

# RiMe

**Rivista dell'Istituto  
di Storia dell'Europa Mediterranea**

ISSN 2035-794X

## **Technological transfer: the importance of language in the tradition of competences**

**First hints on the lexicon of *Pratica di Fabricar le Scene e  
le Machine ne' Teatri* di Nicola Sabbattini da Pesaro,  
Ravenna 1638**

**Grazia Biorci**

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## **Technological transfer: the importance of language in the tradition of competences**

First hints on the lexicon of *Pratica di Fabricar le Scene e le Machine ne' Teatri di Nicola Sabbattini da Pesaro, Ravenna 1638*

Grazia Biorci

### *Foreword*

In this paper I will consider a particular and knotty subject related to the technical transfer and its development into the sharing of knowledge. The subject I will try to deal with is the language in which techniques were explored, taught and broadcasted or exported outside each workshop or small factory. The issue carried out by language is about practice and technique; the text on which the research is based on is not a scientific treaty, (scientific in our assumption) but a manual about how things are materially, about how and not why certain procedures do work, while others do not.

I will start with some considerations on the knowledge transfer in general, and I will proceed with others on the vehicle (the language) employed to transmit the contents of the message.

The first general consideration concerns the distinction of where technological and knowledge transfer occur.

Traditionally scientific matters are taught in Universities and Academies; while practices and techniques are taught or better transferred live in workshops and small factories.

In Universities and Academies the subjects were philosophical (Mathematics, Medicine, Philosophy and Gramatica) and, even though in class subjects were taught possibly in Volgare, the text books and treaties were written in Latin or Greek.

On the other hand in workshops and factories the art was acquired by the apprentice directly observing and following the Master's directions and actions. The communication's language was both a practical example and an orally described and taught rehearsal of a technique. No texts were needed and written, except for the book of the Master. It is, indeed, a precious repertory of linguistic data where important issues of the practice (such as chemical element's proportions, materials, orders and commitments) were possibly quoted. In addition, the Master's book was the milestone for the workshop as prescription text. It was the exemplar text, the one to

be considered a pattern, a generalization of the practice, a hint for successive implementations and personal enhancements.

### *Texts*

The production of manuals and treaties exploring and describing the procedures and techniques of an art or craft, is a phenomenon which emerged in parallel with the production of theoretical treaties and manuals on pre-Galilean "scientific" matters. The latter were still more philosophic while the others had different practical aims. The outstanding of many *Theatri Machinarum* attests the evidence of a bias to a new attention towards a "scientific" gaze on how things are done and how and why they do work. These collections of drawings were the not produced for literary aims, but as hints, as synthesis of an inventing process.

What could the reasons be why a Master, or someone else charged by him, could be inclined to observe and describe in words and drawings what he sees or practices? Who was this person? Someone simply curious keen in the practice or, may be, who was attempting and studying the scientific theories linked to a specific practice?

One reasonable need could be the transfer in letters of a know-how in order to transform the connection knowledge-competence into knowledge-reproduction. And this seems an early "scientific" way of thinking.

Another reason could be the need of recording a practice fixing it with all its details and actual procedures. A sort of photograph of a particular art to be transmitted outside the special working and production site, the village, the country. Or a matter of self promotion for being employed as artist or architect by a government or a prince.

I dare call this kind of transfer in letters a translation of a competence into a language with all the linguistic problems that are concerned.

The first aspect which I see is the fact that in the XVI century many books and manuals were printed in various copies and distributed around. The emergence of print promoted the passage from a personal master's techniques book to a technical text for new skilled people involved in the practice. The personal note-book rises to a pre-scientific text. This emergence implies that the language used in such manuals must be understood by a large public, larger



than the number of people usually in touch with the workshop in the village or in the immediate neighbourhood.

A second aspect concerns terminology. The widespread diffusion of printed texts leads to the overcoming of local languages and to the need of the election of a shared nomenclature. Taking into account the traditional importance and presence in Italy of so many dialects, this aspect is crucial above all for the denotation of precise tools, materials and procedures.

