



Baccio del Bianco and the artistic *fortuna* of Galileo's *Il Saggiatore*

Eva Struhal

University of Trento, eva.struhal@unitn.it

Abstract

This contribution takes into consideration Galileo's *Il Saggiatore* as an overlooked source for the arts in Florence during the first part of the seventeenth century. I focus on the Florentine polymath Baccio del Bianco (1604-1657), an artist, engineer, architect, and caricaturist, whose interaction with Galileo was documented by the Florentine biographer Baldinucci. Baccio had also collaborated with Galileo's friend, the architect and astronomer Giovanni Pieroni. My contribution especially highlights the confluence of artistic and natural philosophical perspectives in the cultural *fortuna* of Galileo's treatise. The influence of *Il Saggiatore* on Baccio del Bianco's work is exemplified by the decoration of the *Camera della Notte e del Di* of Casa Buonarroti, designed in close dialogue with Michelangelo Buonarroti il Giovane. At a closer look, also Baccio's caricatures are revealed as reflections on (human) nature endowed with the same authority as Galileo's approach.

Keywords

art and science, Baccio del Bianco, caricature, Casa Buonarroti, telescope

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My contribution highlights parallels between Galileo Galilei's natural philosophy, in particular his treatise *Il Saggiatore* and the artistic concepts of the Florentine artist-engineer Baccio del Bianco (1604-1657), who was active as a military, civil, and theatrical engineer throughout his life. Baccio and Galileo moved in the same cultural circles of seventeenth-century Florence.¹ As is well known, Galileo was in contact with a number of contemporary Florentine artists.² Filippo Baldinucci (1625-1696), the Florentine biographer of Baccio del Bianco in his *Notizie dei Professori del Disegno*, states that Galileo was Baccio's "maestro" and explicitly mentions him in the double role of "pittore ed architetto del Granduca".³ Since Baccio was also active as an engineer and a military architect, it is likely that Galileo instructed Baccio in the field of applied mathematics and engineering.⁴ For example, Baccio was involved in projects of water management in Florence, such as the project to build a wood bridge over the Chiana for Foiano in 1642.⁵

Baccio's polyhedric artistic activity as painter, draftsman, landscape architect, engineer, theatrical designer, caricaturist, satirist, and observer of Nature spans the full extent of Baroque visuality including the "veduta al naturale" – landscapes drawn from life – elaborate theatrical decorations, opulent costume designs, caricature, and artistic representation. Due to Baccio's artistic involvement with a multitude of artistic genres, later critics are yet to agree on a conceptual framework for Baccio's idiosyncratic and heterogeneous oeuvre

¹ Baccio del Bianco has been neglected by recent research. The most complete biographical source is still his life by Filippo Baldinucci, see Baldinucci, "Notizie di Baccio del Bianco". See also the summary of biographical data in: Arcangeli, "Biografie", 76-78. Detailed aspects of his life, particularly concerning his caricatures have been studied recently, see: Grassi, "Baccio del Bianco e i suoi amici"; Rice, "The cuckoldries of Baccio del Bianco"; Cheng, "Parodies of Life"; Măgureanu, "Baccio del Bianco and the cultural politics of the Medici court".

² The artistic milieu that Baccio and Galileo moved in and the impact of Galileo's philosophy on the artworld after his death have been described by Alessandro Tosi, "Circa 1642: gli artisti intorno a Galileo". Vincenzo Viviani's *Racconto storico della Vita del Sigr Galileo Galilei* mentions that Galileo's opinions on art were appreciated by a series of contemporary artists "come dal Cigoli, dal Bronzino, dal Passignano, e dall'Empoli": see Gattei, *On the Life of Galilei*, 6. The interactions between Galileo and Lodovico Cardi called Il Cigoli have received the broadest attention by researchers, also because they are the most extensive and best documented. Besides the classical article by Panofsky, "Galileo as a Critic of the Arts", see also Ostrow, "Cigoli's Immacolata and Galileo's moon". For the exchanges between Galileo, Jacopo da Empoli and Michelangelo Buonarroti il Giovane in a broader culture of a fascination of the "ritratto al naturale", be it portraits or stillives, see Massimiliano Rossi, "La Crusca nell'occhio".

³ Baldinucci, "Notizie di Baccio del Bianco", 16-51. The mention of Galileo as his "maestro", *ibid.*, 35.

⁴ For Baccio's activity as a military architect, engineer, and military architect see Baldinucci, "Notizie di Baccio del Bianco"; Arcangeli, "Biografie"; for Galileo's activity as an engineer see most recently Valleriani, *Galileo Engineer*.

⁵ BNCF, Gal. 148, doc. 5, cc. 20r-22v.

and have labelled it “eclectic”.⁶ Baldinucci categorized Baccio as a *naturalist*, an artist who based his art on skillful imitation of nature and her processes, by imitating the “fare alla natura”, the “workings of nature” rather than her mere appearances.

Baccio’s proficiency as draughtsman of landscapes survives in his impeccably drawn “vedute al naturale” that he produced during morning walks outside Florence.⁷ His mastery was recognized by Grand Duke Ferdinando II, who asked Baccio in 1642 to create a *natural portrait* of the moon (“far ritrarre al naturale”) with the help of Galileo’s “large and perfect telescope”.⁸ Baldinucci reports that the desire to imitate nature and her different appearances guided Baccio’s much acclaimed stage sets “che si trovò presente, e tutto vide, che Baccio imitò quanto di maraviglioso vediamo fare alla natura in terra, in aria, ed in acqua”.⁹ For the Spanish court Baccio designed landscape gardens (“all’usanza della Città di Firenze”).¹⁰ These instances illustrate a career-long thread of Baccio’s interest in nature and her workings, in line with contemporary concerns of natural philosophy.

