

1 Zograscopes, Virtual Reality, and the Mapping of Polite Society in Eighteenth-Century England

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Although primarily associated today with B movies and IMAX headgear, 3-D viewing technology has a very long history. As early as 1677, German writer Johann Christoph Kohlhans described how equipping a common camera obscura with a convex lens gave a pictured object the appearance of being “before one’s naked eye in width, breadth, familiarity and distance.” By 1692, William Molyneux of Dublin could write as if this three-dimensional effect were already well known. “Pieces of Perspective,” he said of architectural views, “appear very Natural and strong through Convex Glasses duly apply’d.”¹ Yet despite the vivid description by these students of optics, contemporary instrument sellers did not promote the use of convex lenses for picture-viewing, and print sellers did nothing to advertise perspective views as particularly suited for use with lenses. The 3-D phenomenon was known across Europe, but it was neither popularly disseminated nor commercially exploited.

All of this changed in the 1740s when convex lenses and perspective prints became packaged together as consumer goods in England. The first 3-D gadget craze developed around a manufactured lenticular device commonly referred to today as the zograscope. Between the mid-1740s and the mid-1750s, zograscopes and zograscope prints appeared regularly in English magazine copy and newspaper advertisements, as did hundreds of different engraved, hand-colored images designed for use with the device.² Curiously, almost every one of the known engravings from that period has the same subject. Zograscope prints depict the manmade environment, particularly urban topography.

Why was this early incarnation of three-dimensional viewing so relentlessly invested in cosmopolitan views—in cities, buildings, and gardens—rather than in natural scenery, or the wide range of subjects tapped by painting and other graphic genres? What made the relationship between the public subject matter and the domestic practice of zograscopic viewing so attractive? The answer lies with the social function of the device: The zograscope enabled its users to think of themselves as individuals participating

together in the larger sphere of polite society. To the newspapers, correspondence, novels, and conversation commonly held up as instruments of polite society, the zograscope offers a crucial nonverbal complement. By creating a three-dimensional space for viewers that was both domestic and public, zograscope allowed users intricately to develop a new relationship between privacy and the public sphere. Zograscope provided a model for seeing public space as generic, neutral “polite” space.

By the 1760s, although they were still being sold in large numbers in England, zograscope views fell out of the spotlight. They had gone from being a topic of discussion in the previous decade to being an ordinary amusement not worthy of polite society’s comment. It was around that time that the production and consumption of zograscope images seem to have developed in France, Germany, and Italy, but never with the same brief intensity and limited subject matter as they had first had in England.³

The Viewing Device

The essential component of a zograscope is a convex lens at least three inches in diameter, with a focal distance of about an arm’s length. The lens refracts the light rays coming from each point on the print being viewed so that rather than seeming to originate on the surface of the paper, they arrive at the eyes almost parallel to each other, as if originating from a much greater distance. Spherical aberration around the edges of the lens and juxtaposed patches of bright color on the print itself further disrupt normal depth cues. These disruptions combine to create the perception of three-dimensional picture space known as *stereopsis*.⁴ The single view stretches into depth, with the individual figures, carriages, and trees in the image still flat, but apparently distanced from each other.

In the eighteenth century, the lens of the zograscope was usually suspended vertically in front of a mirror that was inclined at a 45-degree angle, and the whole assembly either mounted on a stand or inside a box that could be placed upon a parlor table (figure 1.1). Instead of looking through the lens directly at a print, the viewer looked at the reflection (in the flat mirror) of the refraction (through the curved lens). The fact that the scene and caption would appear in reverse with this arrangement appears not to have bothered viewers in England, at least not enough for deliberately reversed prints (with reversed captions) to be produced in great numbers, as they were somewhat later in France, Germany, Italy, and elsewhere. Once placed before the zograscope, the earliest three-dimensional images left their captions behind.



Figure 1.1 Eighteenth-century zograscope and print from the Adler Planetarium, Chicago.

Virtual Reality and “Polite Society”

Above all, eighteenth-century sources emphasized the lifelikeness of zograscope views. William Emerson praised the zograscope for its ability to put viewers inside a summer scene, even on a winter’s day. Henrietta Knight, Lady Luxborough, felt the same way, and she wrote in 1748 that she preferred experiencing London with her zograscope, because it made the place come to life without her having actually to visit a city of which she was not very fond. Both Knight and Emerson, then, were describing the visual aspects of what is today called “virtual reality,” a space that is enacted technologically and perceived by viewers but that exists nowhere on its own.⁵ The term *virtual* describes something intangible but real in its effect, as in “virtual image” in optics, “virtual memory” in computing, and in keeping with Wolfgang Iser’s use of the term, the “virtual” literary work produced when reader and text converge. The zograscope view does not exist on a piece of paper or on the lens, but is a simulacrum that only comes into being in the viewer’s visual cortex.

Like the virtual image produced by the nineteenth-century stereoscope, the zograscope view does not have an original elsewhere; it is created then and there, and exists only in the moment that viewer and viewing device come together. This places the zograscope ahead of its time according to Jonathan Crary’s chronology in *Techniques of the Observer*, where a purely mechanical “camera obscura model” of vision characterizes the eighteenth century.⁶ Not until early nineteenth-century discoveries about persistence of vision and other physiological elements of optics, he writes, was it possible for viewers to consider a virtual image as a form of reality rather than as an irrelevant deception. For Crary, the stereoscope exemplifies this new conception of vision. Should his model be pushed back in time so that the optically similar zograscope can play the hero instead? Tempting as it is, the answer is no. The zograscope of 1750 did not provide a new dominant model of seeing; it provided a different way for a limited group of people, the men and women who considered themselves members of polite society, to visualize public space.

The imagined (but not imaginary) community of polite society knew no physical boundary. By self-definition it was not confined to particular neighborhoods, cities, or countries, but rather existed within a conceptual boundary as the group of relatively well off, educated, decorous people of good character. Much has been written in recent years about the emergence of this category, its independence from monarchical or ecclesiastical structures, and the difficulty of assigning it a precise boundary and name.⁷ What I call

polite society here would be termed the “public sphere constituted by private people” in Jürgen Habermas’s canonical text.⁸ I prefer the word “polite” because it was used by contemporaries to set themselves apart, but unlike “the Republic of Letters” (also used at the time) it does not imply a verbal medium for doing so.⁹ Newspapers, correspondence, conversation, art criticism, and novels are often cited as means through which people came to think of themselves as individuals participating together in polite society. The zograscope provided a uniquely visual guide for the same subjectivity.

Zograscope views provided a spatial understanding in which space can be theorized as a neutral thing, apart from discourses of authenticity or narrative. By creating a virtual space that was domestic and public at the same time, zograscope views allowed observers to imagine a new relationship with the nondomestic world around them. Bodily experience grounded in the fullness of sights, sounds, smells, and jostling in the streets was too earthy and all-inclusive for a self-conception as polite society. Instead, zograscope views told a story of public space as available, accessible, dynamic, and vibrant, but controllable, clean, and polite. In this story, streets, squares, parks, and church interiors were spaces for unhindered physical movement and expansive vision, not static, deep, particular experience. It was a new modern geography,¹⁰ made visible by the zograscope in its presentation of generalized open space as something three-dimensionally real.

