

Performance in Greek and Roman Theatre

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SKENOGRAPHIA IN BRIEF*

Jocelyn Penny Small

From its two root words, *skēn-* and *graph-*, *skēnographia* literally means “scene painting”, which reflected its earliest use. We know that in the first century BC Vitruvius used it in a context which scholars sometimes translate as “perspective”. It remains hotly debated whether the “perspective” described by Vitruvius is what we call “linear perspective”.¹ It also is unclear what the nature of *skēnographia* was at the time of its birth in the fifth century BCE and where precisely it was placed on the *skēnē* or “stage building”. The textual sources are few and widely scattered in date and no uncontested material remains of *skēnographia* exist to supplement that information.

I begin chronologically with our earliest mention of *skēnographia* in the fourth century BCE. Aristotle (*Poetics* 1449a18) says: “Three actors and *skēnographia* with Sophocles.”² That places the beginning of *skēnographia*

* This essay is a very much abbreviated discussion of *skēnographia* from my project on optics and illusionism in classical art. It has much fuller arguments than I am able to present here. I am grateful to the two editors, George W.M. Harrison and Vayos Liapis, for their unstinting support. It is with deep gratitude that I thank T.E. Rihll and Susan Woodford for their comments and suggestions. All URLs were accessed in January 2011.

¹ Definitions of “linear perspective”—from informal to obtuse—exist. “Linear perspective” may informally be defined as a system of depiction that follows geometric rules to convert a three-dimensional scene to two-dimensions and that reflects “what we see” rather than “what really is”. More formal definitions refer to horizon lines and picture planes among other aspects. The “classic” example of linear perspective, taught to most every American school child, shows a road or railroad tracks receding into the distance with the two sides gradually converging on a single vanishing point, even though in reality the two sides are parallel and therefore cannot meet. Moreover, linear perspective applies not only to physical aspects of the setting, but also to every element within a scene including the figures. For a technical treatment, see Willats 1997, especially Chapter Two (“Projection Systems”). For a consideration of the philosophical aspects, including Damisch and Lacan, see Iversen 2005. For the history of linear perspective, see Veltman 2004, especially 82–92 for antiquity. Finally, gargantuan is the only word to describe the amount of scholarship on linear perspective; whereas that on *skēnographia* is merely huge. I make no attempt to be complete even for recent references.

² My translation. Pollitt (1974) 236–240 provides the best compilation of the literary references in the original Greek and Latin with translations, as well as discussion. Also good on the textual tradition is Camerota 2002. Beer (2004) 26–29 suggests that *skēnographia* is not literally “scene-painting” but rather a verbal description of the setting. He can maintain

in the fifth century BCE.³ Other later sources (Vitruvius 7, praef. 11) agree on the date in the fifth century BCE, but substitute Aeschylus for Sophocles.

The next citation comes from Polybius in the second century BCE who paraphrases Timaeus: “To glorify history he [Timaeus] says that the difference between it and declamatory writing is as great as that between real buildings and structures [τὰ κατ’ ἀλήθειαν ὠκοδομημένα καὶ κατεσκευασμένα] and the appearances of places and compositions [διαθέσεων] in skenographia.”⁴ κατεσκευασμένα is sometimes translated as “furniture” and other times as “structures”, which I prefer.⁵ Most movable furniture could well have been “real” and just placed “on” stage. It would not need to be painted. The “structures” could then refer to things that are large and cumbersome like buildings and hence good candidates for facsimiles rather than the real thing. Next, Pollitt translates διαθέσεων as “subjects” rather than “compositions” like other translators. Neither choice is entirely satisfactory. Nor do Aristotle, Timaeus, and Polybius tell us precisely what skenographia is.

Our next citation chronologically comes from Strabo in the first century BCE who (5.3.8 [236C]) likens the Campus Martius with its monuments to a “skenographia”: “And the works which are located throughout the area and the land itself ... and the brows of the hills which, in rising above the river and reaching up to its channel, present to the sight a scene painting [σκηνογραφικὴν ὄψιν ἐπιδεικνύμεναι]—all these provide a view which it is difficult to ignore.”⁶ Strabo uses skenographia, in modern terms, as a painted backdrop with a landscape dotted with buildings.

Vitruvius at the end of the first century BCE is one of our fullest and most problematic sources. He says (1.2.2):

that erroneous interpretation only by ignoring the later textual evidence. For an excellent discussion of the classical antecedents for this passage and Vitruvius 1.2.2 (to be discussed shortly below), see Gros 2008. Senseney (2011) provides good summaries of some of the issues associated with skenographia, but his belief that the Greeks must have used linear perspective in designing their buildings skews his discussion. Finally, for a thorough review of the texts and the issues involved, see Rouveret (1989) 65–127.

³ Some scholars think that the line is a later interpolation and not Aristotelian. Brown (1984) credits G.F. Else (in 14 n. 2) with first suggesting this idea. Against whom, see Ley 1989.

⁴ The Greek of the last part of this sentence is important: “ἡλίκιη ἔχει τὰ κατ’ ἀλήθειαν ὠκοδομημένα καὶ κατεσκευασμένα τῶν ἐν ταῖς σκηνογραφίαις φαινομένων τόπων καὶ διαθέσεων”. Polybius 12.28a 1.4–2.1. My translation.

⁵ LCL [W.R. Paton] and Scott-Kilvert for “furniture” and Pollitt (1974) 236 No. 2 as “structures”.

