

# Ways of making digital editions of historical recipes and experimental texts: The Making and Knowing Project

*The Making and Knowing Project. Intersections of Craft Making and Scientific Knowing.* <https://www.makingandknowing.org/bnf-ms-fr-640/>

(Last Accessed: 2025-05-05). Reviewed by  Sarah Lang (Max Planck Institute for the History of Science), slang [at] mpiwg-berlin [dot] mpg [dot] de.

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## Abstract

The *Making and Knowing Project* is an educational and research project that has employed citizen science to produce a digital critical edition of the 16th-century manuscript BnF Ms. Fr. 640, along with accompanying educational resources. Situated within a historiographical turn centered around materiality and practical making, the *Making and Knowing Project*, led by Pamela Smith, explores the tacit knowledge of early modern artisans and practitioners. A major component involves the recreation of historical recipes in educational laboratory settings, documented in the form of essays. The other central component is the digital critical edition of the anonymous French technical tract, BnF Ms. Fr. 640. The first version of the edition and website was completed during the initial funding phase by 2020. Further funding has supported continued development of the edition and related outputs, such as a teaching companion and the digital scholarly editing tool *Edition Crafter*. *Making and Knowing* is a flagship project in historical recipe research and in the application of experimental methods in the history of science and knowledge.

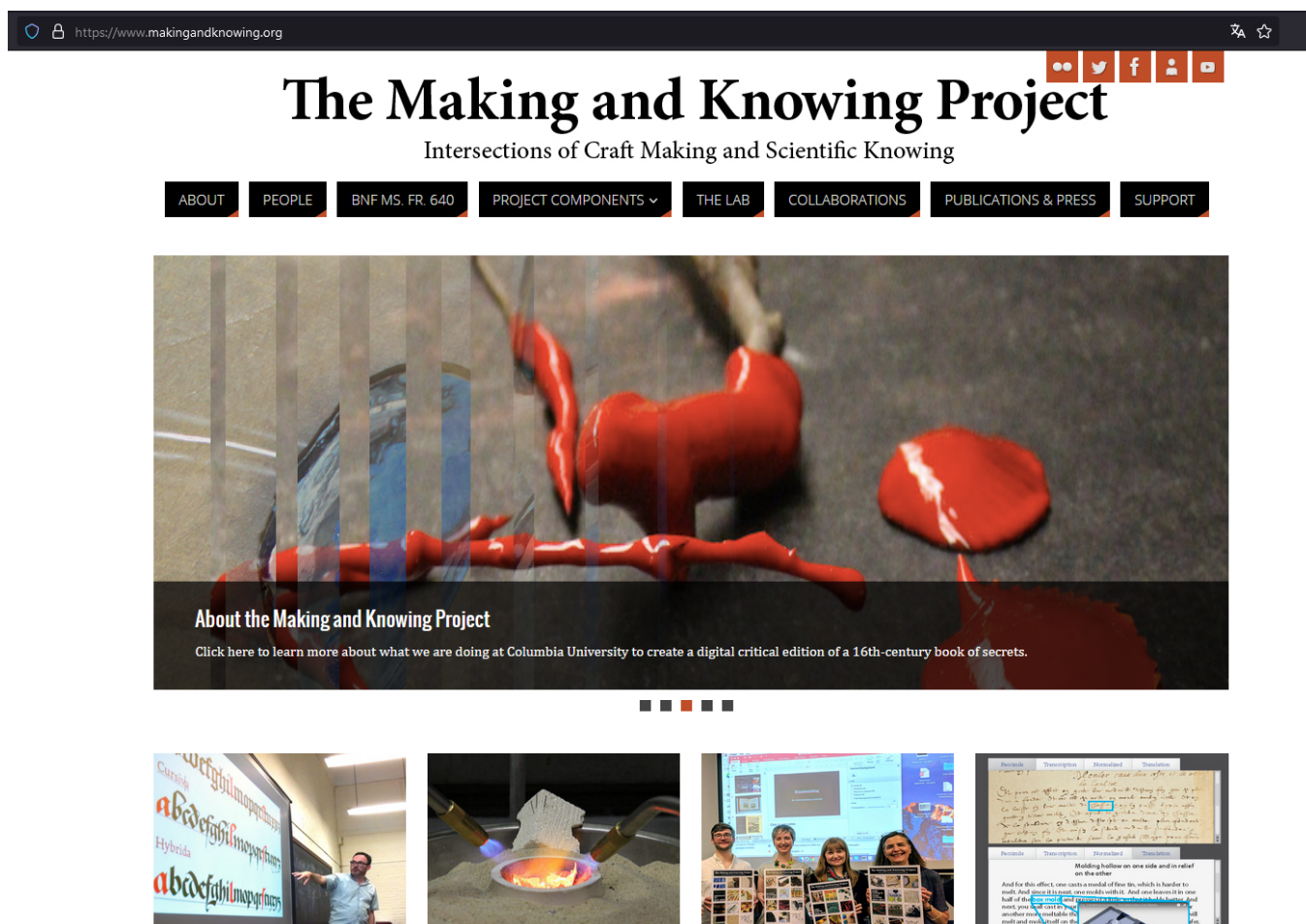
## Introduction

The *Making and Knowing Project* (with the subtitle “Intersections of Craft Making and Scientific Knowing”) is situated at the intersection of the experimental history of science,<sup>\*</sup> recipe research and the Digital Humanities, leveraging the help of citizen scientists to create a digital scholarly edition.<sup>\*</sup> The recreation of historical recipes within educational laboratory contexts, documented in detailed essays, complements a digital critical edition of a 16th-century technical treatise, BnF Ms. Fr. 640. While the initial version of this digital scholarly edition was completed during the first funding run in 2020, the project later received additional funding to hone in on Digital Humanities aspects, which go beyond the first version of the digital edition. The *Making and Knowing Project* has received the Eugene S. Ferguson Prize (2019) and the Renaissance Society of America’s (RSA) Digital Innovation Award (2022).

In seeking to understand historical practices of knowledge-making, historians of science have moved away from a narrowly defined concept of science as distinct from a broader history of knowledge. This shift reflects a growing recognition that knowledge production extends beyond the traditionally elite domains typically

associated with the sciences. By focusing solely on a conventional history of science, scholarly attention has often been limited to specific practices and actors—frequently members of social or intellectual elites—while marginalising or overlooking the contributions of more everyday forms of knowledge.

The *Making and Knowing Project* is situated within a historiographical tradition that centres the study of knowledge rather than science alone. It aligns with the material and practical turns that have reshaped epistemological and historical inquiry in recent decades (Rheinberger 2001). Closely related to these developments is the adoption of experimental methods, which have transformed the study of historical craft practices. Once viewed as peripheral or esoteric, such practices are now understood as central to the emergence of modern science and knowledge-making. In this framework, the historical practices of artisans, craftspeople, and alchemists are reframed not merely as precursors to scientific disciplines such as chemistry, but as integral components of their historical development (Smith 2006, 292). This perspective emphasises the complex interrelationship between textual sources and embodied, material practices.\* With the emergence of the experimental history of science, the so-called 'RRR methods'—reconstruction, replication, and re-enactment—have become a pivotal tool for investigating the tacit and practical dimensions of historical scientific practices (Hendriksen 2020, 314).\* These methods help address the documentary gaps in historical recipes (Fors et al. 2016).



The main project website, which likely serves as the primary entry point for most users before navigating to the digital edition itself.

# The Making and Knowing Project

Intersections of Craft Making and Scientific Knowing

ABOUT

PEOPLE

BNF MS. FR. 640

PROJECT COMPONENTS ▾

THE LAB

COLLABORATIONS

PUBLICATIONS & PRESS

SUPPORT

## BnF Ms. Fr. 640

The digital critical edition is openly accessible at <https://edition640.makingandknowing.org>.

[Hi-Def Images of the Ms. \(Gallica\)](#)

When citing the edition, please use:

The Making and Knowing Project, Pamela H. Smith, Naomi Rosenkranz, Tianna Helena Uchacz, Tillmann Taape, Clément Godbarge, Sophie Pitman, Jenny Boulboulé, Joel Klein, Donna Bilak, Marc Smith, and Terry Catapano, eds., *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640* (New York: The Making and Knowing Project, 2020), <https://edition640.makingandknowing.org>.

Please visit our [edition citation page](#) to learn more.

### A Book of Secrets?

BnF Ms. Fr. 640 resembles most closely “books of secrets” that began circulating in the Middle Ages and then were printed in large numbers from the last decades of the sixteenth century. Lacking a clear title, the manuscript text was bound in the seventeenth century with the title of *Choses Diverses*, and then as *Recueil de recettes et secrets concernant l'art du mouleur, de l'artificier et du peintre* by the BnF. Although “books of secrets” sound esoteric, they are, in effect, books of techniques, which, while practical and useful, also hint at the tacit dimension and initiation process of much craft knowledge.

BnF Ms. Fr. 640 differs significantly, however, from other such collections of techniques in its apparent lack of formulaic recipes, its constant reference to the writer's own experiences, its extensive observations of animal behavior, and its sketched illustrations of technical points. The margins of the instructions are filled with the practitioner's comments on his experiments with different materials and procedures, an indication that the manuscript was most likely a set of working notes. The anonymous author-practitioner is a vocal and sometimes self-reflective witness to his culture, and his text offers insight into how natural materials and art objects were collected, appreciated, and circulated in a period of burgeoning production and consumption of material goods. BnF Ms. Fr. 640 provides a rare view into the experience and significance of experimenting with and improving artistic techniques, as well as into attitudes to natural materials and processes.