A New Kind of Print

Advertisements reveal that before the late 1740s, publishers conceived of prints in three ways. At one end of the spectrum, they had value as collectible items for connoisseurs, where they would be stored in portfolios to be admired and discussed for their subject matter and artistic merits. In a more utilitarian way, prints could serve as wall decoration, either framed behind glass, or pasted on walls with decorative borders as a kind of wallpaper. Lastly, some prints were little more than amusing throwaways: souvenirs of a public event, comic scenes, miscellaneous designs for children, and so on, which peddlers might buy in bulk from a map- and printseller to sell again at fairs or in the streets. Zograscope views appeared on the scene as a fourth type of print, one that was not meant for connoisseurs’ portfolios, nor to be hung on a wall, nor for children to play with. Zograscope prints, instead, were spectacular or “curious” scenes for adults. Not fine enough to collect as art, but not cheap enough to be children’s playthings, they still do not fall into the remaining category of wall decoration. A Mr. Mear made a similar point when he divided his customers into three groups by “Taste,” those who “want Prints for Furniture,” those who want prints “to colour for the Diagonal and Concave Glasses,” and those “who are forming a Collection or Cabinet of Prints.”¹¹

The additional explanation zograscope prints received in advertisements attests to the newness of the device. Collectors did not need to be told how to store or display their fine-art prints, or what the experience of looking at them was like. The aesthetic value of fine-art prints for collectors was already understood. The zograscope experience, on the contrary, was unknown except perhaps to people interested in natural philosophy who had read optics treatises or attended public lectures. Hence, map- and printsellers included tempting tidbits in their advertisements, which surely affected observers' expectations. "These Prospects viewed in a Concave Glass have a surprising Appearance," wrote S. Austen and W. H. Toms, with three little stars setting off the phrase. Thomas Bakewell said his eight prints, when seen with a zograscope, "have a greater Effect than any Thing every [*sic*] yet done."¹²

The earliest mention of prints for use with a zograscope appeared in the *St. James's Evening Post* for 2 to 4 April 1747.¹³ References to zograscope views increased rapidly after that. The number of newspaper advertisements peaked in 1749, the same year the *Gentleman's Magazine* described zograscope viewing. Then in 1750 and 1751, the *Gentleman's Magazine* explicitly included four zograscope views in each annual volume, saying in the list of plates that "Those marked with a Star, if coloured, will make very good Objects for the Optic Machine, or the Concave Mirrou[r]." By 1753, a stand-alone catalog of zograscope views had appeared, naming over two hundred prints in Robert Sayer's stock.¹⁴

Publisher John Bowles saw fit to invest in the new format and point of view for at least sixteen pictures of ostensibly the same subjects around 1750, even though his earlier plates were still perfectly usable, as demonstrated when twenty-two plates from his 1731 catalog appeared in the 1754–1755 edition of *Stow's Survey of London*.¹⁵ A plate like the 1731 catalog entry *The Monument on Fishstreet-Hill, erected in commemoration of the Fire of London, 1666* (engraved by Sutton Nicholls), which is in portrait orientation, with banners in the sky, and the edifice itself blocking the recession into depth, could not be sold to consumers hungry for zograscope views (figure 1.2). John Bowles's new version of the plate, called *The Monument in memory of the conflagration 1666* in his 1753 catalog, is markedly different (figure 1.3). Oriented in landscape format, it has the standard 11 × 17-inch dimensions of a zograscope view, and the title now appears in the lower margin, where it will not interfere with the three-dimensional illusion. Most important, the visual emphasis has shifted away from the monument itself in order to draw attention to the swath cut into the picture space by the wide street, with its orderly parade of unremarkable traffic. A similar opening up of space can be seen in the other new Bowles plates.



Figure 1.2 Sutton Nicholls, *The Monument*, first published 1731, this impression 1754. Photo courtesy of The Newberry Library.

Robert Sayer, Mrs. Beckett, Mr. Watkins, and W. Harbet took care to reassure potential customers that their views, which could be used as wall decoration, were also “delightful for the concave and Diagonal Mirrours, and are allow’d by Connoissures to excel for either Purpose.”¹⁶ Clearly, true connoisseurs would neither need nor want a newspaper advertisement to instruct them in their purchases. Instead, the wording directs itself to people who aspired to a more cultured existence, and were willing to be convinced that a “Diagonal Mirrour,” or zograscope, was part of the kit.

The Subject Matter

Although conversation pieces, idyllic rural scenes, portraits, and histories were all well represented in the visual arts of the period, they did not appear in commercial zograscope



Figure 1.3 Thomas Bowles, *The Monument of London in remembrance of the dreadful Fire in 1666. Its Height is 202 feet.* | *Collone de Londres elevé pour une Perpetuelle Resouvenance de Lincendie Generalle de cette Ville en 1666. En Haut 202 Pieds,* circa 1750. Victoria and Albert Museum.

prints.¹⁷ There is no technological reason this should be the case, since even a portrait would appear in 3-D with the device, as Benjamin Martin made clear when describing the effect a few years before the zograscope craze got underway. “The Cheeks are protuberant, the Nose projects, the Eyebrows overhang . . . and the Lips are about to speak,” he wrote in 1740.¹⁸ Nevertheless, only views were printed for the zograscope in England in the 1750s, and almost all of these views depicted places in and around the great cities of Europe.

Approximately half of the zograscope prints listed in John Bowles and Son’s 1753 catalog showed scenes that are clearly urban, such as streets and rivers busy with traffic, groups of buildings, and cathedral interiors. The other half mostly showed landscaped gardens with geometrically laid-out walks populated by small well-dressed figures. They emphatically did not show sentimental rural scenes, bucolic peasants, or other “natural” types we might think of as the antithesis of urban. The so-called “parks” in this nonurban category were well-tended enclaves within London, like St. James’s Park and Green Park, not vast hunting parks available only to aristocrats.

All two hundred and eighty-five zograscope prints advertised in London newspapers between 1747 and 1753 (after which time the number of new views fell dramatically) showed scenes in Western Europe.¹⁹ British scenes dominated, with more views of London and environs than of the rest of Britain put together. Views of Italy came next, primarily Venice and Rome. The twenty-three plates in the 1750 volume of the *Gentleman’s Magazine* show that the scarcity of other subjects in zograscope views was not because other subjects were beyond the realm of possibility for engravings at the time. The four plates in this volume, which “make very good Objects for the Optic Machine, or the Concave Mirrour,” were typical of zograscope prints in that they showed modern places in Western Europe: two church interiors in London, a view of Fontainebleau (figure 1.4), and a view in Florence. The nonzograscope plates in the volume, however, showed a range of exoticism, erudition, and drama: African princes, antiquities, a snarling tiger, and an eruption of Mount Vesuvius engulfing whole towns in fire.