⁶ Translation from Pollitt (1974) 236 No. 3.

The species of design [*dispositio*] ... are these: **ichnography** (plan), **orthography** (elevation), and **scenography**. **Ichnography** is the skillful use, to scale, of compass and rule, by means of which the on-site layout of the design is achieved. Next, **orthography** is a frontal image, one drawn to scale, rendered according to the layout for the future work. As for **scenography**, it is the shaded rendering [*adumbratio*] of the front and the receding sides as the latter converge on a point.⁷

The passage crucially says nothing about the theater and its stage. Vitruvius considers skenographia as divorced from the theater and an independent form of “design”, *dispositio* in Latin, which the *OLD* defines as “spatial arrangement, layout, formation”.⁸ Skenographia is one of the three kinds of drawing that an architect must master. An architect has to be able to do a ground plan, a two-dimensional elevation presumably of the four “sides” of a rectangular building (and significant sections of a round building, such as the entrance as well as the “back”), and a skenographia. Unlike some earlier translators, Rowland has carefully avoided the use of the word “perspective”.⁹ She has translated *adumbratio* as “shaded rendering”, a literal interpretation of the word rather than the freer “sketch, outline” also given in the *OLD*. White stresses this aspect of *adumbratio*, when he translates the passage more literally as: “scenography is the sketching of the front and of the retreating sides and the correspondence (convergence) of all the lines to the point of the compasses (centre of a circle).”¹⁰ He too has avoided using the word “perspective”, but, again, like Rowland has the sides converging on a point—an arrangement that is inextricably linked in our post-Renaissance minds as a form of linear perspective.

Vitruvius (7, praef. 11) appears later to add to his discussion of skenographia. In my literal translation:

For, first, Agatharcus made a stage-building [*scaena*] in Athens when Aeschylus was producing a tragedy, and he [Agatharcus] left a commentary about it. Democritus and Anaxagoras, learned from it and in turn wrote about the same

⁷ Translation from Rowland and Howe (1999) 24–25. Words are bolded as they are in the translation. Instead of “to scale”, *modice* should be translated as “regular [use]”.

⁸ *OLD* 555 s.v. **dispositio** [a]. The other two usages refer to rhetoric (“arrangement of arguments, words, etc.”) and “living” (“the orderly arrangement or disposition of time, activities, etc.”). Vayos Liapis (personal communication) suggests that *διάθεσις*, as the Greek equivalent of *dispositio*, could be translated similarly in the Polybius (12.28a 1.4–2.1) passage quoted above as “design”. The idea has much merit, but also entails problems, because Polybius implies that *διάθεσις* is a part of skenographia; whereas Vitruvius reverses that relationship by making skenographia one of three elements that comprise *dispositio*.

⁹ For example, Morgan 1960.

¹⁰ White (1956) 51.

subject [*res*], that is in what way lines should respond in a natural relation [*ratio naturalis*] to the point [*acies*] of the eyes and the extension of the rays [*radii*] once a fixed [*certus*] place [*locus*] has been established as the center, in order that from a fixed position [*res*] the images of buildings in the paintings of the stage-buildings [*imagines aedificiorum in scaenarum picturis*] reproduce an appearance [*species*] with some [lines] seen extending [*prominentia*] and others receding when painted on the vertical [*directus*] planes and fronts [of the stage-building/scaena].

In contrast to the previous passage where the theater goes unmentioned, here Vitruvius speaks only about the theater and optics with no mention of architectural drawings of any kind. He does not use the term “skenographia”, but the more literal description of “images of buildings in the paintings of the stage-buildings”. The context is important. Vitruvius began Book 7 (“Finishing”) with a discussion of the treatises written before his time in part to credit his predecessors. Hence when Vitruvius who, like me, is working chronologically through the sources, comes to the fifth century BCE, he refers to Agatharcus and the fact that Agatharcus influenced the philosophers Democritus and Anaxagoras. Vitruvius is not concerned here with architectural plans for *real* buildings. Instead he wants to stress how one person influences another.

In other words, the earlier passage (1.2.2) describes the tools the contemporary architect needs. The later passage acknowledges Vitruvius’ debt to his predecessors. It is not at all clear that the word “skenographia” existed in the fifth century BCE. Our earliest citation is by Aristotle in the following century. Furthermore, Agatharcus was a painter and it is his painting that drew the attention of the two philosophers. The usefulness of that kind of depiction for architects was not yet apparent. Most important of all Vitruvius uses the word “*scaenographia*” only in 1.2.2.¹¹ Nor does he elsewhere refer to its two companions, *ichnographia* and *orthographia*. In other words, Vitruvius considers *skenographia* solely as a type of technical architectural drawing, and once he has finished the discussion of such drawings, he has no need to refer to any of them later. Hence when Vitruvius (5.6.8) discusses the three different kinds of setting for the theater, he does *not* use the word “*skenographia*” but rather describes the decoration of the *scaena*. Similarly,

¹¹ Vitruvius does refer to the *scaenae frons* [“front of the stage building”] in several passages, all of which deal with the construction of the theater itself except for one (5.6.8–9) that concerns its decoration. This passage, as is to be expected, presents its own problems. It does not deal with the form of the decoration but just the choice of subject and its placement on *periaktoi*, another enigmatic element discussed briefly below.

