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The Vitruvian Source of Marvell's Tortoise in "Upon Appleton House, To My Lord Fairfax"

This essay explores the provenance of the tortoise metaphor in Andrew Marvell's "Upon Appleton House, To My Lord Fairfax" (1652). It discusses the degree to which the tortoise metaphor celebrates the classical architecture of the estate. It identifies a thread of testudinal imagery originating in the architectural writings of Vitruvius (fl. 70–15 BCE), who invokes the tortoise metaphor to describe both primitive dwellings and siege weapons. It also traces the thread of influence through the various revivals of Vitruvian theory, including Leonardo da Vinci's "Vitruvian Man" (1490), Palladio's "I quattro libri dell' architettura" (1570), Inigo Jones's architectural designs (1614–17), and John Webb's design for Appleton House (1650).

Keywords: Andrew Marvell; Vitruvius; Inigo Jones; architecture; tortoise

The tortoise in Andrew Marvell's "Upon Appleton House, To My Lord Fairfax" (1652) is a highly perplexing metaphor that appears twice, framing the poem's ninety-seven octosyllabic stanzas.¹ The initial suggestion that "Beasts...Birds...[and] Tortoises" (11–13) inhabit spaces best suited to their anatomies creates a lacuna in the poem, which some scholars have interpreted as a critique of Appleton House.² Is the Fairfacian dwelling, standing in Brobdingnagian scale against the backdrop of the tortoise shell, unbecoming of its owner, Marvell's patron, Lord General Thomas Fairfax (1612–1671)? Or does the poet revere the scale and proportion of Appleton House and praise it axiomatically, through a theory of architecture articulated in the maxim: "Their Bodies measure out their Place" (16)? I argue the latter case and propose that the shared geometries of architecture and anatomy converge in the source of the tortoise metaphor: Vitruvius's *De architectura* (ca. 15 BCE)

Marcus Vitruvius Pollio (fl. 70–15 BCE), one recalls, was a Roman architect, engineer, and author of the ten books on architecture. *De architectura* not only established the basic principles of proportion and construction that inspired Leonardo da Vinci's drawing of the "Vitruvian Man" (1490), but it also influenced *I Quattro Libri dell' Architettura* (1570), the seminal architectural treatise of Andrea Palladio (1508–1580). I posit that the tortoise metaphor exemplifies Marvell's interest in the classical architectural theories of Vitruvius and Palladio, as well as the drawings of Leonardo da Vinci. Marvell's tortoise is a shibboleth for the study of proportionality in nature. I propose that Marvell's contemporary, Inigo Jones, who transferred Palladian architecture to early modern England with his designs for grand houses and palaces, served as one conduit for the poet's burgeoning interest in proportionality.

In "Upon Appleton House" Marvell lauds his patron for the design of an idyllic estate, regarding it as "Paradice's only Map" (775). The poet celebrates Nun Appleton, located south of

York, through the presentation of its topographical organization, starting with the constructed environment.³ Marvell then visualizes an unbounded, lush landscape that gives birth to works of art such as Appleton House.⁴

But Nature here hath been so free
As if she said leave this to me.
Art would more neatly have defac'd
What she had laid so sweetly wast
In fragrant Gardens, shady Woods,
Deep Meadows, and transparent Floods.
While with slow Eyes we these survey,
And on each pleasant footstep stay,
We opportunly may relate
The progress of this Houses Fate.
A Nunnery first gave it birth.
For Virgin Buildings oft brought forth.
And all that Neighbour-Ruine shows
The Quarries whence this dwelling rose. (75–88)

These couplets blur the distinction between the natural and built environments, implying that both manifest their features organically. According to Marvell, the static Appleton façade contrasts sharply with the dynamic landscape. The various settings (“Gardens... Woods... Meadows... and Floods”) are pregnant with action, foreshadowing the fortified gardens (329–66), felled trees (537–60), mowed grasses (369–460),⁵ and inundated rivers (470–80) of later stanzas. The sequence and pace of narration in these appear to follow the speaker’s relaxed gait as he tours the grounds.

As a tutor-in-residence to Lord Fairfax's daughter, Marvell had familiarized himself with the management of Fairfax’s demesne. As McColley informs us, Marvell commends Fairfax for his *economy*, the prudent governance, management, and organization of an estate.⁶ Fairfax’s management style follows the path of least natural resistance. That is to say, Fairfax neither prevents the flood (623–28), which irrigates the soil, nor does he interfere with the hewel (*Picus viridis* L.), the woodland bird known for chiseling trees (557–60). The synergy of natural and

built features in the environment suggests that Fairfax's understanding of the relationship between economy and ecology was deeply felt. Here, the etymological relationship between "economy" and "ecology" reminds us of Xenophon's discussion of estate management in the *Oeconomicus*.

