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# Bricolagic Practitioners and the Fluid Culture of Skilled Work in Late Sixteenth-Century Rome

This paper explores the culture of skilled practice in late sixteenth-century Rome. It takes specific examples of engineers, architects, printers, engravers, and painters to show the ways in which individuals in this time and place led particularly fluid work lives – moving from different kinds of skilled occupations as a way of moving up the social ladder. At the same time, skilled individuals and learned humanists often communicated in substantial ways and even developed friendships in arenas that I have called trading zones. This paper discusses the implications of this fluidity of occupation and the development of trading zones in early modern Europe. The examples are taken from Rome, but it is suggested that although Rome was in some ways unique, these conditions also prevailed in many other places in Europe.

This essay focuses on the city of Rome in the second half of the sixteenth century and on certain kinds of skilled workers, and their activities. I suggest that in this particular time (the 1500s) and place (Rome) such workers had great occupational fluidity and that they changed occupations and identities throughout their lifetimes in ways that improved their social status. For example, sculptors could become architects, and printers could become cartographers. I suggest that this fluidity was not just characteristic of Rome but of other locales in Europe as well. These practitioners were bricolagic – that is, they cobbled their varied careers from a variety of available resources and opportunities, and they sometimes changed what we would call their crafts or professions.[1]

The occupational fluidity of these individuals was accompanied by a kind of social fluidity, an ability to develop communication and even friendships with higher status,

university educated men. Practitioners needed the kind of learning that such people had to offer. It is also true that learned people, especially learned humanists – men devoted to a new learning based on classical Latin and the study of antiquity – needed the knowledge about practice that artisanally trained practitioners possessed. What I've called trading zones developed: places such as sites of ancient ruins in Rome, or print shops, for example, in which substantive communication occurred between learned people and workshop, or practically trained skilled people. This development had implications for the culture of knowledge in early modern Europe.[2]
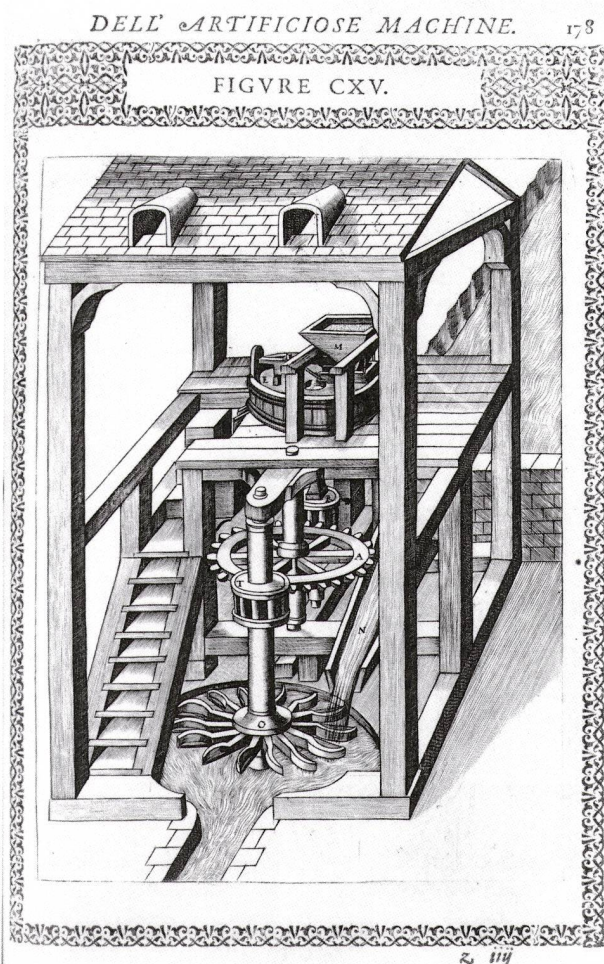
What are the conditions under which occupational fluidity and the development of trading zones could occur? One is an aspect of sixteenth century European culture that saw a growing appreciation of objects, especially beautiful objects, such as salt cellars, ceramics, elaborately carved

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DELL' ARTIFICIOSE MACHINE. 178

FIGVRE CXV.