Pliny (*Natural History* 35.37 (113)) maintains the same distinction when he mentions “Serapio [who] painted stages [*scaenae*] well, but could not paint a person.”¹²

The bifurcation of the meaning of *skenographia* continues in the later sources. The use of “perspective” today in the context of art provides a good analogy. Art historians are very careful to define what they mean by “perspective”; whereas the general populace generally means “linear perspective” when they use “perspective” alone. Both uses coexist contemporaneously. Similarly, *skenographia* continues to refer to painted settings (or more literally “scene painting”) in later sources.¹³ Nor does its meaning remain fixed, for in the fifth century AD Hesychius (s.v.σκιά) considers *skenographia* a synonym of *skiagraphia*, loosely translated as “shading” or “shadows”.¹⁴

At this point our discussion becomes two-pronged. First, what was *skenographia* in its connection to the theater; and, second, has Vitruvius described linear perspective?

Scholars divide into two major groups: those who believe in elaborate painted sets and those who espouse minimalist decoration.¹⁵ Both face one insurmountable problem: no tangible evidence. Theaters in the fifth century BCE were temporary structures made of wood. Except for a central entrance most of the plays could make do with virtually no setting beyond that embedded in the plays themselves. For example, the *Agamemnon* opens:

I ask the gods some respite from the weariness
of this watchtime measured by years I lie awake
elbowed upon the Atreidae’s roof dogwise to mark
the grand processions of all the stars of night.¹⁶

We immediately know who is speaking, the watchman, and where he is, the palace of *Agamemnon*.

¹² My translation.

¹³ As “scene painting”, see: Plutarch, *Life of Aratus* 15.2 = Pollitt (1974) 237 No. 5; Sextus Empiricus, *Against the Mathematicians* 7.88 = Pollitt (1974) 237 No. 6; Heliodorus 7.7.7 = Pollitt (1974) 237 No. 7; Heliodorus 10.38.3 = Pollitt (1974) 238 No. 8; and Diogenes Laertius 2.125 = Pollitt (1974) 238 No. 9.

¹⁴ Pollitt (1974) 238 No. 10. *Skiagraphia* presents its own problems, which cannot be addressed here. Pollitt’s main discussion of *skiagraphia* follows on 247–254. Summers (2007) discusses the entanglement of the two terms in his first chapter (16–42).

¹⁵ For incredible fantastical reconstructions of the sets for various plays, see Bulle and Wirsing 1950. For the minimalist view, see Pickard-Cambridge (1946) who discusses the “scenery” period by period and remains an invaluable source.

¹⁶ Aeschylus, *Agamemnon*, 1–4. Translation from Lattimore 1953.

Once permanent stone theaters appeared in the fourth century BCE, the problems of indicating setting actually increase. If one erects a temporary theater, it can be adapted to suit the plays being staged. If one, however, has a permanent theater, certain aspects become fixed. The most important difference between classical and contemporary theaters generally goes unremarked. Today we are accustomed to bare stages with easily changeable, movable flats, scrims, and, indeed, whole built settings of rooms, buildings, outdoor scenes, etc. The evidence from permanent Roman stone theaters indicates that the Romans, and probably the Greeks, were content with one permanent backdrop whose only requirement was three entrances with the central one being the most important. These permanent backdrops could not be easily hidden or camouflaged. Furthermore, it is not likely that a long-standing tradition of elaborate sets adapted to individual plays would be replaced by a one-scene-fits-all setting. Consider how in the twentieth century we became increasingly discerning in what we required for sets in movies, television, and, of course, stage productions. I think that classical “sets” were always rudimentary by our standards.

In the fifth century BCE the most obvious place for *skenographia* would be on the stage-building (*skēnē*), as implied in the word. Nonetheless, it still is not clear where the paintings would go. If the building had any entrances, then presumably the *skenographia* could go between and/or above them. The Hellenistic theater gets a low stage with a “formal” stage building. From the Hellenistic evidence, both inscriptions and actual remains, openings, called *thyromata*, could be filled with *pinakes*, which presumably could be changed.¹⁷ The *pinakes* could be installed in two places: the *episkenion* with large openings above the *logeion* or stage itself and the *proskenion*, between the front edge of the stage and the “floor” of the orchestra, with smaller openings than in the *episkenion*. A cement pinax decorated with a wooden door has survived from Priene.¹⁸ Bieber suggests that curtains, *siparia*, positioned above the *thyromata*, could be dropped to cover inappropriate pinakes and cites a Roman marble relief from Castel San Elia with separate curtains for each opening/*thyroma* neatly gathered at the top.¹⁹

¹⁷ Csapo and Slater (1994) 434 s.v. *thyroma*. Bieber (1961) 111–112 with figs. 423–425 (theater at Priene) and 120–125 with figs. 426–429 (theater at Oropus). Bieber remains remarkably useful for her broad discussion and extensive illustrations.

¹⁸ Bieber (1961) 123 with n. 54.

¹⁹ Bieber (1961) 180 with fig. 629, a marble relief from Castel San Elia with a theatrical scene above with *siparia* gathered between low columns. Another example of the use of a curtain to hide a portion of the *scaenae frons* is the relief with the putative periactus discussed below.