▼ [Click here to see a marginal annotation from the Ms.](#)



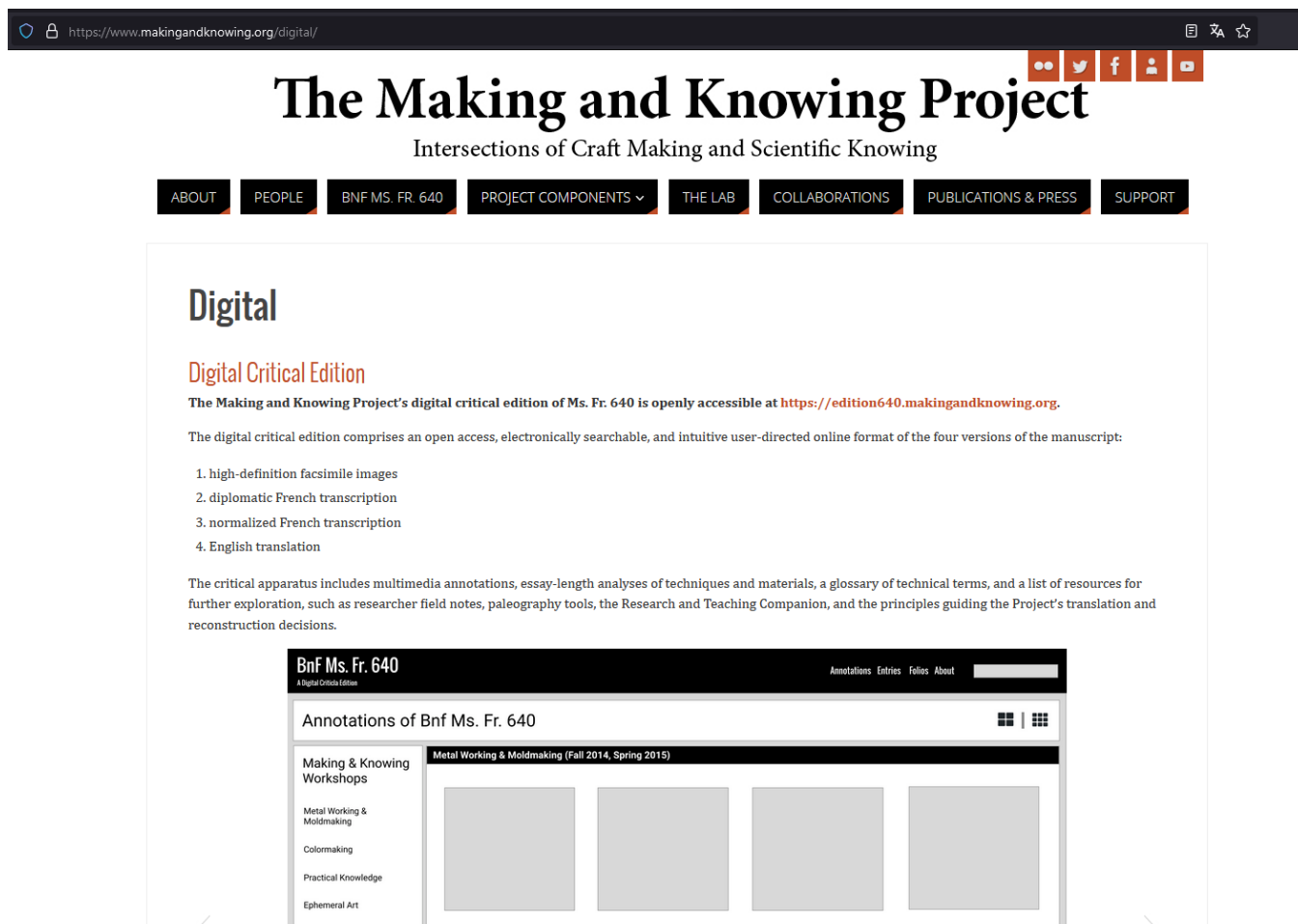
“About” page briefly describing the manuscript, linking to high-resolution images in Gallica, and displaying the book's spine.

Under the leadership of Pamela Smith, the *Making and Knowing Project* has employed citizen science to craft a digital critical edition of BnF Ms. Fr. 640 (see the main website in Fig. 1). Li (2020, 586) describes the edition as “an exceptionally close reading of the sixteenth-century manuscript Ms. Fr. 640, an anonymous early modern source composed of handwritten entries that pertain to the history of science, art history, and material culture.” Over 500 collaborators helped create a full transcription and translation for 340 pages of manuscript. Over one hundred essays, many created by ‘grad scholars’ participating in laboratory seminars, represent an impressive output of the citizen science side of the project. Grounded in the historiographical turn centered on materiality and craftsmanship as sources for the history of knowledge beyond scholarly discourse, the project investigates the tacit knowledge (Polanyi 2009, Sibum 2020) of early modern artisans and practitioners. In its description (“About” section, see Fig. 2), the project frames itself as both a research and pedagogical initiative exploring intersections between crafts making and scientific knowing. It explores the earliest phases of a period referred to as the “Scientific Revolution” where artisanal making and scientific knowledge production using experiments still overlapped.\* The *Making and Knowing Project* presents the results of its research at the intersection of laboratory and archival work using the digital medium. The digital edition was first launched in 2020 and updated to a more user-friendly version in 2021.\*

# The Project

The *Making and Knowing Project* is situated at the Columbia University Center for Science and Society and led by Pamela Smith (Seth Low Professor of History, Director of the Center for Science and Society), Naomi Rosenkranz (Assistant Director) and Caroline Surman (Project and Communications Coordinator).<sup>\*</sup> Apart from the editors, a considerable number of individuals have contributed to the project, ranging from Digital Humanities professionals, palaeographers, postdoctoral and visiting scholars, makers, teaching assistants to student research associates and laboratory assistants.<sup>\*</sup> The project (and its web components) are twofold: A project website containing all activities revolving around *Making and Knowing* as well as the Digital Critical Edition of BNF Ms. Fr. 640 whose first version was released in February 2020. The *Making and Knowing Project* also maintains a number of social media outlets to keep the public and research community updated on the current state of the project. Apart from the Flickr photo repository, the project has X, Facebook, and YouTube accounts.<sup>\*</sup> The “Publications and Press” section provides an extensive overview of outputs generated in the *Making and Knowing Project*, covering a wide range of categories from a GitHub sandbox, public lectures, scholarly articles and books, press mentions to artistic responses.<sup>\*</sup>

Under “Support”, the project declares itself as “a largely self-funded initiative” relying on federal or internal grants as well as donations, and its funding sources are listed.<sup>\*</sup> The “Collaborations” tab lists an impressive number of collaborating institutions.<sup>\*</sup> In “The Lab”, users of the website are redirected to a YouTube playlist containing the video outputs of the project.<sup>\*</sup> The “Project Components” tab provides further information on text workshops, lab seminars, and working groups previously held in the context of the project as well as digital project components. The somewhat cryptically named dropdown option “Digital” (Fig. 3) leads users of the website to information on the digital critical edition.<sup>\*</sup> This offers diplomatic and normalized French transcriptions as well as an English translation of BNF Ms. Fr. 640 alongside high-resolution facsimile images. A YouTube video of the Beta version is embedded as a demo. Below are two lists of “annotations” although the purpose of those lists remains unclear to the author of this review. After it follow links to earlier prototypes of the digital edition as well as the project sandbox, a GitHub.io site allowing users access to experiment with the data underlying *Making and Knowing*. Long-term sustainability of the digital edition is provided by the Columbia University Libraries where it is provided as Open Access. The page further documents three 2017/2018 Digital Humanities courses in collaboration with the project. Through the use of ‘expert crowd sourcing’, i.e., citizen science in the form of university class projects, the project has created a critical edition and English translation of its source.<sup>\*</sup> For example, the first transcription and markup were created during a series of three-week workshops with graduate students, beginning in 2014, teaching them practical skills in middle French palaeography while yielding base data for the digital edition.<sup>\*</sup> The replications of historical recipes were conducted as part of laboratory seminars involving modern expert practitioners, such as conservators, artists, and craftspeople.



The “Digital” section of the project site, which provides access to the digital critical edition, though its title “Digital” may be somewhat confusing.

## The Digital Critical Edition

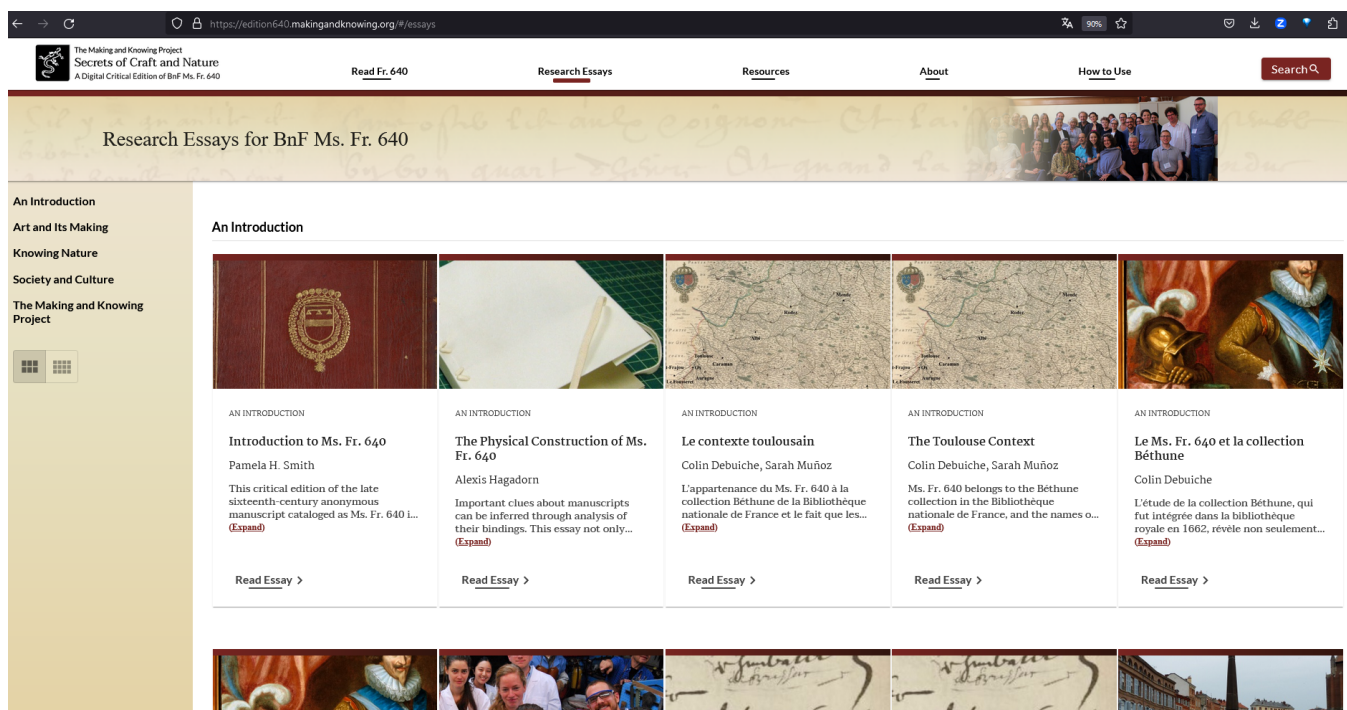
Between 2014 and 2020, the project's main focus was creating a digital critical edition of an anonymous French technical manuscript dating from the 16th century, BnF Ms. Fr. 640. The manuscript, begun sometime after 1579 by an anonymous author, consists of 170 folios, or 340 pages, of closely written text with hand-drawn figures. It contains recipes, instructions, notes, and first-hand accounts of experiments with diverse materials, techniques, and observations from pigment application to imitation gem production, compiled over an unknown period, probably until around 1588. The resulting manuscript is now known as Bibliothèque nationale de France, Ms. Fr. 640. It is a unique record focusing on processes and the practice of making, and thus an invaluable source for the history of craft and material culture in the late sixteenth and early seventeenth centuries.