[Socrates:] We agreed that economy was...[the] branch of knowledge...whereby men are enabled to enhance the value of their houses or estates; and by this word "house or estate" we understood the whole of a man's possessions; and "possessions" again we defined to include those things which the possessor should find advantageous for the purposes of his life; and things advantageous finally were discovered to mean all that a man knows how to use and turn to good account.⁷

"Upon Appleton House" also describes the overlap between the ecological and economic spheres, granting the poet conceptual space to reflect upon the various forms and functions of an ecosystem in equilibrium. These concepts are governed by the same *eco-* prefix in English, which derives from the Ancient Greek *oikos*.⁸ Etymologically speaking, the discipline of economics entails the study of "laws of the household." Ecology, on the other hand, provides the "reason of the household," that is to say, it explains the environmental macro-processes that envelop economies. Marvell's praise for Nun Appleton's economic administration is more than mere flattery; his description of the estate is both emblematic and literal.⁹

Marvell contrasts the grand architecture of a human dwelling with more humble shelters in the animal kingdom, most notably that of the tortoise and its shell (13–14).¹⁰ The rhetorical question of the second stanza verbalizes the muted thoughts of a guest, perhaps Marvell himself, who beholds the monumental architecture of Fairfax's home.

Why should of all things Man unrul'd
Such unproportion'd dwellings build?
The Beasts are by their Dens exprest:
And Birds contrive an equal Nest;
The low roof'd Tortoises do dwell
In cases fit of Tortoise-shell:
No Creature loves an empty space;

Their Bodies measure out their Place. (8–15)

In recent decades, Marvell scholars have commented on the curious inclusion of the tortoise in this tricolon. The above stanza casts doubt upon the right of humans to build and inhabit such over-sized shelters, especially when the natural world supplies all other creatures with living spaces better suited to their bodies. Does this stanza spoil the poet's praise for Lord Fairfax's residence? Or does Marvell aim his praise for Appleton House more subtly, suggesting that the design of the estate manifests the same proportionality as the natural world as exemplified by the "dwarfish Confines" (46) of the tortoise's shell? I shall argue for the latter, deeming the tortoise metaphor and its source central to an accurate reading of Marvell's tribute to his patron, Lord Fairfax.

Some dozen critics have undertaken investigations into the provenance of Marvell's tortoise, having generated an impressive eight readings of the tortoise metaphor. These are an analogy between fishers and turtles,¹¹ an allusion to Sir Thomas Browne,¹² an allusion to the Noah of scripture in which tortoise shells were celebrated for their utility,¹³ the punch-line to an arcane linguistic joke,¹⁴ a metaphor for humans learning from nature,¹⁵ a symbol for rationality,¹⁶ or a symbol for the poem's circular structure.¹⁷ Although each interpretation presents a fresh perspective on the poem, none satisfactorily explains Marvell's tortoise allusion. I argue here that any interpretation of the tortoise be measured by its consistency with other thematic and structural features of the poem. Since Marvell invokes the tortoise metaphor in an architectural context, it seems reasonable that an appropriate reading should possess an architectural tenor suited to classical allusions found elsewhere in the poem.

Marvell scholars agree that the relationship between ecology and architecture informs "Upon Appleton House," though little attention has been paid to the poet's architectural training.

Nearly all of the aforementioned studies of Marvell's tortoise critically engage with the environmental aspects in the poem at the expense of the built environment. Since the tortoise metaphor operates in an architectural context, an examination of Marvell's familiarity with architectural theory is apposite.

Some Marvell scholars argue that Vitruvian architectural theory informs Marvell's understanding of architecture, construction, and proportion. H. C. Beeching was the first critic to identify the juxtaposition between Marvell's description of Nun Appleton and the work of "boasted Italian architects."¹⁸ Over the last century, the discussion of Italian architectural influence in Marvell's poetry has narrowed significantly, with critics identifying Sir Henry Wotton's *Elements of Architecture* (1624) as an influential source for British architectural knowledge in the period. The title page identifies the book as "Collected by Henry Wotton Knight, from the best Authors and Examples." Throughout the compendium, it is evident that Wotton adapts materials from the treatises and science of Vitruvius, whom he regards in the preface as "our principall Master." In addition, a brief note about Marvell's "The Mower against Gardens," which the poet composed alongside "Upon Appleton House" during his residence at the Fairfax estate, provides a clue about Marvell's reading history. Pitman argues that Marvell may have borrowed the unique "pool of aire" language from Wotton's architectural manuscript, which would indicate that the poet familiarized himself with Vitruvian architecture through *Elements of Architecture*.¹⁹ On the other hand, Michael Schoenfeldt links Marvell's "Upon Appleton House" more directly to Vitruvius, noting, "just as the house is built in conformity to nature, so does nature flourish in conformity with the more rarefied principles of Vitruvius."²⁰ Recently, Anne M. Myers extends this line of reasoning to conclude that Marvell crafts "Upon Appleton House" in the same spirit as Wotton gathered material for his book. Moreover, Myers

identifies Marvell's affinity for finding similar proportions in nature and architecture as distinctly Vitruvian.²¹

Each line of the first stanza alludes to and then dismisses some part of the Vitruvian-style architectural treatise and, by inference, all architects trained in that tradition. Marvell's list of topics here—the quarrying of stone, acquisition of timber, the conception of a “design” for the whole work, the construction of a model, and the optical analysis of the façade—could all have been culled from almost any of the architect authors from whom Wotton had “gather[ed]” his “stufte.”...Marvell twists another common principle of the classical and Continental treatise: architectural symmetries mirror the natural symmetries of the human body. For Vitruvius, the success of a design is determined by its relationship to the harmoniously proportioned whole.

