Resumo

Durante muito tempo, os Manuscritos de Estrasburgo foram considerados as fontes mais antigas, em língua germânica, para o estudo das técnicas de iluminura no Norte da Europa. Perdidos em 1870, no fogo da biblioteca de Estrasburgo, o seu conteúdo técnico só sobreviveu graças a uma transcrição feita por *Sir* Charles Eastlake, no séc. XIX. Vários estudos como os de Ploss e, mais recentemente, os de Oltrogge têm destacado a existência de textos com conteúdos semelhantes, agrupando-os sobre o nome de «Família de Estrasburgo». A partir destes estudos, foi possível definir claramente um corpo de manuscritos como pertencendo a esta família e nova evidência textual tem vindo a ser descoberta. Os procedimentos e receitas artísticas descritas nestes manuscritos são, na sua maioria, dedicadas à pintura e iluminura e, em especial, à preparação de cores. Existe ainda um grande número de receitas que descrevem quais as combinações mais adequadas de pigmentos e quais os ligantes a usar na iluminura. Graças a uma análise filológica e codicológica, podemos propor, para esta família de manuscritos, não só uma área geográfica mas também uma data para a sua produção, entre 1400 e 1560. Através destes textos, temos assim, dentro de um quadro preciso, os dados para uma história dos materiais e técnicas.

A descoberta de novos manuscritos e o seu tratamento, levou à criação de uma base de dados. Inicialmente, esta centrou-se nos manuscritos escritos durante o período medieval, especialmente na Alemanha e nos países limítrofes. Até agora, mais de uma centena de manuscritos foram tratados e quatro mil receitas foram transcritas. Cada instrução foi codificada numa combinação especifica de ingredientes, reunidos de acordo com a ordem em que aparecem na receita. Graças a esta base de dados é possível analisar para cada ingrediente, a sua frequência global ou a sua repetição no *corpus* de textos. Além disso, podemos também observar para certas combinações de ingredientes, *i.e.*, nas receitas, qual a estrutura básica, qual a sua frequência no corpus e evolução, de forma a perceber de que maneira uma receita foi sendo modificada ao longo do tempo ou por acção de certos factores externos.

Uma comparação com um *corpus* maior de textos artísticos medievais provenientes de países de língua germânica permitir-nos-ia destacar a originalidade e a novidade de certos processos para a produção de cores descritos nos textos da «família de Estrasburgo». Além disso, também é possível relacionar a história de um número de prescrições e correlacioná-las com técnicas de mais ampla difusão. ●

palavras-chave

TÉCNICAS DE ILUMINURA
MANUSCRITOS
RECEITAS ARTÍSTICAS
MATERIAIS
BASE DE DADOS

Abstract

For a long time, the Strasbourg Manuscript has been seen as one of the oldest German-language sources containing instructions on North European illuminating techniques. Lost in the 1870 Strasbourg Library fire, its technical content only survives in a nineteenth-century transcription made for Sir Charles Eastlake. Several studies like those of Ploss and, more recently, those of Oltrogge have highlighted the existence of texts with very similar contents, grouping them under the name of the 'Strasbourg Family'. Since the appearance of these studies, a clearly defined corpus of manuscripts has been established as belonging to this family and new textual evidence has been discovered. The artistic instructions of these manuscripts are mostly dedicated to painting and illuminating and, especially, to the preparation of colours. A great number of recipes are also concerned with suitable combinations of pigments and specific binding agents used in illumination. Thanks to a philological and codicological analysis, we can propose both a geographical area in which the manuscripts of the so-called Strasbourg tradition were produced as well as a chronological range from 1400 to 1560. Through these texts, we thus have a survey of artistic materials and techniques within a precise framework.

The discovery of new witness manuscripts and their treatment has necessitated the creation of a database. Initially, this database concentrated on manuscripts written during the medieval period, especially on those from Germany as well as from some border countries. Up until now, more than one hundred manuscripts have been treated and four thousand recipes have been transcribed. Each instruction has been coded in a specific association of ingredients, assembled according to the order in which they appear in the recipe process. Thanks to this database it is possible to examine for each ingredient its global frequency or repetition in the corpus of texts. Moreover, we can also observe in the associations of ingredients, i.e. recipes, the basic structure, their frequency in the corpus and their evolution, in order to perceive in which way a recipe has been modified over time or by other external phenomenon.