Finally I envisage problems linked to the structure of technical texts which necessarily differ from the structure of literal ones. The technical narrative and the structure of its prose are essential. It is important to focus the way in which authors describe practices and procedures and how they use to display the aim of their written communication.

For what concerns the first point, there is a wide literature about the importance of printed texts for the beginning of language standardization. In particular, printed publication of technical books – not scientific books – leads to the belief that the election of a shared term denoting a tool or a craft, comes from its frequent attestation in manuals. When a term frequently appears with a certain sense or acceptance, then, it could become the elected one.

The second point about terminology is strictly connected to the third point: the structure of technical narrative.

The structure of a manual must be characterized by linearity and coherence. There is no space for poetic indulgencies nor for nice descriptions, it must be essential and epigrammatic. The prose is simple and plain. Constructions are rapid and paratactical, often elliptical and concise. In order to immediately focus, and without ambiguities, the kernel of the subject, the practices described in manuals are usually expressed as if they were orally told. The language seems a sort of transcription of the vernacular spoken in workshops or factories. Language looks immediate and very denoting in order to succeed in its didactic intent of training other people in the same practice. However, the didactic communication is not thought to be popular. Authors write for potential experts and skilled people. They are able to understand what is written, and infer what is not specifically described as implicit is something normally shared. The potential lecturers are expected to have already acquired an encyclopedic knowledge about the proposed skill or about a similar one.

As a consequence, terminology plays a fundamental role in these texts. Authors, in order to pursue coherence and preciseness, use

more likely an elected/selected terminology. Terminology is functional and not a scholar display. For this reason authors did use specific terms, which are not opaque, to give the treaties the importance that they have acquired in their coeval cultural and social context. They are not important as literature texts, but because of the originality of their content and because of the subject they transmit. As well as the consequent technological transfer and evolution of technical knowledge delivered by these texts started to deeply influence – and improve – people's everyday life.

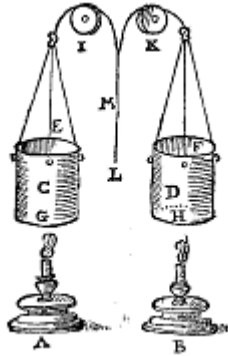
We have already seen that the attestation in a printed book promotes the overcome of locally founded terms and habits. In addition to this, it must be remembered that language runs slower than technical innovation. For this reason it tends to adapt existing terms with new words which are innovative, significant or borrows, adapting from other languages, classical or not. The metaphoric adjustment of a term is, together with periphrases, a common phenomenon for new linguistic coinage.

Texts are usually divided into chapters and subjects with a systematic pattern: a) the advice of the author to the lecturer with the apology for the poorness of his writing and for the not transparency of the text; b) an invocation to God to assure the correctness of the author's intentions and a concise hint of the contents of the book.

### *Drawings*

Drawings completed with technical details are fundamental in this kind of texts. The drawings' aim was an auxiliary function of machinery description made by a technician for a technician. It was an endeavour towards generalization in order to reproduce ideally machineries and apparatus. A primary innovative motivation of the existence of such texts was the effort to research – in our modern acceptation – the principles of machinery functioning despite the not yet discovered physic phenomena. The accomplishment of technological transfer by means of the diffusion of such texts and the new ideas can be transmitted around. This improves the evolutionary process both of society and of technical outputs, and it is guaranteed and supported by the presence of technical tables. They allow the technological transfer to go beyond any possible linguistic incomprehension. The language of drawing, the technical details designed and reproduced in the treaty could be universally

understood by people who have a knowledge in a practice and are skilled beyond its term denotation and terminology. Even though drawings may show something new or at least not yet seen.