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chests, and jewelry. This was accompanied by the development of conspicuous consumption, which linked social status to fine clothing, jewelry, great palaces, and the like.[3] There was also a growing regard for the skill needed to create such objects. Even princes and other nobles sometimes took an interest in hands-on alchemical laboratories or ceramics workshops in which not only skilled artisans under their patronage, but also they themselves engaged in

hands-on experimentation and the making of objects – a phenomenon that Bruce Moran pointed out years ago in a classic article called German "prince-practitioners".[4]

At the same time, great interest developed in instruments, such as navigational and astronomical instruments, and in machines of various kinds.[5] This appreciation permeated many realms of European thought, including literature and philosophy. Jessica Wolfe illustrates this in *Humanism, Machinery, and Renaissance Literature* (2004), as does Jonathan Sawday in *Engines of the Imagination.*[6] These literary scholars show in abundant detail how instruments and machines were embedded in literature and literary culture. Of course, this interest was also inherent in early modern technological and engineering culture. One manifestation was the proliferation of drawings of machines and machine parts in the fifteenth century and the publication in the sixteenth century of numerous "Theaters of Machines" such as that of Agostino Ramelli.

In addition, late sixteenth century Rome developed in certain ways that are relevant to the context of skilled practice. At this time, Rome was experiencing a building boom. Literally hundreds of churches and palaces were being renovated or newly built, and they were being provided with new paintings, sculptures, and other ornamentation, including furniture and tapestries. In the city itself, streets were being widened and straightened. Ancient obelisks were being transported to new locations and raised to mark important streets and churches.

The study of Roman antiquities and ruins was an obsession both of learned humanists and of artisans, builders, and other makers. The ongoing activity of construction in Rome meant that new antiquities were discovered or dug up on an almost daily basis.[7]

An ancient aqueduct, the Acqua Vergine, was restored to its full capacity at this time, while another, the Acqua Felice, was newly built, but using some of the channels and materials of ancient aqueducts. Numerous new urban fountains were created from the newly provided water.[8] This huge construction boom brought hundreds of skilled and
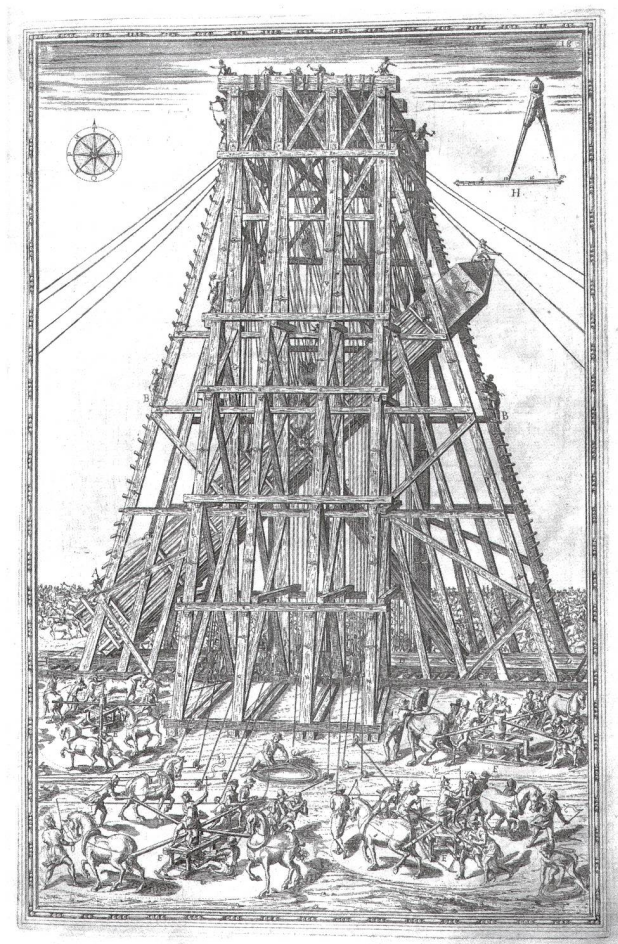
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unskilled workers to Rome from other places. Rome as a city was being reformed and renewed in the 1500s. At the same time, numerous maps of Rome were created, which amounted to a kind of re-envisioning of the city on paper.[9]

