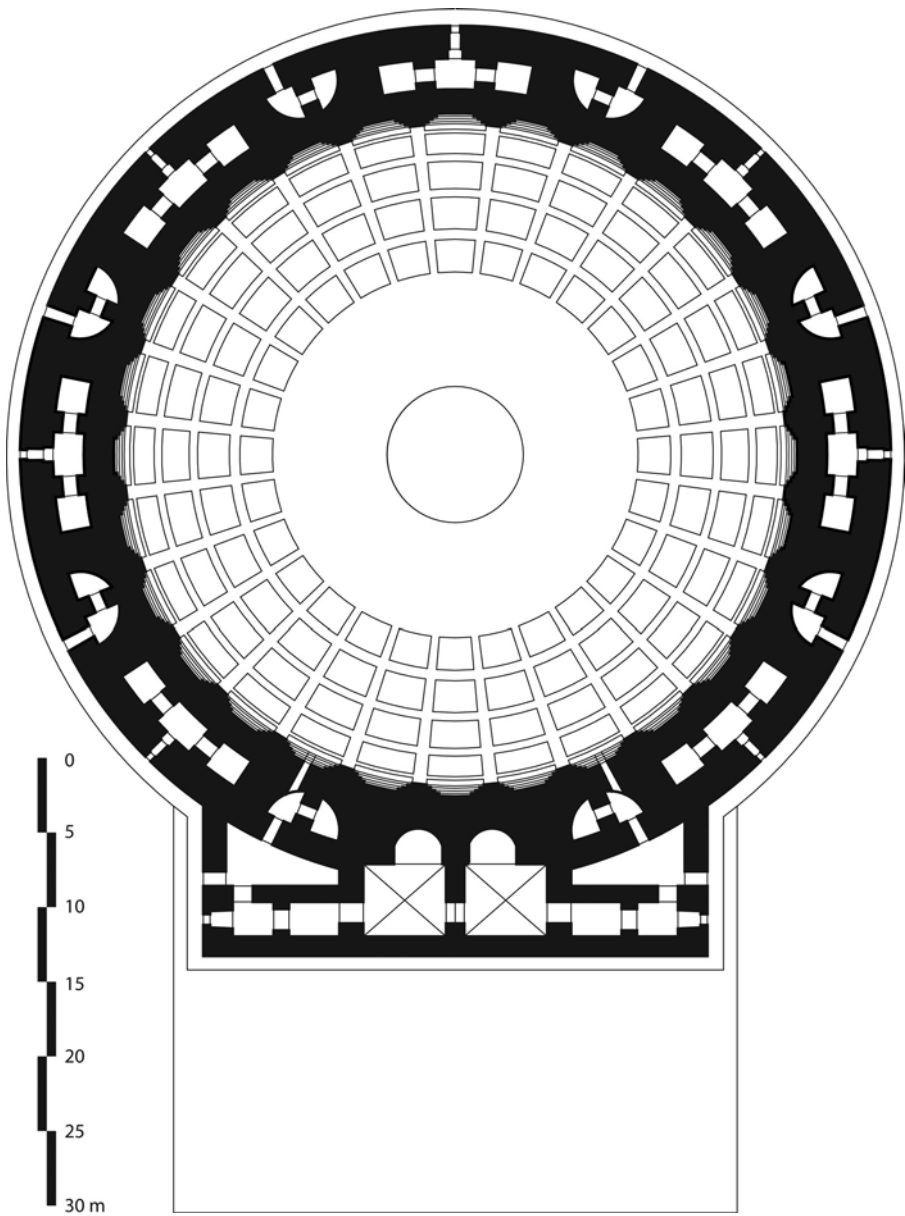


# INTRODUCTION: CHALLENGES OF ANALYSIS AND INTERPRETATION

When Renaissance architects like Bramante or Alberti executed or wrote about linear perspective and scale architectural drawings, they engaged in practices and discourses that were already well established by the time Vitruvius picked up his pen near the end of the first millennium B.C.<sup>1</sup> In addition to what Vitruvius tells us about the subject, there are other Roman references to scale drawings used in architectural planning,<sup>2</sup> as well as a few surviving examples that can hardly attest to the frequency with which such drawings surely must have been made.<sup>3</sup> More than just a fact of the design process, the application of geometry in scale drawings during the Imperial era in particular may have engendered the very aesthetic based on the curve and polygon that characterizes Roman vaulted buildings perhaps as best appreciated today in the Pantheon (Figure 1).