1 *Pratica*, Libro Secondo Cap. 12, pag. 86<sup>1</sup>

### *The Pratica di Fabricar le Scene e le Machine ne' Teatri*

Let's start to observe the first results of the research on the text of Nicolò Sabbatini, architect and erudite living in the town of Pesaro in XVII century. As it is recorded on the manuscript preserved in the Oliveriana Library in Pesaro, *Abbecedario delle persone notabili di Pesaro – voce Nicolò Sabbatin*<sup>2</sup>, Sabbatini was born in Pesaro in

<sup>1</sup> Libro II, cap. 12

«**Come si possa fare, che tutta la Scena in uno istante si oscuri.**

Volendosi che in un subito si oscuri tutta la Scena, si potrà tenere quest'ordine. Si faranno fabbricare tanti cilindri di banda stagnata, quanti saranno i lumi, che si dovranno oscurare, (...)

Siano i due Lumi, che si havranno ad oscurare A.B. e i Cilindri C.D. con gli spiragli nel mezo nella parte di sopra in E.F. e aperti di sotto in G.H. e i fili che sostentano li Cilindri, passino nelle girelle I.K. in maniera aggiustati, che stiano à piombo sopra i Lumi A.B. e che detti fili si uniscino in un capo solo in L.

Quando si vorrà, che si oscurino i Lumi, si alzarà il capo del filo L. in M. che conseguentemente i Cilindri C.D. haveranno coperti i Lumi A.B.. Nel discoprirli poi si tirerà il detto filo da M. in L. come era prima, che in quello istante si saranno scoperti i sudetti Lumi. Il simile si dovrà fare à tutti gli altri, unendo in un capo solo d'un filo più numero di fili, che sia possibile: che così riuscirà quanto si è detto».

<sup>2</sup> Oliveriana Library; ms *Abbecedario delle persone notabili di Pesaro – voce Nicolò Sabbatini*, 1066 fascicolo I *Abbecedario*, carta 15:

«Sabbatini Nicolò

1574. He has studied there and he had the opportunity to be the pupil of the mathematician Guidobaldo dal Monte. He projected and built important public works in Pesaro, such as the new Harbour, the apartment named di Madama in Corte; la Palazzina in S. Angelo; the ornamentations of the Teatro del Sole, the most important theatre of the town.

*Pratica di Fabricar le Scene e le Machine ne' Teatri* is the first treaty on stage craft and consists in two volumes. The first one was published in 1637 in Ravenna, and deals with the very first settlement of a stage and on perspective. This is not extraordinary: as pupil of Guidobaldo dal Monte, mathematician and erudite, Sabbatini was well informed in perspective matters and could employ coherently his knowledge in stage craft.

The second volume completed the first one in 1638. It comprehends the instructions to build and set different machinery over, under and on the stage according to the drama needs.

As usual, *nemo profeta in patria*, Sabbatini did not achieve great fortune with his treaty. His intention of transferring his knowledge and practice on stage craft to other people remained undiscovered although his instructions were founded not only on his practical experience, but also on scientific knowledge on lifting heavy items. At the end of the second book Sabbatini wrote: «La Teorica non è difficile, ma è più facile la Pratica»<sup>3</sup>

This occurred, mainly, because of the popularity of a successive and famous scenographer and artist Giacomo Torelli, known as the *Grand Magicien* because of his magnificent painted scenographies in

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Fu scolaro del gran Guidobaldo del Monte, e benché il Quadrio lo dica di Ravenna, nacque in Pesaro e solo potea dirsi di quella città, perché fu figlio di Mro Appollinare Sabatini originario in Ravennate. Dotto come egli era, esercitò l'Architettura e col di lui consiglio furono fatte tutta la Fabbrica di considerazione nello Stato dell'ultimo Duca Franco M. II Il nuovo Porto, l'Apartamento nobile detto di Madama in Corte, la Palazzina in S. Angelo in Vado furono opere sue come anche l'ornato del nuovo Teatro, allorché nell'anno 1627 per la prima volta fu rapresentato l'Asmondo Tragedia del Sig. Giovanni Hondadei, fu suo, e mise in pratica ciò che dette ancora alla stampa= Pratica di far la Sciena. Pesaro per Flamminio Concordia 1637. Parte I e quindi Parte I e II in Ravenna per Pietro de Paoli a Gio. Batta Giovanelli in folio. Non è nota l'epoca precisa di sua morte, ma dovè accadere circa l'anno 1640».