Baccio’s career began as an assistant to Giovanni Pieroni (Giovanni de Galliano Pieroni) (1586-1654), whose extensive communication with Galileo is well-documented. Pieroni was a man of multiple talents and professional orientations. In 1610 at the University of Pisa, Pieroni had acquired a doctorate in Natural Philosophy.¹¹ An accomplished astronomer, his research into the fixed stars was taken seriously by Galileo and his circle.¹² Pieroni’s two professional orientations, that of military architect and that of natural philosopher have so far led parallel lives in the modern literature on this “uomo di lettere”.¹³

Pieroni’s involvement with the Galileian natural philosophical context proved to be an extremely important stimulus for Baccio’s career. Although some scholars have highlighted the fact that Baccio’s art stands in connection with “the new science”, Pieroni’s intellectual formation has so far not been considered as an impetus behind Baccio’s career.¹⁴ Baccio accompanied Pieroni to the Viennese Imperial court in 1622.¹⁵ However, their relationship gradually deteriorated and towards the end of 1624 Baccio precipitously

⁶ See for example Giusti, *Pietre Dure*, 84.

⁷ Baldinucci, “Notizie di Baccio del Bianco”, 34.

⁸ *Ibid.*, 30.

⁹ *Ibid.*, 47.

¹⁰ *Ibid.*, 48.

¹¹ About Pieroni see: Fidler, “Dottore Giovanni Pieroni Architetto e Matematico”; Ulicny, “Albrecht of Waldstein”; Ulicny, “Giovanni Pieroni”.

¹² See several letters that Giovanni Pieroni addressed to Francesco Rinuccini from Vienna in 1640: OG, XVIII, 138-139, 146, 163-164.

¹³ On the philosophical aspect of Pieroni’s career and his several points of contact with Galileo see Heilbron, *Galileo*, 330-331; 354-355.

¹⁴ For example, Măgureanu, “Baccio del Bianco”, 13; Forlani Tempesti, “Baccio del Bianco fra scherzo e scienza”.

¹⁵ Baldinucci, “Notizie di Baccio del Bianco”, 16.

left Prague where he was working for the acclaimed General Wallenstein and travelled back to Florence.

During Pieroni's years in Central Europe (1622-1654), he was an active promotor of Galileian astronomy and the Florentine's new natural philosophy. From a letter addressed to Galileo from Prague, dating from 24th July 1626 we learn that Pieroni regretted not being able to find many intellectuals in Prague who take pleasure "delle speculationi più gentili di filosofia e matematica come ho conosciuto in Italia".¹⁶ This letter mentions that Pieroni and Kepler were eager to read Galileo's *Il Saggiatore*, which he was unable to find in Prague, implying that Pieroni was in contact with Johannes Kepler (1571-1630), the court astronomer and mathematician of Emperor Rudolf II. Pieroni let Galileo know that he was attempting to calculate the exact position of the moons of Jupiter with one of his telescopes, a "strumento assai buono, credo uscito dalle mani di V.S., poi che non mi pare inferior a quello che il Sig.re Conte, il nipote del Sig.r Generale Tilli mi dice d' haver ricevuto da lei".¹⁷ He ended the letter by stating that whenever possible, he publicly lauds ("celebra") Galileo and his achievements and asked to be informed about ongoing research. While the letter was written some years after Baccio left Pieroni, it is very likely that Pieroni's fascination with Galileian thinking and his writings informed his conversations with Baccio. In fact, Pieroni's letter is an important document for two other aspects contributing to the cultural success of the New Science: its oral dissemination and the importance of actors to promote and develop the essential tenets such as architects and engineers, who only recently have reappeared on the historical map of early modern natural philosophy.¹⁸

Stillman Drake has introduced *Il Saggiatore* as the key to understanding Galileo's success "in winning converts to his 'new sciences' with profound consequences for the orientation of modern society".¹⁹ *Il Saggiatore*, published under the sponsorship of the renowned Accademia de Lincei enjoyed enormous popularity in Rome during the 1620s. Like his predecessor Gregory XV, the newly elected pope Urban VIII, to whom it was dedicated, approved of the treatise's contents.²⁰ Besides introducing readers to detailed aspects of the polemics surrounding the fundamental question of comets' appearance versus their substance and location, the treatise also introduced readers to new ways of observing nature and an open system of scientific inquiry.²¹ Such an impact of *The Assayer* becomes evident from the testimony of the Roman poet and philosopher, Virginio Cesarini in the introduction of Galileo's treatise where he writes: "...with the guidance of your

¹⁶ OG, XIII, 333-334.

¹⁷ *Ibid.*, 334.

¹⁸ Lefèvre, "Galileo Engineer".

¹⁹ Drake, *The Controversy*, VIII.

²⁰ *Ibid.*, XIX.

²¹ *Ibid.*, XXIII.

discourses I chose a better road to philosophy and knew a surer logic, whose syllogisms, founded either on physical experiments or mathematical demonstrations, open the intellect to a knowledge of truth.”²² Baccio’s own ideas of how humans understand the workings of nature parallel those presented in *Il Saggiatore*.

A Galileian program: Baccio del Bianco, Michelangelo Buonarroti il Giovane and the Impact of Il Saggiatore on the Decoration of the Casa Buonarroti

Between 1628 and 1629, Baccio del Bianco painted three *trompe l’oeuil* doors for Michelangelo Buonarroti the Younger’s study, the so-called *Camera della Notte e del Di* in the Casa Buonarroti.²³ As Rossi has underscored, Baccio’s activity in the Casa Buonarroti inserts itself within a cultural context informed by strong aesthetic affinities to humble objects such as country food, animals, local plants and an empirical naturalism that connected the Accademia della Crusca of which Buonarroti was a member and Galileo’s natural philosophy focusing on the immediate experience of nature.²⁴

The earliest description of the *trompe l’oeuil* doors from 1684 attributes them to Baccio, but does not explain the doors’ subject matter.²⁵ The three *trompe-l’oeuil* doors are today identified as *Country Dance* (Fig. 1), *Country Concert* (Fig. 2), and *Study of Astronomy* (Fig. 3). They have been largely neglected in research on the Casa Buonarroti, which has focused mostly on the *Galleria* and its eulogistic representation of Michelangelo’s life.²⁶ The meaning of the programs of rooms other than the *Galleria* have not received much attention.