Comparison with a larger corpus of medieval artistic texts emanating from German-speaking countries would allow us to highlight the originality and the newness of certain processes for the manufacture of colours described in the Strasbourg family texts. In addition, it is also possible to relate the history of a number of prescriptions to, and to correlate them with, more widely diffused techniques. ●

key-words

ILLUMINATING TECHNIQUES
MANUSCRIPT
ARTISTIC RECIPES
MATERIALS
DATABASE

THE STRASBOURG FAMILY TEXTS: ORIGINALITY AND SURVIVAL

A SURVEY OF ILLUMINATING TECHNIQUES IN MEDIEVAL SOUTH GERMANY

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The Strasbourg Manuscript and its technical tradition

The evidence provided by, and the usefulness of, artistic recipe books for a better knowledge of artistic practices and materials has been debated by several authors for some decades (Ploss, 1962; Clarke, 2001; Oltrogge, 2005). This paper does not intend to present a summary of their characteristics and history, or even discuss their relevance when using them as a source for the historical study of artistic practices and materials. Instead, it will focus on a specific textual tradition of this kind of literature. For a long time, the *Strasbourg Manuscript* has been seen as one of the oldest German-language sources containing instructions on North European painting techniques. Its text was generally dated to the fifteenth century. However, for some specialists, such Sir Charles Eastlake, first director of the London National Gallery, the practices described may perhaps date from an earlier period (Eastlake, 1847, 126). Taking into account these characteristics, this manuscript was especially famous for containing recipes for the manufacture of oil media at a very early period. But, apart from these instructions, the manuscript is mostly dedicated to painting and illuminating and, especially, to the preparation of colours. A great number of recipes are also concerned with suitable combinations of pigments and specific binding agents used in illumination. This text is thus, at different levels, a precious witness for the

illuminating practices in medieval times. Unfortunately, the manuscript was lost in the 1870 Strasbourg Library fire. However, the artistic recipes have survived in a nineteenth-century transcription made for Charles Eastlake. Since this date, several editions of the text have been published, firstly those of Eastlake, with the *Material for a History of Oil Painting* (Eastlake, 1847), those of Berger (Berger, 1897) and those of Borradaile (Borradaile, 1966).

Like most medieval recipe books, the Strasbourg Manuscript results from compilation of older or contemporary texts. It thus shares some of its content with other books. Relevant studies like those of Emil Ploss (Ploss, 1962, 1964, 1971) and more recently those of Doris Oltrogge (Oltrogge, 2005) have highlighted the existence of texts with very similar contents, grouping them under the name of the 'Strasbourg Family'. Since the appearance of these studies, a project has been initiated at Liège University in order to define a clearer corpus of manuscripts belonging to this family [1]. For two years, new textual evidence has been discovered and the Strasbourg family currently corresponds to a corpus of sixteen manuscripts.

Thanks to a philological and codicological analysis, it is now possible to propose not only a geographical area in which the manuscripts of the so-called Strasbourg tradition were produced, but also a chronological range from 1400 to 1560. The manuscripts of the Strasbourg family mainly originate from the south of Germany (Upper German). The three main dialects of this region (Franconian, Alemannic and Bavarian) can be identified in the different versions. Some of them present consistent feature errors suggesting transpositions of an Alemannic original [2].

In the first instance, the opportunity of such a group would offer us not only a chance to reconstruct the text of the lost manuscript but also to compare different versions of a nearly identical text in order to visualize a structural basis, to study its recurrence and its evolution through time and the different members of the family, at each stage of the copying process.

The «Strasbourg family database»

The discovery of new witness manuscripts and their treatment has necessitated the creating of a database. Initially, it focussed on manuscripts written during the medieval period and especially on those from Germany and some border countries. More than 250 examples have been systematically recorded in a specific setting within the database, containing information about the title, the current location, place and date of origin, scribes or authors when possible, description of the other contents and additional information. As a second step, their content has been divided according to each of the recipes that they contain. Up until now, over 100 manuscripts have been treated and 4,000 recipes have been transcribed. The greatest part of these instructions relate to colours used in painting and illuminating [3]. They have been recorded in a second dedicated file which is accessible from the first interface, dedicated to descriptions of the manuscripts.