This observation, which is far from new, underscores the formative role of reduced-scale drawing not only in the creation of buildings, but also in the guiding approaches to form that underlie their production.<sup>4</sup> In a straightforward emphasis on technical determinism, one may view the fluid, plastic potential of Roman concrete as the primary impetus that transcended the prismatic forms determined by traditional Greek construction with rectilinear blocks.<sup>5</sup> Yet keeping in mind the additional importance of the curvilinear, radial, and polygonal qualities of classical scale drawings, one may perhaps better understand Roman concrete as the material exploited to reflect in three dimensions the forms first explored in ichnography (the art of ground plans), elevation drawing, and linear perspective.<sup>6</sup> Acknowledgment of this generative aspect of ancient drawings emphasizes their function as models rather than mere architectural representations.<sup>7</sup>

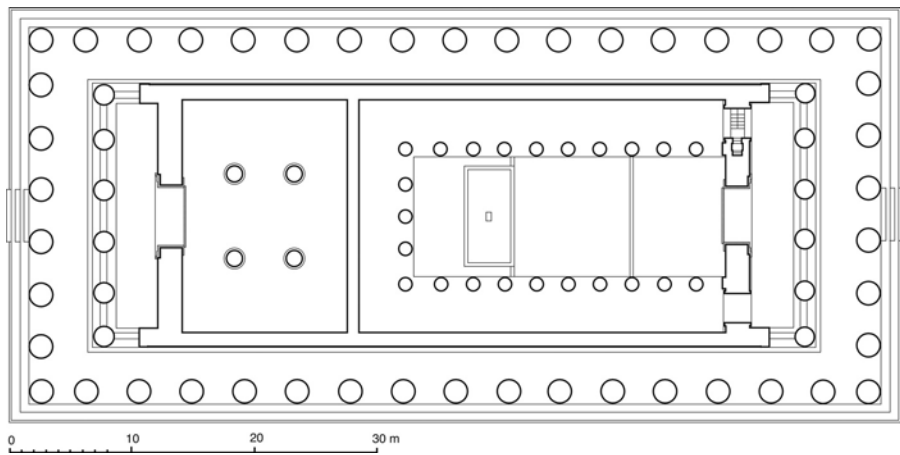
THE ART OF BUILDING IN THE CLASSICAL WORLD



1 Pantheon, Rome. A.D. 120s. Plan of level III showing radial pattern of intrados. Drawing author, adapted from B.M. Boyle, D. Scutt, R. Larason Guthrie, and D. Thorbeck, in MacDonald 1982: Plate 103.

Of course, the idea that scale drawing precedes building should hardly sound revolutionary. At least until recently, architectural students commonly learned to conceive of buildings in terms of *parti*, or the geometrical underpinnings that inform one’s composition as a whole and the interrelationships of its parts. This

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2 Classical Parthenon, Athens. 447–438 B.C. Ground Plan. Drawing author, modified from M. Korres, in Korres 1994: Figure 2.

approach to design results in a sequential process that directly links the final built form with the first moments of drawing at small scale.<sup>8</sup>

The modern habituation with scale drawings may emerge from not only the ways that architects design, but also from institutionalized ways of thinking about buildings. After the initial publication of Sir Banister Fletcher’s *A History of Architecture on the Comparative Method* in 1896,<sup>9</sup> historians of art and architecture came to largely understand the works of all periods through illustrations that compare buildings to one another, often at a strictly typological level. In turn, this kind of representation often serves to form part of the modern image of a given historical building. Relatively few introductory-level students are fortunate enough to experience the Parthenon for the first time when walking in the open air of the Athenian Akropolis rather than in a textbook or dark lecture hall where they view the temple by way of a small-scale set of black lines (Figure 2). This graphic illustration of a ground plan then becomes a part of a new generation’s image of the Parthenon and comes to represent how architectural space is organized in ways that compare or contrast the supposed drawing board of Iktinos with that of Brunelleschi or Mies or Zaha Hadid.<sup>10</sup> In this way, drawing itself becomes an exceedingly familiar, culturally neutral act with a universal application in buildings across time that express vastly different forms and purposes.