In this section, I reconstruct an overarching iconographic program of Michelangelo the Younger’s study that parallels central ideas of Galileo’s *filosofia naturale* such as the importance attributed to the senses in ordering and understanding the world as well as the role of “God-given” senses in creating knowledge that is more reliable than that derived from books.²⁷ These ideas are central to understanding Galileo’s thinking. They shape his discourse on sense perception and the conclusions to be drawn from it, which is a central topic of *Il Saggiatore*.

²² *Ibid.*, XII.

²³ The most fundamental publication is still Vliegenhart, *Galleria Buonarroti*, 58-59; Goudriaan, *Florentine Patricians*, 114-119; Spinelli, “Michelangelo il Giovane”, 78-81.

²⁴ See the brilliant article by Rossi, “La Crusca nell’occhio”, 197-206.

²⁵ *Descrizione Buonarroiana*, s. p.: “Gli due usci finti di qua e di là sotto gli due ovati, e il terzo in quest’altra facciata, dove sono figurine ed altro, sono di Baccio del Bianco”.

²⁶ The identification of the doors’ iconography has not changed since the 19th century: Fabbri-chesi, *Guida*, 16: “La Danza Campestre; Il Concerto Musicale; Lo Studio delle Scienze Astronomiche”. Compare to the most recent listing in *Michelangelo Buonarroti il Giovane*, “Atlante”, s.p.

²⁷ For the importance of Galileo’s philosophy of the “mondo sensibile” for the context of the Casa Buonarroti see Rossi, “La Crusca nell’occhio”.

The study was decorated in three steps, from 1625-1638: the ceiling paintings depict Jacopo Vignali's *God Creating Day and Night*, adapting Michelangelo's statues of Day and Night from the *Cappella Medicea*. Baccio's *trompe-l'oeuil* doors from 1628 decorate the lower part of the side walls and above is a cycle of members of the Buonarroti family, which was added in 1637-1638. I propose that the three *trompe-l'oeuil* doors form a coherent iconographic program with the room's ceiling. The *Country Dance* (Fig. 1), represents two women, of which one is holding a rose, in the foreground, sitting and standing on a staircase. The other woman points towards a dance scene in the middleground. The central couple visible in this scene performs a dance move with an elegant touching of the hands. In the context of an iconography focusing on the senses, I posit that this scene represents smell and touch.

The second scene in the series of the doors with the title *Country concert* (Fig. 2) represents two youths seated on a balustrade playing a lute and singing. On the tree above Baccio depicts two birds, who invite the spectator to reflect on the comparison between the "natural music" of birds singing and human music.

In *Study of astronomical sciences* (Fig. 3), Baccio organizes the composition so that the viewer is looking through a doorway onto a scene that contains two distinct groups: in the foreground, two children balance a basket overflowing with ripe fruits, offering a bunch of grapes to the spectator, representing the sense of taste. Framed by a drawn back



Fig. 1: Baccio del Bianco, *Country dance* ("The senses of smell and touch"), 1628. Florence, Casa Buonarroti.



Fig. 2: Baccio del Bianco, *Country concert* (“The sense of hearing”) 1628. Florence, Casa Buonarroti.



Fig. 3: Baccio del Bianco, *The study of astronomical sciences* (“The sense of sight”), 1628. Florence, Casa Buonarroti.

green curtain, Baccio represents three aristocrats engaging in telescopic observations. The scene takes place during daytime and it is therefore unlikely that Baccio represents any astronomical activity. This suggests that, if anything, the gentlemen use Galileo’s “noble instrument” for its major virtue, which is to make “distant things might be seen as perfectly as if they were quite close”.²⁸ The representation of hearing through music making, taste through fruits, smell through flowers is a long-established iconographic tradition dating back to an exemplary print-series by the Dutch artist Cornelis Cort from the year 1560.²⁹

²⁸ Drake, *The Controversy*, 211.

²⁹ Welzel, “Sehen mit allen Sinnen?”, 12.

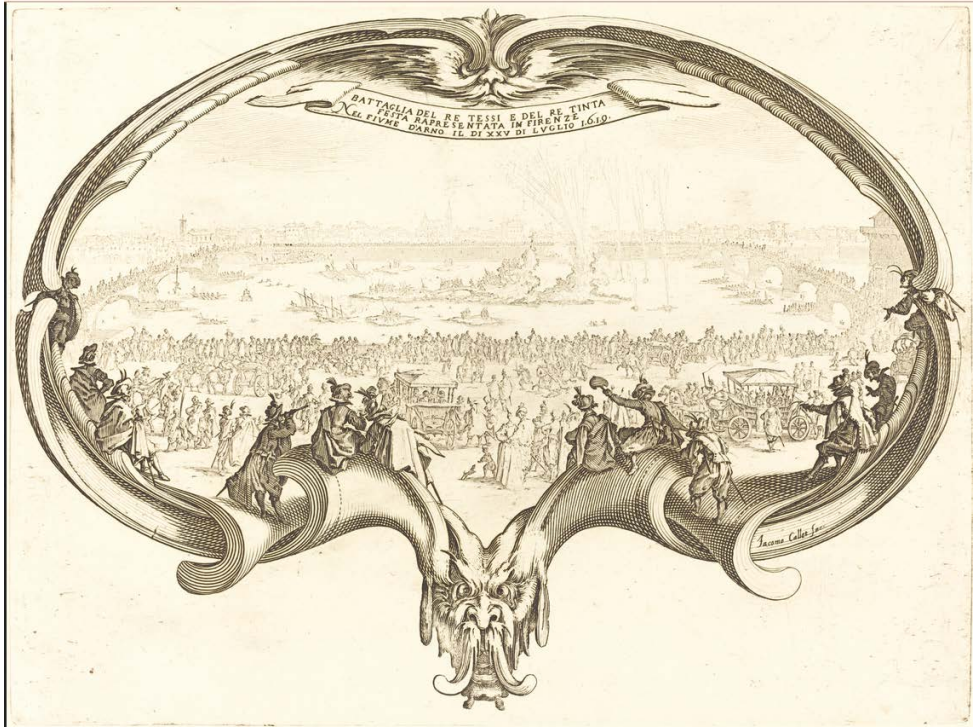


Fig. 4: Jacques Callot, *The Fan*, 1619. Image in the Public Domain, The National Gallery of Art.

