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Specularity: Opera, Art, and Science in Rome (1680-1710)
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In November of 1680, a comet visible to the naked eye—seen even in daylight—streaked across the sky, causing widespread fascination and fear. Public responses were immediate and varied. Art, literature, philosophy, religion, science, and popular news pamphlets all reflected the comet's impact on individual and communal belief systems. The boundaries between science and speculation, between truth and falsehood, between images and imagination, were frequently blurred. As the first comet to be observed using a telescope, by the astronomer Gottfried Kirch on November 14 from his observatory in Coburg, this pan-European and even global event brought empiricism, measurement, and science into broader spheres of popular discourse.[1]

As a visual spectacle, the comet brought new interest to ocular devices, whether scientific (microscopes, telescopes, the camera obscura) or metaphorical (artistic, literary, and operatic verisimilitude and illusion). Scientific and philosophical pamphlets and treatises evidence a return to the contentious debates of the early seventeenth century regarding vision, perception, and truth, which had surrounded Descartes and Galileo.[2] Significant questions rose to the surface. How can we observe, describe, and understand things previously unseen? How do we know whether we can trust our eyes? How can we convince others of the veracity of our observations? At the same time, images became increasingly important for conveying complex

[1] For just one example of how scientific discourse became popularized, see *A True Relation and Description of the Strange and Prodigious Blazing Comett [...]* (London: Printed for Benjamin Harris, 1680).
[2] Catherine Wilson makes explicit the connections between "micro" and "macro" issues of vision and perception in science and philosophy in the early seventeenth century; see *The Invisible World: Early Modern Philosophy and the Invention of the Microscope*, Studies in Intellectual History and the History of Philosophy (Princeton: Princeton University Press, 1995); for the issues of observation and classification of nature, and reproducing findings through illustration, see David Freedberg, *The Eye of the Lynx: Galileo, His Friends, and the Beginnings of Modern Natural History* (Chicago: University of Chicago Press, 2002).

information among scientists and to the wider public. In Rome, the Accademia fisico-matematica, founded and led by Giovanni Giustino Ciampini (1633-1698), with the nominal support of Queen Christina of Sweden (1625-1689), intensified their work on developing ocular devices used to view the infinite and the infinitesimal.[3] [See Chapter 1, "Measuring the Heavens;" Chapter 2, "Eyewitness Testimony—*Ekphrasis* and *Enargeia*;" and Chapter 3, "Science and Speculation—Imaging Nature"]

But all was not well in the land of images. Fake news and false images abounded, incorporating pseudo-scientific markers to be somewhat convincing. These sources often conveyed just enough authority to be believable to certain audiences—thus, operating in the same way as modern digital mechanisms and social media platforms that generate deep fakes and conspiracy theories. News reports and imagistic pamphlets relating incredible and incredulous events surrounding the comet and its related discourses circulated widely, landing even in reputable newspapers and academic discussions.[4] [See Chapter 4, "Fake News and False Images"]

Between these two extremes—the exactly truthful and the intentionally deceptive—artists, literary figures, and opera librettists played with vision and perception both to question and to reify imagistic truth. Artists and art historians, such as Giovanni Pietro Bellori (1613-1696), Lodovico David (1648-c.1709), and Andrea del Pozzo (1642-1709) alternately used

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[3] For the collaboration between Queen Christina and Ciampini, their shared interest in collecting and studying ocular devices, and the development of the Accademia fisico-matematica, see Salvatore Rotta, "L'accademia fisico-matematica Ciampiniana: un'iniziativa di Cristina?," in *Cristina di Svezia: Scienza ed alchimia nella Roma barocca*, ed. Wilma DiPalma and Tina Bovi (Bari: Edizioni Dedalo, 1990), 99–186.
[4] For just one out of many examples of pamphlets mixing true and false ideas, see *A True Relation and Description of the Strange and Prodigious Blazing Comett [...]* (London: Printed for Benjamin Harris, 1680). For the broader culture of skepticism and doubt regarding printed media, see Brendan Maurice Dooley, *The Social History of Skepticism: Experience and Doubt in Early Modern Culture*, The Johns Hopkins University Studies in Historical and Political Science, 117th ser., 2 (Baltimore: Johns Hopkins University Press, 1999).