Rome was not completely controlled by the popes in a regime of papal absolutism as is often imagined. It is true that the pope's power was hugely important and the popes certainly aspired to absolutism. In fact, however, there were numerous centers of power and patronage in Rome, including powerful cardinals, powerful ambassadors, and powerful nobles. In addition, Rome was governed by two entities, not one. Rome was governed by the popes and the papal bureaucracy, but also by the less powerful but always present traditional city government, the Capitoline Council headed by three conservators and a prior.[10] Finally, Roman guilds for a variety of trades such as carpenters and stonecutters did exist, but they were relatively weak. Guild regulations existed but could be avoided by means of acquiring patronage from some powerful person and thereby skirting guild requirements.[11]

Rome's building boom – which included infrastructure projects such as bridges, streets, and aqueducts as well as palaces, churches, and other buildings – combined with the complex patronage situation that provided numerous centers of powerful and wealthy patronage, meant that skilled workers had a great deal of maneuverability in terms of getting the best deal, and also flexibility in

what they actually did. Many became intrigued with ancient Roman building techniques and ancient Roman ruins, and they had skills, such as the ability to survey and measure and the ability to draw, that were useful to learned antiquarians who were also studying Roman ruins.[12] I have space to give just three examples of men that I call bricolagic practitioners, but there were many others that I could have chosen from.

## Leonardo Bufalini

My first example is Leonardo Bufalini (d. 1552). During his lifetime, Bufalini worked as a carpenter, a military engineer, a surveyor, a woodcutter (that is cutter of woodblocks for printing), and a cartographer. His fame was linked to his map of Rome which is the first large scale ichnographic map of the city. (An ichnographic map is one that is measured and shows plans and elevations according to precise measurements throughout).

Bufalini was apparently involved in the renewed fortification of the Roman walls that was carried out in the 1530s, initiated by Pope Paul III following the ferocious year-long sack of Rome by an imperial army that occurred in 1527. In various sources Bufalini is called a lignarius or carpenter. We know that he surveyed the city of Rome, since his map is the result of surveying. Another military engineer, Francesco di Marchi, wrote that he accompanied Bufalini in his surveying project for six months to learn from him. Di Marchi and Bufalini went together to explore the famous sunken ancient ships at Lake Nemi. Bufalini is also mentioned in an account as working on the construction of a bastion at the Castel Sant' Angelo. Furthermore, he is probably the Leonardo mentioned as a woodcutter in the print shop of Antonio Blado, the printer who published the famous Bufalini map in 1551, of which only a 1561 edition by Antonio Trevisi is extant. As Jessica Maier has pointed out, Bufalini's map shows both the contemporary city of Rome and the ancient city. It displays ancient structures that no longer existed in Bufalini's lifetime. As a carpenter, he was also held in great esteem by learned humanists such as Onofrio Panvinio. He was admired for his map, for his sur-
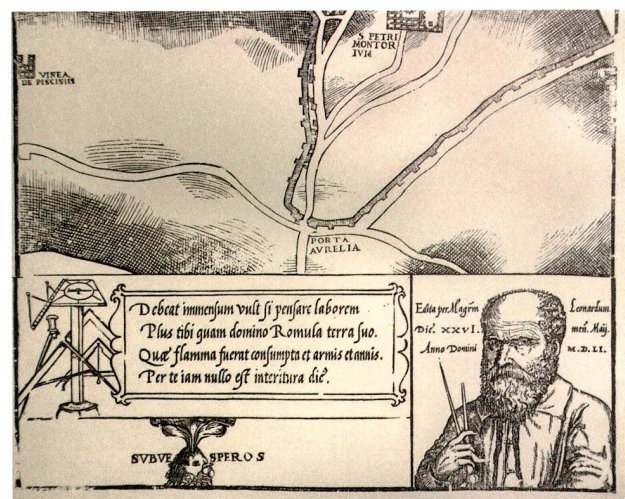


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3 Lowering the Vatican obelisk. Domenico Fontana, Della trasportatione dell'Obelisco Vaticano [ . . .] (Rome, 1590), fol. 18r.