Baccio's representation of sight is different but is comparable to the representation of the telescope in aristocratic culture on a design for a fan by Jacques Callot (Fig. 4), the French etcher who was also active for the Medici Court.³⁰

Like Callot, Baccio also shows gentlemen engrossed in their telescopic observations: one gentleman's face is not visible because he is leaning out of the window, contemplating with the bare eye what the other two young gentlemen have just looked at through the telescope. One of the young men, who has been identified with Michelangelo's brother Francesco Buonarroti, wears a coat with the cross of the order of Malta suggesting that the beholder is witnessing aristocrats' pastime.³¹ All are engaged in vivid discussions. They are

³⁰ On the relationship between seeing and scale, observer and spectacle, Callot and Galileo see Serebrennikov, "Spectacularly Small", 134-136. On the contextualisation of Callot's print within the Medicean promotion of Galileo's astronomical discoveries see Tosi, "Lune e astri galileiani", 181-184.

³¹ For the identification of the costume and the identity of the young man see: Procacci, *La Casa Buonarroti*, 181; Sebgondi, "Francesco Buonarroti, cavaliere gerosimilitano...", 81.

standing next to a table with an inkpot and books, some opened, some closed: the opened page of the book reveals an angular geometrical drawing that suggests a terrestrial object of observation, maybe a fortification, rather than a heavenly body.

Facing the spectator at the fresco's threshold are a girl and a toddler boy, holding fruit toward the spectator. While the putto holds a large bunch of grapes, the girl holds a plate of fruit in her lap containing peaches and an apple. The still-life and the ripe fruit that are offered to the spectator highlight a particular dimension of the sense of sight: the voracity of sight, since – as has been recently pointed out by Sanger – still life painting encourages the eye of the viewer to take on an additional mouth-like function.³² Kulbrandtstad Walker has pointed out that food in art can be a signifier for the sense of taste, considered a “sense of proximity and therefore lower orders of human faculty”.³³ Although the scene is a visual enigma – what do the children have to do with the aristocrats – the answer could be found in a reception of ideas and practices deriving Galileo's natural philosophy, in particular his *Saggiatore*. Jusepe Ribera's *Five Senses* (Fig. 5), painted in Rome around 1615, have been associated with the culture around the Accademia de' Lincei.³⁴ Similarly, I place Baccio's representation of the senses in dialog with discourses present in *Il Saggiatore*, which was published a few years before the painting of the *trompe-l'oeuil* doors (1623).

The impact of Galileo's intellectual world on the decoration of Michelangelo's study in the Casa Buonarroti becomes important before the backdrop of familiarity with Galileo and his philosophical ideas, but also concerning the extensively documented fact that Michelangelo Buonarroti the Younger and Galileo were close friends.³⁵ Galileo and Buonarroti were both members at the Accademia della Crusca. The decoration of the Casa Buonarroti includes portraits of Galileo, as in the *Galleria degli Uomini Illustri* or in Valerio Marucelli's scene in the *Galleria, Michelangelo a Venezia è accolto dai delegati del Doge e del Senato*.³⁶ Maria Giovanna Masera highlights that Michelangelo the Younger wrote a sonnet celebrating Galileo's discovery of the moons of Jupiter.³⁷ Massimiliano Rossi has paralleled literary and aesthetic concepts of Buonarroti il Giovane and Galileo.³⁸

³² Sanger and Kulbrandtstad Walker, “Introduction: Making Sense of the Senses”, 1.

³³ Kulbrandtstad Walker, “Appetites”, 109.

³⁴ Friedman, “Jusepe de Ribera's Five Senses”.

³⁵ About Buonarroti's friendship with Galileo see: Masera, *Michelangelo Buonarroti il Giovane*, 15, 21; Vliegenhart, *La Galleria Buonarroti*, 9; Rossi, “Capricci, frottole e tarsie di Michelangelo Buonarroti il Giovane”.

³⁶ Bigazzi, “La stanza della Galleria Buonarroti dedicata da Michelangelo il Giovane alla fama dei Toscani illustri”, 180-188; for the identification of Galileo in Marucelli's painting see Vliegenhart, *La Galleria Buonarroti*, 227. See also Tognoni, *I volti di Galileo*, 51-55.

³⁷ Masera, *Michelangelo Buonarroti*, 15. For Buonarroti's sonnet about Galileo's discovery see OG, X, 412.

³⁸ Rossi, “Capricci, frottole e tarsie”, 177.



Fig. 5: Jusepe Ribera, *Allegory of Sight*, 1615. Franz Mayer Museum, Mexico City.

Such broad cultural familiarity with Galileo and his writings suggests a profound and detailed knowledge also of Galileo's texts. I argue that rather than representing astronomical research Baccio's *trompe l'oeuil* door represents vision in its sensorial (the children who offer fruit to the beholder) and intellectual (observation through telescope) dimensions. This fresco contrasts unfiltered sensory perception against Galileo's sophisticated reasoned sensory perception, his "sensata esperienza" which is a central topic of the *Saggiatore*.³⁹ Galileo's New Philosophy caused a reevaluation of and an attempt to "certify" the human senses, to lift them from their embeddedness in subjectivity in line with Mersenne's lament: "One of the greatest difficulties in Physics lies in understanding the operations of the senses".⁴⁰

Baccio's depiction is not only interesting because it represents aristocratic engagement

³⁹ Baroncini, "Sulla galileiana 'esperienza sensata'". Baroncini underscores that in the *Saggiatore* Galileo gives preference to the term "sensata prova", *ibid.*, 163. About Galileo and the senses see also: Piccolino and Wade, "Galileo's eye".

⁴⁰ Kambaskovic-Sawers and Wolfe, "The Senses in Philosophy and Science", 107.

with Galileo's telescope but also because it illustrates how embedded telescopic observation was within contemporary aristocratic culture and the multiple actions associated with it: autoptic observation (with optical instruments), comparison with what can be seen with the bare eye, discussion, reading, geometrical drawings and writing.⁴¹ Frequently, Galileo explained as "ritrovata da Fanciulli" or "cosa puerile" the faulty conclusions of his opponents drawn from a wrong interpretation of the data gathered through the senses as that they wrongly interpreted scientific facts.⁴² The two children in Baccio's painting therefore represent a less sophisticated form of perception, a vision that is merged with touch, taste, and lack of judgment.