ekphrasis as an analytical technique or created visual feints that obscure the differences between real and imagined. Poets and librettists used visual frameworks such as "moving portraiture," shifting perspectives, and iconographical symbolisms to create a representational verisimilitude that hints at truth while sowing doubt in the audience's perception.[5] Collectively, these projects dealt in some way with continued skepticism towards relying on images to understand and convey information about the world, by either codifying vision as truth, or by pushing against it with irony and illusion. [See Chapter 5, “Opera, Deception, and Illusion”]

As I argue in my book-in-progress, titled *Specularity: Opera, Art, and Science in Rome (1680-1710)*, the late seventeenth century grappled with a "crisis of images," as intellectuals, artists, and the broader public were attempting to define the limits of believability through ocular mechanisms. Debates regarding vision, perception, truth, fiction, deceit, and credibility occurred in various formats, from the scientific to the popular, and from the artistic to the performative, with a wide-ranging impact on society. I also argue that this period of crisis and doubt led to the literary-philosophical theory of the *immagine del vero* (image of truth), put forward by philosopher and literary critic Gianvincenzo Gravina as a central tenet of the project within the Accademia degli Arcadi (Arcadian Academy) to reform taste and verisimilitude in Italian literature and opera.

War News: Seeing the Other

Additional layers present in publications and representations of the Great Comet reveal that, as a cultural phenomenon, this event inflamed religious and political conflicts arising from confused definitions of "truth." Catholic authors pointed fingers at Protestants, and Protestants

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[5] Ayana O. Smith, *Dreaming with Open Eyes: Opera, Aesthetics, and Perception in Arcadian Rome* (Oakland, California: University of California Press, 2019), https://doi.org/10.1525/9780520970403.

pointed fingers at Catholics. Everyone pointed fingers at Jews and Muslims. Narratives of true faith, true histories, true portents, true miracles, true correlations, true observations—entangled with narratives of the comet—radiated outwards from popular comet pamphlets and scientific journals into independent and serious academic discourses in other fields, such as archeology, church historiography, philology, and religious doctrine. There was already a long history of circulating news about comets to strengthen ties to morality, religion, and "truth" among the public, and to create associations with political or military agendas.[6] Such rhetorical strategies apparent in the comet literature find their way into publications on these subjects even when the comet is not discussed. The search for the truth was rampant. A world in which narrative fictions and visual illusions could be considered more believable than history and reality (ideas espoused by both Crescimbeni and Gravina)—and in which the principles of scientific empiricism can be turned towards "true observations" of peoples and cultures in order to mark and hierarchize their differences—as it turns out, is dangerous. [See Ch. 6, “News and Its Corollaries: Opera As and About Media”]

These strategies, combined with the results of academic, historical truth building, could be used to justify military action. In a context where the comet was believed to be a portent signifying collective sin and lack of faith, and in which Ottoman "threats" (*minaccia*) were considered evidence of God's punishment, and in which victory in battle would signify God's reward, war lay just one step ahead. Although many western scholars pinpoint the beginning of the Holy League-Ottoman wars (1683-1699) as a consequential reaction to the Ottoman Siege of Vienna, it is clear that the Vatican was already preparing its diplomatic and military strategies by

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[6] Joad Raymond and Noah Moxham, eds., *News Networks in Early Modern Europe*, Library of the Written Word 47 / The Handpress World 35 (Leiden: Brill, 2016); Sandro Bulgarelli and Tullio Bulgarelli, *Il giornalismo a Roma nel Seicento: avvisi a stampa e periodici italiani conservati nelle biblioteche romane* (Rome: Bulzoni, 1988).