This manuscript was transcribed and is given in its original French as well as an English translation. To satisfy the particular needs of editing the text of artisanal recipes, the critical apparatus offers not only annotations but also essay-length analyses and a glossary of technical terms. Apart from this multimedia apparatus to the text itself, the project held laboratory seminars, workshops, and working groups bringing together a wide array of interdisciplinary expertise whose results can also be accessed on the project website. The laboratory seminars would, for example, bring together university students (“grad student scholars”) and artisanal experts (from museums or craft-making contexts) to reconstruct the recipes contained in BnF Ms. Fr. 640, thereby understanding it better. The tacit and gestural knowledge as well as

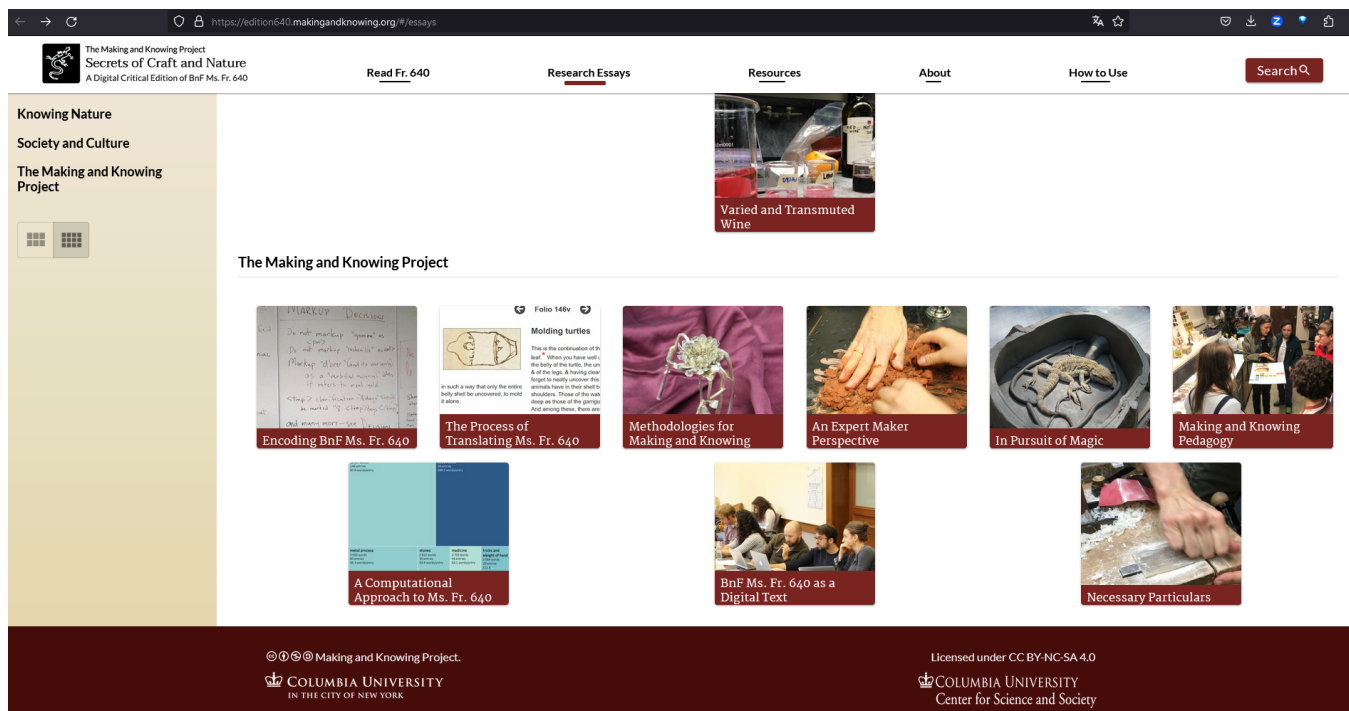
practical insights from these historical-critical experiments thus function as a new dimension of critical apparatus to further inform the reader, just like linguistic notes or notes on the transmission of a historical source.\*

The “BNF MS. FR. 640” tab provides a central point of entry to the digital edition, situating the source briefly as part of the “books of secrets” genre, recipe books or how-to manuals which had become especially popular in the last decades of the 16th century.\* It contains a citation suggestion and links to a sub-site dedicated specifically to citing the edition. Since the identity of the person responsible for writing or compiling BnF Ms. Fr. 640 is unknown, they are referred to as “the author-practitioner” throughout the *Making and Knowing Project*. This technical writing transmits the “maker’s knowledge”—the tacit or gestural knowledge of craftspeople who, previously illiterate, began recording their recipes during the print boom between 1490 and 1800. However, the editors describe BnF Ms. Fr. 640 as singular within this genre, as it is filled with self-reflexive commentary and process notes by the author-practitioner, offering a unique window to their ways of making and knowing.

Once the user of the website clicks “Explore” or any other link to the edition itself, one is directed to a dedicated landing page.\* From there, one can choose to watch a video, “Read the edition”, “Learn more” (leading to the “About” page) or access a list of resources and featured essays (Fig. 4, 5, 6, 7).\* The essays all have their own DOI and citation suggestions.\* Their topics range from essays explaining the edition itself (Fig. 5) (“An Introduction to Ms. Fr. 640 and Its Author-Practitioner”, “Ma<math>r</math>king and Knowing: Encoding BnF Ms. Fr. 640”, “The Manuscript Seen from Afar: A Computational Approach to Ms. Fr. 640”), information regarding the manuscript as a text-bearing object (“Making Ms. Fr. 640”, “The Language of Experience in Ms. Fr. 640”) to contextual information (“Artillery in 1590s France”, “Pigments in Sixteenth-Century Europe”) and experimental recreations of recipes in BnF Ms. Fr. 640 (“Counterfeit Coral”, “Uses of Sulfur for Casting”) (for examples of the essays, see also Fig. 6 and Fig. 7). Given the French origin of the manuscript, some of the essays are provided both in French and English versions.



Overview of the research essays, including an introduction to the manuscript and its physical construction, as well as examples of texts in both French and English, since some essays are available in both languages.



Another example of the essay overview page, here showing essays about the project itself—its encoding, translation, and methodologies—as well as reflections on the edition as a digital text and computational approach.

The Making and Knowing Project  
Secrets of Craft and Nature  
A Digital Critical Edition of BnF Ms. Fr. 640

[Read Fr. 640](#)
[Research Essays](#)
[Resources](#)
[About](#)
[How to Use](#)

# ←

## An Introduction to Ms. Fr. 640 and Its Author-Practitioner

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Director, Making and Knowing Project and Seth Low Professor of History, Columbia University

DOI: <https://www.doi.org/10.7916/ny3t-qg71>

**Abstract**

This critical edition of the late sixteenth-century anonymous manuscript cataloged as Ms. Fr. 640 in the Bibliothèque nationale de France was created through the work of team members, students, and collaborators of the Making and Knowing Project at Columbia University. The technical and artistic “recipes” contained in Ms. Fr. 640 provide an outstanding opportunity to explore the epistemic and historical intersections between craft making and scientific knowing, especially in light of the emergence of a new science in the following centuries. Ms. Fr. 640 provides important insights into the material, technical, and intellectual worlds of late sixteenth-century Europe, and brings a better understanding of how and why nature was investigated, used in art, and collected and appreciated in early modern Europe. It sheds light, as well, on the type of knowledge possessed by handworkers, known today as “practical knowledge,” “how-to,” or “makers’ knowledge.” At the heart of the Edition of Ms. Fr. 640, however, lies an intriguing puzzle: who was the anonymous individual who wrote down (and in many cases tried out) these 930 entries filling 170 folios, and why did a French nobleman collect and preserve this manuscript?

**Cite As**

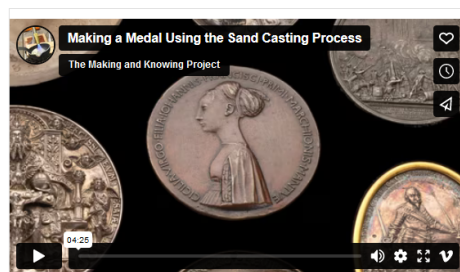
Smith, Pamela H. “An Introduction to Ms. Fr. 640 and its Author-Practitioner.” In *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640*, edited by Making and Knowing Project, Pamela H. Smith, Naomi Rosenkrantz, Tianna Helena Uchacz, Tillmann Taape, Clément Godbarge, Sophie Pitman, Jenny Boulboulé, Joel Klein, Donna Bilak, Marc Smith, and Terry Catapano. New York: Making and Knowing Project, 2020. [https://edition640.makingandknowing.org/#/essays/ann\\_300\\_ie\\_19](https://edition640.makingandknowing.org/#/essays/ann_300_ie_19). DOI: <https://www.doi.org/10.7916/ny3t-qg71>

**Making and Knowing**

This critical edition of a manuscript held by the Bibliothèque nationale de France (BnF), catalogued as Ms. Fr. 640,<sup>1</sup> was created through the work of team members, students, and collaborators of the Making and Knowing Project.<sup>2</sup> The Project, founded in 2014 by Pamela H. Smith, is a research and

Example of a research essay presented in the project’s minimal edition format.

sixteenth century—the Poncet—suggests a background as a founder of metals. His apparent lack of knowledge about the actual casting process for cannons—which took place hidden from prying eyes behind the walls of the Arsenal—indicates that he was almost certainly not involved in cannon founding.<sup>35</sup> Sculptors and founders were in close contact, however. The state foundries in the Venetian Arsenal, for instance, were sometimes used by sculptors.<sup>36</sup> Founders often became sculptors. For example, Claude Pelhot, who cast the remarkable sculpture of *Dame Tholose* in 1544, was a master founder in the Toulouse Arsenal. Pierre Poncet was apprenticed in 1537–40 to Pelhot. The author-practitioner mentions a large sculptural portrait of Jesus that he made when experimenting with different molding “sands” (fol. 85v), and numerous entries in Ms. Fr. 640 have to do with such experiments in making sand molds, especially for portrait medals (Vid. 2). Whether the author-practitioner was a sculptor with a background in a foundry must remain an open question, but he shares many interests with the well-documented arsenal founder of Toulouse, Barthélémy Fraysse.<sup>37</sup>



Vid. 2. *Making a Medal Using the Sand Casting Process*, The Frick Collection, dir. Diana Mellon, 2017. This video shows the process of making a medal using sand molds, with Making and Knowing Expert Maker, Tonny Beentjes, filmed in the Making and Knowing Lab, 2017. Public Domain.

### The Identity of the Author-Practitioner II: The Scholarly Author

The many practical instructions and observations, as well as the firsthand testing and trying of materials in Ms. Fr. 640 indicate the space of an artisanal workshop.<sup>38</sup> In contrast, the first and last folios of the manuscript, with their long lists of books in Latin, Italian, and French, and the scattered passages in Latin, give the impression of a scholarly background, with a training in grammar school and perhaps some years of university. The author-practitioner seems to know some Italian and select words in German and he may even have traveled in Germany.<sup>39</sup> He comments acutely

Example of an essay that includes an embedded video, illustrating how video documentation makes the experiments accessible to users of the edition in the digital format.