4 Detail, portrait of Bufalini from Leonardo Bufalini Roma 1551, Reprint 1560.

5 Stefano (Étienne) Duperac, Roman Forum with Arch of Septimius Servus. Engraving/etching. From I vestige dell'antichità di Roma (Rome, 1575), no. 3.

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veying, and for his knowledge of the ancient Roman city. So Bufalini started out as a carpenter, became a surveyor, an explorer of antiquities, a cartographer, and a woodcutter of blocks for printing. He could be called a bricolagic practitioner, starting out with the skills of carpentry, but acquiring those of surveying, woodcutting of blocks, and cartography. He is sometimes called an architect – *architetto* – in the sources as well.[13]

## Pirro Ligorio

My second example is Pirro Ligorio (1514–1583). Ligorio was from Naples and claimed to have come from a noble family. Nevertheless, he seems to have been practically trained. He moved to Rome as a young man in the 1530s and the first we know of him is that he was a painter of decorative house façades. Ligorio became an avid student of the antiquities and ruins of Rome. We have hundreds of pages of his writings, almost all in manuscript, about his researches which involved his personal examination and measurement of ancient ruins, and his study of ancient inscriptions, coins, and other artifacts. Ligorio had extensive friendships with learned humanists who helped him with difficult inscriptions and texts in Latin and Greek. He became architect of the popes, designing the beautiful Casino, a house in the Vatican gardens, and other Vatican structures, and he was appointed architect of St. Peter's. He was a designer of gardens; most famously he was the designer of the famous d'Este gardens at Tivoli, with its extensive hydraulic works and fountains. He appears to have surveyed an ancient aqueduct, the Acqua Vergine. He can be called a hydraulic engineer. He was also a map maker and cartographer and created maps of both contemporary Rome and Rome in antiquity.

When he was forced to move to Ferrara later in his life, he experienced the Ferrara earthquake in 1570 and took a hand in the repair and reconstruction of the city. He wrote a book on earthquakes, and created the first design for an earthquake shock-proof building.[14]
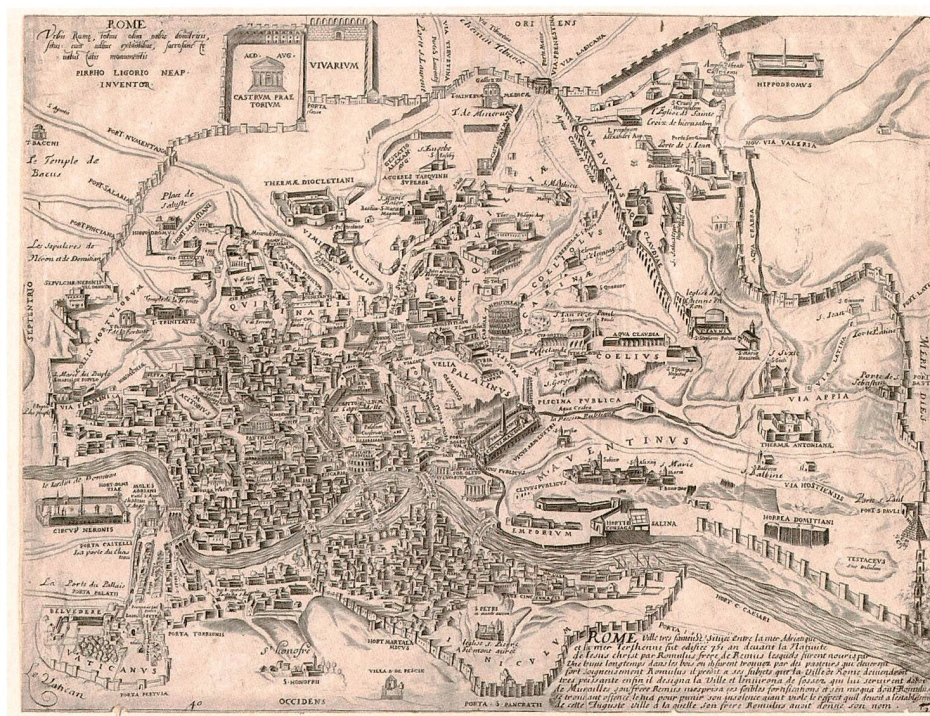
## Étienne Dupérac