the summer of 1680.[7] The comet, when it arrived in November, with its frequently attendant religious vitriol, simply pushed these narratives over the edge. Thus began a vicious circle, one that began, overlapped, ended at, and traveled through multiple points, but led always to similar outcomes. Which came first, the comet or the conflict? The images or the beliefs? [See Chapter 6, "News and its Corollaries—Opera As and About Media," and Chapter 7, "Seeing the Other"]

The narratives are so deeply intertwined, it is almost impossible to say. Of course, the answer also depends on how long of an historical swath one decides to examine, and when the starting and ending points are located. In my case, I have traced ocularcentric ideologies that consolidated towards the century's end, back to a potential—but significant—starting point. This does not mean that similar debates were not happening previously, only that the Great Comet and its subsequent discourses provided one recent factor in a long sequence of events.

Ultimately, as similar themes show up on the operatic stage, we must question, what is opera's role in mediating cultural belief systems? How does opera both reflect and promote ocularcentric and empirical worldviews? How does opera frame the public's vision and perception of the "other"? To what extent are operas set in "exotic" locales an extension of the war news circulating simultaneously? This aspect of my project considers opera and its librettos as a corollary to the war-related publications on sale in bookshops alongside eyewitness reports, letters, *avvisi*, histories, geographies, maps, and prints depicting war-torn locales from Athens and Crete to Vienna and Buda, places farther away, and in between.[8]

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[7] *Copia di lettera scritta da N.N.: nella quale si legge la relatione distinta dell'ingresso, cavalcate, e ceremonie fatte in questa città di Roma nell'occasione della venuta del Signor Duca Radzivil Ambasciatore d'obbedienza appresso la Santità di N. Sig. PP. Innocentio XI., l'anno MDCLXXX* (In Roma: Per Michel' Ercole, 1680); for historical context, see Massimo Carlo Giannini, ed., *Papacy, Religious Orders, and International Politics in the Sixteenth and Seventeenth Centuries*, I Libri Di Viella 159 (Rome: Viella, 2013), 199-200, 202, 211-30

[8] For news, its corollaries, and its sometimes violent consequences, see Mario Infelise, "The war, the news, and the curious," in Brendan Maurice Dooley and Sabrina A. Baron, eds., *The Politics of Information in Early Modern Europe*, Routledge Studies in Cultural History 1 (London: Routledge, 2001), 216-36. For

L'immagine del vero (The Image of Truth)—Verisimilitude and Operatic Representation

By the end of the century, the "crisis of images" that had intensified after the Great Comet of 1680, was starting to settle down. Although the war continued through 1699, the incendiary rhetoric began to be less overwhelmingly present in the 1690s. Thinkers such as Giovanni Mario Crescimbeni (1663-1728), Gianvincenzo Gravina (1663-1718), and Giambattista Vico (1668-1744) consolidated several philosophical and scientific strands regarding vision, perception, truth, and belief into a new rational empiricism that drove the late seventeenth century Italian intellectual culture towards the Enlightenment, and furthered the interests of the scientific revolution. By this point, much of the superstition and astronomical prediction associated with the comet literature has diminished, but the fascination with and theorizing of images remains. Crescimbeni, Gravina, and Vico were all associated with the Arcadian Academy (founded in 1690 in Rome), although Vico more peripherally than the others.

This academy was important both for the reform of Italian literature and for the development of a new operatic genre and its dramatic conventions. This new genre is best known under its eighteenth-century designation, the *opera seria* (serious opera); but when it began in the 1690s as part of the Arcadian Academy's push for a unified aesthetic in Italian literature, it was most frequently called *dramma per musica* (drama through music). This genre is perhaps the longest-lived type of opera since operatic performance began around 1600; it survived all the way through the eighteenth century, becoming the primary mechanism of operatic expression for

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representations in poetry and music, see Luca Ambrosio, “Drammi, commedie e favole musicali all’ombra del Colosseo” (PhD diss., Pavia, Italy, Università degli Studi di Pavia, 2017), 68-71; and Salvatore Canneto, *Il turco, l’assedio di Vienna, la poesia italiana (1683-1720)*, Studi (e testi) italiani. Collana del Dipartimento di Studi Greco-Latini, Italiani, Scenico-Musicali, Sapienza Università di Roma 24 (Roma: Bulzoni Editore, 2012).

baroque and classical composers in the Italian tradition throughout Europe, including Handel, Vivaldi, and Mozart, and even into the early nineteenth-century, as in some early operas by Rossini.