The digital scholarly edition (see Fig. 8, 9, 10, 11, and 12 for screenshots of the user interface) provides detailed information on the manuscript, its author-practitioner, and the making of both the manuscript and the edition itself. It outlines principles of transcription, translation, and encoding, presented through website documentation and accompanying scholarly essays. The digitised facsimile pages derive from Gallica, BnF's digital library. The edition was developed through workshops, courses, and conferences held within the *Making and Knowing Project*. Its markup, in a custom XML format inspired by the Text Encoding Initiative (TEI) standard, is available via the project's GitHub repository, where each folio appears as three XML files: a diplomatic transcription (verbatim in the original French), a lightly normalised version (with added punctuation and diacritics), and an English translation.

The “Resources” section provides access to further material such as a glossary and an extensive bibliography for the edition.<sup>\*</sup> The principles of transcription and how exactly features from the TEI encoding are rendered in the web view are explained in a lot of detail. A “How to Use” section informs visitors of the site how to navigate, for example, the dual pane view of the digital edition or how to search the edition thematically using the tags in the “List of Entries”.<sup>\*</sup> The “Reconstruction Insights” page provides another point of entry for accessing the research essays.<sup>\*</sup>

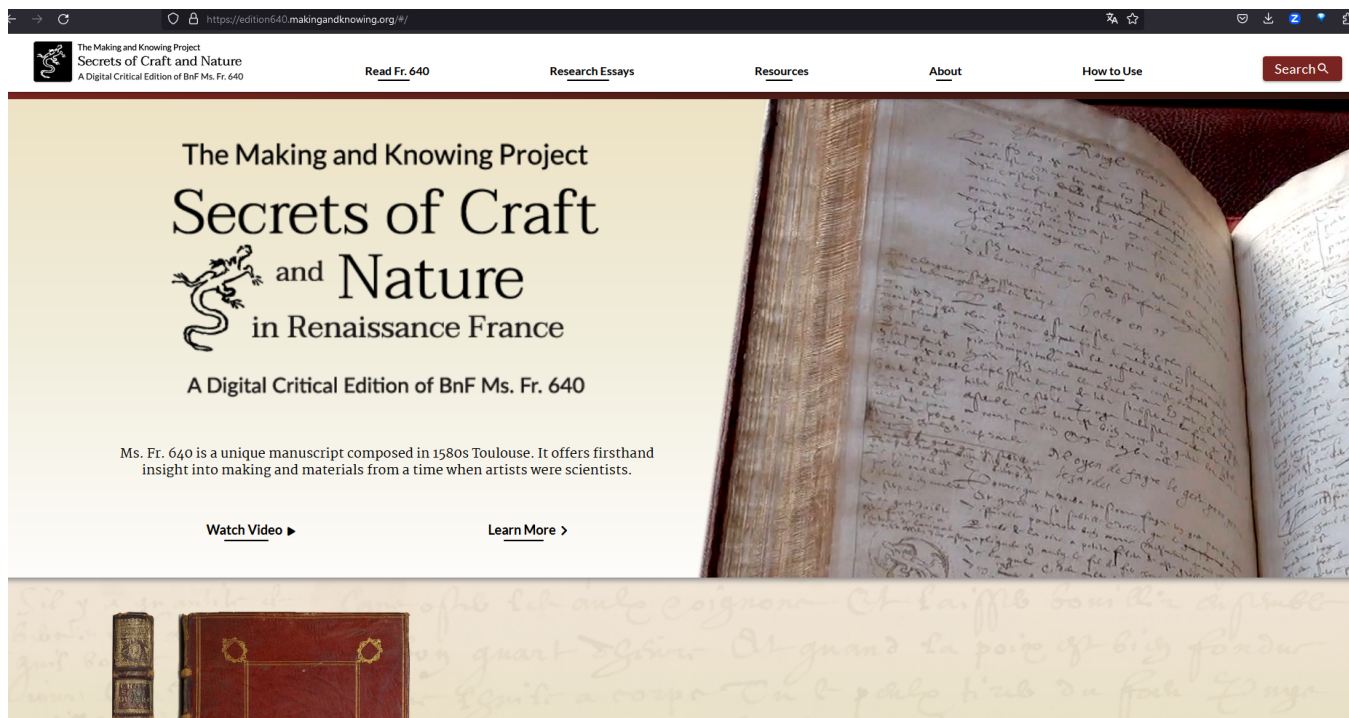
Manuscript data can be accessed via a GitHub repository.<sup>\*</sup> The edition itself provides a parallel view of text (transcriptions or translation) and facsimile images.<sup>\*</sup> The “About the Edition” page contains explanations regarding questions such as ‘What is Ms. Fr. 640?’, ‘What is the digital critical edition?’ or how the digital development was envisioned and implemented.<sup>\*</sup> This page contains links to a number of further pages discussing the edition, transcription, translation, encoding guidelines, and so forth. Creating the digital edition has been the primary goal of the project since its foundation in 2014. It was developed through a series of workshops, conferences, and university courses. Contents were created in a specific form of citizen

science that the project lead has termed “grad-sourcing” or “expert crowd sourcing”, meaning that the citizens contributing to the project were picked from the pool of Pamela Smith’s graduate students. Each essay published as part of the edition underwent multiple rounds of internal and sometimes external review to ensure high quality.

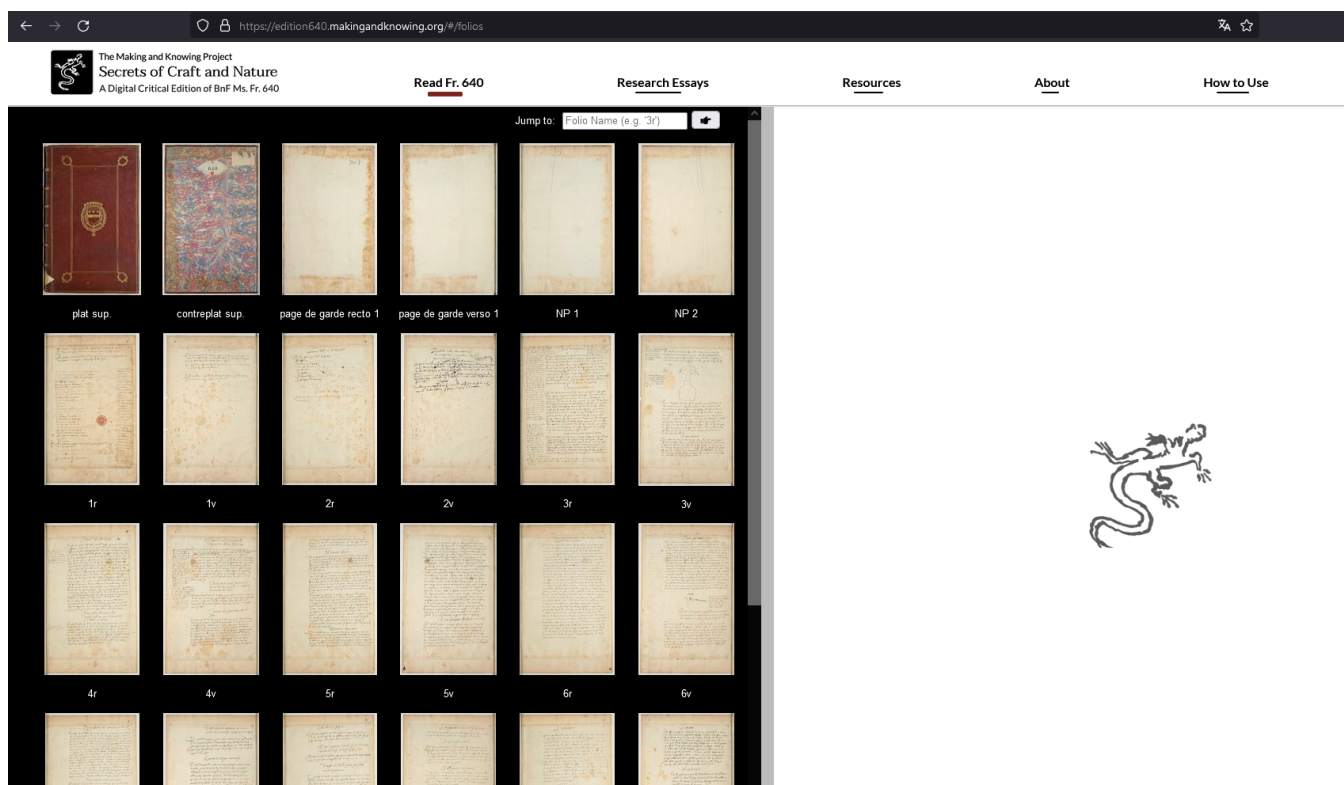
The transcription and encoding were primarily undertaken during palaeography and text workshops (2014–2018), which trained graduate students in Middle French scripts and textual encoding. Senior project members and the digital lead later revised and finalised the XML files. The resulting texts conform to a custom schema developed iteratively during transcription and translation. This schema, influenced by the Text Encoding Initiative (TEI), derives much of its tag set from TEI conventions and is maintained in the project repositories, where the encoding principles and full tag descriptions are documented in detail. The edition’s tag set includes common structural and editorial elements such as `<ab>` (anonymous block), `<div>` (division), `<head>` (heading), `<hand>` (handwriting), `<add>` (addition), `<corr>` (correction), `<del>` (deletion), `<emph>` (emphasis), `<exp>` (expansion), `<figure>` (figure), `<gap>` (gap), and `<ill>` (illegible). Semantic categories extend beyond standard TEI usage, incorporating tags such as `<al>` (animal), `<bp>` (body parts), `<cn>` (currency), `<df>` (definition), `<m>` (material), `<md>` (medical), and `<ms>` (measurement). These additions enable precise encoding of elements relevant to experimental reconstruction. The manuscript’s multilingual elements are also tagged. Although the schema is only inspired by TEI rather than fully compliant with it, this approach allows for highly specific encoding suited to the project’s aims. A stricter adherence to TEI might have facilitated broader interoperability, yet the documentation is so thorough that reuse remains entirely feasible.

The website documentation is exceptionally comprehensive, including written explanations, videos, and photographic material from the workshops, offering valuable insight into how the edition was produced and how collaborative, crowdsourced scholarly projects can be organised. Beyond the brief overview on the “About” page, the sections on “Principles of Transcription”, “Translation, and Encoding” provide detailed explanations, while the “Credits” page lists all participants and workshops, allowing the tracing of individual contributions.