1. This project forms part of my doctoral thesis, some results of which are presented in this paper.

2. For example, in the 'Amberger Malerbuch', we can observe an automatical «diphthongization» of alemannic monophthongs (*sey* instead of *si(e)* 'her') (ff. 219-220, recipe 15) or misunderstanding of south-western *stat* 'stands' (south-east: *stet*) (f. 220, recipe 16).

3. Other arts have also been entered, such as metalwork, and the dyeing of textiles, leather, wood or bone.

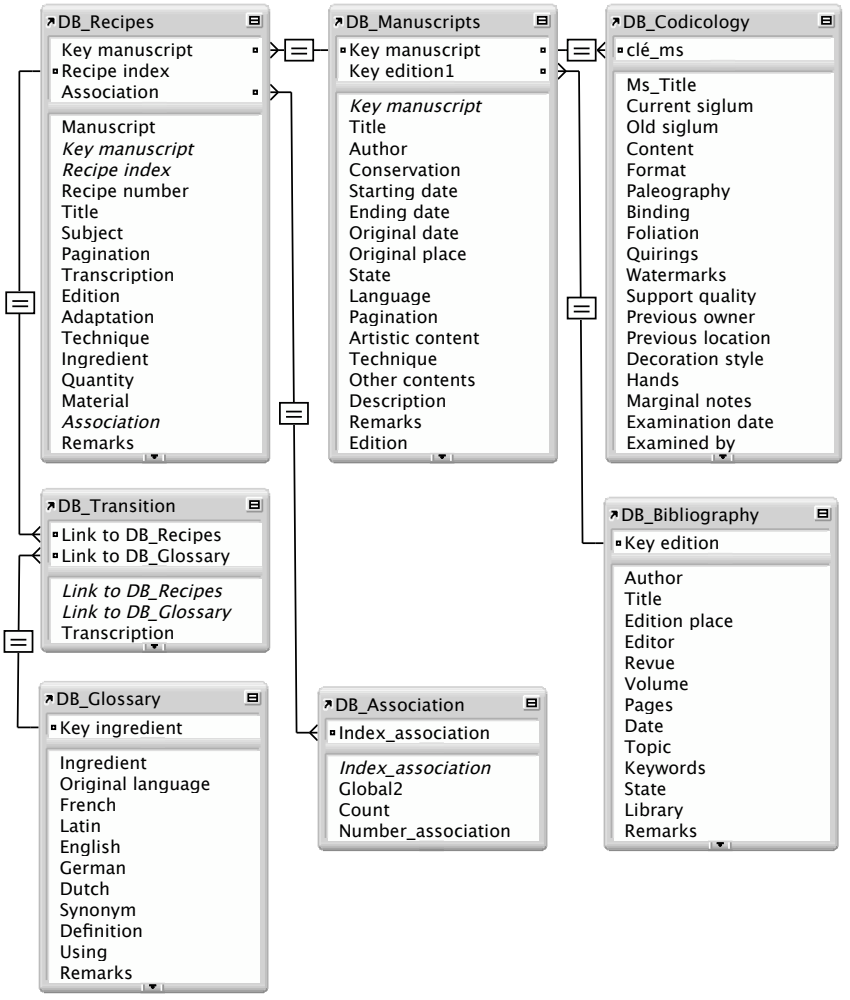


FIG.1 SCHEMA OF THE STRUCTURE OF THE DATABASE

From these instructions, a complete index of ingredients has been set-up. This glossary file lists each ingredient and includes their original formulation, the actual appellation (in German, English and French) and a short description. For most of them, the glossary also mentions their scientific name. Futhermore each ingredient has been coded using an abbreviation corresponding to the first letter of its name and a consecutive number. The glossary file is linked to a list from which it is possible to select an ingredient according to its abbreviation. This technique allows to encode each recipe as a succession of abbreviations, which reflects the specific association and chronological intervention of ingredients in a given recipe. Thanks to this abbreviation technique, it is possible to retrieve the recipes linked to a specific ingredient or a specific preparation process.When creating these associations, we have borne in mind that some ingredients were not explicitly cited. This is frequently the case when the scribe makes an allusion to an ingredient prepared in a previous recipe. Next, each association has been recorded in another file of the database