The generic sameness of the public, polite subject matter in zograscope views necessarily excluded specific images of Continental high culture, the experience of which was one of the ostensible points of a Grand Tour. The “Grand Duke’s Gallery” in Florence, more commonly known today as the Uffizi, was shown only from the outside, as part of a streetscape. The ruins of the Coliseum, which signified Rome and Classical civilization in Grand Tour portraits of Englishmen, did not appear in English zograscope views from the same period. The garden and the exterior of Versailles, which could be balanced by



Figure 1.4 *A View of the Grand Duke's Gallery and Old Palace at Florence, from the River Side* from the *Gentleman's Magazine*, October 1750. Photo courtesy of The Folger Shakespeare Library.

views of English gardens and palaces, were shown, but the inimitable Hall of Mirrors, seen later in French zograscope views, never appeared.²⁰

The subjects of zograscope views allowed Britain to be on a cultural par with Europe, with greater London and a few estate gardens standing for modernity and civilization, while Scotland and Wales were nearby adjuncts providing quaint castles and ruins. John Bowles and Son cross-listed their four general views of London among the zograscope views of “European” cities, but not their views of Edinburgh and Glasgow in Scotland.²¹ As for England’s provincial cities, the only one advertised as a zograscope view in the newspaper is Chester, which John Boydell cast as an “antient” [*sic*] walled city on the Welsh border, with three Welsh castles completing the picture set. Map- and printsellers’

catalogs added Oxford, Cambridge, Portsmouth, Worcester, and Newmarket to the tally of provincial towns, but a total of five provincial towns pales next to the sixty-seven in Samuel and Nathaniel Buck's contemporary series of views, not for use with a zograscope.²² Even though urban polite society existed outside London, London set the standard, and represented it alone in zograscope views.²³ Zograscope views did not survey all the spaces and places of Britain; they showcased a certain idea of its public space as polite and worthy of its Continental cultural rivals.

The zograscope world circa 1750 excluded references to global trade and exploration. In Bristol, R. Darbyshire sold zograscope views printed in London, but none of these would have shown the important port city that was his home.²⁴ Industrial areas like Birmingham, Newcastle, and Norwich do not appear, although their mines, mills and machines are subjects of nonzograscope prints at the time. The people who sold maps and views of current events from the War of the Austrian Succession sold zograscope views at the same time, but zograscope views almost never showed war-related sites.²⁵ Trade, politics, and industry, subjects that were inappropriately businesslike for polite conversation, were also inappropriate for virtual reality viewing in the 1740s and 1750s.

Similarly, sentimental scenes did not appear in English zograscope views. The same cannot be said for Continental zograscope views, which included subjects like prisoners confined in St. Pierre, or episodes from the story of the Prodigal Son. The absence of such subjects in English views must therefore have been due to something other than their suitability for the optics of the zograscope. Joseph Highmore's retelling of Samuel Richardson's *Pamela*, which appeared as a series of prints in 1745, shows that the print medium itself was perfectly suitable to sentimental subjects in England at the time. These prints were not adapted for use with a zograscope, however, and the same holds true for any number of other sentimental prints. Zograscope views were not about sentiment. They were about politeness. English zograscope views depicted those polite places that were suited to neutral public sociability.

In other words, zograscope views exhibited an emotional detachment in their subject matter, and even when they did venture into locations that might seem more picturesque or sensational, those locations tended to be outside England, and outside what became known as the sublime aesthetic. Dramatic, moody prints of England's Peak and Lake Districts, although published in the 1740s and 1750s, were not advertised for use with a zograscope until the late 1760s, well after zograscope ceased being new media. The curiosity cabinets of eighteenth-century England may have housed exotica, but zograscope views seen by the same people were unashamedly familiar. In contrast, the stereographs

of the nineteenth and early twentieth century (see chapter 5) routinely pictured the exotic, hinting suggestively at a later coincidence of stereopsis and imperialist desire.

Zograscope Views and the Mapping of Space

More than being depictions of the public places of polite society described above, zograscope views can be considered mappings of polite public space. Eighteenth-century England saw the urban streets increasingly differentiated by function, with distinct thoroughfares, promenades, shopping streets, and back alleys.²⁶ Zograscope views helped define the polite and public side of the new urban demarcations, and the polite and public side of their rural counterparts. The ostensible subjects of individual prints are specific public “places,” which become generic public “spaces” through the sense of volume and distance brought about by the zograscope. Zograscopes brought this new kind of space indoors, where it could be seen virtually, within the private space of the domestic interior.

“Public” in the context of polite sociability does not mean available to all persons, but available to those men and women considered to be the “right” kind of people.²⁷ For example, when the *Gentleman’s Magazine* first appeared early in 1731, it carried the full title *Gentleman’s Magazine or Trader’s Monthly Intelligencer*. By 1733, the word *Trader’s* had been dropped, not because the contents did not appeal to traders, but because in order to appeal to them, they had to be tacitly subsumed within the category “gentlemen.”²⁸ Similarly, the full-titles of printsellers’ catalogs addressed “Gentlemen” as the people who would buy prints to keep for their collections, while the same prints were for “Merchants for Exportation, and Shopkeepers to Sell Again.”²⁹ This does not mean that merchants and shopkeepers did not buy prints to keep, but that when they did so, they played the role of gentleman, not merchant or shopkeeper. These categories could even cross gender lines to a degree. Prints for the genteel handicraft of japanning were specifically designated “for ladies” within a catalog text not because other prints were unsuitable for women, but because trimming and varnishing prints for ornamentation was coded “elite female” in the same way that buying prints in bulk and reselling them at a higher price was coded “middle-class male” (merchant or shopkeeper).³⁰ By buying (or at least viewing) zograscope views, women and men were participating in an activity implicitly coded “polite society,” where no reference could be made to gender or profession in the advertising copy.

Categories that had formerly been perceived as fixed and innate became fluid, inhering in the same person at different times depending on the occasion. For a broadly based commercial society to function, a less hierarchical, less regimented, but still rule-bound way of relating in society had to develop, and in the 1740s and 1750s in England, the category of the “polite” took this role.³¹ In order to enter the category of polite individuals in public space, a person had to meet both the monetary admission cost where applicable (e.g., one shilling at Vauxhall Gardens), and the qualitative admission cost by dressing appropriately, knowing how to make suitable light conversation with other polite individuals, and remaining politely detached from his or her surroundings. For literate people with a certain amount of leisure time who wanted a model or guide to polite standards, numerous books and magazines showed the way through words. Zograscope views conveyed standards of politeness in relation to public space through images.

Acts of mapping are acts of visualizing, conceptualizing, recording, representing and creating spaces graphically. It is this living relationship between the observer and the zograscope view that I consider to be “mapping,” in that it allows for the active simulation of space, not just its passive representation. The history of *maps* is a technical matter, whereas the history of *mapping* is a matter of examining on the one hand what it is about a culture that determines what a map will look like, and on the other, what the map comes to mean to people in *use*.³² In the case of zograscope views, the culture in question can be described as a group of private persons coming to think of themselves as part of a single public, the emerging bourgeois public sphere described by Jürgen Habermas and Richard Sennett, for which I am using the contemporary term *polite society*.³³

Habermas describes culture at the time as something that ceased being part of church and court spheres and instead became commodified for the public who “as readers, listeners, and spectators, could avail themselves via the market of the objects that were subject to discussion.”³⁴ This rational discussion of cultural objects among private individuals as part of a larger public helped shape that public, beginning, in the case of England, in the coffee houses of the late seventeenth century. In Habermas’s chronology, the press and professionally written criticism took over the institutional role of coffee houses from about 1750.³⁵ Also from about 1750, as David Solkin has convincingly shown, painting in and of the public sphere functioned this way, as both a site and an object for discussion.³⁶ Zograscope views can be understood the same way, as another example of the visual arts playing a role as a commodity available for discussion. Simply restating Solkin’s case with

a new set of examples misses the unique power of the zograscope, however. Zograscope views could do something visual that other objects and images could not.