The digital aspects of the project were developed in a collaboration of *Making and Knowing Project* members with Performant Software Solutions and Columbia University Libraries.\* The project commits to making their data accessible openly and storing them sustainably by choosing sustainable, open formats for data creation and using Open Access and Open Source whenever possible. Furthermore, the adherence to minimal computing principles privileges durability over presentational aspects. Data storage is handled on third-party virtual servers (such as GitHub, AWS CloudFront, S3, and DigitalOcean). Facsimile images are provided by BnF’s digital library Gallica and integrated into the edition using their IIIF manifests. Each folio is represented as an individual XML file containing diplomatic French, normalized French as well as an English translation. The encoding uses a project-specific schema inspired by the Text Encoding Initiative (TEI) Guidelines which can be found in the project repository. The XML base data is converted into HTML and JSON for creating the static site contents using a command line tool called *Lizard*, named after a sketch on the manuscript’s fol. 124v which became the project’s logo.



The landing page of the digital edition, where the header and all accompanying text are part of an image. This design is perhaps not ideal for users who wish to copy text or access it via a screen reader, as only part of the image's text content is part of the logo's alt text.



Dual-pane view showing, on the left, an overview of the manuscript pages and, on the right, the gecko animation used in place of a spinning cursor while pages are loading.

← → ↻ https://edition640.makingandknowing.org/#/folios/2v

The Making and Knowing Project  
Secrets of Craft and Nature  
A Digital Critical Edition of BnF Ms. Fr. 640

Read Fr. 640 Research Essays Resources About How to Use Search

Folio 2v

Practica cioe nova invention  
di contegiare\* stampata in brescia  
per vincenzo sabio\*

Jai prins miniu[m] 26 3 (christ)al\* *[illegible]* et broie sur le marbre 12 3 v(er)det 3 3 Incorpores le tout ensemble  
mis dans un vet\* couvert d'un aultre bien lute qui ait un trou dans  
le haut fuzion 7 heures sans souffler la mace a este dun beau  
v(er)et

Jai prins miniu[m] 12 3 (christ)al 6 3 v(er)det 2 grains fuzion douce  
vi heures recuite 24 heures la mace a este de v(er)et Jaune  
& rouge

| Safir

Caillous ou (christ)al 8 3 miniu[m] 16 3 sel de febvre 4 3  
coryal extinctiel 4 grains fuzion 6 heures

Diplomatic (FR)

Edition view showing some laboratory notes. The left pane presents the facsimile, while the right pane displays the diplomatic French transcription.

The Making and Knowing Project  
Secrets of Craft and Nature  
A Digital Critical Edition of BnF Ms. Fr. 640

Read Fr. 640 Research Essays Resources About How to Use Search

Folio 124v

Esmail\* Rouge clair

Lor fin luy est contraire Car *[illegible]* sur iceluy il demeure  
jaunastre Mays lor allie luy est plus propre Comme celuy  
descu & pistolet Si Lor t nest remis au feu en sa seule  
couleur blafarde rend les esmauls de morte couleur Ma Et  
pour ceste occasion estant taillé on le remet au feu pour luy  
donner couleur co[m]mje rougeastre pour faire les esmauls beaux  
*Aultrem[ent] ils sont mats*

Il y a du rouge clair qui estant use avecq larene perd sa  
beaulte

Il sen trouve qui ha des grains dor dedans Et lopinion aussy  
des bons orfres que le bon se faict avecq de lor

Lor & largent ne saigrissent point  
estant tous rouges et chaults trempes  
en leau

Lor est dun  
quart plus pesa[n]t  
que le plomb

Quand lor est  
en sa parfaite  
chaleur il est verd  
co[m]mje une esmeraude

Garde bien que  
la ou tu veult

Gecter en or

Les moules se recuisent mieulx & plus seurement a feu  
clos co[m]mje dans un pot four de reverberation que autrement  
De sorte que quand les orfres veulent gecter quelque  
piece dimportance dor qui ha couste beaucoup a esbaucher  
en cire liz mettent les moules dans un pot & les revestissent  
& emplissent le pot de terre soubstant le feu qui les  
tient unis et serres Puy recuisent moule terre & pot  
ensemble et co[m]mje tout est bien rouge liz gectent lor Lor fin

Folio 124v in the edition view.



The Making and Knowing Project  
Secrets of Craft and Nature  
A Digital Critical Edition of Brif Ms. Fr. 640

Read Fr. 640

Research Essays

Resources

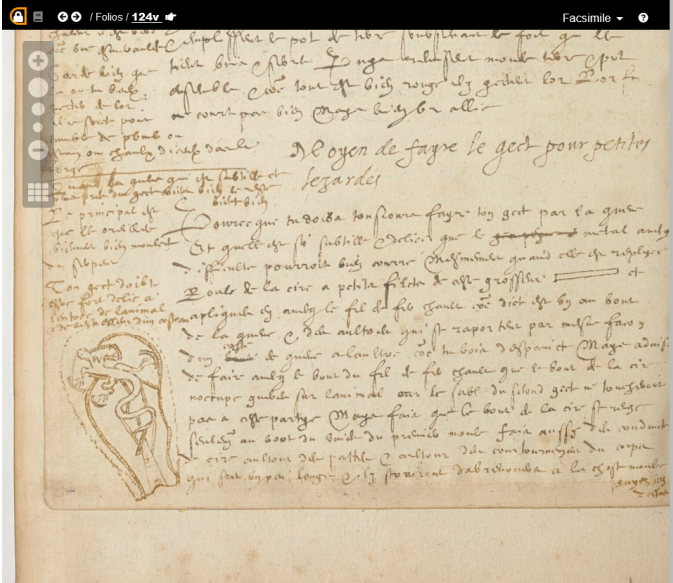
About

How to Use

Search

Folios / 124v

Facsimile



Folios / 124v

Diplomatic (FR)

Folio 124v

Esmail\* Rouge clair

Rouge Clair: Glass or Paint?



This essay explores a material called rouge clair, which is discussed in three separate entries in Ms. Fr. 640 on folios 66, 40v, and 124v. The term usually refers to a vitreous substance used for enameling, but the author-practitioner's instructions complicate this definition: they include its use as a "cold enamel" that could be painted on metal without the use of heat. By reconstructing these entries and testing the application of the rouge clair produced, we conclude that for the author-practitioner, rouge clair did not necessarily refer to a specific substance (vitreous enamel), but rather to an optical effect that could be produced by different materials.

Lor fin luy est contraire Car **piepibie** sur iceluy il demeure jaunastre mayz lor alle luy est plus propre Comme celuy descu & pistolet **Si** Lor **1** **nest remys au feu** en sa seule couleur blafarde rend les esmauls de morte couleur **Ma** Et pour ceste occasion estant taillé on le remet au feu pour luy donner couleur co(m)mje rougeastre pour faire les esmauls beaux **Autrem[ent] ils sont mats**

Il y a du rouge clair qui estant use avecq larene perd sa beaulte

Il sen trouve qui ha des grains dor dedans Et lopinion ausy des bons rfeux nuy le hon se fait auer n de lor

The same folio as the previous image, showing what happens when the small beaker icon is clicked. The icon links to a research essay on *rouge clair*, a material discussed in three manuscript entries that was replicated and tested. The link shows a preview of the essay's findings and allows navigating to the essay itself.

To further highlight the innovative potential of the project, one might have opted to connect the edition and the related research essays beyond merely linking the essays in relevant passages. One could think of the results of replicative experiments as a form of apparatus to the text, just like philologists would add remarks on grammar or linguistic particularities. The replications are more than just results of engagement with the text, they are complementary sources of knowledge that readers can use to read and interpret the text. If the replication results were part of the TEI edition of the text, the data could later be used as training data for research questions such as deep learning recipe extraction. However, it is up for debate how such a direct integration of replication results into a digital edition would be implemented.

## Sandbox

The *Making and Knowing Project* sandbox is a digital platform designed to support exploration and experimentation with the project's data by students, scholars, and other interested users (Fig. 13). It provides access to a range of digital tools, while also encouraging the development and integration of user-created tools, case studies, and additional resources. The platform features a collection of projects that engage with the underlying data of *Secrets of Craft and Nature*. These projects represent experimental, provisional, and ongoing work, offering diverse approaches to analysing the content and themes central to *Secrets of Craft and Nature* and the broader objectives of the *Making and Knowing Project*. The sandbox provides access to the data underlying the *Secrets of Craft and Nature* digital edition and offers tools for its analysis, including textual analysis and visualisation methods.\* It also functions as an informal archive for early minimal edition prototypes that predate the current version of the digital edition. In addition, it links to a range of pedagogical materials developed and employed in the *Making and Knowing* laboratory courses. Technically, the sandbox is implemented as a GitHub repository (Fig. 14), made publicly accessible via a GitHub.io website. However, this front-facing site does not directly host the computational resources themselves but instead provides links to other sections of the project where these are maintained. As noted in Li's review (Li 2020), the

sandbox was conceived in part to separate experimental or in-progress components from the main edition, which is intended for long-term archiving. This separation also supports the project's commitment to minimal computing principles and ensures reliance on technologies that are more conducive to long-term digital preservation.

 <https://cu-mkp.github.io/sandbox/>

## sandbox

The “Sandbox” space makes available a number of resources that utilize and explore the data underlying “Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640” created by the Making and Knowing Project at Columbia University.

[View the Project on GitHub](#)  
cu-mkp/sandbox

## The Making and Knowing Project Sandbox

### Site and Projects Under Development

The “Sandbox” makes available a number of resources that utilize and explore the data underlying *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640* created by the Making and Knowing Project at Columbia University.

The Sandbox presents experimental, provisional, and in-progress work that expands upon the engagement and analyses with the data, topics, and content of *Secrets of Craft and Nature*, with the manuscript, BnF Ms. Fr. 640, and the larger themes explored by the Making and Knowing Project.

The Making and Knowing Project hopes to create an online environment for students, scholars, and others to explore and experiment with the Project’s data using a variety of digital tools, where others can add and create their own tools, case studies, and resources presented here. This is also a space for sharing teaching resources, exploring methods and processes across disciplines and levels of expertise, and engaging in knowledge exchange wherever possible.

**Editors:** Pamela Smith, Naomi Rosenkranz, Terry Catapano, Caroline Surman, Gregory Schare, and Sophia Qureshi.

### Digital Projects

Projects showcasing textual analysis, data visualization, explorations of M&K’s encoding of Fr. 640, and methods for using Fr. 640 as data.

### Edition Prototypes

In the development of *Secrets of Craft and Nature*, a number of iterations, mockups, wireframes, and prototype editions were created and deployed.