A basic truth about scientific instruments such as the telescope and the microscope is that they refined the meaning of what it meant to experience nature by enhancing our perception and creating new perceptual objects.⁴³ These instruments produced new feelings of intimacy with far away objects but also helped to develop a new understanding of distance. Emblematically, Baccio's painting thematizes different ways of enjoying and exploring nature through sight and taste. While the noblemen discuss and contemplate an invisible, far away reality, the beholder is tempted to taste and touch the fruits that are offered to him by the children.

Vincenzo Viviani's eulogistic life of Galileo's talks at length about the "noble instrument" of the telescope, which Galileo distributed initially among aristocrats (we can even trace the provenance of Pieroni's instrument), whose major virtue is to make "objects far away look as if they were close by".⁴⁴ Galileo's telescope is therefore as much an optical instrument as it is an intellectual one by challenging the *curioso* to integrate far away objects into the "here and now".

The opposition between visual perception through the telescope, that impacts the schematic drawing of the fortress on the table (focusing on the categories of "shape and place") or through the fruits that express themselves in "tastes, odors, or colors" correspond to a famous passage in the *Saggiatore*, where Galileo theorizes the difference between primary and secondary qualities.⁴⁵ While Galileo portrays the primary qualities as essential for "conceiving of a material and corporeal substance", for the shape and size of objects; tastes, odors or colors are conceived as secondary are only "names" in our imagination.⁴⁶ Another essential element of Galileo's concept of the senses is that relying solely on the senses is misleading. In Galileo's conception the senses play a contradictory role

⁴¹ For the social dimension of telescopic observations see Payne, *Vision and Its Instruments*, 1-9.

⁴² In his *Starry Messenger*, for example, Galileo dismisses the idea that Venus is illuminated by the moon as "childish". See: Drake, *Discoveries and Opinions*, 43.

⁴³ Shapin and Schaffer, *Leviathan and the Airpump*, 36.

⁴⁴ Gattei, *On the Life of Galileo*, 21.

⁴⁵ Piccolino and Wade, "Galileo's Eye", 1316; Drake, *Discoveries and Opinions*, 274.

⁴⁶ Drake, *Discoveries and Opinions*, 274.

and often observations go against immediate experiences of sensorial data. The senses need to be tempered and guided by prudence in order to turn their information into reasoned observation or what he terms “*esperienza sensata*”⁴⁷

Applied to Baccio's fresco, the rich bowl of different fruits is a representation of nature and the curiosity, appetite, it stimulates in the intellectual. Baccio may even have designed his composition in a way that subjective, sensorial and easy to access experiences are foregrounded but the analytical, instrument-based verification of nature is situated in the background, indicating that they require more effort to access, and perhaps, are not achievable for everyone. The dimension of verification is addressed in the discussion of the two aristocrats about what they see through the microscope. Baccio's representation takes up two themes that are essential for the thematization of the telescope and the senses in his representation: the naturalization of vision through the telescope as one of the ways in which we visually perceive which is one of the major topics in the *Saggiatore* and the reflection on the complex relationship between scientific observation of reality and its relationship with sensorial observation more generally.⁴⁸

Yet, the multisensorial exploration of the world and nature represented by Baccio does not transport the condescending and diminishing associations that Galileo evokes in his discussion of the secondary sensorial qualities. Rather, it is informed by curiosity and wonder for nature. Such a representation is comparable to Galileo's parable of the extraordinarily curious man with a “very penetrating mind” in the *Saggiatore*. This man is lured through the world following intense aesthetic sensations and wonder. Yet, *The Assayer* is more than just an investigation into the observation of nature. It also teaches us that the Book of Nature is continually open to all of our gazes, nature can be explored everywhere and at any time and that “scientific knowledge is infinite in scope”.⁴⁹ *The Assayer* also suggests that the versatile and alert mind of a natural philosopher can solve both, theoretical and practical problems. It not only offers guiding lines for philosophers of how to read the Book of Nature, but also embeds the metaphorical narrative of the “man endowed by nature with extraordinary curiosity and a very penetrating mind”.⁵⁰ He raises birds and enjoys their song, until one night he hears an otherworldly beautiful song. He follows the trail of the sound until he finds a shepherd boy who blows into a hollow stick, a wooden flute, producing sounds similar to those of birds but through a different method. The man acquires the flute, but realizes, he cannot play it and cannot produce the sweet tones that have attracted him; the next day he happens to pass by a hut, within which he hears similar

⁴⁷ See again Baroncini, “Sulla galileiana ‘esperienza sensata’”.

⁴⁸ The “naturalization” of the telescope in the context of the senses as the “new natural eye” is a main theme of Galileo's treatise and a metaphor employed by Faber; for a further reflection on Galileo's concept of vision and the senses see Piccolino, “I sensi, l'ambiguità, la conoscenza”.

⁴⁹ Drake, *The Controversy*, XXIV.

⁵⁰ Drake, *Discoveries and Opinions*, 256.

tones. Upon entering he finds a boy holding a bow, which he moved upon some fibers stretched over a hollowed piece of wood. After this surprising discovery of unanticipated ways of producing melodies, the man “began to perceive that still others might exist”.⁵¹ Driven by curiosity, one day the man entered an inn and found somebody rubbing the rim of a goblet thus producing a pleasant sound. He observes various insects and how they produce sound and his wonder grows. Finally, he became curious about the sound production of crickets; he continues to investigate the cricket piercing and dissecting it, until in doing so he kills it. He never discovers how the animal produces sounds, which underscores Nature’s bounty in producing her effects to an extent, we never think about. The “real thing” of the Cicada, even though it is right in front of us, is equally enigmatic than the comet.

A close connection between the *Saggiatore* and the scene depicted is evident in the *trompe-l’oeuil* door with the title “Concerto Campestre” (Fig. 2). It represents two young men in nature, playing a lute. On the tree above, two birds listen attentively to the sound of lute-playing.