The third bricolagic practitioner that I will discuss is Étienne Dupérac (c. 1525–1604), or Stefano Duperac as he was called in Italy. Duperac was trained as a painter in France. As a young man he moved to Rome where he worked for 20 years as a painter, executing numerous fresco paintings on walls. He also designed images for copper plate engraving, and engraved the plates himself. Many of these engravings depicted Roman buildings including ancient buildings and ruins.

During his time in Rome, he befriended the learned antiquarian and humanist Onofrio Panvinio. Panvinio and Duperac studied Roman ruins together. Panvinio had extensive knowledge of ancient texts such as histories which mentioned places and buildings in Rome. These histories helped in understanding the buildings and fragments of buildings that could be seen. Duperac was important to Panvinio as well. For one thing, he could draw, and making visual images became crucially important for the study of antiquities. Duperac also became a cartographer. He helped Panvinio make a small map of Rome, then made three maps of his own, including one of contemporary Rome and one of the ancient city. His new knowledge of Roman antiquities, which he acquired from studying the ruins at first hand and from his learned friend Onofrio Panvinio, allowed him to climb the social ladder and acquire patronage. After 20 years in Rome, Duperac returned to France. He became a designer of Royal gardens (the skill of garden designer probably learned from Ligorio), and finally he became architect to the French king, Henry III. He never touched an engraving tool again, and his daughter married a French nobleman.[15]

## Professional fluidity

I have provided three examples of practitioners, artisanally trained skilled workers, whose careers were highly fluid, not only because of the different kinds of skilled practices that they undertook, but also because of their social mobil-

ity, and their friendships and communication with learned people, that is, to put it in another way, because of their ability to participate in trading zones. A trading zone is an arena in which there is substantive communication between someone trained by apprenticeship in a workshop and someone trained in a text-based system, usually in a university. Because university education in the late medieval period was available only in Latin, a language usually available only to elite males who had studied the language since boyhood, and because artisanal skill also took years of practice in a workshop, two different worlds existed, or two different realms. I suggest that in the 1500s, the gap between the two worlds narrowed considerably, and that numerous trading zones developed.[16]

A trading zone involves a situation in which a learned person desires knowledge of some aspect of skill, or even a skill itself, and a workshop trained person needs some aspect of learning not easily obtainable by himself. And so the two exchange their respective knowledge and skills with each other substantively, sometimes on a very ongoing basis. A trading zone is not a patron-client relationship, although a trading zone could exist within such a relationship. The discovery of the existence of a trading zone is entirely a matter of empirical investigation. Such empirical investigation confirms that the late sixteenth century was a time of flourishing trading zones.

The term "trading zones" is an apt one for premodern studies of the interactions of artisans and learned men, or artisanal culture and university and/or humanist culture. However, the categories of artisanal on the one hand and learned on the other, and the divisions between them, were to some extent breaking down in the late sixteenth century. Indeed, if the divisions between artisanal worlds and learned worlds had been rigidly separated, trading zones would never have developed.