### M&K Student Projects

From 2019 onwards, M&K’s courses at Columbia University have asked students to create exploratory final projects. These have included:

This project is maintained by [cu-mkp](#)

Hosted on GitHub Pages — Theme by [orderedlist](#)

ENGL84031 / HISTGU4031 / COMS4495: *Transforming Texts* (Spring 2019)

The sandbox page on GitHub.io used for the less permanent, more experimental parts of the project and for engaging with the digital data.

publishing-to-sandbox.md Update publishing-to-sandbox.md 7 months ago

README.md

DOI [10.5281/zenodo.4914452](https://doi.org/10.5281/zenodo.4914452)

## The Making and Knowing Project *Sandbox*

<https://cu-mkp.github.io/sandbox/>

The “Sandbox” space makes available a number of resources that utilize and explore the data underlying *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640* created by the Making and Knowing Project (M&K) at Columbia University.

The Sandbox presents experimental, provisional, and in-progress work that expands upon the engagement and analyses with the data, topics, content, and methodologies of *Secrets of Craft and Nature* and with the manuscript, BnF Ms. Fr. 640.

Related repositories:

- [cu-mkp/m-k-manuscript-data](#) for XML transcriptions and translation of Fr. 640, as well as metadata and derivative files
- [cu-mkp/manuscript-object](#) for data extraction, manipulation, transformation, and analysis

The Making and Knowing Project hopes to create an online environment for students, scholars, and others to explore and experiment with the Project’s data using a variety of digital tools (e.g., Jupyter Notebooks), where others can add and create their own tools, case studies, and resources presented here. Projects include visualizations and analysis of Fr. 640 through NLP, explorations of M&K’s encoding oteaching resources such as assignment sheets

### Adding content to the site

Those with sufficient permissions should follow these [protocols/instructions](#) to add pages to the site.

See also our [Introduction to Github](#) that also includes information about Markdown, the markup language used to create pages in Github Pages.

### Want to Contribute?

The Sandbox is an ever-growing place for continued exploration and an invitation for others to experiment with us.

**Releases** 2

v1.0.x-zenodo 2021-06-8 **Latest**  
on Jun 8, 2021

+ 1 release

**Packages**

No packages published

**Contributors** 7

**Languages**

CSV 97.0% Markdown 2.4% Other 0.6%

The corresponding GitHub repository for the sandbox, including information about adding content and contributing to the sandbox.

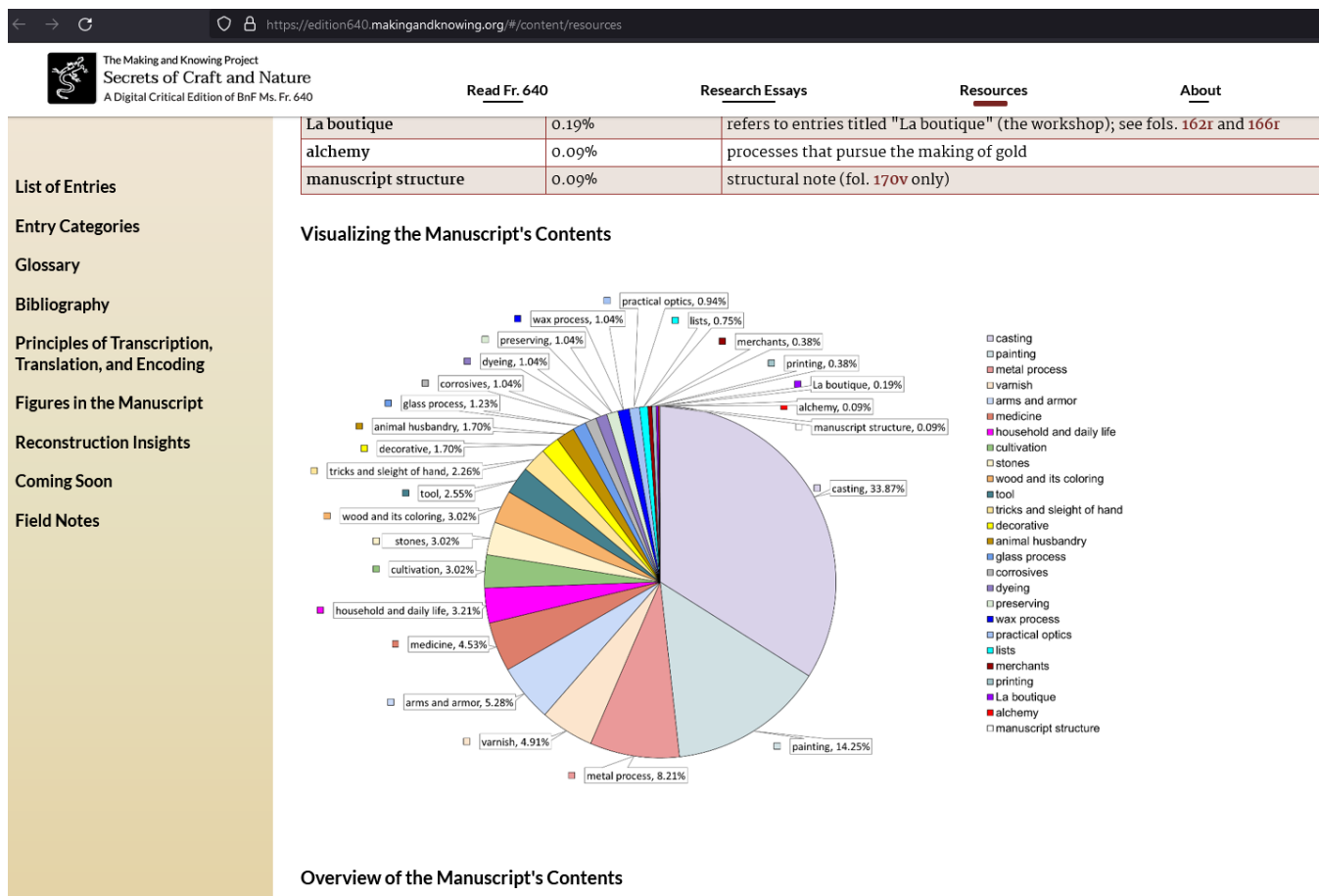
In terms of Digital Humanities, the most interesting part of the sandbox is probably the sub-site “Digital Projects”<sup>\*</sup> which contains entries such as: “Interacting with the Manuscript object in Python” (2020-11-02), “Understanding and Analyzing the Categories of the Entries in BnF Ms. Fr. 640” (2021-02-01), “Applying Machine Learning to the Manuscript: Semantic Trees, Word Clouds, and Sentence Embedding” (Dana Chaillard), “Visualizing the Semantic Tagging in Secrets of Craft and Nature” (Roni Kaufman), “ms-text-analysis: Files and tools for performing textual analysis of BnF Ms Fr 640” (2020-02-04) as well as “Visualizing Semantic Markup in BnF Ms. Fr. 640” by *Making and Knowing* postdoctoral scholar Clément Godbarge (2021-03-09). It also allows users to use *Voyant Tools* to explore the manuscript data (in v1.2.0 using “Normalized French” or “English Translation”). Related repositories to the sandbox are “cu-mkp/m-k-manuscript-data for XML transcriptions and translation of Fr. 640, as well as metadata and derivative files” as well as “cu-mkp/manuscript-object for data extraction, manipulation, transformation, and analysis”. The *Manuscript Data Repository* contains working files, data as well as XML transcription and translation for BnF Ms. Fr 640 along with complementary data such as metadata and bibliographies.<sup>\*</sup> The repository is documented extremely well using READMEs. However, the ms-xml subdirectory seems to include files with the naming ending in “preTEI.xml” which aren’t valid TEI files. This would indicate that the creation of TEI-conforming XML outputs was intended although this is in contradiction to the documentation stating that a project-specific schema was used. It is not clear whether TEI-conformant XML files can be found anywhere on the website or whether the creation thereof was implemented at all. The *manuscript-object* repository provides the *Making and Knowing* dataset based on the digital critical edition in the form of a custom python

manuscript object the use of which is also well-documented in the README.md (including code examples).<sup>\*</sup> It is to be commended that releases of the contents of the GitHub repositories are archived in Zenodo as well. The edition was inspired by Minimal Computing principles to promote long-term sustainability.

## Usability

A minor annoyance is that in many parts of the website, headings are rendered as images rather than digital text, making them inaccessible to screen readers and preventing users from copying them. This may limit navigation for screen reader users, who may miss out on key structural cues across sub-sites. Otherwise, the website is generally intuitive and easy to use, especially following the updated relaunch in 2021 (see Fig. 15, 16, and 17 for different sections of the website). However, the edition view can be slow to load. In such cases, the *Making and Knowing* logo—a gecko from the manuscript—appears spinning, though this sometimes leads to a timeout. Pre-loading lower-resolution images could improve front-end performance and provide a smoother user experience.

Furthermore, users may find themselves overwhelmed by the sheer volume of information offered by the *Making and Knowing Project*. It could be helpful to introduce thematic pathways or improve subject-based access through tagging and faceted search options. Nevertheless, the current site structure is more than adequate for users to navigate and locate relevant materials. If materials will continue to be added in the long term, it will be important to develop efficient ways of accessing the expanding collection of research essays associated with the broader *Making and Knowing Project*, particularly for users who may not yet know what specifically interests them.



Visualization from the “Resources” tab showing the manuscript’s contents in percentages according to their tagging. The largest category is casting (33.87 %), followed by painting (14.25 %), and others such as practical optics, dyeing, alchemy, printing, household and daily life, and medicine.