The integration of a reflection of the senses into a setting dedicated to Michelangelo Buonarroti’s study is an important reference to Galileo’s philosophy.

The program of the *Camera della Notte e del Di* is also closely linked to another basic and often repeated idea of the *New Science*: that God has given humans the senses and reason to explore nature rather than believing in what previous thinkers have stated about it. In an homage to Michelangelo’s sculpture *La Notte* and a reference to the energetically floating Godfather of the Sistine ceiling, the ceiling represents frescoes of God creating the cosmos, separating sun and moon. The program for Michelangelo Buonarroti’s *studio* is based on the concept of curiosity in exploring nature, a sensory curiosity that undergirds Galileo’s scientific writings. The program sets the doors in relationship to the room’s ceiling and draws parallels with God’s profound wisdom and his capacity in creating nature for exploration by man. It defends the basic Galilean idea that humans should use God given senses to explore the Universe:

I say that I do not want to be among those ignoramuses and ingrates toward nature and toward God who, being given senses and reason, should wish to defer such great gifts to the mistakes of one man, or to believe blindly and stupidly what I wish to believe and subject the freedom of my intellect to anyone who is just as liable to error as I am.⁵²

Also, in the introduction to his treatise *Esperienze introno alla Generazione degl’ Insetti* (Florence, 1668), Francesco Redi underscores that the “supreme architect” has attributed

⁵¹ *Ibid.*, 257.

⁵² Drake, *The Controversy*, 302.

to humans their senses “like many windows or doors through which they admire nature and the natural phenomena enter in order to make themselves known” (“come tante finestre, o porte, per le quali, o elle si affacci a mirarle, o elle entrino a farsi conoscere”)⁵³ In consequence, the program of the *Camera della Notte e del Di* should be considered through a unified lens that unites its parts: the ceiling representing the creation of sun and moon through godfather and the *trompe l'oeuil* doors representing the senses that enable humans to explore the universe.

The Epistemic Dimension of Caricature and the Galileian Telescope

In his introductory letter to *The Assayer*, Johann Faber, member of the Lincei from Bamberg lauds Galileo's telescope for aiding the deficient eyesight of humanity; in fact, Faber suggests that the telescope is “the new natural eye”.⁵⁴ Faber's letter therefore highlights one of the central contents of *The Assayer*, a discussion of how to employ the human senses in exploring the rules of nature. That Galileo's contemporaries understood the senses, how they function and how reliable they are, as a central theme of *The Assayer* also becomes evident from Francesco Stelluti's introductory poem to this treatise:

Scarce a man can understand
 Though he use his senses well
 How our touch is in our hand
 How our eyes see sights, ears hear, and noses smell
 This we ask you now to tell,
 Though the tongue can scarce relate
 How it knows the varied flavors on a plate.⁵⁵

Defending the reliability of his telescope, Galileo engages in a profound explanation of the senses and their laws. An essential function of the senses for Galileo is to bring things from non-existence to existence and in the case of the telescope, this happens through an enlargement of observed objects otherwise not visible and therefore not existent to the bare eye.⁵⁶ Faber compares the telescope's expansion of human vision to the explorers Amerigo Vespucci and Cristoforo Colombo.⁵⁷ Galileo's telescope expands vision without limits, including being able to see the sun “marred by strange spots” and the moon's “swol-

⁵³ Redi, *Esperienze*, 1.

⁵⁴ Drake, *The Controversy*, 154.

⁵⁵ *Ibid.*, 159.

⁵⁶ *Ibid.*, 200.

⁵⁷ *Ibid.*, 154.

len mountains”. Where once we saw a nebula, we now see bright stars.⁵⁸ The telescope is aiding old humanity “with mind still sound but eyes dimmed” to see new characteristics of the stars, a sharpened quality of vision that David Freedberg has associated with the symbol of the sharp-eyed lynx of the Lincei.⁵⁹

Such aspects of bringing what is hidden underneath the plainly visible surface to evidence, also informs the epistemic dimension of Baccio del Bianco’s caricatures. Among Baccio’s multiple areas of artistic engagement, his caricatures are probably the most striking and the best surviving body of his work.⁶⁰ Within Baccio’s *Vita* Filippo Baldinucci offers a long definition of the art of caricature, of which he considers Baccio as one of the protagonists: “Quello però, in che Baccio del Bianco fu eccellente, e forse anche singolare, in materia di finire, fu l’inventare e toccar di penna storiette piacevoli, caramogii, e ritratti di persone con disegno caricato”.⁶¹ It is important to understand that Baldinucci’s definition of caricature differs profoundly from our understanding of this art form today as “an exaggerated or distorted image of a person or a thing which is characterized by visual likeness”.⁶² In fact, Baldinucci clarifies that the caricaturist does not distort nature, but “always follows nature’s intentions, therefore completing and perfecting her intentions, he works in a way that the ugly becomes even more ugly” (“seguitando sempre l’intenzione della natura, e dando, per così dire, adempimento e perfezione all’intento di essa, fa sì che il brutto nella sua propria bruttezza diventi senza paragone più brutto”).⁶³ While Baldinucci’s definition underscores the epistemic possibilities of caricature, modern definitions focus on the aspects of its entertainment, compromising the important connection to understanding essential aspects of the “intenzione della natura”.

In the seventeenth century, caricatures were not simply derisions of imperfect nature, but also testimonies to the sharp-witted artist and his capability to look beneath the surface of natural appearances in order to uncover nature’s true intentions, her workings. Baldinucci’s definition of caricature therefore situates this genre at a central position in the understanding of nature and therefore in the conceptual vicinity of natural philosophy.

Baldinucci also underscores that not everybody can draw caricatures and that the car-

⁵⁸ *Ibid.*, 154-155.

⁵⁹ Freedberg, *The Eye of the Lynx*, 276.

⁶⁰ On Baccio’s caricatures see: Gregori, “Nuovi accertamenti”; Cheng, “Parodies of Life”; Rice, “The cuckoldries of Baccio del Bianco”; Forlani Tempesti, “Baccio del Bianco”.