Featuring a streamlined dramatic structure, based on the moral conflicts, love interests, personal choices, political alliances, and averted tragedies of noble or serious characters drawn from ancient history and literature,[9] this new operatic genre eliminated the mixed characters, comic exploits, cross-dressing, disguises, and meandering plots that had delighted the public audiences of Venetian opera beginning in the middle of the seventeenth century, composed by such favorites as Claudio Monteverdi (1567-1643) and Francesco Cavalli (1602-1676).[10] The music, too, underwent significant change. Abandoning the more flexible alternation between recitative (declamatory, syllabic, speech-like musical style) and arias, ariosos, and ariettas (more formalized, lyrical songs with rhythmic and melodic regularity and repetition), the new *dramma per musica* standardized the placement, form, and style of arias. Now, arias occurred mostly at a character's exit at the end of a scene (although entrance arias could happen for dramatic effect to introduce important characters, and mid-scene arias, though rare, still existed), thus stabilizing the harmonic areas and allowing more contrast across scenes.

Composers developed new techniques in musical language, harmony, and rhetoric to create bold and effective emotional contrasts. These contrasts were present not only within individual arias, but also through the whole series of arias sung by any given character. By

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[9] The literature on this subject is vast, but I reference here the work by Robert Ketterer, which discusses the relationship between *dramma per musica* and ancient Roman dramatic values, contrary to the often-cited idea that the genre primarily derives from ancient Greek sources: Robert Ketterer, *Ancient Rome in Early Opera* (Urbana: University of Illinois Press, 2009).

[10] Again, the literature on this subject is too vast to footnote, but I reference here Ellen Rosand's comprehensive study that defines the aesthetic, formal, and musical conventions of the genre: Ellen Rosand, *Opera in Seventeenth-Century Venice: The Creation of a Genre* (Berkeley: University of California Press, 1991).

standardizing aria forms to the new *da capo* type, matched in the poetic form of the text, characters could express a range of emotions; the *da capo* form consists of an A section (stanza 1) based on an initial emotion, a contrasting B section (stanza 2) depicting a new or opposing emotion, and concluding with a repetition of the A section (*da capo*; "from the top"). This was a significant departure from the many diverse aria forms of Venetian opera. The new format allowed audiences to hear both momentary and long-term emotional changes that were easily identifiable for each character, giving them depth, compass, and variety from the beginning to the end of the performance—and distinguishing characters from each other as they experienced differing ranges of emotion. Recitative was reserved for dialogues and monologues, and no longer served to express sudden emotional outbursts, as in the older Venetian style, except in rare instances.

Crescimbeni was the leader (*custode generale*) and one of the main founders of the Arcadian Academy. Although he (and other Arcadians) criticized the dramatic and textual exigencies created by adding music to tragedies in general, he enthusiastically endorsed and promoted the Arcadian operatic agenda by praising the librettos written by the many poet members of the academy. Crescimbeni's *L'istoria della volgar poesia* (1698) is the first comprehensive history of Italian vernacular poetry, and his *La bellezza della volgar poesia* (1700) develops a critical approach to literary aesthetics; both works historicize and critique operatic texts within the broader contexts of literary history and style. Although Crescimbeni is not included in scholarship on the pre-Enlightenment (and rightly so based on his ideologies), his catalogue-like scope encompassing multiple volumes for each book places him in line with the impulses driving the much later French *encyclopédistes*. Gravina and Vico were both disciples of Gregorio Caloprese (1654-1715) in Naples, who was the earliest philosopher in the Cartesian

tradition in Italy. When Gravina moved to Rome and joined the Arcadian Academy, his innovative blend of Aristotelian, Cartesian, Epicurean, Lucretian, and Platonic philosophies of images, which transformed literary criticism from an exercise of generic comparisons to a rational empirical science, became central to the Arcadian aesthetics.