In Solkin's mid-century examples, emphasis mostly falls on reading and speaking, only it is images, not printed words, that are being read.³⁷ Solkin writes that paintings of low and "popular" scenes on display in Vauxhall Gardens were understood by visitors as amusing depictions of what they themselves were not, and paintings on display at the Foundling Hospital were understood as discourses on sympathy. In other words, the pictures were read; the various pictorial elements acted like words in a sentence, where there is necessarily a time delay in grasping the story, since it takes at least a moment or two to figure out what the picture is "about." Focusing on the narrative element like this leaves aside the uniquely visual aspect of images. Namely, there is something visceral and instant about a visual object that can be exemplified by the difference between the meaning of the sequence of words on a page, and the meaning of the layout and typeface of those words. Zograscope views in this light are not commodifications of "culture" in the artistic sense, but commodifications of space, the space in which "culture" exists and proceeds.

As Geographer David Harvey generalizes:

Social relations are always spatial and exist within a certain produced framework of spatialities. Put another way, social relations are, in all respects, mappings of some sort, be they symbolic, figurative, or material. The organization of social relations demands a mapping so that people know their place. . . . From this it follows that the production of spatial relations . . . is a production of social relations and to alter one is to alter the other.³⁸

It was precisely in this sense that the new zograscope views mapped a new spatial relationship, one that accorded with the emerging, constitutive needs of polite society. The relationship between individuals and public space in polite society must be a relationship of spectator and spectacle, not participant and activity.³⁹ Sites become distanced and neutral sights. Zograscope views provided a model for experiencing space with the same distancing from personal and particular circumstances. Tiny, anonymous people appear over and over in the same kind of vast cosmopolitan spaces.

In order for polite space to come into people's consciousness, it has to first be described, or be made describable.⁴⁰ Zograscopes had a super-descriptive quality: The kind of description necessary was qualitative and referred less to the specific place involved than to the type of space that specific place ought to occupy. A particular site might already be

known to the observer through having visited or done business there, or through pre-conceived notions from literature; zograscope views worked to counter this knowledge by removing sites from their physical, historical, or literary contexts and allowing them to be regrouped as interchangeable components of a set. Instead of describing a particular place, zograscope views describe a particular kind of space, mapping it out so that a specific lived-in site can be understood as a generic, distanced sight. That is, zograscope views participated in a construction of knowledge about space, knowledge of how public space could be rendered appropriate for polite society.⁴¹ Only a neutral and “empty” kind of space, such as the narrative-free yet apparently real space of the zograscope view, met the requirements of the eighteenth-century discourse of politeness, a point that requires some expansion on the meanings of space and place and their relationship to virtual reality and to mapping.

Space can be conceived of in two related ways, one static, and the other dynamic. The difference between the two can be seen in the adjectival form each takes: *spacious* for the static aspect, and *spatial* for the dynamic. Place, in contrast, is always only static and particular. Differences in language and vocabulary complicate the issue. For instance, the French translation of Habermas’s *Strukturwandel der Öffentlichkeit* renders the title *L’Espace public* and uses the words *espace* and *sphère* interchangeably in the text, although Habermas does not address the issue of abstract, spacious space as such, a kind of space that is central to zograscope views and difficult to articulate in German.⁴² Michel de Certeau, for his part, contrasts *espace* and *lieu*, translated as *space* and *place* respectively, in *The Practice of Everyday Life*, yet his concept of abstract space is spatial only, not spacious.⁴³ Writing in English, David Harvey uses *space* in both senses, but does not recognize their difference.⁴⁴ Distinguishing between “spacious” space, “spatial” space, and particular “place” might seem to be little more than arcane word-play, but examining zograscope views in terms of these distinctions reveals what is unique about them, and what made them so appropriate to the needs of commercial society operating under a code of politeness circa 1750.

Space as spacious is open and abstract. It carries the illusion of neutrality in its emptiness and sense of distance. In contrast with this kind of space, a place is particular, engaged, sometimes even personified. Place is always full, although its particular contents will vary from perceiver to perceiver. As a fullness, “place” is incompatible with eighteenth-century notions of politeness. Politeness requires “delicacy” and an avoidance of all that would seem indecent.⁴⁵ It requires spaciousness in which an appropriate distance from particulars can be achieved and maintained. The superficiality of the subject matter

and clarity of composition in zograscope views fits this standard, but such polite banality would have been equally apparent in the prints had the zograscope never appeared. Rather, the polite spaciousness that is mapped in zograscope views comes from the erasure of the print surface altogether. The enacted zograscope view with its blurry margins and stereoptic effect is not an image of width-wise expanse, in the manner of a map or panoramic view, but an image of expansion into depth. Thus zograscope views can map space as spacious in ways other pictures cannot, and it is the spaciousness, brought about by the optics of the device in relation to human vision, which aligns the image with “politeness,” allowing the zograscope view to participate in the rhetoric of politeness at a deeper level than the subject matter and composition of the print seen with the naked eye.

To illustrate what I mean about politeness through spaciousness, consider the difference between a conventional map of a site and a painting of the same. The conventional map abstracts space into a flat “footprint,” making the map a schematic representation of the specific place in question. Space and ease-of-movement on the map can be represented by widening the footprint of streets and canals in relation to the buildings’ footprints, but this map remains two-dimensional, without a sense of volume. It is compressed into a flat surface, seen from above.

A painting of the same site, on the other hand, does acknowledge the volumetric quality of space, and represents it through linear perspective. It can only be a representation of space, though, not a simulation or *mapping* of space. Imagine an actual eighteenth-century painting, with light glistening off the varnish, perhaps some feathery touches of pale paint stroked on top as highlights, and visible brushstrokes in areas where the paint is thick. The very fact that it is made of paint means that this picture will always be a surface, and not a space. It bears both the weight of the physical material with which it is made and the immediate physical traces of an individual’s hand. Therefore it is too obviously material and too obviously connected with the bravura performance of an artist to be an instance of the trifling, unceremonious, easy detachment that defined politeness.

A similar argument about materiality of surfaces could be made for a print of the same site. The paint is translucent watercolor rather than heavy oils, so now it is the texture of the paper and the graphological quality of the engraving rather than the brushstrokes and pigment that call attention to the two-dimensionality of the representation. This argument holds true only as long as the print is seen with normal vision, though. As soon as it is seen through a zograscope, the picture surface dissolves into three-dimensional space. Instead of the ideal one-eyed observer who must gaze fixedly at a scene, the observer becomes a living two-eyed being who can freely glance at different parts of the scene with-

out destroying the illusion of depth. By erasing the surface of the image, the zograscope both creates spaciousness and allows the observer to relate to it with natural vision, at a polite distance, in a free and easy way.

Unlike spaciousness, the dynamic spatiality of space cannot be conceived of as an empty volume. Michel de Certeau writes of this kind of space that it is “composed of intersections of mobile elements” or “actuated by the ensemble of movements deployed within it.” Put in more concrete terms, he says “*space is a practiced place*. Thus the street geometrically defined by urban planning is transformed into a space by walkers” (emphasis in the original).⁴⁶ De Certeau’s dynamic, living space cannot exist in a single eighteenth-century print seen without a zograscope. Without the zograscope, the image necessarily has the static “being there” of a place in de Certeau’s terms. A set of zograscope views, on the other hand, begins to shift the images from place toward space, creating the neither-here-nor-there actuality of “mapping,” which de Certeau does not address as such, but which his terminology can help illuminate.