⁶¹ Baldinucci, “Notizie di Baccio del Bianco”, 31. See also Baldinucci’s definition of “caricare” in: Baldinucci, *Vocabolario*, 29.

⁶² See for a recent definition of caricature: *Oxford Dictionary of Art and Artists*: “Caricature: A form of art, usually portraiture, in which characteristic features of the subject represented are distorted or exaggerated for comic effect or to make critical comment. The term is sometimes used more broadly to denote other forms of pictorial burlesque or ludicrous representation, such as the grotesque heads of Leonardo”. Brassat/Knieper, “Die Karikatur”, 773-796.

⁶³ Baldinucci, “Notizie di Baccio del Bianco”, 33.

icaturist needs a particularly sharp wit in order to uncover the “intentions of nature” that are perceptible only to him. Baccio had a natural talent for caricature: “Opera in vero, che è propria di cervelli tagliati a tal misura solamente, e non di tutti... se non ha da natura un tale spirito; e veramente Baccio in questo fù singolare”.⁶⁴ Baccio del Bianco, the “spiritoso pittore” whose perspicacious intellect perfectly guides his hand and whose sharp-witted observational skills enable him to discover natural defects present in people’s physiognomy therefore resembles a natural philosopher.

Let us take a close look at a caricature which has been attributed to Baccio by Sandra Cheng (Fig. 6).⁶⁵ In the center of it is a dull-witted, laughing, and crouching giant seen in profile, on whose shoulders sits an old man with reddish curly hair, a big nose and a hunchback. The old man holds a stick onto which a pickle is pierced. The painter, a writer with thick glasses and a pointed hat, and a court jester with a telescope are all focused on this bizarre pair. I argue that the theme of this caricature highlights different modes of observation in art, poetry, and science. Many of the objects depicted in the drawing are symbolical and represent a satirical commentary on the figures’ intelligence. For example, the *Vocabolario della Crusca* explains that the pickle (*cetriolo*) in Italian figuratively identifies a stupid, irrational person: “detto figuratamente d’uomo sciocco, senza senso”.⁶⁶ The painter’s easel abounds with symbolic hints: old ankle boots hanging off nails from the easel may refer to the label for a bad painter – *pittore de’ stivali*. This term derives from *pittore da sgabelli* (“painter of stools”), which clearly arises from workshop jargon and refers to a clumsy painter of low repute who lacks basic skills in disegno, is incapable of transcending the two-dimensionality of the picture plane by creating an illusionistic representation of space, and instead fills the canvas from edge to edge with clumsy figures.⁶⁷ A “painter of stools” is also not in command of the more sophisticated pictorial techniques of chiaroscuro or sfumato, since he sets fields of color bluntly next to each other. The term *pittore da sgabelli* or its synonyms (*pittore da stivali*, *pittore da roste e boti*) are a part of the derogatory, competitive discourse practiced by artists in the workshop milieu. Baccio’s painter of low repute has also hit lean times and he wears clothes that

⁶⁴ *Ibid.* On Baldinucci’s interest in caricature and the importance he attributes to it as cosubstantial to any form of portrait in an “apparenza dell’ verità”, see Rossi, “Serio Ludere”, 70-74.

⁶⁵ I discovered this work through Sandra Cheng’s paper at the RSA-conference 2021, who I am grateful for pointing me to the further literature on this drawing. My own interpretation of the work, however, deviates from Cheng’s. In her presentation she attributed the drawing to Baccio del Bianco, an attribution that I share entirely. For the attribution to Faustino Bocchi see “Composition of grotesque Figures with an artist at work”, Parker, *Catalogue of (...) Ashmolean Museum*, cat. nr. 800, 420.

⁶⁶ *Vocabolario della Crusca*, ed. 5, vol. 2, 795.

⁶⁷ Baldinucci, *Vocabolario*, 125: “Pittore da sgabelli. Dicesi per dispregio di pittore grossolano e che non punto sa disegnare (...)”.



Fig. 6: Baccio del Bianco, *The Artist's Studio*, ca. 1628. Oxford, Ashmolean Museum.

are filled with patched holes. We see on the canvas the astonishingly imprecise transformation of the motif of the two fools. The dilettante lacks the quality of being “spiritoso” a quality that Baccio displays as the inventor of this very caricature. On the easel sits a “gazza ladra”, a thieving magpie, which refers to bad and unfiltered, therefore “stolen” imitation of nature. The caricatured courtier in profile with his prominent runny nose looks through a telescope but it is unlikely that it helps him discern anything as the painter is much too close to him.

In addition to the thematic parallel of including a representation of a telescope, the caricature at the Ashmolean Museum exhibits stylistic similarities to Baccio’s representation of the *Sense of Sight* at the Casa Buonarroti: the figure of the painter is similar to that of the young aristocrat holding the telescope; the spatial differentiation of figures in the background represented in lighter colors and with less distinct outlines with the figures in the foreground, the heavily delineated contours and strong colors in the group of children and fruit in the foreground as well as of the court jester with dripping nose looking

through the telescope. Similar to the theme of this scene Baccio's caricature focuses on the Galileian concepts of observation, the importance attributed by the philosopher to the capabilities of evaluating what is in front of our eyes in the "grand book of nature".