By the end of the first century BCE most Roman theaters were no longer temporary wooden structures, but had a multi-storey *scaenae frons* that is embellished throughout with columns. While this facade provides the “required” three entrances, it also provides no obvious place for skenographia, that is for decorated “flats” of whatever nature. For a specific well-preserved example, consider the Theater at Orange whose theater building has largely survived.²⁰

The Romans, and probably the Greeks, seem to have gotten around the limitation with the use of *periacti* (*periaktoi*)—a three-sided device that could be rotated to display one of three possible settings (city, country, and satyr-play/cave). As the scene changed, someone would turn the device to the appropriate scene.²¹ (*Figure 1*) Viewers who can live with such a simple signal of location are not terribly demanding. Unfortunately not only has no *periactus* survived, but also scholars do not agree about the placement of the *periacti*, how many there were, or even if they existed in the fifth century BCE.²² It is assumed that skenographia would have been used to decorate the *periacti*. In other words, we have another tantalizing reference that tells us nothing about what skenographia actually was or looked like.

We now turn to the second prong: how should Vitruvius 1.2.2 be interpreted? Two relatively lengthy passages expand on Vitruvius’ citation. The

²⁰ Sear (2006) 245–247 s.v. Arausio and especially pl. 67. Sear (2006) is the best compendium of Roman theaters with a catalogue of extant theaters, their plans, and photographs, as well as an excellent introduction to their architecture and workings.

²¹ Vitruvius 5.6.8.

²² Pickard-Cambridge (1946) 126 is against their use in the fifth century BCE. Morgan (1960, 147 plan = “deltas” in circles) puts three on each side, for which see *Figure 1*. Rowland and Howe ((1999) 247 fig. 83 top) have two, but within doorways. Sear (2006) 8 has one at each end and says that one has survived at the theater in Lyon (236 s.v. “Hyposcaenium”): “At south end an inclined platform for the machines (cf. Arausio [theater at Orange].)” So if this is a *periactus*, only the mechanism for its turning would seem to have survived. Schnörer (2002) 69 figs. 80–82 places three together in a large opening whose placement is not clear. Wiles ((1991), 42–44; pl. 3) suggests that a Roman relief shows a *periactus*, but his argument is not compelling: “the broken line and dizzy angles suggest that we are actually looking at a sculptor’s rendering of a *trompe l’oeil* scene painting set on a *periaktos* that is not quite flush. This city scene is covered by a curtain, probably because its grandeur belongs to tragedy. Faintly behind the curtains, we can trace the line of the pediment on which the *periaktos* rests.” Unfortunately too many Roman reliefs and paintings exhibit similar characteristics from the odd angles to the curtains without portraying *periacti*. While Bieber ((1961) 92–93, fig. 324) also thinks that the scene is comic, she makes no mention of a *periactus*. Marble relief, Naples, Museo Archeologico Nazionale 575.

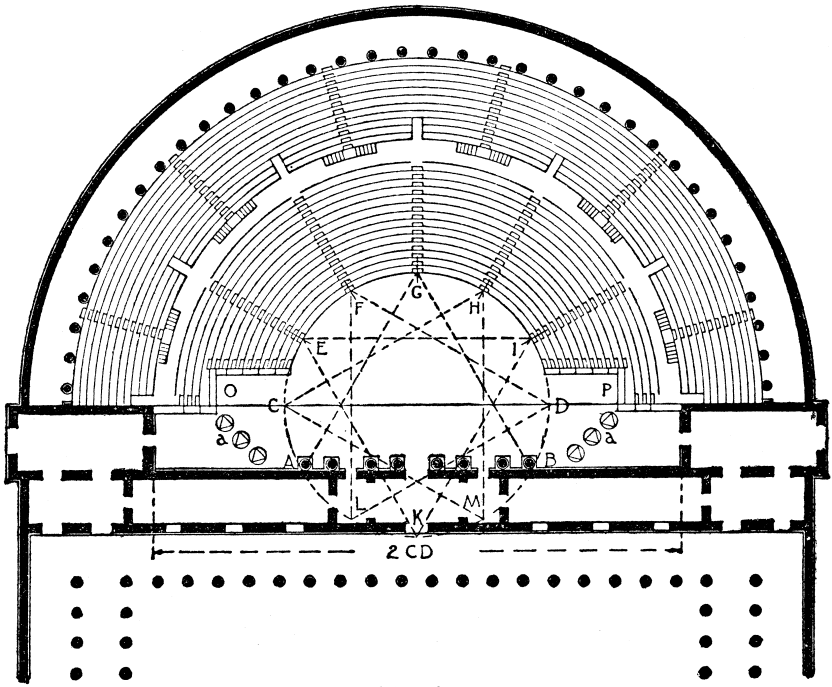


Figure 1. Plan of a Roman Theater. After Morgan (1960) 147 top.

first has been variously attributed to Geminus (1st c. BCE), Heron of Alexandria (*Definitions* I35.13 = 1st c. CE), and “Damianus” (4th c. CE).²³ No matter who wrote it, it fits well with the first Vitruvian passage. It says:

What is *skenographia* [or the “*skenographic* part of optics”]? The *skenographic* part of optics seeks to discover how one should paint [or “draw”] images of buildings. For since things do not give the appearance of being what they in fact are, they look to see not how they will represent the actual underlying shapes, but, rather, they render these shapes in whatever way they appear. The goal of the architect is to give his work a satisfying shape using appearance as his standard, and insofar as is possible, to discover compensations for the deceptions of the vision, aiming not at balance or shapeliness based on real measurements [or “reality”] but at these qualities as they appear to the vision.²⁴

²³ Pollitt (1974) 96 n. 44 gives a good summary of the attributions and hence the possible dates.