← → ↻ https://edition640.makingandknowing.org/#/content/about

The Making and Knowing Project  
Secrets of Craft and Nature  
A Digital Critical Edition of BnF Ms. Fr. 640

Read Fr. 640      Research Essays      Resources      About      How to Use      Search

## About the Edition

The Manuscript  
The Edition  
The Making and Knowing Project  
Digital Development  
People and Credits  
Peer Review  
How to Cite  
Sponsors  
Contact

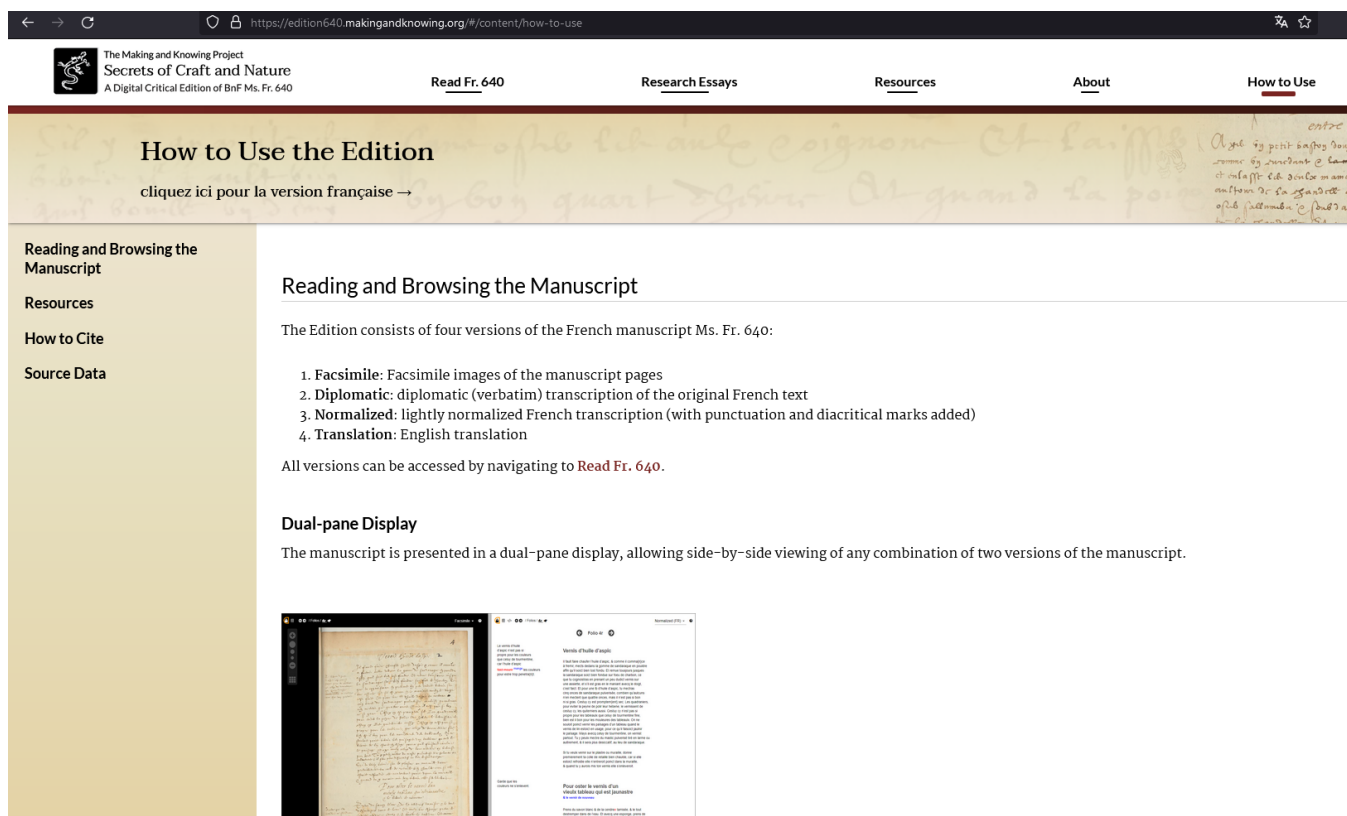
### The Manuscript

#### What is Ms. Fr. 640?

**Making of the Manuscript**  
The Making and Knowing Project

Il faut premièrement faire le brancq de boye ou  
prendre un brancq de boye bierre pour fonder un  
de de poire ou de la plus belle et y mettre  
un once de bierre de boye fustillee avec sucre de noir  
On y adionne du boye de bierre de la plus belle  
la couleur y sera plus bien et remue le tout dans la  
refuse fonde sur feu de charbon croix de flamme  
petite que le feu ne se puisse After temps y tournes  
le brancq dedans et y report quelque filamen

“About” page with the start of the section describing the manuscript in detail, including an example of the handwriting.



Helper page explaining how to read and browse the digital edition of manuscript, noting that it consists of four versions (facsimile, diplomatic, normalized, and translation) and describing how the dual-pane view works.

The project outputs are licensed CC BY-NC-SA 4.0.

## Ending a Long-Term Project

The original version of this review was written in late 2022 and 2023. Since then, only minor changes have been made to the project, especially the digital scholarly edition at the core of this review.\* At the time, it appeared the project might still be ongoing, based on a *Making and Knowing* newsletter that mentioned additional funding for digital scholarly editing: In the *Making and Knowing* newsletter from 17 August 2022, the project announced receiving a new NSF grant to support the development and dissemination of the open-source, customisable tool *Edition Crafter*. This tool, based on the software developed for *Secrets of Craft and Nature*, is intended to enable others to publish their own digital critical editions as feature-rich yet sustainable websites.

The 17 July 2024 newsletter announced the departure of Assistant Director Naomi Rosenkranz in 2024. That year, the project also hosted another Open Laboratory Day at Columbia, during which students participated in a workshop to develop a research and teaching companion intended to help educators use the platform and demonstrate how to incorporate hands-on experimentation in teaching. This research and teaching companion for *Making and Knowing* is now available through the web portal as well—an open-source, open-access online platform offering curated, searchable, and downloadable guides, lesson plans for hands-on activities, and case studies for research and teaching.\* The *Making and Knowing Project* has thus produced a wide range of material not only in Digital Humanities and the history of science but also in public outreach and citizen science.\* As part of a series of student projects, the Computer Graphics and User Interfaces Lab (CGUI) at Columbia University, under the direction of Professor Steven Feiner, developed an augmented

reality (AR) toolset to complement the *Secrets of Craft and Nature Project*. These interactive tools are designed to convey the practice-based, experiential knowledge produced in the *Making and Knowing Lab*. Through visualisation technologies, such as Microsoft HoloLens and Google Tango devices, users are enabled to engage with historical techniques in an immersive manner, experiencing processes rather than solely reading about them. These activities remain connected to the broader intellectual framework of *Making and Knowing*, though not to the digital scholarly edition, which can now be considered complete.

## EditionCrafter

The minimal edition tool, originally developed within the *Making and Knowing Project*, has since been expanded into a standalone resource: Now known as *EditionCrafter*, it was presented in a workshop at the 2025 ADHO Digital Humanities Conference in Lisbon.<sup>\*</sup> While it constitutes a significant and valuable outcome of the broader project, it is not the main focus of this review. Copyrighted in 2022, *EditionCrafter* appears largely complete, although recent updates to the GitHub repository and the 2025 workshop indicate ongoing development and support.

*EditionCrafter* is an open-source platform designed for publishing digital scholarly editions, enabling the creation of diplomatic renderings of texts alongside deep-zoom views of original folios. Editions may include multiple textual layers, such as transcriptions paired with translations, and support the display of editorial notes and glossaries. Inheriting its methodological approach from its parent edition, *EditionCrafter* employs minimal computing strategies to generate static websites. It operates without a server or backend infrastructure; all components are rendered from XML-TEI at the time of build. Projects may be initiated with as little as a set of image files and corresponding plain text transcriptions. The resulting edition is economical to host and can be maintained on nearly any standard internet hosting service. A notable feature is its permalinking capability, which allows stable references to individual pages within primary source materials.

Building on the functionality of its predecessor, the development team behind *EditionCrafter* conducted a survey of typical requirements expressed by their Humanities collaborators. Two tasks often proved challenging for collaborators lacking technical support: the transformation of plain text transcriptions into digital scholarly editions encoded in XML-TEI, and the organisation of image sets for hosting via a IIIF server. In response, the *EditionCrafter* build process was adapted to better accommodate these use cases. A key requirement is that the XML-TEI file includes references to folio images within the `<facsimile>` element. A command-line utility, distributed as `@cu-mkp/editioncrafter-cli`, is provided to convert base documents into the necessary output formats for the final edition. *EditionCrafter* is designed to function within content management systems (CMS) that support HTML editing. It has been tested across several platforms, including Hugo CMS, Scalar CMS, and the Astro framework. The tool can be embedded directly into an HTML-based website or implemented as a React component within a React application. A ready-to-use example site built with Hugo is available for forking via the project's GitHub repository.

## Conclusion

The experimental history of science aims to replicate historical experiments and recipes in contemporary laboratories. This approach goes beyond revisiting historical texts, using practical making as a method to bridge gaps in the historical record. Recipe texts were once interpreted by craftspeople whose tacit knowledge allowed them to navigate implicit instructions. For modern readers, removed by centuries and lacking this experiential background, such texts often appear opaque. The project's aim was to recreate

aspects of this practical understanding by using making as an epistemic tool. Practical making was both studied in historical texts and used as a method to investigate and fill gaps in the sources that transmit chymical and craft recipes.

The *Making and Knowing Project* has had a widespread impact on the history of science and knowledge, beyond the manuscript under review here. The project's principal investigator, Pamela Smith, published the definitive study *From Lived Experience to the Written Word: Reconstructing Practical Knowledge in the Early Modern World* (University of Chicago Press, 2022). This book provides a comprehensive account of practical and recipe literature, and of the broader phenomenon of encoding practical knowledge in writing, particularly in how-to books. It examines the relationship between tacit, practical knowledge and its written transmission, exploring what occurred when artisans began to record their recipes and compose tracts that presented their expertise as part of university learning. It considers artisan authors, the use of these texts, and the implications of collecting and reconstructing knowledge, including its global entanglements, situating makers' writing within broader intellectual and social contexts. Emerging directly from almost a decade of the *Making and Knowing Project* and related activities, it reflects Smith's 15–20 years of scholarship in this field and constitutes both a culmination of the project and a major contribution to the state of scholarship on the topic.

The project has shaped and continues to shape the discipline. Its interactive digital edition of BnF Ms. Fr. 640, alongside documentation of replicated experiments, offers a rich array of resources for both scholars and the public. Li (2020) highlights its pedagogical potential, but one could argue that its most significant contribution lies in popularising experimental methods in the history of science. Moreover, it is a pioneering effort in developing digital editions informed by contributions from citizen scientists and in creating editions of this unique type of text, where experimental reconstructions function as an additional scholarly apparatus.

A notable feature is the “project sandbox”, a digital platform designed for users to experiment with distant reading techniques. This platform provides access to the full dataset from the digital edition, facilitating data reuse in line with the FAIR principles by ensuring the data is accessible, reusable, and interoperable through the use of standard formats. Within the field of Digital Humanities, the *Making and Knowing Project* has been a pioneer in adopting and promoting minimal computing principles for digital scholarly editing. These principles have not only guided the technical implementation of the project itself but have also led to the development of a spin-off tool, *EditionCrafter*. This tool enables users to create sustainable digital scholarly editions with minimal technical expertise, drawing directly on the approach and implementation employed by *Making and Knowing*. Thus, the project has not only developed a sustainable implementation for its own purposes but has also benefited the wider scholarly community beyond the history of science and knowledge.

While engagement with materiality, experimental replication, and artisanal tacit knowledge have increasingly become the norm in history of science and knowledge, the *Making and Knowing Project* was at the forefront in integrating the latest and best practices in Digital Humanities trends. Its pioneering approach not only recovers the tacit knowledge of historical craftspeople but also opens new research paths, such as the analysis of historical recipe books through making or distant reading. The project is not merely a study of the past; it has shaped new methods in the historiography of knowledge. As the field continues to evolve, the project will remain a central reference point for researchers and enthusiasts alike.

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## Figures

The main project website, which likely serves as the primary entry point for most users before navigating to the digital edition itself.