An early passage on the telescope and its use is contained in a letter by Gianfrancesco Sagredo to Galileo, which specifies what can be seen through the telescope "looking at the city of Florence and some nearby place" from purposes that require sharp judgment, but for which no new instrument had been invented yet: "for distinguishing madmen from the wise, good men from those of evil counsel..."⁶⁸ In Baldinucci's opinion, Baccio's caricatures are able to lay open, what Sagredo claims Galileo's telescope is lacking: the ability to help with judgement, in distinguishing between "wise, good men from evil men and madmen". Such a moralistic aspect becomes apparent from the figure type of *caramogi* that Baldinucci associates with Baccio's caricatures. *Caramogi*, as defined in the third edition of the *Vocabolario della Crusca* are "small and ugly", dwarflike figures.⁶⁹ Baccio invented these new forms to personify his view underneath the surface of his contemporaries. Baldinucci highlights their innovative aspect: "Le storie de' caramogi fece egli in atti e gesti si nuovi, e si bizzarri, che non è chi abbia veduto ancora cosa simile [...]".⁷⁰ Baccio's caricatures are a testament to his sharp intellect, his observational skills, and a judging, moralistic gaze.⁷¹

Baccio's caricatures follow Galileo's emphasis on geometric representations of a natural model.⁷² For the belief that nature is best understood, if assimilated to geometrical figures see Galileo's famous passage in *Il Saggiatore*: "Philosophy is written in this grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and read the letters in which it is composed. It is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures without which it is humanly impossible to understand a single word of it; without these, one wanders around in a dark labyrinth".⁷³ Understanding the grand Book of the Universe therefore requires a gaze that subjects nature and her appearances to an analysis through "the language of mathematics", that dissects reality into geometric figures.

Here it is interesting to take a look at Baccio's caricature of a portrait painter, his sitter

⁶⁸ Drake, *Opinions and Discoveries*, 68. Most recently, Friedman, "Jusepe de Ribera's Five Senses".

⁶⁹ For the term "caramogio" which only turns up in the third edition of the *Vocabolario dell' Accademia della Crusca*, 287: "CARAMOGIO. Dicesi di Persona piccola, e contraffatta. Lat. Pumilius, pumilio".

⁷⁰ Baldinucci, "Notizie di Baccio del Bianco", 32.

⁷¹ For the moralistic aspect of Baccio's caricatures see Sandra Cheng, "Parodies of Life".

⁷² For this often analyzed passage see for example, Palmerino, "The Mathematical Characters of Galileo's Book of Nature".

⁷³ Drake, *Controversy*, 238.



Fig. 7: Baccio del Bianco, *Studio of a Portrait Painter* (Gab. Disegni, 3303.13). Florence, Uffizi.

and a priest (Gab. Disegni, 3303.13; Fig. 7).⁷⁴ We see a painter sitting in profile, painting a courtier as a *caramogio*. On the left side stands a Dominican friar also seen in profile. One of Baccio's caricatural strategies is to assimilate faces to their underlying geometrical forms: therefore, he converts the monk's round face into a circular shape. Similar to Galileo's geometrical analysis of nature and like the well-known saying of Michelangelo's "seste dell' occhio", Baccio looks at the world through "seste" (compasses).⁷⁵ Baldinucci states that it is only the "spiritoso pittore", (witty, sharply intelligent painter) who is able to recognize perfectly the "intention of nature", capable of perfectly translating what his "perspicace intelletto" (acute intellect) signals.⁷⁶ Because he has a deep understanding of the defects of human physiognomies, he is able to detect these even in the most beautiful faces. The "perspicace intelletto" then perfectly guides his hand and his sharp-witted

⁷⁴ Petrioli Tofani, *L'inventario settecentesco*, 1063.

⁷⁵ On the well-known saying of Michelangelo's "seste dell' occhio" see for example Summers, *Michelangelo and the Language of Art*, 255. This association was known also in the Seicento, see: Baldinucci, "Notizie di Alberto Durerò", 17. For the idea of the mathematization of Florentine visual arts through Galileo's philosophy, see: Camerota, "Il contributo di Galileo alla matematizzazione".

⁷⁶ Baldinucci, "Baccio del Bianco", 33.

observational skills enable him to represent and magnify even minor natural defects in people's physiognomy.

Baldinucci, therefore, associates caricature with the capacity of the ingenuous artist to look below the surface of deceptive appearances, to understand and capture the "intentions" of nature or the hidden character or intentions of his sitters. The caricaturist completes a task similar to that of the natural philosopher as portrayed in *The Assayer*. He is particularly able – to stay with the words of *The Assayer* – to "read the great book of Nature" and then to define the "real objects" distinguishing them from their "appearance".⁷⁷

It is likely that the assimilation of the Dominican's profile to a circle also carries with itself a satirical dimension. For example, "cervello tondo" is a mode of referring to a dumb, ignorant person.⁷⁸ Such an overlapping of mathematical and satirical elements suggests that, in fact, Baccio's caricatures are capable of uncovering aspects of reality invisible to other people, but unlike the telescope, they are capable of support in drawing judgements. Therefore, Baccio's caricatures are more profound than "comic drawings to parody the pomp and glamour of seventeenth-century Florence".⁷⁹ To conceptualize seventeenth-century caricature as an art form congenial with scientific investigation goes far beyond our conception of caricature as a humorous art form. Rather, these caricatures are philosophical reflections on nature and her intentions, an aspect that is prevalent throughout Baccio's *oeuvre*.

Conclusion

Focusing on two case studies of the intersections between Galileo's philosophy and the artistic oeuvre of the Florentine polymath Baccio del Bianco, this article underscores the multidisciplinary cultural context that Galileo's *Il Saggiatore*, an ostensibly natural philosophical text, has influenced. In the *Camera della Notte e del Di* for Michelangelo Buonarroti il Giovane, the thematic focus on the senses in Baccio's *trompe l'oeuil* doors reveals an adherence to values put forward by Galileo in *Il Saggiatore*. A similarity with Galileo's analysis of nature also becomes apparent from the genre of Baccio's caricatures, which are interpreted here similarly to Galileo's telescope being a "new eye of nature" by highlighting aspects of reality only evident to the "pittore spiritoso". This cultural entanglement and multidisciplinary framework in which Galileo's oeuvre was received also brought with itself multifaceted epistemic demands, as illustrated by Sagredo's criticism of a lack of support for moral judgements in telescopically enhanced views. In contrast, Baccio's caricatures embraced and adopted the principles, concepts, and the advanc-

⁷⁷ Drake, *The Controversy*, 186.

⁷⁸ Patriarchi, *Vocabolario*, 329.

⁷⁹ Cheng, "Parodies of Life", 127.

es described in *Il Saggiatore* by embedding geometrical forms as well as his moralistic judgement in order to reveal a more truthful understanding of reality, thus expanding the influence of *Il Saggiatore* in ways that Galileo had himself likely not anticipated.

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