Consider the contrasting pairs de Certeau uses to characterize place versus space⁴⁷ as two different ways of relating to the known world:

PLACE	SPACE
seeing	going
map	tour
identified	actualized

In respect to de Certeau’s model, zograscope views are an amalgam of place and space, combining characteristics from both sides of what was for him a theoretically absolute divide. With the zograscope, the images are a form of “actualized” “seeing,” bringing a type of space to life rather than “identifying” a particular site (place), yet the space can be moved through only up to the limit of the picture’s borders. As an arrangement of sites in series, they constitute an itinerary for visually “touring” polite geography (spatial), not a single “map” where sites are simultaneously present, in parallel (place). In their virtual reality mode, zograscope views are not fixed statements that can exist like a “map,” apart from the observer (whose visual cortex creates the illusion), but only exist in relation to the person doing the seeing, like a “tour.” Yet as a finite set of images, zograscope views provide what de Certeau would consider a maplike sense of place. This allows zograscope views to map space as “polite” according to eighteenth-century understandings of the

term: Overbearing sensationalism and overbearing rationalism are both avoided because the relationship with the observer is limited and dynamic at the same time.

Taking the monument in Fish Street as an example again, one can see how walking in the street and zograscopically viewing the street both create space, but only the zograscope space is polite, in the mid-eighteenth-century sense. When actually walking along the street depicted in figure 1.3, the experience that creates the space is tied to the various bodily sensations of feeling feet on paving stones, hearing church bells, smelling the passing horses. The zograscope view of Fish Street, however, limits the actualization of the site to the polite realm. The body's sense-perception remains safely within domestic space—the feel of feet on carpet, the sound of pages turning, the scent of tea—while the eyes and mind can contemplate Fish Street and the Monument as a public, active space.

In addition to the physicality of the body being in Fish Street, the experience of actually walking there is tied to the walker's trajectory. Where you are going, and where you have been is inevitably part of the experience. Thus the "actualized" space when walking down the street includes not only the immediate sight, sound, smell, taste, and feel of being there, but the memory of personal, idiosyncratic sensations from what you have passed (a friend's home, an accident in the roadway . . .) and the anticipation of arriving at your destination. Such a saturated experience is inappropriate to the aesthetic of politeness, a problem rectified in zograscope viewing, where the trajectory is not a seamless series of particular and ever-changing places transformed into spatial space by walking. It is a series of discrete prints that can be viewed in any order, with the same generic perspective taken up by the observer again and again. The view of the Monument might be seen as one of a group of thoroughfares, or a group of landmarks, or just a random grouping of prints in the order in which they happen to have been put back in their box. A zograscope image is not a deep understanding of a particular place, but one of many interchangeable components in a system that can collectively be thought of as polite public space. Space itself is being commodified.

Nor are mid-eighteenth-century English zograscope views narratives in the common meaning of the term. A mid-eighteenth-century view of a church interior, for instance, would never show a service in progress, nor would it draw attention to the actions of particular figures. The people in such prints tend to be small, positioned in groups of two or three, chatting with each other, gazing at the architecture, or sometimes unobtrusively giving and receiving alms. Views of palaces do not feature members of the royal family but rather show anonymous figures from a distance, going about their business or enjoy-

ing the vistas. Catholic pageantry is absent from St. Peter's in Rome. The Lord Mayor's coach might appear outside the Mansion House in London, but his presence is neither visible in the print nor mentioned in its caption. There is no obvious story or moral to be had in the print itself, just a view of a public site in an objective, impersonal, and therefore polite mode. The only story told is one of space.

Zograscope views take many different places—a Scottish castle, a Roman piazza, a London church, a Paris bridge—and cast them all into the same kind of generic space. The prints' captions give little information other than the name of the city and the principal buildings depicted. The point of the captions is to familiarize the sites in a general way, without spelling out political and historical details like the captions of Bucks' views or describing actual events in the scene, which could create a narrative with overt appeal to the depths of heart or mind. Observers actualize this space through the natural eye movements of normal distance-vision while manipulating the zograscope and prints on the table in front of them. The spaces depicted are thus rendered polite, uniform, real, and manageable. The new kind of space is distanced from the observer, yet the observer is still implicated thanks to his or her involvement in arranging the prints and realizing the simulation. Public space is rendered palatable for domestic consumption.

A month after the fact, Peter Brookes and Robert Sayer advertised their zograscope view of the Green Park fireworks in celebration of the Treaty of Aix-la-Chapelle as something that would provide “a just Idea of the Structure, and its Situation, as well as the Performance itself.”⁴⁸ Given that the “performance itself” had ended prematurely when a charge misfired, engulfing the structure in flames and sending the carefully orchestrated light show to a chaotic and sudden conclusion, the last part of the advertisement reads more like a disincentive to buy. However, a “just idea” of the performance need not be a retelling of the narrative of events (although I do not wish to suggest that Brookes and Sayer actually thought this through when placing the advertisement in the newspaper). In the same way that a portrait photo taken from an unsympathetic angle in unflattering light may not “do justice” to the sitter, while another (even if highly retouched) will, the justice of the zograscope view of the fireworks is that it shows public space as it ought to be perceived. That is, a zograscope view of the fireworks shows a public display in the familiarity of a private, domestic setting, where it can be simultaneously made real and placed at a polite distance.⁴⁹

Little evidence about actual viewing practices from the 1740s and 1750s survives, but because the lens lets only one pair of eyes at a time see the illusion, and because the zograscope was simple to set up, we can infer that they were often viewed alone, or in small

groups. Lady Luxborough writes of “an optical glass which I have lately purchased” as something where she herself places the prints in the machine, and she makes no mention of other people being with her.⁵⁰ Although zograscope views provided a spectacular vision of public space, they were something to be experienced in a private setting, either alone or in small groups. Like the novel, magazine, and newspaper, zograscope views brought public spaces to individuals in a private setting. Also like the novel, magazine, and newspaper, the zograscope did not attempt a total isolation of the individual from his or her surroundings. Although important for the illusion of depth in the picture, “immersion” in the virtual reality sense was not enhanced to the degree it could have been with the zograscope. Bordering the prints in black did isolate the illusory scene within the field of view when looking through the lens of the zograscope, but common stand-type and book-type zograscopes did not seal the print away from the rest of the room. Drawing-room observers manipulated the prints themselves. They may even have been the ones who added color to the views, using paints sold ready-prepared for coloring prints at home. There was no hiding the constructedness of the illusion.

Observers claimed that seeing a zograscope view was like having “the Life itself be there,”⁵¹ but it should be emphasized that it was like having the life itself be there under controlled circumstances, set off for contemplation by the wonders of the modern scientific instrument. A simulation not only creates an effect, it also isolates that effect and brings it forth for examination.⁵² It is for this reason that the zograscope view and zograscope viewing had to maintain a link with the domestic interior. The zograscope produced specimens of virtually real space that exemplified polite detachment from personal particulars yet did not require arcane aesthetic knowledge to understand. They could be talked about naturally and easily in terms of optical effects (zograscopes figure prominently in both the catoptrics and dioptrics sections of popular science texts at the time), in terms of the sites depicted, and in terms of the group of sites as a whole.