In focusing on the gap that separates the instruments, methods, and applications of technical drawing in classical and modern architecture, the present study explores how craftsmanship conditioned vision in the classical world. As I argue, the shared habits of drawing in the art of building and the sciences became central to the entity that, in Roman times, would receive the designation

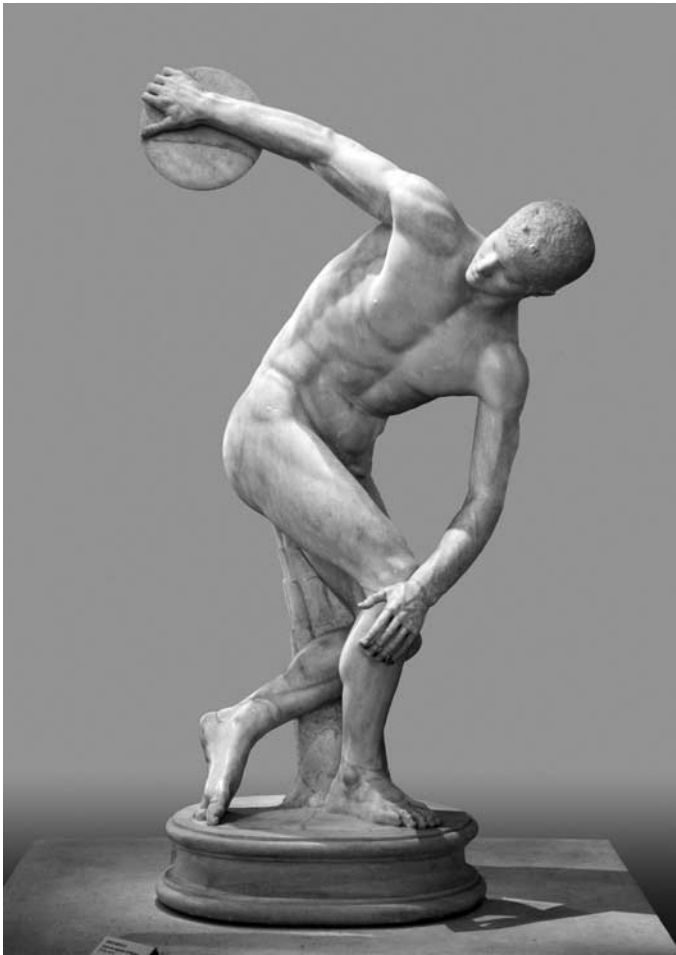
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of “architecture” passed down to western traditions of building. The shaping of order according the tools and techniques of craftsmanship directly impacted how Greeks saw the structures and mechanisms of nature, as well as the understanding of vision itself as articulated in philosophy and optical theory. Against this background, I present the Greek invention of linear perspective as reflective of existing procedures of drawing and influential for the heightened role of scale drawing in the organization of architectural space beginning in the Classical period (479–323 B.C.). In this exploration, I approach the Greek *theatron* – the “place for seeing” – as the earliest space expressly designed to shape vision, enhancing the rituals of spectacle associated with Greek practices of seeing that served the metaphor for “theory” itself as a new way of explaining the universe in abstract and internally coherent ways. The resulting “architectural vision” was to define how sacred and urban space was planned by way of ichnography, itself born of linear perspective in Greek painting. This book thereby considers the impact of the art of building on classical constructions and perceptions of the world.

With good reason, the centrality of scale graphic representations as an art historical focus in the manner of this book has been challenged in recent decades. Kevin Lynch’s seminal sociological study of the ways in which westerners understand their cities as collectives of landmarks, nodes, paths, districts, and edges came to suggest an alternative model of analysis according to cognition at an experiential level.<sup>11</sup> For the classical material, studies of urban architecture have emphasized the integrated nature of Roman cities sensorily experienced at eye level by the ambulating subject who responded to partial, oblique, and gradually unfolding vistas.<sup>12</sup> Researchers have awoken an interest in the interaction of Roman viewers with the everyday experience of their cities through sequential, three-dimensional “armatures” comprised of piecemeal assemblages of structures over time rather than just urban plans or individual buildings studied as isolated ground plans, elevation drawings, and sections that do not correlate to how ancient buildings were actually seen. This methodology provides a salutary dose of imagination needed to restore a humanizing sense of life, motion, and even emotion to how buildings *worked* in antiquity.<sup>13</sup> In this way, a new historical narrative has relocated classical architecture in a kind of real space that allows one to grasp its former potential to be intuited temporally through the senses of the people who, driven by desire and necessity, lived and moved within it.

