España –which depends of the Dirección General de Bellas Artes and Bienes Culturales. See (Díaz de Miranda, 2011, pp. 405-408; and Hidalgo & Díaz Miranda, 2012, pp. 169-176).

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