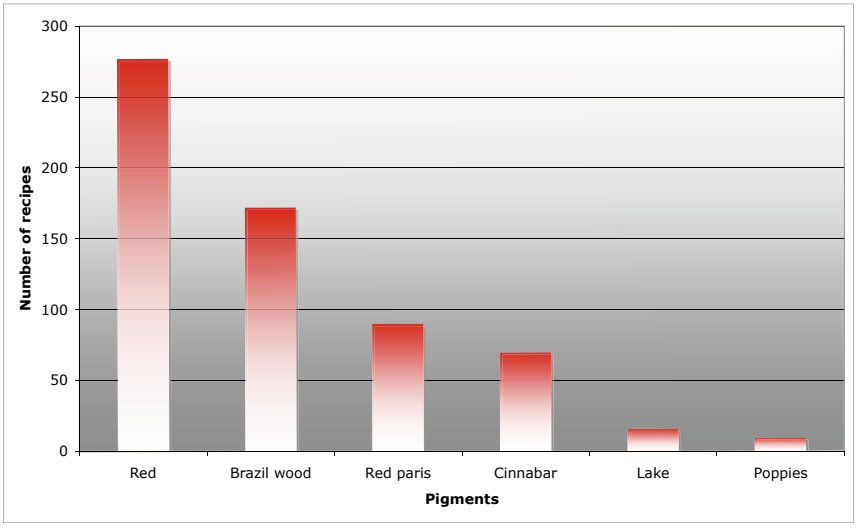
which cross-references the number of recurrences and indicates the manuscripts where this specific association appears.

The database has been cross-checked for integrity and consistency using random queries techniques. Thanks to subject classifications, queries can also be done by keywords for specific recipes, methods or materials. The global frequency and recurrence for each ingredient can be derived from the corpus of texts. Moreover, it is possible to observe, through factors such as frequency in the corpus, basic structure, and evolution, the way in which recipes were modified over time or by other external phenomenon.

Functions of the database

A survey of the materials

In parallel to scientific research and material analysis, information about the possible use of certain materials, ingredients and techniques can be obtained from the research of historical written sources. Our database enables access to this kind of information by allowing the researcher to find quickly and easily the technical instructions he needs. Searching with the database is carried out using keywords arranged in different thesauri that allow us to fine tune the result. We can thus combine the search of an ingredient, mentioned in a specific group of texts (Strasbourg Family, Heraclius, Mappae Clavicula, Theophilus,…) with a specific technique (illuminating, painting, dyeing,…). The database will count the number of recipes dedicated to this ingredient or involving it in a procedure. As an example, graph 1 presents pigments used in the Strasbourg family recipes that produce a red coulour. We note the frequent recurrence of cinnabar and Brazil wood mentioned in recipes dedicated to illumination and, less frequently, the use of gum lake but also *Papaver Rhoeas* L. species (poppies).



GRAPH 1 RED COLOURING PIGMENT FOUND IN THE STRASBOURG FAMILY TEXTS

The associations

Concerning associations, initial research was solely concentrated on the associations or recipes which are similar to those found in the Strasbourg Manuscript. This helped us not only to recognize the witnesses belonging to the Strasbourg family but also to demonstrate their membership. So far, 200 recipes have been found to be common to at least two manuscripts of the Strasbourg family. These similar recipes have been put in parallel as a means of comparing them.This comparative approach allows us to highlight the basic structure of certain recipes. Quite often, it corresponds to a small number of frequent ingredients associated together in a great number of recipes.

As an example, one of the most repeated associations is a recipe employing copper and acetic acid contained in vinegar. This instruction usually serves to obtain a green copper pigment. This was a very well known procedure in the Middle Ages and has been detected in a great number of cases in the Strasbourg family texts. Moreover, it has been identified in a very consistent formulation,which involves an identical text. We also noted that more complex procedures, involving a certain number of ingredients, are repeated less frequently in the same form throughout the different manuscripts. Of the 254 recipes dedicated to the preparation of green copper pigment using copper and vinegar, 66 include tartar, 53 add honey and 30 involve salt.