Gravina introduces his *immagine del vero* in his *Discorso sopra l'Endimione* (1692) and expands it in his *Della ragion poetica* (1708). In these two works, he explains how we perceive and interpret images, and how they are central not only to the creation of verisimilar representation in poetry and drama, but also to the audience's ability to remain ensconced in the fictional synchronicity of the performance. In Gravina's theory, images are embedded in the subject, language, style, and tone of the poet's (or librettist's) text. From there, they are legible to the reader (or audience member, in a dramatic performance). Images percuss against the imagination, which governs the intellect. There, the application of judgment (which is shaped by personal character) determines whether each image is truthful, or not. The imagination thus functions as an archive of images allowing us to make sense of past and present experiences, and fictional, truthful, or deceitful representation. There are emotional and psychological consequences to discovering false images within a text or a performance, causing a "bitterness of the senses;" falsehood not only destroys verisimilitude, it also destroys the synchronicity between the stage and the audience, causing spectators to step outside the credible but fictional realm, now becoming "critics."[11] [See Chapter 8, “The Operatic Mirror”]

We can trace Gravina's influence through Crescimbeni and the next generation of influential philosophers and critics of the Arcadian Academy, such as Lodovico Antonio Muratori (1672-1750) and Antonio Conti (1677-1749), both of whom used theories of images,

[11] Smith, *Dreaming with Open Eyes*, 75-102.

imagination, fantasy, truth, and verisimilitude in their critical philosophical writings. We can also trace Gravina's influence through operatic texts. One of his disciples, Pietro Trapassi, became the most important librettist of the eighteenth century under the assumed name Metastasio (1698-1782); another disciple was Paolo Antonio Rolli (1687-1765), who became a prominent librettist to the composers George Frideric Handel, Nicola Porpora, and Giovanni Bononcini, all working in London in the early eighteenth century. Although most of the Arcadian criticism—and therefore the large corpus of scholarship on this group—concerns literary aesthetics, Arcadian poetry fell out of favor long before Arcadian opera.[12] The resulting disparaging comments about Arcadian poetry may have been a factor in music historians' relatively low engagement with the representational aspects of Arcadian opera, despite the clear endurance, importance, and popularity of the genre.

Ironically, for the Arcadian critics, images—not sound—were the fundamental attribute of verisimilar representation. (I sometimes wonder whether the staunch Arcadian critics of operatic composition were somewhat irked by the widespread musical successes of the *dramma per musica*.) According to Arcadian theories, sound could carry no intellectual, symbolic, or meaningful signifiers, and could only "please the ear." For this reason, the much smaller body of Arcadian writings about music were highly critical of opera.[13] Therefore, to fully understand the popular, diffuse impact of this new operatic style on audiences, we must study how the duality of sound and image contributed to the success of *dramma per musica*.

[12] Smith, *Dreaming with Open Eyes*, 39-74.
[13] *Idem*, 17-38.

Deceiving the Eye and Pleasing the Ear

For operatic audiences, clearly the music is a central part of the performance experience. Opera without music is simply a "play"—and probably not a very good one, due to the necessary repetition of text and other conceits required for musical performance (qualities that the Arcadians criticized). As musicologists, and as historical performance practice experts, those of us in the field of early music have primarily studied musical manuscripts, organology, orchestral practices, improvisation, ornamentation, vocal and instrumental techniques, and other aspects of the operatic sound, in order to replicate as best as we can an "authentic" experience of baroque opera as performed today. When we turn to imagistic evidence, it is usually in service of sonic qualities, such as using iconography to understand the use and placement of instruments, or for staging and theater design.