As opposed to buildings, complexes, and cities, sculptures need not involve a similar degree of changing perspective in motion on the part of the spectator. As a textbook example of a fixed frontal perspective, even a dynamic sculpture in the round like a Roman copy of Myron’s *Diskobolos* of the mid-fifth century (Figures 3–4) disappoints rather than rewards the alternative perspectives of a wandering viewer’s change of position, revealing a flatness and imbalance

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3 Myron of Athens (fifth century B.C.). Diskobolos (Lancellotti Discobolus). Roman copy of Myron’s bronze original of ca. 460–450 B.C. Frontal view. Marble. Museo Nazionale Romano (Palazzo Massimo alle Terme), Rome, Italy. Vanni/Art Resource, NY.

from the side that does little to break beyond even the static pose of an Archaic *kouros*.<sup>14</sup>

The unfolding, processual element found in classical architecture gains emphasis when one confronts sculpture of the Hellenistic period in particular. A defining feature of Hellenistic art is the extension of dynamism inherent in the work itself to the viewer’s interaction with the work. As seen in the bronze horse and jockey pulled from an ancient shipwreck off Cape Artemision, this quality transcends the principal view normally presented in published photographs (Figure 5).<sup>15</sup> The boy turns his glance toward an invisible opponent with whom he seems to run neck-and-neck toward a “photo finish,” his horse dedicating every muscle, fiber, and vein to the momentum and energy of the final push. In terms of the height of its original placement and its accessibility,

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4 Myron of Athens (fifth century B.C.). Diskobolos (Lancellotti Discobolus). Roman copy of Myron’s bronze original of ca. 460–450 B.C. Lateral view. Marble. Museo Nazionale Romano (Palazzo Massimo alle Terme), Rome, Italy. Vanni/Art Resource, NY.

one cannot know how this work related to the perspective of ancient viewers, but it seems unlikely to have differed significantly from its current display in the National Archaeological Museum in Athens. Pulled in by curiosity, the engaged spectator may find himself drawn to a frontal view where the full impact of the horse’s velocity may be felt at an adrenaline-releasing, and indeed personally endangering, intensity.<sup>16</sup> The tension between one’s bodily reaction – the impulse to freeze or jump out of the way – and the mind’s realization that this is merely sculpture internalizes the spectator’s experience, breaking down the space that otherwise separates the viewer from the work in the manner of the Diskobolos, for example.

Perhaps one of the boldest Hellenistic expressions of vision in motion centers on Roman copies representing a figure that is anything but dynamic (Figure 6). Enticed by the erotic qualities of the sleeping figure, the unfolding experience

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5 Horse and jockey. Hellenistic, ca. 150–125 B.C. Lateral view. Found off Cape Artemision, Greece. Bronze. Parts of horse’s barrel restored, tail modern replacement. National Archaeological Museum, Athens, Greece. Vanni/Art Resource, NY.

of seeing results in perplexity and astonishment at a hermaphrodite’s male genitalia, “a typically Hellenistic theatrical surprise.”<sup>17</sup> As described here, the gradual, spatial, and temporal qualities of classical vision shows a kinship in the differing media of sculpture and architecture that appears to come into being in the Hellenistic period.



6 Sleeping hermaphrodite. Antonine copy (A.D. 138–192) of a Hellenistic original of the second century B.C. View of backside. Marble. Museo Nazionale Romano (Palazzo Massimo alle Terme), Rome, Italy. Vanni/Art Resource, NY.



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DRAWING AND THE INVENTION OF ARCHITECTURE

Beyond this very generalized classical context, however, there is a significant difference between the methods of creating that engendered the visual experience in sculpture as opposed to architecture. In this regard, the special case of architecture comes down to basic issues of definition. Strictly speaking, architecture as a distinct institution in the manner that Vitruvius recognizes it is difficult to isolate in ancient Greek culture through the Hellenistic period. In ancient Greek, the *techne* of building as a category with its own nounal designation (ἡ οἰκοδομική) seems to have suggested the art of the architect in the sense of the “builder” (οἰκόδομος).<sup>18</sup> Vitruvius’ *architectura*, a Hellenized Latin term from the end of the Late Republic, carries something more of the explicit authority of the architect in the sense of the “master artificer” (ἀρχιτέκτων).<sup>19</sup> The term *architectura* thereby suggests a discipline of “master craftsmanship” that approximates the Greek adjective “architectonic” (ἀρχιτεκτονικός), describing not only the art of the master artificer of buildings (Plato *Statesman* 261c; Aristotle *Politics* 1282a3), but also the very concept of an authoritative master art that dictates to the persons and processes that serve it.