Moreover, amongst the 200 recipes common to at least two manuscripts of this tradition, many of the instructions are not isolated recipes but they are contained in different sequences. These sequences are often characterised by a more or less similar order and a specific artistic technique. These common sequences may be interpreted as the reflection of older – and probably lost – artistic manuals which perhaps served as a (partial) basis for the compilation of the manuscripts of the

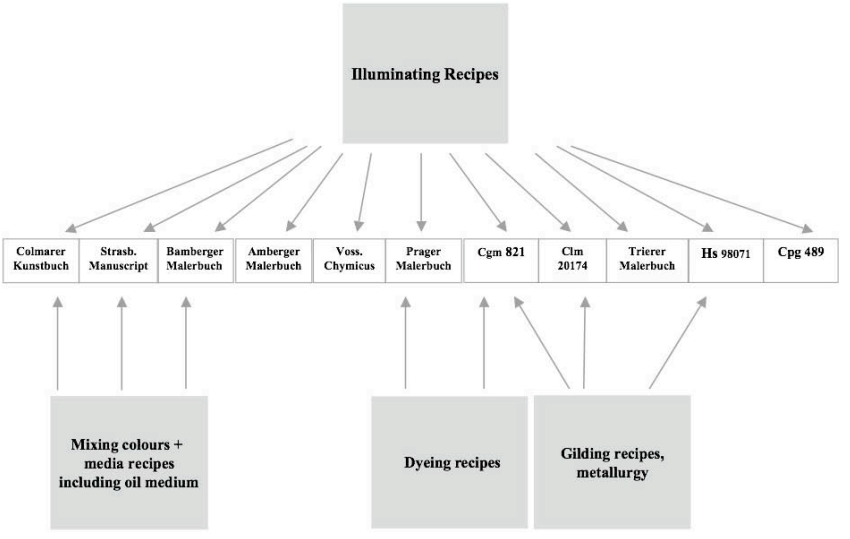


FIG. 2. DIAGRAM OF THE PARTIAL COMPILATION PROCESS OF MANUSCRIPTS OF THE STRASBOURG FAMILY

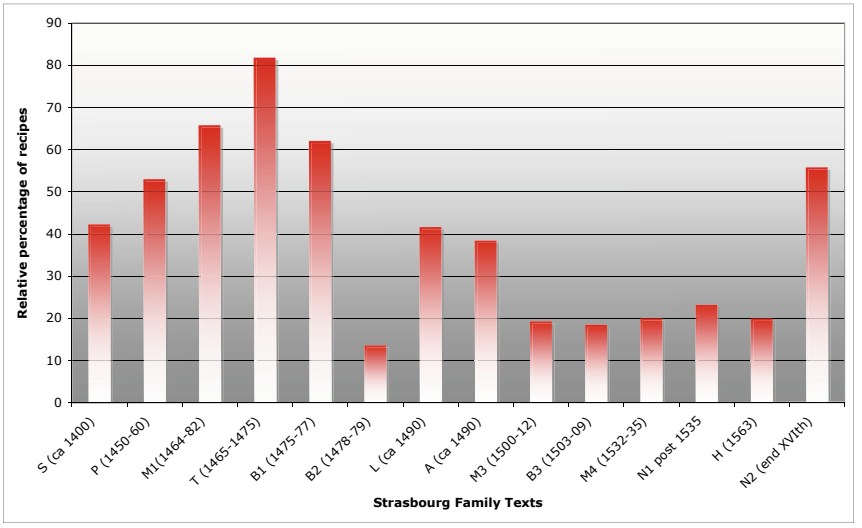
Strasbourg group. When we concentrated solely on the Strasbourg Manuscript, we observed that it seems to derive partly from two distinct sequences. The first one appears to correspond to a treatise on illumination, which has been frequently copied over time and place and from which at least a small part is found in each manuscript of the family.

The oldest manuscripts partly originated from this treatise on illumination and their recipes seem to respect more or less the same order. In the later manuscripts, the content has been reorganised, perhaps with a view to improving the manuscripts' practical use by ordering their material by subject, media and so on but also by including new procedures dedicated to other artistic techniques.

The second sequence from which the Strasbourg Manuscript may derive appears to be a more local treatise – which is only otherwise found in the so-called *Colmarer Kunstbuch* and the *Bamberger Malerbuch* – and mostly dedicated to the mixing of colours and the preparation of media. Therefore, the Strasbourg Manuscript is largely the result of a text that was widely diffused and modified, as well as another more local one.