<sup>3</sup> «e per darne un esempio fresco, le Machine mentovate in ambedue questi libri sono state in gran parte praticate ne gli Spettacoli nobilissimi, che ultimamente si sono rappresentati in Pesaro nel Teatro del Sole, e sono riuscite così felicemente, c'hanno apportato particolare amiratione, e diletto à riguardanti.»

Venice and Paris, and for his famous winch.

This evidence is recorded in a manuscript dedication in the printed *Pratica* owned by Annibale degli Abbati Olivieri and preserved in the Oliveriana Library in Pesaro<sup>4</sup>. In the words of the dedication, the author, an erudite and collector, Gio Battista Passeri, in 1764 witnesses – one century after Sabbatini's book publication – that his fellow citizen architect reached, much before the others, the best results in the practice of stage craft projects, both for perspective and machinery, he succeeded so fully, that his book must be considered as fundamental for this art<sup>5</sup>.

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<sup>4</sup> *Pratica di fabricar scene, e machine ne' teatri*. Di Nicolo' Sabbatini da Pesaro ... – In Pesaro: per Flaminio Concordia, 1637. Biblioteca Oliveriana, coll. Man VII-3-35bis.

<sup>5</sup> Transcription of the manuscript dedication on the front page of *Pratica* in the 1638 edition preserved in Oliveriana Library:

«Ferrara 6 8bre 1764

Quando nei scorsi giorni mi fù recato da Parma  
Il Trattato del nostro Sabbatini introno alla pratica  
Del fabricar scene, credetti di aver trovato un libro  
Di un nostro concittadino e niente più. (...) ed io mi  
figuravo che per quanto buona cosa potesse opera  
stata a suoi tempi, ora da che l'architettura  
dei teatri è giunta al colmo della perfezione,  
non le rimanesse altro pregio, che quello dell'  
Antichità (...)

Ma nell'esaminare questo libro  
mi sono disingannato, ed hò conosciuto, che questo  
nostro Autore, fosse il primo di tutti era  
giunto all'ultima perfezione dei due ufficj dell'  
Architettura teatrale, e Prospettiva, e Statica.  
(...) Intorno alla Statica teatrale in servizio della  
Taumaturgia io vedo, che il nostro autore  
prescrive machine tali, che poste in opera  
da un avveduto Professore possono riuscire  
per qualunque meraviglioso spettacolo. Io che  
con studio grande ho raccolto quanto hò potuto  
di machine rappresentate nelle più  
suntuose occasioni, ho veduto non esservene  
alcuna, che per via degli ordegni che  
propone il nostro concittadino non possa mettersi  
in opera, tanto che io reputo questo libro non  
solamente per sistematico, ma anzi per elementare  
e fors'anche per fondamentale di quest'  
arte ammirabile. (...)  
Gio Battista Passeri».

### *Structure of the Pratica*

Some outwork aspects of Sabbatini's text have a structure similar to a theoretic scientific text. The description of machineries and their functions are completed with technical drawings. The entire process of the possible handling charge of heavy objects, for example, are both described and illustrated. The difference is that while in a theoretic scientific text the language is specific and precisely connoted, in the chapters of Sabbatini's, language is familiar and simple. The pragmatic aim seems to be fundamental.

The two books are divided into chapters. Each chapter has a distinct subject which is described in two different ways. First, Sabbatini gives a narrative description in which the functions, the movements and above all the effects produced by an apparatus or a machinery are outlined. Then Sabbatini proceeds in explaining the same machinery or apparatus by means of the drawing and its precise technical details. The two volumes count 97 chapters, i.e. an average of 90 different subjects in total.