²⁴ Translation from Pollitt (1974) 239–240 No. 12. Italics and comments between brackets are Pollitt’s.

Three things stand out in this quotation. First, skenographia is categorized as part of the study of optics. Second, it is a method of drawing to depict buildings and presumably nothing else. Third, it is concerned more with appearances than reality—a trait it had from at least the fourth century BCE.

The second passage is more secure in its attribution and date. Proclus in the fifth century AD wrote a commentary on Euclid (Book I 40, ed. Friedein). He elaborates on the previous quotation:

What is more, optics and the mathematical theory of music are offshoots of geometry and arithmetic; ... demonstrated in the art which is called *skenographia*, [i.e. the theory of] how appearances should avoid giving the impression of being ill shaped or ill formed in pictures, based on the distances and the height of painted [or drawn] figures.²⁵

Proclus, like “Geminus” just discussed, ties skenographia to optics and, significantly, to geometry. In other words, skenographia is a technical tool that simultaneously uses precise rules to make things appear “right” rather than as they “are”.²⁶

With this background I can now address the principal scholarly interpretation of the word skenographia as “perspective” and most likely “linear perspective”. I do not believe Vitruvius or, indeed, anyone in classical antiquity had any understanding of the concept of a vanishing point much less of linear perspective. The problem is compounded, because the term “vanishing point” is modern.²⁷ Yet the absence of the term does not prove the absence of the concept. Instead only an analysis of texts and pictures can make a stronger or weaker case for or against the concept. To use the Renaissance and Baroque periods as examples, enough paintings and descriptive texts exist to indicate that they understood not just the idea of a vanishing point but also a number of the other concepts it entailed.²⁸ That is not the case for classical antiquity.

First, if Vitruvius (1.2.2) meant a vanishing point, we would know it and not have spent a century arguing about the meaning of fourteen words. The concept is sufficiently unusual to merit an explanation, yet easy enough

²⁵ Translation from Pollitt (1974) 239 No. 11. Italics and comments between brackets are Pollitt’s.

²⁶ Compare the well-known statement attributed to Lysippus: “he used commonly to say that whereas his predecessors had made men as they really were, he made them as they appeared to be.” Pliny the Elder, *Natural History* 34.19 (65). Translation from LCL (translator, H. Rackham).

²⁷ Edgerton (1975) 26.

²⁸ For example, the “horizon line isocephaly” (Edgerton (1975) 26).

to describe if you grasp the concept. We would see it clearly expressed in Roman painting of which we have more than enough from Vitruvius' time to study. Other writers, like Lucretius, interested in such phenomena would have written about it. Reliefs, again plentiful, would also incorporate its principles. That simply does not happen. In fact, the case is overwhelming for no knowledge of linear perspective.²⁹

Second, the use of compasses with central points and rulers are two of the basic tools for the architect. Vitruvius (1.1.4) says: "**Geometry** [*sic*] in turn, offers many aids to architecture, and first among them, it hands down the technique of compass and rule, which enables the on-site layout of the plan as well as the placement of set-squares, levels, and lines."³⁰ Consider for example his instructions (5.6.1) for designing a theater: "Whatever the size of the lower perimeter, locate a center point and draw a circle around it, and in this circle draw four triangles with equal sides and at equal intervals. These should just touch the circumference of the circle."³¹ His famous description of the human body also depends on the idea of a center point (3.1.3):

[T]he center and midpoint of the human body is, naturally, the navel. For if a person is imagined lying back with outstretched arms and feet within a circle whose center is at the navel, the fingers and toes will trace the circumference of this circle as they move about. But to whatever extent a circular scheme may be present in the body, a square design may also be discerned there.³²

In other words, as long as you are using compasses, you will have a center point. You may also have rectilinear forms within that circle like the triangles for the theater and the square for the body. Thus, if Vitruvius intended the center point to mean anything beyond its usual purpose when using compasses, he would have had to say so.

Third, the utility of linear perspective was not apparent to classical artists. Linear perspective is notoriously inefficient at capturing information other than physical setting.³³ For example, a sacrificial scene on the column of Trajan combines aspects of linear perspective with hierarchical and bird's eye perspective.³⁴ We see the animals being led to slaughter outside the

²⁹ From an art historian's point of view, so also Richter (1974) 3. From more of a scientific stance, see Knorr 1991 and Andersen (2007) 723–730.

³⁰ Translation from Rowland and Howe 1999.

³¹ Translation from Rowland and Howe 1999.

³² Translation from Rowland and Howe 1999.

³³ See Small 2009.

³⁴ Scene 53 (132–134). Small (2009) 152 fig. 9–3.

precinct and then within the precinct, which would not be visible in linear perspective; and we see Trajan, depicted larger than the other humans, about to perform the ritual.