It is in this last respect, as items making up a visual collection, that the final piece of the puzzle allowing zograscope views to generate an understanding of polite public space falls into place. By compiling and dividing into individual views a theoretically finite number of polite public spaces in Western Europe, each in the same horizontal format on a half-sheet of paper, a set of zograscope views was a collection of like things. Devoid of the sentimental properties of a souvenir, except in rare cases where the observer did happen to have purchased the print when visiting the site depicted, they could be arranged and rearranged to create something new.⁵³ Zograscope views were examples of the kind of space one ought to know about, divided up into equivalent units for ease of understand-

ing and integrated by the observer into a whole. Unlike souvenirs, where the gaps between the objects that make up the “story” are filled in by the individual’s particular memories, thoughts, and desires, the emptiness of the gaps between zograscope views were integral to the experience. They encouraged the observer to perceive the prints with the discreteness and detachment of politeness instead of as a seamless narrative.

Conclusion

In theory, constructing knowledge of space by emptying places of previous associations, then filling the resulting empty space with new values, will create a new place.⁵⁴ In practice, polite space would always exhibit a tension between abstract ideals and actual human impulses.⁵⁵ A writer in the *World* (19 December 1754) pointed out with tongue-in-cheek pragmatism, “It is not virtue that constitutes the politeness of a nation, but the art of reducing vice to a system that does not shock society.” Specifically, certain aspects of the world had to be concealed in order for polite society to function. Zograscope views provided a model for this concealment by supplying polite society with new mappings of space. They masked the individually specific experiences each person had of a place in order to provide the illusion that there was one proper, detached, way of experiencing space. They showed what kind of identity (of the many any one person has) was appropriate in public: one that denied the immediacy and physicality of the body, the actuality of sore feet while walking, of having to watch for traffic when crossing the street, of losing one’s way. Conventional maps, which do a good job of showing a territory as a single bounded entity, would be of little use to a community that does not exist within territorial boundaries. Polite society needed a different kind of map, one that set out and unified the *kind* of space involved. In accord with the needs of modern society, this space appeared as an absolute structure that individuals could (ideally) understand in the same way.⁵⁶ More insidiously, perhaps, zograscope views naturalized the idea that the domestic world (the space of the viewing) and the public world (the space of the view) were related, but separate. In order for the political public sphere described by Habermas to develop out of the bourgeois public sphere, it was necessary that the separation be absolute and gendered, a change of mindset that the zograscope facilitated.

Zograscope are sometimes portrayed as precursors of the cinema and television, in that they presented an illusionistic image of one space to observers in another space.⁵⁷ In a technological sense, this is undoubtedly true. It is also true of many later zograscope images. However, unlike conventional cinema and television, nothing obviously *happens*

in English zograscope views circa 1750. The three-dimensional illusion of space and the limited subject matter, not an internal narrative, create the experience. In this experience, certain spaces are real-but-not-real, close at hand but at a distance, lifelike but without the personal identification and emotion that bring plays and novels, as well as cinema and television, to life.

Considering early zograscope views as part of cinema history also presumes that the zograscope view continued to develop along the same lines until eventually being replaced by a newer and better virtual reality device. In England, at least, this was not the case. After the 1750s, zograscope views suddenly disappeared from newspaper advertisements. The *Universal Magazine* made no more mention of them. The *Gentleman's Magazine* stopped promoting them. The *Copper Plate Magazine* (which issued numerous prints whose titles began "Perspective View of . . ." between 1774 and 1778) ignored them completely. When the *Gentleman's Magazine* for August 1765 included a view of Vauxhall Gardens almost identical to one published as a full-sized zograscope view in 1751 or 1752, the magazine's title page called it "a beautiful Perspective view" of the garden, "elegantly engraved on Copper."⁵⁸ Had this plate appeared in the magazine fifteen years earlier, its suitability "for the Concave Mirror or optical Machine," the formula given for perspective views in title pages from 1749 through 1751, would have been highlighted, not its beauty and elegance. Many people who owned zograscope views apparently continued to color the later *Gentleman's Magazine* plates for the devices on their own initiative,⁵⁹ but the magazine had changed its editorial mien (always geared toward people who wished to be considered Gentlefolk) toward fine art aesthetics when publishing view prints.

Fashions in any age only last so long, and five or ten years of attention for the same kind of images in newspapers and magazines is quite a feat at a time of increasingly rapid change. The taste for "sentiment" that in some sense succeeded "politeness" happened to be incompatible with zograscope viewing, and although some publishers added sentimental genre scenes and landscapes to their catalogs of zograscope prints, the interposition of a viewing device between observer and image opposed the intimacy demanded by connoisseurs of sentiment. The needs of polite society had changed. Publisher John Boydell turned away from zograscope views completely after mid-century, intending instead to elevate the tone of English print culture with "Designs in Genteel Life" in emulation of French prints.⁶⁰ Ironically, he had to turn from a native English genre to a French one in order to promote national pride, thanks to changing ideas about what counted as cultural achievement. Britain remained known for precision scientific instruments, but the link between optical instruments and images no longer had a cultural cachet.⁶¹

Although Robert Wilkinson carried much of John Bowles's stock of zograscope views on into the nineteenth century, often publishing them jointly with the firm of Bowles and Carver (successors to Carington Bowles, who had succeeded Thomas Bowles), Bowles and Carver's 1795 catalog indicates that they added very few prints to their zograscope repertoire. Robert Laurie and James Whittle, successors to Robert Sayer, and in turn their successor, Richard Holmes Laurie (Robert's son), did add some new zograscope views, notably sentimental genre scenes, specific episodes from the Napoleonic Wars, and classical landscapes. Five zograscope prints under the heading "Landscapes" appeared in Laurie and Whittle's 1795 catalog: "The Travellers," "The Fowlers," "A Conversation," "Rural Pleasure," and "Wreeken Hill, Shropshire."⁶² These five appeared as a group again in the 1824 catalog, along with two more: "Plundering Country Pheasants" and "Summer, Figures with a Cascade from Watteau."⁶³ Other new zograscope scenes in 1824 included "The Italian Fisherman," "The Judgement of Midas," "Returning from Market," "The Journey," and "The Repose." And although the generic scenes of Paris engraved before 1750 reappeared, now they were joined by prints like "The entrance of his Majesty Louis XVIII into Paris, 3d May, 1814." No longer mappings of polite public space, these new zograscope views (with the exception of "Wreeken Hill, Shropshire") had narrative, not space, at their core.

Other zograscope prints departed from the mapping of space in a different direction, favoring high art landscape (but not high art virtuoso engraving technique) rather than narrative genre. Some time after 1824, Laurie added picturesque views of the Lake District to his catalog of zograscope prints, plus a group of "Twelve very Pleasing Landscapes" after paintings from the seventeenth and eighteenth centuries. Prints after these paintings would have been available for use in 1750, but their picturesque subject matter made them inconceivable as zograscope views then.

New forms of virtual reality experiences arose toward the end of the eighteenth century, ones with very different relationships to public and private space than zograscopes had. In 1787, Robert Barker patented what soon became known as the "panorama," a life-size wrap-around painted scene with the perspective calculated to make paying visitors feel they were seeing the real thing.⁶⁴ Such spectacles served as a form of public entertainment, something vastly different from the private, protected viewing space of the zograscope. Likewise, from 1820 the Cosmorama—a permanent exhibition room with individual oil paintings exhibited behind a series of zograscope lenses set into a wall—became a public destination.⁶⁵ The pictures spanned a range of subjects, related only by the observer's movement from one to the next. Special lighting effects added fire,

gloom, or sunshine to the scenes. This emphasis on variety, sensationalism, and physical movement contrasted with mid-eighteenth-century zograscope, where the experience involved seeing the same kinds of polite spaces over and over while seated or standing in someone's home. The optical principles might have been the same. The experience of space was not.