What I proposed in *Dreaming with Open Eyes* is a thorough overhaul of our understanding of Arcadian criticism, by expanding our study of texts from those discussing opera, to those discussing poetic and dramatic *representation*. Then, using the analytical guidelines that I interpret from the primary sources, I create a working methodology for reconstructing how seventeenth-century audiences might have perceived the symbolic power of images, based on visual mechanisms embedded in the music and the text. I organize these into three categories, according to my analysis of Gravina's theories; these are: *icon* (iconography), *mythos* (mythological "truths"), and *tupos* (narrative typologies). Using detailed case studies of two operas, by Alessandro Scarlatti and Carlo Francesco Pollarolo, I show how these categories manifest in operatic production, including: iconographic references (which I call "moving portraits"), pictorial narrative arrangement of scenes (such as imitating a series of frescoes), *ekphrasis*, and perspectival framing devices. These analytical techniques offer us a more nuanced

idea of this genre and its appeal, compared to the essentially Aristotelian, textual, and genre-based analytical strategies that have predominated in musicological literature (at least until new approaches emerged, such as gender, voice, and sovereignty.)[14]

The Great Comet of 1680 makes a dramatic story for the beginning of a book. And indeed, it is the earliest major event within the materials on vision and perception that I am studying, making it the chronological starting point of this narrative. The conceptual framework of my project, however, begins here, in the middle of my chronological timeline, with the Arcadian Academy in the 1690s. In this new project, *Specularity: Opera, Art, and Science in Rome (1680-1710)*, I bring my imagistic analysis based on Gravina and Arcadian criticism to a wider repertory, while asking the following questions: what precipitated the *immagine del vero*? What happened between the Great Comet of 1680 and the founding of the Arcadian Academy in 1690 to quell the "crisis of images" and motivate an imagistic, empirical framework for representing and perceiving truth? How extensively did the *immagine del vero* operate within Arcadian operatic circles; did it survive transitions to other cities, or to timeframes beyond the late seventeenth century? [See Chapter 9, "Deathly Images"]

Giovanni Giacomo Komarek, Boemo: Analysis, Method, and Structure

My project engages three layers of materials: 1) European comet books and pamphlets, to establish how rhetorical strategies concerning vision, belief, and disbelief circulated in a broader sense, motivating ocularcentric discourses; 2) operatic libretti, primarily from Rome, between the years of 1680-1710, to determine how visual narratives developed and changed over time; and 3)

[14] For just a few ground-breaking examples, see: Wendy Heller, "Reforming Achilles: Gender, 'Opera Seria' and the Rhetoric of the Enlightened Hero," *Early Music* 26, no. 4: Metastasio, 1698–1782 (1998): 562–81; Roger Freitas, *Portrait of a Castrato: Politics, Patronage, and Music in the Life of Atto Melani* (Cambridge: Cambridge University Press, 2009); and Martha Feldman, *Opera and Sovereignty: Transforming Myths in Eighteenth-Century Italy* (Chicago: University of Chicago Press, 2007).

the catalogue of printed works by Giovanni Giacomo Komarek, a Roman editor, typographer, and bookseller, to reveal how scientific and popular information was traded among members of the academies, their cross-influences, and wider dissemination.

This last may seem surprising, or to fit uneasily among the first two layers. Although I am mentioning Komarek here in the final position, the layers of meaning that I am deriving from my reconstruction and analysis of his catalogue will drive the structure of this book. The first half of the book tells the story of opera interwoven with the significant developments of ocularcentric discourse, from the comet to the *immagine del vero* and its disintegration, with reference to a variety of sources, including materials published by Komarek. The second half of the book is a series of shorter essays focusing on ideas emerging from Komarek's catalogue, in chronological order, articulating what we can learn about Komarek, ocularcentrism, and intellectual culture in Rome through his publications. [See Appendix, "Giovanni Giacomo Komarek, Boemo—A Catalogue of the Printed Works"] Opera and other music will also appear in the second half, since Komarek did print several oratorio, musical drama and operatic texts, and a sonata collection by Arcangelo Corelli (1653-1713). The book concludes with the catalogue; sources from Komarek's catalogue will be "tagged" throughout the book.