Fourth, the appearance of a tapering colonnade in Roman wall paintings and in literary descriptions of colonnades does not inevitably imply an understanding of how linear perspective works. The most quoted example comes from Lucretius (4.426–431):

When we gaze from one end down the whole length of a colonnade, though its structure is perfectly symmetrical and it is propped throughout on pillars of equal height, yet it contracts by slow degrees in a narrowing cone that draws roof to floor and left to right till it unites them in the imperceptible apex of the cone [*donec in obscurum coni conduxit acumen*].³⁵

Colonnades abounded in classical architecture. Photographs today, for example, of the reconstructed Stoa of Attalos II in the Agora in Athens portray the precise effect described by Lucretius.³⁶ The Latin of the last line of Lucretius is important, because it indicates less the idea of a vanishing point and more that of the object not being viewable in the distance. Furthermore, Euclid (*Optics*, Definition 2, which I quote in full) uses similar wording in an unambiguous context that precludes the idea of a vanishing point: “and that the figure included within our vision-rays is a cone, with its apex [χορυφή] in the eye and its base at the limits of our vision.”³⁷ Next, no classical depiction of colonnades shows them like the modern railroad tracks with a vanishing point. Instead the colonnades taper from the sides to the center, but never meet. A horizontal cross-section joins them to each other in a manner that reflects the common construction of peristyles, as the Second Style cubiculum from Boscoreale, now in the Metropolitan Museum of Art, New York, demonstrates.³⁸ The “visual cone” is a theoretical idea that classical theories of vision used to describe how rays emanate from (a) one’s own eyes, (b) from the objects themselves, or (c) mix in between.³⁹

Fifth, the pseudo-perspectival scheme applies only to the architectural framework of the decoration of a room, as also seen in the cubiculum from

³⁵ Translation from Latham (1951) 143.

³⁶ http://commons.wikimedia.org/wiki/File:Stoa_of_Attalos_Athens_Agora.JPG.

³⁷ Translation from Irby-Massie and Keyser (2002) 181.

³⁸ Bergmann et al. (2010) 31 figs. 55–56. The end panels (on the right for fig. 55 and on the left for fig. 56) show typical painted colonnades.

³⁹ This idea has been linked with Democritus and Anaxagoras, as quoted earlier in the passage from Vitruvius (7, praef.11). Ings (2007) 154–161 provides one of the clearest descriptions of classical optics and vision.

Boscoreale.⁴⁰ A.M.G. Little investigated its use of vanishing points.⁴¹ (*Figure 2*) The two long walls are more or less identical in their arrangement into four parts, though the parts farthest from the doorway seem to be separated from the rest of the side walls by a painted pilaster that extends from the floor to the ceiling. If the sections beyond the pilasters are not considered, a typical vertical, tripartite division of the wall appears. In this case, rather than implying a specific, single architectural structure, each “panel” allows the viewer to view either a cityscape (the two end panels) or the interior of a sanctuary in the middle panels. Little’s reconstruction of the vanishing points shows a number of misalignments from the vertical axis, as well as multiple points along that axis.⁴²

Under normal circumstances we do not notice the discrepancies. Only a scholar would draw lines to check for a single vanishing point or multiple points along a vertical axis. The important question is why we do not notice the absence of linear perspective despite the fact that most of us today have been trained from photographs and art to assume that linear perspective is the right way to depict architecture. The answer actually is simple. We can either physically “see” an entire scene, but not in fine enough detail to notice discrepancies; or we can look at the details, but not the overall view and the details simultaneously.⁴³ In this case, the wall, even when just viewing the three panels, is too wide and the distance we can stand back from it too short to take all three panels in one glance. As soon as we need more than one “look”, we are unable without mechanical assistance, such as photographs and a straight edge, to figure out precisely where the vanishing points are. In other words, when we look at the cityscapes, it meets our *general* requirement of linear perspective, because the buildings are depicted in a three-dimensional fashion with oblique views that show the sides and occasionally the tops or bottoms. Even if we focus on specific buildings, we find that none is fully enough depicted to reconstruct accurately. It is the idea of a cityscape, not an actual one, that matters.

⁴⁰ While details of the walls are readily available, “complete” views of the side walls are more difficult to find. See: Bergmann et al. (2010) 31 figs. 55–56. Also see the bibliography on 47–48. Lehmann 1953 remains very useful. For color photographs with details: <http://www.metmuseum.org/toah/works-of-art/03.14.13a-g>.

⁴¹ Little (1971) pl. III fig. 2.

⁴² Panofsky (1991) 39 calls the scheme a “fishbone or, more formally put, vanishing-axis principle”.

⁴³ So also Lehmann (1953) 150, but without the technical explanation. For a description of how the fovea (central focusing part of the eye works) compared to the overall view of a scene, see among many others: Macknik et al. (2010) 29–30. They (*ibid.*, 46) offer an analysis similar

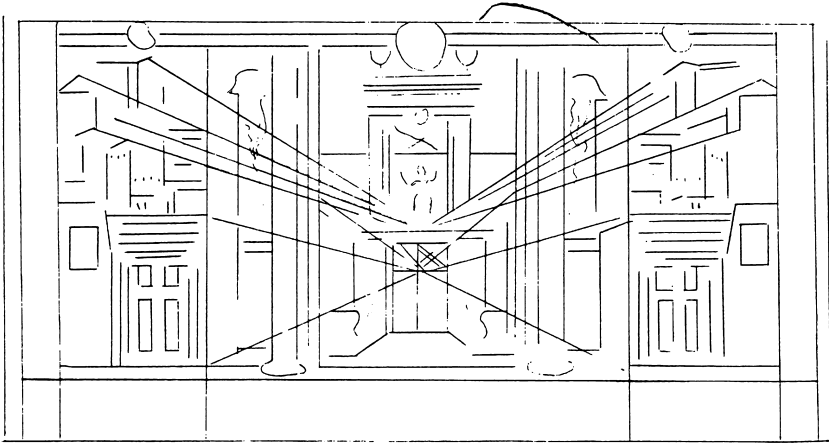


Figure 2. Cubiculum from Boscoreale. New York, Metropolitan Museum of Art. After Little (1971) pl. III fig. 2.