Panoramas, Cosmoramas, Dioramas, Physioramas . . . the list of public spectacles whose illusion consisted of imagining oneself to be looking into real space could go on right up to the cinema, bringing in small-scale nineteenth-century persistence of vision devices like the zoetrope, phenakistiscope, and praxinoscope along the way. The point here, though, has not been to place zograscope views into a seamless chronology of new media. It has been to describe the very particular role of zograscope in England in the years around 1750. When stereoscopes came to public attention in the middle of the nineteenth century (see chapter 5) they encompassed a new vision, one that included empire and world trade.

Notes

1. "Thut man aber in das Sehe-Loch ein ander *vitrum convexum*, so etwan einen solchen *radium* hat, als das Loch von dem *opposito albo* stehet, so sieht man die *objecta*, also vorher gedacht, wie sie von *ausseen libero oculo* vorkommen, in der Weite, Breite, Kündung, und Distantz. Ist ein neues *inventum*, welches auch in der *obscura camera* zu gebrauchen," Johann Christoph Kohlhans, *Neu-erfundene mathematische und optische Curiositäten* (Leipzig, 1677), 295. William Molyneux, *Dioptrica Nova* (London, 1692). This chapter is based on my doctoral dissertation, *Zograscope, Perspective Prints, and the Mapping of Polite Space in Mid-Eighteenth-Century England*, Stanford University, Department of Art and Art History, April 2000.

2. Most zograscope prints measure approximately 11 × 17 inches, although those published by the *Gentleman's Magazine* were considerably smaller. Contemporaries agreed that the prints had to be "properly coloured" for viewing with the device. In practice, this meant outdoor scenes with a predominance of blue, green, and brownish-yellow, with a bright blue sky fading to pink, and touches of red and bright yellow here and there. Indoor scenes limited intense color to drapery and a few architectural details, with only a pale wash elsewhere.

3. Zograscope were also used in other countries in the eighteenth and nineteenth centuries, notably Continental Europe, the United States and Japan. This chapter addresses the particular story of polite society in England circa 1750, and one of my assumptions is that zograscope possessed different implications for different viewers, in other times, and other places.

4. See Shojiro Nagata, "How to reinforce perception of depth in single two-dimensional pictures," in *Pictorial Communication in Virtual and Real Environments*, ed. Stephen R. Ellis, Mary Kaiser,

and Arthur J. Grunwald (London and Washington: Taylor and Francis, 1993), 527–545; Harold Schlosberg, “Stereoscopic Depth from Single Pictures,” *American Journal of Psychology* 54, no. 4 (October 1941): 601–605; Alfred Schwartz, “Stereoscopic Perception with Single Pictures,” *Optical Spectra*, September 1971, 25–27.

5. William Emerson, *Perspective: or, the Art of drawing the Representations of all Objects upon a Plane* (London: 1768), iv–v; Henrietta Knight, *Letters Written by The Late Right Honourable Lady Luxborough, to William Shenstone, Esq.* (London, 1775), 18 [in a letter dated 1748].

6. Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, Mass.: MIT Press, 1990). In order to fit the zograscope in with the type of evidence Crary uses, it should be added that although the zograscope was known at the time to produce a virtual image at least in part through binocular stereoscopy, the essential nature of this image was not a subject for discussion, and when stereoscopes eventually did come about, they were never described as perfected zograscopes. Even David Brewster’s 1856 history of the stereoscope, which goes back to Euclid on binocular vision, does not mention the zograscope.

7. David H. Solkin, *Painting for Money: The Visual Arts and the Public Sphere in Eighteenth-Century England* (New Haven: Yale University Press, 1993); Dena Goodman, *The Republic of Letters: A Cultural History of the French Enlightenment* (Ithaca: Cornell University Press, 1994); Ann Bermingham and John Brewer, eds. *The Consumption of Culture, 1600–1800* (New York: Routledge, 1995).

8. Jürgen Habermas, *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*, ed. Thomas McCarthy, trans. Thomas Burger with assistance of Frederick Lawrence (Cambridge: MIT Press, 1989).

9. For “politeness” as a way of life, see Paul Langford, *A Polite and Commercial People: England 1727–1783*, ed. J. M. Roberts (Oxford: Clarendon Press, 1989), and John Brewer, *The Pleasures of the Imagination: English Culture in the Eighteenth Century* (New York: Farrar, Straus, Giroux, 1997).

10. Josef W. Konvitz, “The nation-state, Paris and cartography in eighteenth- and nineteenth-century France,” *Journal of Historical Geography* 16, no. 1 (1990): 3–16; Miles Ogborn, *Spaces of Modernity: London’s Geographies, 1670–1780* (New York and London: The Guilford Press, 1998).

11. *Public Advertiser*, 27 February 1754.

12. *St. James’s Evening Post*, 2–4 April 1747; *General Advertiser*, 19 January 1748.

13. The earlier date proposed by C. J. Kaldenbach, “Perspective Views,” *Print Quarterly* 2 (1985): 86–104, comes from a misunderstanding of the term “perspective view.”

14. *Two Hundred and Six Perspective Views Adapted to the Diagonal Mirrour, or Optical Pillar Machine*. London, 1753.

15. John Stow, *A Survey of the Cities of London and Westminster, and the Borough of Southwark*, 6th ed., 2 vols. (London, 1754, 1755).

16. *London Evening-Post*, 22–24 January 1751.
17. Timothy Clayton, *The English Print, 1688–1802* (New Haven and London: Yale University Press for The Paul Mellon Centre for Studies in British Art, 1997), 157–161.
18. Benjamin Martin, *A New and Compendious System of Optics, in Three Parts* (London, 1740), 290–291.
19. From a study of the British Library’s Burney Collection. This is the number of titles, not the number of advertisements; only the first occurrence of each advertisement was used to tally the totals. Small-sized zograscope views are not included.
20. For instance, “Galerie des Glaces,” illustrated in *Les Vues d’optique*, exhibition catalog, Chalon-sur-Saône, Musée Nicéphore Niépce, 10 December 1993–March 1994.
21. John Bowles and Son, *Catalogue of Maps, Prints, Copy-Books, &c.* (London, 1753).
22. The Bucks’ “Principal Series of Town Prospects,” executed between 1728 and 1753, consists of 83 sheets: 73 of provincial cities (6 are shown twice), 8 of London and environs, and 2 of St. Michael’s Mount, Cornwall. See Ralph Hyde, *A Prospect of Britain: The Town Panoramas of Samuel and Nathaniel Buck* (London: Pavilion, 1994).
23. Rosemary Sweet, *The Writing of Urban Histories in Eighteenth-Century England* (Oxford: Clarendon, 1997).
24. *General Advertiser*, 20 February 1749.
25. The exception is a set of six prints entitled *The Manner of besieging a Town*, which was sometimes advertised for use with a zograscope, sometimes not. Thomas and John Bowles do not identify the town in their advertisements, but Robert Sayer says it is Barcelona.
26. Penelope J. Corfield, “Walking the City Streets: The Urban Odyssey in Eighteenth-Century England,” *Journal of Urban History* 16, no. 2 (February 1990): 148.
27. In the sense that I use the words *public* and *private* in reference to place and space, I do not mean to evoke specific rights and responsibilities of citizens or the administrative state. I also do not mean interiority versus relations with other people. Public and private here simply refer to different arenas of sociability for polite society. Nondomestic social spaces like streets, parks, and churches are considered “public.” Domestic social spaces such as the drawing room and the library are considered “private.”
28. Langford, *A Polite and Commercial People*, 65; Alison Adburgham, *Women in Print: Writing Women and Women’s magazines From the Restoration to the Accession of Victoria* (London: George Allen and Unwin, 1972), 79.
29. Robert Sayer, *Robert Sayer’s New and Enlarged Catalogue* (London, 1766).
30. For example, John Bowles, *Catalogue of Maps, Prints, Copy-Books, &c.* (1768), 166.