Another aspect of professional fluidity is that it occurred only, or perhaps more, in certain professions than others. In general, in the medieval period, sons followed the trades of their fathers, but as George McClure shows, things became much more flexible in this period and the children of goldsmiths, say, could become painters or printers or sculptors or something else.[17]

In addition, new professions arose that did not fit into traditional guild structures. These included people called architects, and those called engineers (but people doing engineering tasks were often called architects). They included printers, and related arts, a new enterprise from the 1450s. They also included engravers, a practice that emerged only in the sixteenth century. They included military engineers who designed and constructed bastion forts, a type of fortification that developed in the early sixteenth century in response to gunpowder artillery. They included artillery experts and gunners, and they included people who worked in large scale smelting and related metallurgical arts. They often included ship builders or designers who worked in various shipyards and arsenals around Europe. These people usually learned the craft skills they needed on site, or in the case of someone called "architect", they may have just written a book on the topic.

## Occupational fluidity

As the arts and their display flourished, the makers of these arts often also flourished, and they came to be involved not only in making, but also in reading and writing. Hundreds of books on practical and technical topics were written in the sixteenth century, some of them by practitioners, some by university-educated men.[18] As I have suggested, along with this broad interest in practical topics, there was much occupational fluidity. Sculptors became architects and engineers; woodcutters and carpenters became surveyors, car-

tographers, and antiquarians; printers and etchers became architects; painters became cartographers. Moreover, in Rome extensive friendships developed among highly learned antiquarians and practically trained persons who together possessed the knowledge and skills needed to study Roman ruins. Practitioners wore many hats. Although they were not university educated, they sometimes learned Latin. They owned books, read books, and sometimes wrote books. They got help from their learned friends with difficult Latin and Greek texts and inscriptions, and they in turn helped these friends with drawing, measuring, and other skills. They enjoyed rising social status and sometimes lived under an umbrella of patronage in which there was much interchange among skilled practitioners and learned humanists. Learned humanists themselves appreciated and needed the skills of measuring, drawing, and other practical expertise.

Yet it is important to note that even though they might be called the same today, people called architects and engineers (in Italian *architetto*, *ingegnere*) in the sixteenth century were not modern professionals. The sixteenth century was prior to the time of modern professionalism. Modern architects follow a particular course of study that has specific requirements, they are graded, they have required projects, they get degrees, and after that they have to be licensed in order to practice. There was nothing like that in the sixteenth century. Sixteenth century people who were called "architects", or the same in either Latin or the vernacular languages, could have come by that appellation in numerous ways. And here it is important to avoid anachronism. As Anthony Gerbino pointed out, architectural historians have tended to focus on the activities of past people who are called architects only in so far as those activities are consonant with what modern architects do – that is, with designing buildings. They have tended to ignore the much wider range of professional activities undertaken by these people in this era before modern professionalism.[19] This anachronistic approach is one way to mask the occupational fluidity of people in the sixteenth and seventeenth centuries who were called architects.

## Trading zones

Beyond Rome, there were other kinds of places that might encourage trading zones. Trading zones must be discovered by empirical investigation, and they might be found, or not, depending upon where one is looking. The same kind of place could serve as a trading zone in one context, but not in another. For example, James Bennett has investigated instrument shops in London and Paris. In London, the instrument shops serve as trading zones – they were the locales for intense conversations and exchange between skilled instrument makers, who made and sold the instruments, and high-status university educated men who were interested in astronomy, cartography, cosmography, and navigation. Instrument makers were interested in these subjects too and their clients and customers were interested in how to make and how to use the instruments. In London, instrument makers' shops functioned as trading zones. However, in Paris, the same kinds of shops that made similar kinds of instruments, did not.[20]

Print shops also often functioned as trading zones in many areas. Arsenals often served as trading zones in the context of the developing technologies of gunpowder artillery. Arsenals and docks, in which ship construction took place, often functioned as trading zones. Areas of smelting and ore processing could be trading zones. The noble courts of Europe often functioned as trading zones between skilled people trained in apprenticeship situations and learned, university-educated people.[21] These were arenas of great interest to princes and other rulers, and arenas where new technologies were being developed.