I began reconstructing Komarek's catalogue after I reflected on his role as the publisher of Gianvincenzo Gravina's *Discorso*. Although it was already clear to me that Komarek was not a publisher whose name I had encountered much if at all before, the significance of that fact did not occur to me until I was in the last stages of writing *Dreaming with Open Eyes*. Komarek did not appear to be directly associated with the Arcadian Academy, so it seemed strange to me that he would be entrusted with such a symbolically significant volume. Indeed, the "go-to" publisher for the Arcadian Academy was Antonio de' Rossi, a much larger, more established publishing

firm. For music and literature, Francesco Leone or G. Francesco Buagni would be a more obvious choice. So, who was this Komarek? And what was he doing at the center of the *immagine del vero*?

As it turns out, Komarek was not only not well-known to me, but is also not well-known in the field of seventeenth-century books; there is little scholarship about him today, and his name mostly appears in isolated footnotes just because one of his authors is cited as a primary source in the discussion of whatever subject.[15] So scholars are still engaging with his publications, but have underestimated his role in forming, connecting, and circulating knowledge within Roman intellectual spheres. In addition, Komarek's ability to engage in all aspects of the publication process, from collecting and editing texts to producing published volumes and selling them in his own shop, was rare for seventeenth-century Rome.

My survey of Komarek's activity demonstrates that he published a variety of materials related in one way or another to vision, ranging from scientific publications about ocular devices by members of the Accademia fisico-matematica, to descriptions of art and illusion, to Gravina's volume on the *immagine del vero*. He got his start, however, in 1684 publishing war news—a very popular genre that allowed Komarek to engage the public's interest while shaping public perceptions. Following the contentious religious vitriol surrounding the comet, Komarek's professional activity begins precisely with the reality of religious war. Through Komarek's publishing career, we can see how the discourses on vision, perception, and belief overlap in various spheres of Roman intellectual and popular cultures, and we can even trace direct parallels between scientific and philosophical discourses.

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[15] Alberto Tinto, "Giovanni Giacomo Komarek tipografo a Roma nei secoli XVII-XVIII ed i suoi campionari di caratteri," *La Bibliofilia* 75, no. 2 (1973): 189–225.

By studying debates on ocularcentrism and belief through Komarek's catalogue, I have been able to unveil specific connections between the Accademia fisico-matematica and the Arcadian Academy that have gone previously unnoticed. For example, Giovanni Giustino Ciampini's *Nuove inventioni di tubi ottici* (Rome: Komarek, 1686) begins with this statement:

> Racchiude tanti Arcani nel suo seno la natura, che deludendo la debole attività de'nostri sensi giornalmente ci inganna, mentre ci offre spesso oggetti, che avendogli sotto l'occhio, non distinguiamo tal volta molte cose che realmente in essi sono: potendoci in qualche modo dire ciechi per non vedere quelche abbiamo sotto la vista […]. Co'l benefizio del Microscopio si sono discoperte tanta qualità ne i Misti, e ne i tre Regni Animale, Vegetabile, e Minerale, che conviene formare nuova Filosofia.
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> Nature encompasses so many mysteries, that it deceives us daily; frustrating the weak action of our senses, nature often presents us objects whose true essence we cannot discern, even while holding them in front of our eyes. To a certain extent we could call ourselves blind, since we cannot see what is in our direct line of sight […]. With the benefit of the microscope, so many qualities are discovered, within both the mixed and three realms—animal, vegetable, mineral—that we must develop a new philosophy.[16]