These observations may be put in parallel with an examination of the recurrence or diffusion of recipe procedures within the Strasbourg family. For example, a great number of recipes are related to Brazil wood: most of them are dedicated to the preparation of this pigment; a great number are also dedicated to its application with a suitable media; others are concerned with the mixture of several pigments including Brazil wood.

Graph 2 presents the relative percentage of recipes dedicated to the preparation of Brazil wood in the different texts of the Strasbourg family, arranged according to their date. We observe that the older ones contain a great number of recipes dedicated to the preparation of Brazil wood but that this number decreases more or less linearly, especially in the earliest manuscripts, except for the *Colmarer Kunstbuch*



GRAPH 2 FREQUENCY OF RECIPES DEDICATED TO BRAZIL WOOD IN THE STRASBOURG FAMILY TEXTS

(B2). However, we have already noted that this manuscript is specifically dedicated to the mixing of colours and is less focussed on preparation.

We have observed that the older examples are those which are closest to the Strasbourg manuscript's first sequence (fig.2). This sequence is thought to correspond to a lost treatise on illumination. It would thus seem plausible to find a greater number of recipes dedicated to preparation of Brazil wood. In the earliest examples, we have also seen that this sequence has been modified, there are fewer recipes in common and these manuscripts are also characterised by new additions to their content in the form of treatises on metalwork for example (with the exception of the Codex Palatinus Germanicus 489 – H1 – and the manuscript N2 which is a manuscript copy of the *Illuminier Buch* of Valentin Boltz von Ruffach).

Evaluating the modification of recipe process

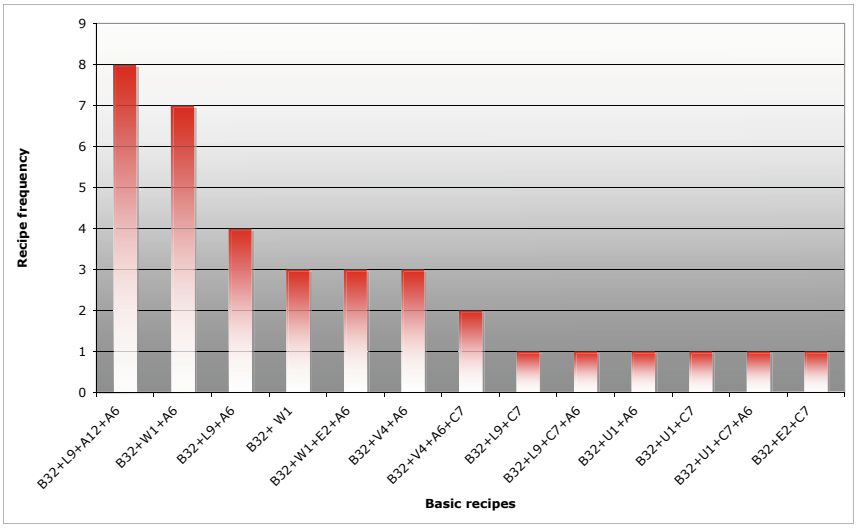
Not all manuscripts belonging to the Strasbourg family have their entire contents in common with each other. Moreover, the degree of similarity is quite sometimes different between the examples. Thanks to the database, we can examine not only the recurrence and the diffusion of a recipe or a type of recipe within the family but also its modification through time or through the different examples of the family.

When looking at the relation between the recipes of the Strasbourg texts, we can observe, on the one hand, a certain number of instructions which are exactly the same (or which perhaps differ only in the dialect or the use of some words). This implies both a similar procedure but also an identical text. On the other hand, some recipes are slightly different in terms of the modification of vocabulary, additions or suppression of information.

Quite often, we observe that the change of recipe process is often due to the addition or suppression of an ingredient. So, as the recipe books evolved and were modified by adding new texts and procedures, the recipes themselves could be modified in their technical formulations during their transmission from one manuscript to another. Frequently, the copyist was free to add, to remove or to modify some ingredients and/or procedures. It is often stated that the main reason for this change is the role the text played as a technical and instructive text. It therefore seems likely that an author may, voluntarily, have corrected the text, or added information to it. However, a great deal of evidence suggests that these recipes were also assembled in book form to serve a more literary, non-practical purpose.