Just as importantly the classical texts support the focus on individual objects. While individual objects may obey the rules of linear perspective, the entire scene with all its parts depicted from one viewpoint is the hallmark of linear perspective. When each element is treated separately, the viewer has to change his position or viewing point to see that element from its “optimal” view. It is crucial to note that neither Euclid nor Ptolemy, the two major authors whose works on optics have (more or less) survived, considered how people look at whole scenes. They and all the other texts we have, instead, discuss how we view individual objects. Ings puts it clearly: “[T]he eye’s ray is narrow, taking in one object at a time. It [extramission] explains why we clearly see just a tiny part of the visual scene, while the rest is a blur; only that part of the visual ray reflected directly back into the eye is strong enough to be perceived properly.”⁴⁴ Brownson states: “Euclid’s *Optics* studies the apparent size, shape, and position of objects from a point of observation, while the central problem for linear perspective is determining the relative size, shape, and placement of objects in a scene as they appear at a picture plane.”⁴⁵

to mine for how Escher’s *Ascending and Descending* (1960) works: “He (Macknik) found that he couldn’t look at the structure globally. He could only really see one area of the staircase at a time ... since you can see only one local area at any given time, small, gradual errors along the entire structure could not be seen with the naked eye.”

⁴⁴ Ings (2007) 160.

⁴⁵ Brownson (1981) 165. The idea of the picture-plane is post-Antique.



Figure 3. South Italian Volute-Krater by the Varrese Painter. Boston, Museum of Fine Arts 03.804. Francis Bartlett Donation of 1900. Photograph ©–2011 Museum of Fine Arts, Boston.

The focus on individual objects and not their place in the whole scene becomes especially apparent in South Italian vase-painting from the fourth century BCE. The emphasis is on “apparent”, because it is not so much the way objects were represented that changed, but that the change in their surrounding settings made visible the way objects were viewed. In the fifth century BCE single scenes on vases begin to be portrayed on multiple levels. For instance, the dead and dying Niobids on the Niobid krater are dispersed about a rolling countryside.⁴⁶ At this point nothing jars our visual sense. How to render three-dimensional elements, like humans, occurs slowly and is mastered element by element and sometimes part by part. For example, by the end of the sixth/beginning of the fifth century BCE shields show both the exterior and interior.⁴⁷

In South Italian vase painting the number of levels increase and the use of rectilinear objects seen from oblique views makes clear that no overall coordination exists for any given scene. Consider the volute-krater by the Varrese Painter, ca. 340 BCE, in the Museum of Fine Arts, Boston.⁴⁸ (*Figure 3*) Side A depicts the death of Thersites whose headless body lies on its own ground-line directly beneath the aedicula with Achilles, his murderer, and Phoenix. The aedicula is depicted in a three-quarter view that one looks up at, since the rafters are visible. The couch on which Achilles sits is shown in a similar three-quarter view, although its underside is not visible. Achilles and Phoenix, however, are depicted orthogonally, virtually head-on. We can remove them from the aedicula and place them in any scene with a single ground line and they will seem appropriate. The same is true for the figures dispersed around the aedicula, each of whom has his own wavy ground line despite appearing to float in the middle of the space. None of the figures has had his proportions adjusted to fit where he appears. Everyone is pretty

⁴⁶ Paris, Louvre G 341, from Orvieto. *ARV*² 601 No. 22. *BAD* No. 206954 (with photographs and bibliography). Small (2003) 18 fig. 8.

⁴⁷ Among many examples, in the scene of Theseus killing the centaur by the Foundry Painter, Theseus' shield is elliptical and shows both exterior and interior, with a hint at its roundness by the use of hatching. Interior of a kylix; ca. 490/480 BCE; Munich 2640; *ARV*² 402 No. 22; *BAD* No. 204363 (with photographs and bibliography).

⁴⁸ Boston, Museum of Fine Arts 1900.03.804. Padgett et al. (1993) 99–106 with numerous photographs. See also <http://www.mfa.org/collections/object/mixing-bowl-volute-krater-154078>. I am purposely not using the “standard” example of the Apulian calyx-krater fragment now in Würzburg (Martin von Wagner Museum Inv. H 4696/4701), because it has been widely discussed and actually confuses the issue with its depiction of a “real” theater that shows only decoration for the pediment rather than decoration on some theater's wall; nor does it indicate how the South Italian artist viewed a whole scene. See Christensen 1999. For a

much to the same scale. Of the objects scattered in the field around Thersites that indicate the struggle between him and Achilles, two matter. On the far left at the bottom a basin has fallen off its support, yet the water seen in its interior defies gravity and looks level. The footed basin, on the right just beyond Thersites' head, looks empty, but like its counterpart is depicted at an angle.