For Vitruvius, *architectura* consists of a set of Greek concepts given by mostly Greek terms that the Hellenistic builders who preceded him certainly would have identified with (*De architectura* 1.2.1–9).<sup>20</sup> Despite the close connections shared between builders and sculptors,<sup>21</sup> these concepts largely relate to drawing and presumably would have represented a salient point of difference between the arts of building and sculpture. In addition to the considerations of natural and financial resources, *architectura* consists of a process of graphic ordering grounded in a modular approach to quantity, and a process of design in the sense of correct graphic placement in accordance with the overall work. Finally, the principles of pleasing form and modular commensuration that these processes of drawing give rise to comprise *architectura*. As given in Vitruvius’ definition of *architectura* in terms of what it consists of, it may be significant that architecture is identified entirely with issues of planning. More to the point, these processes and principles are embodied by three approaches to reduced-scale drawing: ichnography (the art ground plans), elevation or orthography, and linear perspective. This reliance on graphic representation is obviously distinct from the classical sculptural process using a sequence of models and casts.<sup>22</sup> In a workshop like that of Pheidias, a master sculptor might have conveyed his authoritative vision in the creation of a pedimental composition by way of plastic models. In Vitruvius’ *architectura*, the three-dimensional construction of buildings conveying the qualities and principles envisioned by the architect takes place by way of a monumentalized imitation of the architect’s authoritative vision as a graphically constructed *idea* (*De architectura* 1.2.2).



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Regardless of the observable similarities in the unfolding spatial and temporal spectacle engendered in classical sculpture and architecture, then, the process by which this optical and kinesthetic experience was formalized is different. Yet it is not simply different in the sense of the natures of particular media. Rather, the differing process of design is central to what architecture consists of at the moment of its earliest institutionalizing definition in the writing of Vitruvius. The ownership of graphic construction as the domain of *cogitatio* (analysis) and *inventio* (invention) for the shaping of space according to good form and number (*De architectura* 1.2.2) carries important implications for the classical understanding of seeing itself. As the present study suggests, technical drawing and spectacle were connected in ways that had a profound impact on the awakening consciousness of an individual and separate discipline of architecture. Moreover, this study explores the relationship between drawing, seeing, and the birth of theoretical philosophy as an inward seeing associated with knowledge (“insight”), ways of envisioning nature, and even the nature of vision itself. The changing or multiple perspectives unified in the experience of Hellenistic sculptural works like those cited here (Figures 5, 6), I suggest, may very well represent a plastic exploitation of a notion first encountered in Greek drawing as an activity later so integrally identified with “architecture.”

VISION, PHILOSOPHY, AND THE ART OF BUILDING

Vitruvius’ account of architecture hints at an important connection between drawing and the experience of knowledge and seeing. According to him, the Greek term for the three kinds of reduced-scale drawing that define design (ichnography, elevation drawing, and linear perspective) is *ideai*.<sup>23</sup> Such drawings thereby share the same term (ἰδέα) used by Plato in his famous Theory of Forms to describe the transcendent Ideas underlying objects in the phenomenal realm, which are seen internally through the reasoning mind rather than externally through the eye.<sup>24</sup> In other words, there appears to be a correspondence between A) the *idea* as a graphic construction as opposed to the materialized construction that imitates it, and B) the *idea* as the immaterial object that the material object imitates. This correlation in building and philosophy between the graphic and transcendent (or “mental”) image, along with an etymological connection between *idea* and seeing (ἰδεῖν, aorist infinitive of ὁράω), bridges across the centuries into Early Modern thought, as in Marsiglio Ficino’s Neoplatonic commentary on Plato’s *Symposium* in the fifteenth century A.D.:

From the first moment the Architect conceives the reason and roughly the Idea of the building in his soul. Next he makes the house (as best he can) in such a way as it is available in his mind. Who will negate that the