These exchanges among the learned and the skilled had implications for the culture of knowledge. The developing methodologies of the new sciences used observation, valued individual experience and developed experimental approaches. This was a complicated development that emerged over a century and a half. In part, it was generated by the increasing exchanges between learned people who were interested in skills and practices of making, and skilled people who were interested in classical antiquity, and in reading and writing books, and eventually in questions about the natural world. ∎

# About the author

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Pamela O. Long is an independent historian focusing on premodern Europe.
She received her PhD in history from the University of Maryland in 1979, writing
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She has published extensively in cultural history and the history of science and
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Her books include "Openness, Secrecy, Authorship: Technical Arts and
the Culture of Knowledge from Antiquity to the Renaissance" (2001); "Artisan/
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Weiss), "Obelisk: A History" (2009), and (with David McGee and Alan Stahl),
"The Book of Michael of Rhodes", 3 vols. (2009).

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# Annotations

**1** This essay is based in part on Pamela O. Long, Multi-tasking "Pre-professional" Architect/Engineers and Other Bricolagic Practitioners as Key Figures in the Elision of Boundaries Between Practice and Learning in Sixteenth-Century Europe. Some Roman Examples, in: Matteo Valleriani (ed.), The Structures of Practical Knowledge. Cham 2017, p. 223–246.

**2** See esp. Pamela O. Long, Trading Zones in Early Modern Europe, in: Isis 106 (2015): p. 840–847. There is a large literature on the study of antiquities in Rome. A selection includes Brian Curran, The Afterlife of Ancient Egypt in Early Modern Italy, Chicago 2007; Peter N. Miller (ed.), Momigliano and Antiquarianism. Foundations of the Modern Cultural Sciences, Toronto 2014; Arnaldo Momigliano, The Classical Foundations of Modern Historiography, Berkeley 1990; Ingrid D. Rowland, The Culture of the High Renaissance. Ancients and Moderns in Sixteenth-Century Rome, Cambridge 1998; and Roberto Weiss, The Renaissance Discovery of Classical Antiquity, Oxford 1988[2].

**3** See esp. Lisa Jardine, Worldly Goods. A New History of the Renaissance, New York 1996; and Renato Ago, Il gusto delle cose. Una storia degli oggetti nella Roma del Seicento, Rome 2006, translated by Bradford Bouley, Corey Tazzara with Paula Findlen as Gusto for Things. A History of Objects in Seventeenth-Century Rome, Chicago 2013. See also Pamela H. Smith, The Body of the Artisan. Art and Experience in the Scientific Revolution, Chicago 2004.

**4** Bruce T. Moran, German Prince-Practitioners. Aspects of the Development of Courtly Science, Technology, and Procedures in the Renaissance, in: Technology and Culture 22 (1981), p. 253–274.

**5** See esp. James A. Bennett, Shopping for Instruments in Paris and London, in: Pamela H. Smith and Paula Findlen (eds.), Merchants and Marvels. Commerce, Science, and Art in Early Modern Europe, New York 2002, p. 370–395; Anthony Gerbino and Stephen Johnston, Compass and Rule. Architecture as Mathematical Practice in England, New Haven 2009; and Alexander Marr, Between Raphael and Galileo. Mutio Oddi and the Mathematical Culture of Late Renaissance Italy, Chicago 2011.

**6** Jessica Wolfe, Humanism, Machinery, and Renaissance Literature, Cambridge 2004; and Jonathan Sawday, Engines of the Imagination: Renaissance Culture and the Rise of the Machine, New York 2007.