“About” page briefly describing the manuscript, linking to high-resolution images in Gallica, and displaying the book’s spine.

The “Digital” section of the project site, which provides access to the digital critical edition, though its title “Digital” may be somewhat confusing.

Overview of the research essays, including an introduction to the manuscript and its physical construction, as well as examples of texts in both French and English, since some essays are available in both languages.

Another example of the essay overview page, here showing essays about the project itself—its encoding, translation, and methodologies—as well as reflections on the edition as a digital text and computational approach.

Example of a research essay presented in the project’s minimal edition format.

Example of an essay that includes an embedded video, illustrating how video documentation makes the experiments accessible to users of the edition in the digital format.

The landing page of the digital edition, where the header and all accompanying text are part of an image. This design is perhaps not ideal for users who wish to copy text or access it via a screen reader, as only part of the image’s text content is part of the logo’s alt text.

Dual-pane view showing, on the left, an overview of the manuscript pages and, on the right, the gecko animation used in place of a spinning cursor while pages are loading.

Edition view showing some laboratory notes. The left pane presents the facsimile, while the right pane displays the diplomatic French transcription.

Folio 124v in the edition view.

The same folio as the previous image, showing what happens when the small beaker icon is clicked. The icon links to a research essay on *rouge clair*, a material discussed in three manuscript entries that was replicated and tested. The link shows a preview of the essay’s findings and allows navigating to the essay itself.

The sandbox page on GitHub.io used for the less permanent, more experimental parts of the project and for engaging with the digital data.

The corresponding GitHub repository for the sandbox, including information about adding content and contributing to the sandbox.

Visualization from the “Resources” tab showing the manuscript’s contents in percentages according to their tagging. The largest category is casting (33.87 %), followed by painting (14.25 %), and others such as practical optics, dyeing, alchemy, printing, household and daily life, and medicine.

“About” page with the start of the section describing the manuscript in detail, including an example of the handwriting.

Helper page explaining how to read and browse the digital edition of manuscript, noting that it consists of four versions (facsimile, diplomatic, normalized, and translation) and describing how the dual-pane view works.

## Notes

The reviewer’s academic background is in Classics (Neo-Latin), history of science (esp. alchemy) as well as the Digital Humanities. Having written a PhD thesis on a use case for digital methods on the work of an early modern alchemist, she has a background in relevant aspects of the project under review (digital editing, history of science, recipes) and is familiar with the research tradition. Furthermore she has been involved in a project which utilized citizen science in the creation of a learner-oriented, educational digital edition. She also holds a degree in French, the language of the manuscript which is the centerpiece of the digital edition under review. The first draft of this review article was submitted in summer 2023 when the reviewer was still with University of Graz and not yet affiliated with the „Metals, Minerals, and the Life Cycle“ project at Max Planck Institute for the History of Science, in which Pamela Smith is involved. On the experimental history of science see, for

example, Principe 2000, Gelius 1997, Fors et al. 2016, Hagendijk 2018, Dupré et al. 2020, Hagendijk et al. 2020, Hendriksen 2020, Sibum 2020, Taape et al. 2020. On experiments in the Digital Humanities see Lang 2022. On replication in the Humanities see Peels and Bouter 2018, Peels 2019.

On citizen science see Vohland et al. 2021, on digital editions generated using citizen science meant to serve as educational resources Lang and Spielhofer 2020.

In the History of Science, a whole sub-field has emerged investigating artisanal knowledge-making amongst which the *Making and Knowing Project* is probably the most prominent among many others, see Smith 2006, 2017, 2020b, 2022; Smith et al. 2017, 2020b; Neven 2014, Valleriani 2017, Hagendijk 2018.

A whole range of experimental methods has become established in the experimental history of science under the label of 'RRR methods'. Hendriksen (2020, 314) provides a definition: "Performative methods include, but are not limited to, reconstruction, replication, and re-enactment (RRR) of historical experiments, apparatus, processes, and techniques."

On the so-called 'Scientific Revolution' see, for example, Moran 2009 and Principe 2011. Nowadays many scholars are critical of this periodization because it suggests a rapid teleological move towards to our modern notion of science, thereby creating an artificial, ahistorical caesura and discarding other forms of pre-modern knowledge production, such as certain aspects of alchemy which do not fit our modern idea of science.

<https://web.archive.org/web/20250327111435/https://edition640.makingandknowing.org/#/content/about>. Links were archived where possible, however, this is not always technically feasible.

<https://web.archive.org/web/20250519033653/https://scienceandsociety.columbia.edu/content/research-cluster-making-and-knowing-project>; The *Making and Knowing Project*: <https://web.archive.org/web/20250519033648/https://www.makingandknowing.org/>.

People sub-page: <https://web.archive.org/web/20260313151958/https://www.makingandknowing.org/people/>.

Photo repository for the documentation on the reconstruction experiments: <https://web.archive.org/web/20250519033846/https://www.flickr.com/photos/128418753@N06/>; X: <https://web.archive.org/web/20250325182455/https://x.com/makingknowing>; Facebook: <https://web.archive.org/web/20250519034038/https://www.facebook.com/login/?next=https%3A%2F%2Fwww.facebook.com%2FMakingKnowing%2F>; YouTube: <https://web.archive.org/web/20250519033936/https://www.youtube.com/channel/UCViaSZhCLq9zml6djVL044Q>.

<https://web.archive.org/web/20250519034127/https://www.makingandknowing.org/publications/>; for scholarly publications see, for example: Klein 2020, Smith et al. 2017, Smith et al. 2020b, Taape et al. 2020, Uchacz 2020.

<https://web.archive.org/web/20250519034324/https://www.makingandknowing.org/support/>.

<https://web.archive.org/web/20250519034156/https://www.makingandknowing.org/collaborators/>.

<https://web.archive.org/web/20250519034410/https://www.makingandknowing.org/the-lab/>.

<https://web.archive.org/web/20250519034311/https://www.makingandknowing.org/digital/>.

The video lecture by project lead Pamela Smith titled "Learning through Reconstruction: The Making and Knowing Project" (Yale University Art Gallery; July 31, 2018) introduces the reasoning behind the pedagogy of *Making and Knowing*. <https://web.archive.org/web/20250519034533/https://www.youtube.com/embed/zIOyAdg1Td4>.

[https://web.archive.org/web/20250519034500/https://cu-mkp.github.io/2017-workshop-edition/about\\_mk/](https://web.archive.org/web/20250519034500/https://cu-mkp.github.io/2017-workshop-edition/about_mk/).

Polanyi 2009; on gestural knowledge: "[...] practical engagement also builds up a working knowledge in the practitioner that Sibum has called 'gestural knowledge.' [...]" The nature of this gestural knowledge is well-described in his difficult-to-translate German phrase "das in seinem Handlungsvollzug gebundene Wissen". In: Fors et al. 2016, 92; see also Sibum 2020. On historical-critical experiments (Gelius 1997), replication in the context of historical experiments (Fors et al. 2016) or the so-called 'RRR methods' more generally see Hendriksen 2020. It is a matter of discussion in the experimental history of science which term is best suited to describe such research methods: While some favour 'replication' (Fors et al. 2016), Gelius suggests 'historical-critical experiments' (Gelius 1997). The *Making and Knowing Project* seems to have chosen 'reconstruction' to name its method of 'trying and testing' the instructions contained in BnF Ms. Fr. 640.

<https://web.archive.org/web/20250519034812/https://www.makingandknowing.org/bnf-ms-fr-640/>. On the genre of "books of secrets" see Eamon 1990, 1994, 2016; Zweifel 2022.

<https://web.archive.org/web/20250519034702/https://edition640.makingandknowing.org/#/>.

<https://web.archive.org/web/20250519034649/https://edition640.makingandknowing.org/#/content/about>.

A few relevant examples are: Godborge 2020; Camps and Lyautey 2020; Smith 2020a, 2020b. The list can be accessed under: <https://web.archive.org/web/20260313152943/https://edition640.makingandknowing.org/essays>.

<https://web.archive.org/web/20260313162434/https://edition640.makingandknowing.org/content/resources>.

<https://web.archive.org/web/20260312112539/https://edition640.makingandknowing.org/content/how-to-use>.

<https://web.archive.org/web/20260312112539/https://edition640.makingandknowing.org/content/resources/reconstruction-insights>.

<https://web.archive.org/web/20250519035228/https://github.com/cu-mkp/m-k-manuscript-data>.

<https://web.archive.org/web/20260430110945/http://web.archive.org/screenshot/https://edition640.makingandknowing.org/folios>.

<https://web.archive.org/web/20250519034649/https://edition640.makingandknowing.org/#/content/about>.

<https://web.archive.org/web/20250519034649/https://edition640.makingandknowing.org/#/content/about>.

<https://web.archive.org/web/20250519035629/https://cu-mkp.github.io/sandbox/> and <https://web.archive.org/web/20250519035642/https://github.com/cu-mkp/sandbox>; <https://doi.org/10.5281/zenodo.4914452>.

<https://web.archive.org/web/20250519035746/https://cu-mkp.github.io/sandbox/docs/index-digital-projects.html>.

<https://web.archive.org/web/20260430111435/https://github.com/cu-mkp/m-k-manuscript-data>; <https://doi.org/10.5281/zenodo.4724101>.

<https://web.archive.org/web/20250519035912/https://github.com/cu-mkp/manuscript-object>.

There has been little further development on the digital scholarly edition. Since the reviewer's visits in October 2022 and August 2023, GitHub records indicate that little has changed in the *Making and Knowing Project*. Despite the 2022 newsletter's implication of continued work, the website and repository suggest the project had already mostly concluded by that point. The few identifiable edits include the addition of essays and the correction of minor bugs and transcript errors. These were made or suggested by the Digital Humanities Lead, Terry Capitano, and the project's PI, Pamela Smith, presumably the remaining permanent staff at Columbia associated with the project. Consequently, the project can now definitely be considered concluded. Still, the continued activity shows that the project and related efforts are continuously being maintained.

*Research and Teaching Companion to Secrets of Craft and Nature in Renaissance France*: <https://web.archive.org/web/20250519040050/https://teaching640.makingandknowing.org/>; <https://web.archive.org/web/20250519040208/https://teaching640.makingandknowing.org/resources/digital/>. 2024 entry from the *Making and Knowing Project* newsletter (dated 17 July 2024) reported that the project's efforts culminated in the Ph.D. summer school *Mindscapes – Socio-Natural Sites of Extraction and Knowledge*, co-led by Pamela Smith and long-term collaborator Tina Asmussen. They are now working with the Max Planck Institute for the History of Science as part of the *Metals, Minerals, and Life Cycle* project, led by Dagmar Schäfer, and further summer school excursions are planned for 2025 and 2026.

The bulk of the pedagogical initiatives and lab seminars seem to have ceased somewhere around 2023, despite a few related activities still ongoing.

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