Ciampini uses the term "philosophy" to refer to what we would now call "natural philosophy;" of course, by this time, natural philosophy had already been increasingly governed by the principles of observation, experience, and experiment since the early seventeenth century. In one sense, the new philosophy already existed; optics, mechanics, and astronomy with their increasing use of mathematics and geometry, were the fields most actively pursued by the Accademia fisico-matematica. Yet in other ways, Ciampini and his scientists were at the forefront of new discoveries regarding anatomy, biology, and embryology—in short, discovering new laws of nature. The language and techniques used in Ciampini's *Nuove inventioni*—authority, detailed description (*ekphrasis*/*energeia*), duplication, empiricism, evidence, experience, observation, and testimony—are later harnessed by Gianvincenzo Gravina in the

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[16] Carlo di Napoli, *Nuove inventioni di tubi ottici dimostrate nell'Accademia fisicomatematica romana l'anno 1686* (In Roma: Nella Stamparia di Gio: Giacomo Komarek Boemo, 1686), [1]

Discorso and the *Della ragion poetica*; in Gravina, these concepts are used to create a literary philosophical cosmology in which the investigation of nature and its imitation through empirical and imagistic mechanisms results in the truthful representation, perception, and belief.[17] If I had not begun studying Komarek's catalogue I would not have realized these connections—and, I would not have known that Gravina had absorbed these concepts as a member of the Accademia fisico-matematica, because this information would not have seemed relevant to Arcadian *dramma per musica*, and indeed it is not discussed in the scholarship of the Arcadian Academy.

By studying these materials through Komarek's catalogue, I have been able to strengthen our understanding of how Arcadian verisimilitude responded directly to questions raised in scientific circles in the decade before the academy was founded. This is not to say that Komarek's competitors in the publishing world of seventeenth-century Rome may not have forged similar connections; after all, Komarek's authors did not always publish exclusively with him, but also worked with other firms in the city. However, among the massive amounts of materials produced by those more established businesses, the discursive connections have been drowned out. Furthermore, because Komarek was a smaller publisher, his professional networks take on a more personal scale. We can imagine him developing his publishing business through direct connections with individual people, and therefore curating his specialties with intention.

Why is a musicologist writing this book?

While this project is about opera, it is also not about opera. It is about opera to the extent that I wish to show how *dramma per musica* was conceived, produced, perceived, and used in ways beyond what our current musicological scholarship has shown. It is true, a book on the late

[17] Smith, *Dreaming with Open Eyes*, 75-102.

seventeenth-century crisis of images does not *need* opera to function as a whole entity. And a book about seventeenth-century opera does not *need* a catalogue of Giovanni Giacomo Komarek's publications and an analysis of how they interacted with intellectual and popular cultures. But it is so much more interesting to understand how these entangled visual and epistemological discourses, ranging from a comet and ocular sciences to literary and artistic theories of images—played out through a sonic medium. It is exactly this intellectual dissonance between sound and image—and the corresponding performative harmonies between these same two concepts—that make seventeenth-century opera so fascinating. By thinking about opera from these more global perspectives, we can elucidate aspects of how we live today, learning about truth, knowledge, and belief through the moments of contrast and consensus between our various senses. How do we perceive our own world?

My project demonstrates how opera was tangled up in many larger philosophical, literary, and scientific debates—but has been excluded from the perspectives of these other fields. In many ways, what I have found should not be surprising, considering how the patrons, librettists, and composers (less so, but still present) were engaging in multiple intellectual, political, and social networks that influenced their operatic productions. Although the Arcadians used opera as a performative tool to extend their influence and promote their activities, they also capitalized on the demand for the sensational, for the visual, for the scientific, and for the epistemic. Through the visual aspects of opera (which add otherwise unseen layers of meaning to the textual and musical rhetorics), the Arcadians could "prove" that vision and empiricism—both regardless of, and because of, the use of ocular devices—were valid methods of scientific discovery, literary analysis, and representational meaning.

I realize the irony of including no images or music in a paper about a book that is fundamentally *about* image, text, and music. Hopefully this pre-paper has conveyed enough of the rationale, methodology, and background to my project that the presentation—which will be focused precisely on images and music, so that we can appreciate these together—will add new connections and new meaning.