The problem is that if we are looking up at the rafters in the aedicula, how can we simultaneously be looking down at the inside of the two basins? A scene in linear perspective could not allow such an occurrence, but if each object is viewed separately—the way we normally zoom in on details—then the artist can choose the view that suits him (and the scene) best. In this case, the artist's "canonical" view is looking down at a basin to see its farther rim and contents. "Canonical" is a term commonly used in cognitive science to refer to the view from which an object, building, etc. is most easily identified and hence captures what is most typical about that object.⁴⁹ Canonical views tend to become formulaic so that whenever a footed basin, for example, is required, the canonical view is used. Because we cannot physically in any case take in the details of the two vases *and* the aedicula simultaneously, it actually does not matter for the artist or, indeed, even the viewer that one overall schema was not used for the vase painting.⁵⁰ Finally, indirect corroboration comes from the scenes in the main panels in Roman wall-painting. While buildings may be depicted in a three-quarter view similar to the aedicula on the vase with Thersites, it is never applied uniformly throughout the scene to either the figures or the structures within the panels.

Thus far I have avoided grappling with precisely what Vitruvius (1.2.2) may mean when he said in White's more literal translation: "scenography is the sketching of the front and of the retreating sides and the correspondence (convergence) of all the lines to the point of the compasses (centre of a circle)." Pollitt is more explicit: "And finally *scaenographia* is the semblance of a front and of sides receding into the background and the correspondence of all the lines [in this representation] to [a vanishing point at] the center

color photograph: Schörner (2002) 67 fig. 77. Similarly, the "Room of the Masks" in the House of Augustus is often used as an example of what a Roman theater would look like, but it, too, is strikingly free of "skenographia" except, of course, for its own rendering. In other words, it does not tell us where the *skenographia* went, but rather how it was used. See Iacopi (2008) 20 bottom.

⁴⁹ For definitions and a history of the idea, see Blanz et al. 1996.

⁵⁰ Perry (1937) presents an argument about "Greek life and literature" that parallels mine here.

of a circle.”⁵¹ The additions in parentheses and brackets for both White and Pollitt are their own. The real question is, then, did Vitruvius in this passage mean, imply, or even know the concept of a vanishing point. Clearly Pollitt believes he did, while White is more circumspect. I would, instead, more literally translate the crucial fourteen words: “*item scaenographia est frontis et laterum abscedentium adumbratio ad circinique centrum omnium linearum responsus*” as “Likewise skenographia is the drawing of the front and of the sides receding and the response of all lines to the center of the compass.”

Perhaps the best representation of the concept—not necessarily the placement—is presented by Kenner.⁵² She places a man with his eye level at the center of a large circle. The man looks to the right at a series of squares drawn within circles with his gaze forming the visual cone. I have reduced the basic concept to the central area in *Figure 4*. I made the drawing in the following steps, roughly following Vitruvius (1.2.2):

1. Draw a circle.
2. Then a square within that circle with its four corners touching the edge of the circle.
3. This is the crucial step: diagonally extend the four corners of the square symmetrically on either side, either upward or downward to the edge of the circle.⁵³

If one then combines this drawing with the concept drawn in Kenner’s illustration, a visual cone results that could have inspired Democritus and Anaxagoras (Vitruvius 7, praef.11) in their understanding of how vision works. Merely by using circles and squares or rectangles an artist can produce a reasonable facsimile of a building or object, like an altar, seen in an oblique view. The important point to note is that this kind of “perspective” applies only to the objects and not the human (or animal) figures.

In summary over the course of several centuries the word “skenographia” became generalized from its origins in the theater as a means of representing a three-dimensional structure on a two-dimensional space and used more widely as a term for a technical drawing of a building seen from an oblique view as in Vitruvius (1.2.2) and “Geminus”. In short, we must abandon the idea

⁵¹ Pollitt (1974) 237 No. 4.

⁵² Kenner (1954) 158 fig. 29.

⁵³ Note that it is arbitrary where the vertical line is dropped. Today we tend to make the side wider than customary on South Italian vases.

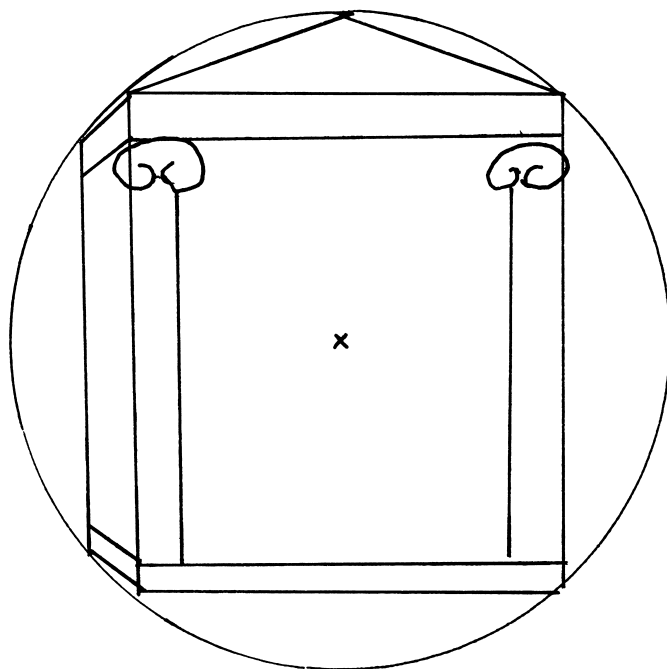


Figure 4. Author's reconstruction of drawing a building according to Vitruvius 1.2.2.

of any kind of elaborate painted stage “setting” in Greek or Roman theater. Nor is the idea of linear perspective at the base of *skenographia*. *Skenographia* is simply a technique to render buildings (and objects) in oblique views.