This phenomenon could indeed be explained in several ways: it could be due to an attempt to improve or to diversify a previous formula; it could correspond to a «quid pro quo», in which an unknown or expensive ingredient was replaced by a more well known one or a less expensive one; it may have been a voluntary reduction of the recipe text. In the later case, the most obvious parts of the recipe are not recorded, the copyist conserving only the essential part of the recipe (as in the case of an «aide-mémoire»). Furthermore, changes to the recipe may occur with a misunderstanding of the procedure. This could happen when the copyist was not a practitioner or when he was not able to translate and/or to transcribe an unreadable formula (Halleux, R., 1989).

Looking at the first sequence from which the Strasbourg Manuscript originated, the procedures are almost the same to the ones occuring in the older examples of the family. They seem to respect more or less the same order of recipes. In the later ones, the content has been reorganised and the recipes are more complex.
If we focus more specifically on the procedure in itself within the texts of the Strasbourg family, and looking at instructions dedicated to the preparation of the Brazil wood, the database counts up to sixty five entries.



GRAPH 3 TYPICAL PROCEDURES FOR THE PREPARATION OF THE BRAZIL WOOD AND THEIR FREQUENCY IN THE STRASBOURG TEXTS

Graph 3 summarizes the basic procedures and their frequency in the family texts. The most repeated recipe dedicated to this procedure corresponds to an association of Brazil wood with potash lye made of ashes from different trees and alum (B32 + A12 + L9 + A6). Another frequently repeated recipe consists of the extraction of the colorant agent in Brazil wood through water and the addition of alum (B32 + W1 + A6). We find a fewer number of preparations that specify Brazil wood plus an undetermined lye (B32+L9+ A6) and, even less frequently, the use of Brazil wood and water (B32 + W1).
In the Strasbourg family texts, we noted in particular two different ways in which the recipe is modified:

Modification 1 (addition)
Comparing the characteristic associations, we see that some basic recipes are still present as a sort of nucleus to which other ingredients may have been added. One of the simplest only consists of Brazil wood whose colorant is extracted by putting it in a lye (B32 + L9). The colour can next be fixed on alumine or alum. The addition of alum allows a beautiful red colour to be obtained (B32 + L9 + A6). Some other chemical agents can also be added in order to modify the pigment's hue or charac-

teristics. As an example, the addition of white lead serves to obtain a more opaque colour (B32+L9+A6+W5).

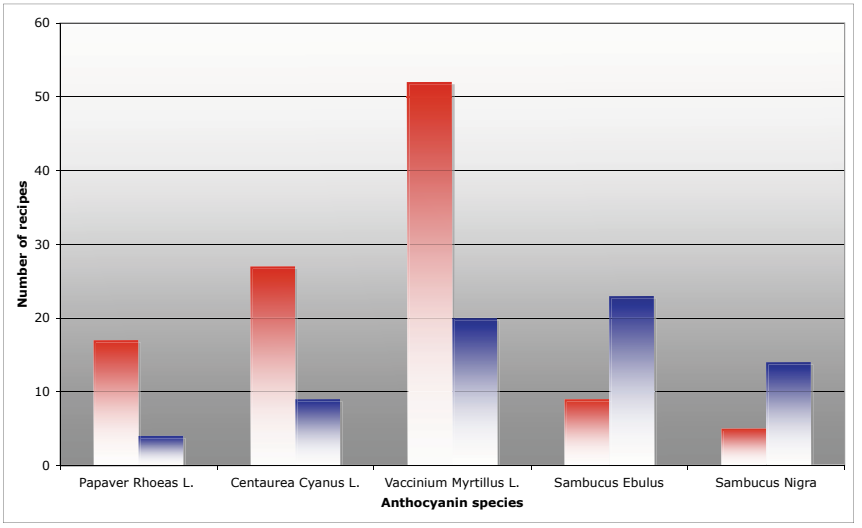
Example 2 (substitution)
In some other cases, ingredients have been replaced by other ones.
As an example, in the later manuscripts of the family we find the typical association of Brazil wood extracted with water and fixed with alum (B32 + W1 + A6), or Brazil wood extracted in a lye and fixed with alum (B32 + L9 + A6); in the oldest ones, the lye may be replaced by urine (B32 + U1 + A6) or vinegar (B32 + V4 + A6). Chalk can be added in order to modify the characteristics of the colour. Quite often, it is obtained from crushed egg shell. In the earliest ones, we found recipes where vinegar is mixed with beer or the lye is mixed with urine. Generally, these changes are due to technical or aesthetic reasons but sometimes, when comparing a certain number of recipes, we can conclude that the the name of an ingredient has probably been misunderstood and replaced by another substance's name whose presence cannot be justified in the recipe process from a technical or aesthetic point of view.
Thanks to the database, it is possible to identify the basic structure of a great number of recipes as well as study the differences and modifications appearing in the Strasbourg family texts. It is also possible to try to postulate in which ways the procedure has been modified, and, by highlighting similar or parallel recipes, to trace back the route of the artistic instructions, in a certain way, to reconstruct the life of a recipe.