31. Langford, *A Polite and Commercial People*, and Tom Williamson, *Polite Landscapes: Gardens and Society in Eighteenth-Century England* (Baltimore: The Johns Hopkins University Press, 1995).
32. Denis Cosgrove, "Introduction: Mapping Meaning," in *Mappings*, ed. Denis Cosgrove, Critical Views (London: Reaktion Books, 1999), 1, 9, 17.
33. Habermas, *Structural Transformation of the Public Sphere*; Richard Sennett, *The Fall of Public Man* (New York: Norton, 1976); Langford, *A Polite and Commercial People*.
34. Habermas, *Structural Transformation of the Public Sphere*, 36–37.
35. *Ibid.*, 51.
36. Solkin, *Painting for Money*, especially chapters 3 through 5.
37. For a critique of Habermas's emphasis on readers and speakers rather than, for instance, performers or spectators, see 117–137; and Joan B. Landes, "The Public and the Private Sphere: A Feminist Reconsideration," in *Feminists Read Habermas*, ed. Johanna Meehan (New York: Routledge, 1995), 100–101.
38. David Harvey, *Justice, Nature and the Geography of Difference* (Oxford: Blackwell, 1996), 112.
39. Ogborn, *Spaces of Modernity*, 109.
40. Walter D. Mignolo, *The Darker Side of the Renaissance: Literacy, Territoriality, and Colonization* (Ann Arbor: The University of Michigan Press, 1995), 227.
41. The argument for maps as knowledge construction as opposed to knowledge transfer comes from Alan MacEachren, *How Maps Work: Representation, Visualization, and Design* (New York: Guilford, 1995), as cited in Jeremy Black, *Maps and Politics* (Chicago: University of Chicago Press, 1997).
42. Jürgen Habermas, *L'espace public: archéologie de la publicité comme dimension constitutive de la société bourgeoise*, ed. Miguel Abensour, trans. Marc B. de Launay (Paris: Payot, 1986).
43. Cf. "spatial" and "spacieux" in *Le Grand Robert*, and "spatial" and "spacious" in the *Oxford English Dictionary*. *Spacieux* no longer has the indefinite, abstract meaning it once did in French, and still does in English. ("Spacieux ne se dit plus guère d'un espace libre, de la mer . . . , du monde." [sic ellipsis], *Le Grand Robert*, 2d ed., s.v. "spacieux").
44. Harvey, *Justice, Nature and the Geography of Difference*.
45. "Essentials of Politeness or Good-breeding," *Scots Magazine* 3 (December 1741): 554–556.
46. Michel de Certeau, *The Practice of Everyday Life*, trans. Steven Rendall (Berkeley: University of California Press, 1984), 117.
47. *Ibid.*, 118ff.
48. *The General Advertiser*, 27 May 1749.

49. For the difference between public and private spectacle, see Barbara Maria Stafford, “‘Fantastic’ Images: From Unenlightening to Enlightening ‘Appearances’ Meant to Be Seen in the Dark,” in *Aesthetic Illusion: Theoretical and Historical Approaches*, ed. Frederick Burwick and Walter Pape (Berlin and New York: Walter de Gruyter, 1990), 176.
50. Knight, *Letters . . . by Lady Luxborough*, 18.
51. Martin, *New and Compendious System of Optic*, 290.
52. Gilles Deleuze, “The Simulacrum and Ancient Philosophy,” in *The Logic of Sense*, ed. Constantin V. Boundas (New York: Columbia University Press, 1990), 263; first published 1967.
53. Susan Stewart, *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection* (Durham: Duke University Press, 1993), 152.
54. Yi-Fu Tuan, *Space and Place: The Perspective of Experience* (Minneapolis: University of Minnesota Press, 1977), 6.
55. John Brewer, “‘The most polite age and the most vicious’: Attitudes towards culture as a commodity, 1660–1800,” in *The Consumption of Culture, 1600–1800*, ed. Ann Bermingham and John Brewer (London: Routledge, 1995), 341.
56. For a description of modern Western capitalist space, see Harvey, *Justice, Nature and the Geography of Difference*, 224.
57. For example, Olive Cook, *Movement in Two Dimensions* (London: Hutchinson, 1963); C. W. Ceram, *Archaeology of the Cinema*, trans. Richard Winston (London: Thames and Hudson, 1965); John Barnes, *Barnes Museum of Cinematography, Catalogue of the Collection, Part One, Precursors of the Cinema* (Saint Ives, Cornwall: Barnes Museum of Cinematography, 1967); Paul Genard, *Cinema d’où viens-tu? Évolution d’une technique . . . naissance d’un art* (Lyon: Centre regional de recherche et de documentation pédagogiques de Lyon, 1975); Maria Adriana Prolo and Luigi Carluccio, *Il Museo Nazionale del Cinema, Torino* (Turin: Cassa di Risparmio di Torino, 1978); *Prima del cinema: Le Lanterne Magiche, La collezione Minici Zotti*, exhibition catalog, Venice, Pedrocchi, 26 March–26 June 1988; Carlo Alberto Zotti Minici, *Il Mondo Nuovo: Le meraviglie della visione dal ‘700 alla nascita del cinema* (Milan: Mazzotta, 1988); Hermann Hecht, *Pre-Cinema History: An Encyclopaedia and Annotated Bibliography of the Moving Image Before 1896* (London: Bouwker Saur in association with the British Film Institute, 1993); *Les Vues d’optique* (Chalon-sur-Saône: Musée Nicéphore Niépce, 1993).
58. *Gentleman’s Magazine* 35 (August 1765).
59. *A Complete List of the Plates and Wood-Cuts in the Gentleman’s Magazine* (London, 1821) says of the Vauxhall plate “many . . . were taken from the Magazines to be put into Optical Machines; and are therefore become scarce” (vii).
60. *Public Advertiser*, Numb. 6342. Tuesday, February 25, 1755.
61. See Barbara Maria Stafford, *Artful Science: enlightenment entertainment and the eclipse of visual education* (Cambridge: MIT Press, 1994).

62. *Laurie and Whittle's Catalogue of New and Interesting Prints . . .* (London: Robert Laurie and James Whittle, 1795).
63. Richard Holmes Laurie, *Catalogue of Perspective Views, Coloured for the Shew Glass, or Diagonal Mirror* (London: R. H. Laurie, 1824).
64. Ralph Hyde, *Panoromania: The Art and Entertainment of the "All-Embracing" View*, exhibition catalog, London, Barbican Art Gallery, 3 November 1988–15 January 1989, 45.
65. Richard Daniel Altick, *The Shows of London* (Cambridge: Belknap, 1978), 211–214.