# Picture credits

**7**   For recent work see esp. Dorothy Metzger Habel, When All of Rome Was Under Construction. The Building Process in Baroque Rome, University Park, PA 2013; Pamela O. Long, Engineering the Eternal City. Infrastructure, Topography, and the Culture of Knowledge in Late Sixteenth-Century Rome, Chicago 2018; and Clare Robertson, Rome 1600. The City and the Visual Arts Under Clement VIII, Yale 2015. For Roman obelisks, see esp. Veronica Biermann, Ortwechsel. Überlegungen zur Bedeutung der Bewegung schwerer Lasten für die Wirkung und Rezeption monumentaler Architektur am Beispiel des Vatikanischen Obelisken, in: Stefan Altekamp, Carmen Marcks-Jacobs, and Peter Seiler (eds.), Perspektiven der Spolienforschung 1, Spoliierung und Transposition, Berlin 2013, p. 123–156; Giovanni Cipriani, Gli obelischi egizi. Politica e cultura nella Roma barocca, Florence 1993; Brian A. Curran, Anthony Grafton, Pamela O. Long, and Benjamin Weiss, Obelisk. A History, Cambridge, Mass., 2009; and Cesare D'Onofrio, Gli obelischi di Roma. Storia e urbanistica di una città dall età antica all XX secolo, Rome 1992³.

**8**   See esp. Cesare D'Onofrio, Le fontane di Roma, Rome 1986³; Long (see n.7), p. 63–91 and p. 102–112; and Katherine Wentworth Rinne, The Waters of Rome. Aqueducts, Fountains, and the Birth of the Baroque City, New Haven 2010.

**9**   For the maps of Rome see esp. Amato Pietro Frutaz, Le piante di Roma, 3 vols., Rome 1962; and Jessica Maier, Rome Measured and Imagined. Early Modern Maps of the Eternal City, Chicago 2015.

**10**   See Long (see n.7), esp. p. 1–19; and Laurie Nussdorfer, Civic Politics in the Rome of Urban VIII, Princeton, NJ, 1992.

**11**   See esp. Paul Arthur Anderson, Master Carpenters in Renaissance and Baroque Rome. The Collaboration of Artists, Architects, and Artisans on Monumental Commissions in the Cinquecento and Seicento, PhD University of California at Santa Barbara 2008; Antonio Martini, Arti, mestieri e fede nella Roma dei papi, Bologna, 1965; and Isa Lori Sanfilippo, La Roma dei romani. Arti, mestieri e professioni nella Roma del trecento, Rome 2001.

**12**   See Long (see n. 7).

**13**   See esp. Francesco Ehrle, Roma al tempo di Giulio III. La pianta di Roma di Leonardo Bufalini del 1551 riprodotta dall'esemplare esistente nella Biblioteca Vaticana, 1911, Reprint, Vatican City 2011; Long (see n. 7), esp. p. 121–123; Long (see n. 1), p. 227–230; and Maier (see n. 9).

**14**   See esp. Robert W. Gaston (ed.), Pirro Ligorio. Artist and Antiquarian, Florence 1988; Fernando Loffredo and Ginette Vagenheim (eds.), Pirro Ligorio's Worlds. Antiquarianism, Classical Erudition and the Visual Arts in the Late Renaissance, Leiden 2018; Long (see n. 7), esp. p. 68–72 and p. 128–138; and Long (see n. 1), p. 230–233.

**15**   See Long (see n. 7), esp. p. 149–155; Long (see n. 1), p. 233–236; and esp. Emmanuel Lurin, Étienne Dupérac, graveur, peintre et architecte (vers 1535? –1604). Un artiste-antiquaire entre L'Italie et la France, PhD L'Université Paris IV, Sorbonne 2006.

**16**   See Long, (see n. 2); and Long, Artisan/Practitioners and the Rise of the New Sciences, 1400–1600, Corvallis, Ore. 2011, p. 94–126.

**17**   George W. McClure, The Culture of Profession in Late Renaissance Italy, Toronto 2004.

**18**   Pamela O. Long, Openness, Secrecy, Authorship. Technical Arts and the Culture of Knowledge from Antiquity to the Renaissance, Baltimore 2001, esp. p. 175–250.

**19**   Anthony Gerbino, François Blondel. Architecture, Erudition, and the Scientific Revolution, London 2010.

**20**   Bennett (see n. 5).

**21**   Long, Artisan/Practitioners (see n. 16), p. 94–126.