Comparison with a larger group

This method makes sense in the current framework of my PhD thesis which seeks to demonstrate and to study the place and the originality of the Strasbourg Manuscript within the family. However, comparison with a larger corpus of medieval artistic texts emanating from German-speaking countries would allow me to highlight the originality and the newness of certain processes for the manufacture of colours described in the Strasbourg family texts.

Example of anthocyanin recipes

As an example, we have seen that the Strasbourg family texts convey recipes dedicated to the manufacture of red pigment or more exactly colorant obtained from poppies (graph1). The typical red colour of this species is due to the presence of anthocyanin colorant.
The use of anthocyans is very frequent in the Strasbourg family texts. If we compare it to a larger group we see that more than sixty percent of the procedures including anthocyans come from the Strasbourg family texts. Graph 4 presents the proportion of recipes found in the database and employing several species of flowers or fruits for their anthocyanin colorant agent. The Strasbourg family texts are marked in red and the other encoded manuscripts are in blue. We observe the use of poppies and



GRAPH 4 NUMBER OF RECIPES USING ANTHOCYANIN COLORANT IN THE STRASBOURG FAMILY TEXTS AND IN THE OTHER MANUSCRIPTS CONTAINED IN THE DATABASE

cornflowers but also bilberry is also a lot more frequent in the Strasbourg familly texts than in other texts. Eighty percent of recipes that include poppies can be found in the Strasbourg family and more than seventy percent of recipes with cornflowers. Oppositely, the use of berries such elderberry or other *Sambucus* species is more frequent in the other texts.

Conclusion and perspectives

Up until now a comparative analysis has been performed for every recipe in common between the Strasbourg Manuscript and the other witnesses of the textual tradition in order to study the recurrence and evolution of the recipes.

One may think that, through these texts, we have a survey of illuminating practices in a more or less clearly-defined framework. However, these manuscripts convey texts that could be qualified as «living», since they have not always been the object of a simple copy but have been adapted and modified in several manuscripts. So, if their «textual architecture» is more or less stable over nearly one and a half centuries, the ingredients used in the recipes have been modified, and some procedures have been expanded with other ingredients. Several explanations may be suggesting for explaining these modifications. Moreover, the nature of certain variations or errors across the text can often tell us something about the author and the context of compilation. Let us take the example of substitution, which is a change in ingredients used in a recipe. On the one hand, substitution may be due to palaeographical problems that resulted in a word being misunderstood and thus being replaced by another well-known one; on the other hand, it may correspond to a deliberate technical improvement by the scribe of the recipe.

Finally, as illustrated through these few examples from a well known family texts, we would insist on the fact that a recipe or a manuscript should not be studied in isolation. Comparison with a larger corpus of medieval artistic texts coming from german language countries allows us to underline the originality and the newness of certain processes for the manufacture of colours described in the Strasbourg family texts. On another way, it is also possible to relate the history of number of prescriptions and to correlate them with more widely diffused techniques. ●

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Biography

After a Master's degree in History of Art and Archaeology, I am now conducting research into historical artistic practices with a specific focus on the medieval period and, more precisely, the techniques of painting and illuminating. I am studying the written sources for art technological research and, notably artist's recipe books. As part of my PhD, I studied the so-called Strasbourg Manuscript and the other witness manuscripts in relation to its texts. Dr. Sylvie Neven, Université de Liège, PhD Student, Université de Liège, Département des sciences historiques, Histoire de l'Art et Archéologie, Quai Roosevelt, 1B, B – 4000 Liège, Belgium, phone: +32 4 3665443, Sylvie.Neven@ulg.ac.be