The first volume starts at the very first steps in stage craft techniques, from the choice of the site to the reproduction of the visual effect of the perspective and the building of the "wings", of the "houses" and of the painted backdrop.

The second volume concerns the construction and the use of theatrical machineries above and beneath the stage to provide movements of huge items, such as portions of scene, or the appearance or disappearance of actors and objects. Every single machinery is first described in a narrative way focusing the aspects of its functions and theatrical effects, then in its technical details. Every single passage of how it works is technically clarified referring to its corresponding drawing.

The volumes include 91 drawings, described with the pattern mentioned above.

### *Lexical considerations*

Here are displayed the first results of a starting inquiry on the lexicon of *Pratica* which will lead to the publication of a critical edition on Sabbatini's technical lexicon.

The two volumes are formed by 44.300 occurrences for a total of 4192 forms and 2224 entries. Among these data, nouns count 9226 occurrences and 949 entries; adjectives count 3642 occurrences and

350 entries; verbs count 8071 occurrences and 528 entries. The ratio among occurrences and entries is an average of 1/10. This result suggests that lexicon in this text is neither varied nor particularly rich, although it may be very specific in terminology.

A first consideration is on the retrieval of the lexemes in historical dictionaries. It is important to remember that technical terminology and lexicon was (and more likely is) not considered to be attested in language dictionaries. In the remarks to the lecturer of the 1612 *Vocabolario della Crusca* it is explicitly written that terms indicating tools and procedures of professions and arts are not commonly used but well known by professors of that art. This is the reason why none of these terms is included in the dictionary<sup>6</sup>.

Sabbatini himself was probably concerned about the legibility of his text by not skilled people in the practice. Sabbatini indeed gives to his lecturers the key to understand or not to misunderstand some opaque or not yet elected terms related to the art, giving in the text a synonym or an alternative term:

L. I, cap. 23 -

Se si vorrà poi fingere che sostenuto da Modiglioni, ò Barbacani, si servirà della medesima operatione, segnando prima il profilo di essi (...)

L. I, cap. 37 -

In quanto al primo vi sarà poca fattura, poiché si farà con due semplici troclie, ò girelle che le vogliamo nominare, le quali siano conficcate dalle bande al principio del Cielo (...)

L. I, cap. 37 -

Sia il Cilindro, ò Fusello A.B. il cui diametro, se lo spatio lo comporta, come si è detto, sia (...)

Starting from these examples, and after having chosen a sample of frequent and specific stage craft words, I tried a comparison between the definitions of the cited lexemes in 3 different historic dictionaries:

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<sup>6</sup> «A' LETTORI

Perché i termini, e strumenti delle professioni e dell'arti, non sono del comune uso, e solamente noti a' lor professori, non ci siamo obbligati a cavargli tutti. Quegli, che ci è occorso raccorre, saranno dichiarati quanto pertiene alla voce; e il nome di strumento s'è detto solo al fattivo, come ago, fuso, e simili. (...)

Ne' puri termini, non ci siamo guardati d'usar parole de' professor di quella scienza, o vero arte, ancorchè non pure latine».

*Grande Dizionario della Lingua Italiana*, a cura di Salvatore  
BATTAGLIA, Utet 1961 -2002;  
Tesoro della Lingua Italiana delle Origini (TLIO)  
<<http://tlio.ovi.cnr.it/TLIO/>>;  
Vocabolario della Crusca 1612  
<[http://www.accademiadellacrusca.it/Vocabolario\\_1612.shtml](http://www.accademiadellacrusca.it/Vocabolario_1612.shtml)>

In fig. 2 and fig. 3 comparative tables of two examples of definition:

<b>Modiglioni, ò Barbacani</b>		
<b>BATTAGLIA</b> <b>Barbacane</b> s.m. : 1 opera di rincalzo di rinforzo di sostegno o puntello (nelle costruzioni, fortificazioni , bastioni, murature; terrapieno a scopo difensivo, protettivo. (cit : Villani 1348, Pucci 1369 ; Boiardo; Cosimo Bartoli (1503 – 1572) nei trattati su Leon Battista Alberti volgarizzati 1550 circa; Vasari)	<b>TLIO</b> <b>Barbacane</b> s.m. : 1 Costruzione di rinforzo per mura e fortificazioni [1] <a href="#">Flore, XII u.g. (fior.), 28.2, pag. 58:</a> Gelosia fece fondar un castello / Con gran fossi d'intorno e <b>barbacani</b> / Ché molto ridottava uomini strani, / si facev'ella que' di su' ostello... [3] <a href="#">Cronichetta lucchese (1164-1260), XIII/XIV, pag. 245.1:</a> Et in quello anno, lo die di Sancto Dalmasio, fue grande battaglia tra Lucca e Pisa, e Lucca prese Viareggi et distrusse lo <b>barbacane</b> et ispiannonno le fosse loro, et andónno sopra li Pisani, et intrónno per forza in dello campo di Pisa e li Pisani fuggiteno. [7] <a href="#">Matteo Villani, Cronica, 1348-63 (fior.), L. 5, cap. 73, vol. 1, pag. 898.15:</a> Le mura furono larghe nel fondamento braccia IIII, e fondate braccia uno sotto il piano del fosso, e sopra terra grosse braccia due, ristrignendosi a modo di <b>barbacane</b> , e sopra terra alte braccia XII...	<b>CRUSCA</b> <b>BARBACANE</b> . parte della muraglia da basso, fatta a scarpa, per sicurezza, e fortezza. Alcuni lo dicono in latino <i>antemurale</i> G. V. 9. 136. 1. <i>E simile s' ordinò si cominciassero i barbacani.</i>

2

<b>Cilindro, ò Fusello</b>		
<b>BATTAGLIA</b> <b>Fusello</b> s.m. : 3 Techn. asse albero di rotazione , perno. (cit. Franc. Martini di Giorgio); 4 piccola stecca per lavorare la cera (cit. Filarete)	<b>TLIO</b> <b>Fusello</b> s.m. : 1 [Tess.] Piccolo fuso, o lo stesso che fuso.    <b>Fusolo</b> s.m. : . 2.3 Asse ligneo di rotazione di ruote o ingranaggi. [1] <a href="#">F. Piero de' Crescenzi volg., XIV (fior.), L. 5, cap. 61:</a> Del suo legno [[ <i>scil.</i> dell'olmo]] si fanno [[...]] <b>fusoli</b> di mulini, e a questi si convien molto.    Sorio, <i>Tratt. Agr.</i> , vol. 2, p. 209.	<b>CRUSCA</b> <b>Fusello</b> : no entry <b>Cilindro</b> : no entry

3

Other comparisons may be done with a list of lexemes attested in *Pratica* and not always retrieved in historical dictionaries.



In Battaglia's Dictionary it is not rare to find Sabbatini's lexemes because this text was one of the texts included during the construction of the lexical *corpus* of the dictionary. I have decided to adopt two other historical dictionaries as lexical reference *corpora*, compiled by means of older texts than the one of Sabbatini, to test the distribution of some technical or peculiar lexemes in the corpus of texts considered literate and not specifically technical.

The results of this choice lead to the following considerations.

In the TLIO dictionary specific technical theatre terms are very rare. One can only find a bunch of them referring to a generic and not specific meaning, although some of them, such as *fusello* are attested in some literal old text where this term is employed within the art of weaving. It is therefore part, as suggested in the mentioned introduction of the Crusca Vocabulary, of a common and shared everyday language. The same term is not attested, for example, in the Crusca Vocabulary.

Another interesting case is for example the term *caviglia*. This term is attested in all the three dictionaries examined with the following differences:

Battaglia:

**Caviglia** s.f. : 1 pezzo di legno o di ferro per lo più cilindrico e munito di capocchia , da configgersi in un muro (o altrove) per sospendervi o attaccarvi qualcosa , per unire insieme tavole di legno o per altri usi analoghi. (cit. Guittone, Villani, Sacchetti; Pulci; Palladio)

**Incavigliato** agg.: (ant. lett.) fissato o collegato con una o più caviglie ; unito. (cit. Marchi; Sabbatini; Targioni Tozzetti )

In Battaglia's dictionary the noun *caviglia* assumes the sense of a specific tool as first acceptance. The word is defined and described with its specific characteristics of material and functioning. It is quoted in the writings of famous poets, but it is also quoted as an adjective in some later technical texts.

TLIO:

**Caviglia** s.f. : **2** Pezzo di legno o di ferro con punta aguzza che si conficca nel muro o in altra struttura per vari scopi (appendere, tappare buchi, ecc.) -

Citations from Guittone<sup>7</sup>, Tesoro volgarizzato<sup>8</sup> XIII Century, Bestiario Toscano<sup>9</sup> XIII Century ; Boccaccio Decameron **Incavigliato** agg. da **incavigliare** : **1** Inchiodare, costringere (fig.). [Anche pron.:] inchiodarsi, aderire.

As reported in the TLIO example, this term is attested in poems and philosophical texts, although its characteristics both of materials and of functions are specified, and, in any case, included in the sense of the word.

In the Crusca Vocabulary *caviglia* is treated as follows:

**Caviglia:** accrescitivo di *cavicchio*, e serve a diversi usi – Citations from Boccaccio<sup>10</sup>

In this latter historical dictionary, the term *caviglia* is defined in its technical meaning a little wooden stick, as seen in the other two dictionaries, but here there is no reference to the material and to the function of the tool, except for the citation to its hypernym *cavicchio*.

These examples are the first suggestions from the starting research on Sabbatini's lexicon in *Pratica*. They are only the hints for theoretic considerations about the diffusion and attestation of technical terms both in texts and in dictionaries.

The most interesting emergences of this inquiry is that technical manuals seem to be the conjunction texts between an instruction one and a theory one, in a historical period in which practices develop into an established, worthy, pre-scientific art. At the same time, the language of these written particular productions seems to represent the passage from the natural/vernacular language adapted to innovative items, to a scientific specific (high) technical language.

I dare call the language of technical manuals a sort of "inter-language": an intermediate language between *koinè* of the workshop

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<sup>7</sup> GUITTONE D'AREZZO, *Lettere in prosa*, 1294. Lettere Edizione a cura dell'Ufficio Filologico [d'Arco Silvio Avalle].

<sup>8</sup> ANONIMO, *Tesoro di Brunetto Latini volgarizzato* [Libri III, IV e V], XIII sec. Edizione Brunetto LATINI, *I libri naturali del "Tesoro" emendati colla scorta de' codici*, commentati e illustrati da Guido BATELLI, Firenze, Successori Le Monnier, 1917, Libro V, cap. 39, pp. 3-51, 55-72, 75-192.,

<sup>9</sup> ANONIMO, *Bestiario Toscano*, XIII sec. Edizione Milton Stahl GARVER e Kenneth MCKENZIE, "Il Bestiario toscano secondo la lezione dei codici di Parigi e di Roma", *Studi romanzi*, VIII, 1912, Cap. 31, pag. 53 [testo pp. 17-94].

<sup>10</sup> Giovanni BOCCACCIO, *Decameron*, IV 10 p. 320.19: «Egli aveva a buona caviglia legato l'asino».

and a scientific treaty. It is a passing language. A language in movement, in strict connection and mutual relevance with the drawings shown: where the concepts expressed by language are not sufficiently exhaustive, then technical drawings supply.

The further development of the scientific literature, which has broadened in a particular way, with a specific language characterized by transparent, univocal and unambiguous terms, and with a peculiar, exact concept-displaying pattern, obscured the fortune of practice manuals. Science quickly overlapped practice, and the role of the "inter-language" translating and conceptually corresponding to an "inter-science" in progress, unavoidably shaded.