Identifying the classical source of the tortoise, which Marvell reserves solely for the beginning and end of his praise poem to Lord Fairfax, will bring clarity to the Marvell's reading history and grant insight into the poet's understanding of his craft. On the matter of reading history, Nigel Smith informs us that Marvell was well-versed in the Latin writings of Cicero, Horace, Ovid, Terence, and Virgil due to his education at Hull Grammar School. However, much of what is known about Marvell's classical knowledge comes from Milton's own recommendation of the poet to the position of Assistant Latin Secretary.²²

Mr. Marvile...hath spent foure yeares abroad in Holland, France, Italy, & Spaine, to very good purpose, as I beleeve, & the gaineing of those 4 languages; besides he is a scholler & well read in the latin & Greeke authors, & noe doubt of an approved conversation; for he comes now lately out of the house of the Lord Fairefax who was Generall, where he was intrusted to give some instructions in the Languages to the Lady his Daughter.

It is also possible that Inigo Jones, one of the most influential English architectural minds of the the first half of the 17th century, was partly responsible for Marvell's understanding of classical architecture.²³ Marvell may have learned about architecture through his connections to Jones,²⁴ whose first designs were for theatrical productions. In terms of realized designs, Jones was the leading force behind the introduction of classical architectural theories, such as those of Palladio and Vitruvius, into 17th century England.²⁵ From 1614 to 1617 Jones designed several

Palladian-style buildings based upon Vitruvian symmetries, most notably the Palace of Whitehall and the Queen's House in Greenwich.²⁶ Marvell visited the Banqueting House at Whitehall shortly before composing the poem. It has been noted that the experience left a deep impression upon him, because he wrote about witnessing the execution of Charles I at Whitehall in "An Horation Ode."²⁷

Jones, through his mentorship of John Webb, was influential in the design of Appleton House. Jones educated Webb in the classical architectural theories of Vitruvius and Serlio, among others.²⁸ Both Jones and Webb owned 1601 reprints of Palladio's *I quattro libri dell' architettura*.²⁹ Webb learned most of his craft from Inigo Jones as his draftsman and pupil.³⁰ In 1650, Webb designed and oversaw construction of Appleton House, which involved the fundamental renovation and remodelling of a pre-existing structure. In Marvell's phrase: "A Nunnery first gave it birth" (85).³¹ Thus, it is possible that the architectural strategies of Inigo Jones percolate into Marvell's poem about the estate at Nun Appleton through Jones's professional affiliation with Webb.

Webb applied the lessons he learned about Vitruvian and Palladian architecture to the geometry of Appleton House. Both Vitruvian and Palladian designs follow special laws of proportionality and incorporate these as mathematical formulas to resolve the space requirements for buildings, such as the size of windows and doorways. In the case of ceiling height, Vitruvius supplies two formulas. He suggests that, for oval-shaped rooms, designers average the length and width of a room to calculate ideal height, and for rectangular rooms, designers increase width by half to determine ideal height.³² In 1570, Palladio simplifies the application of this Vitruvian formula in *I quattro libri dell' architettura*, this time using the "arithmetic mean" of room length and width to compute ceiling heights for round and rectangular rooms alike.³³

Palladian architects such as Jones and Webb also considered ceiling type (e.g. vaulted) when calculating spatial dimensions.³⁴

Palladio, working from the foundation set by Vitruvius, supplied Jones and Webb with architectural formulas for achieving ratios and proportions found in nature. Marvell integrates Palladio's architectural theory of room dimensions into his poetic structure. McColley explains that the poem imitates the quadratic space of rooms with perfectly proportional ratios of eight-by-eight.

Marvell's stanzas (Italian for "rooms") could be aligned to form visual quadratures, but even in print they are conceptually square, having eight lines of eight syllables each. Numerically (and visibly if they are justified, in the printer's sense) the lines form a quadrant...Symbolically a quadrature represents the earth in Renaissance numerology, earth having four elements, four seasons, four winds, and four "corners."³⁵

Furthermore, Wheeler proposes that Marvell's four-couplet stanzas emulate cubes, segmenting the work into symmetrical stanzas as a cartographer would map out diverse tracts of land.³⁶

Perhaps Marvell selected this poetic form in order to add a sense of three-dimensionality to his work on gardens and architecture. Eight, the cube of two, grants his couplets three-dimensionality in the eight-line stanza form. Like the tortoise, whose hemispheric shell stretches upward, Marvell's visually flat poem simulates vertical height through the re-creation of cubic shapes in its couplets and stanzas. Hence, the establishment of perfect proportions in the poem mirrors both the precise fit of the tortoise's shell and the geometric elegance of Appleton House. Moreover, Marvell's numerology takes on greater architectural meaning in light of Appleton's façade, "Whose Columnes should so high be rais'd / To arch the Brows that on them gaz'd." (7-8). Vitruvius theorized that ideal column height, proportions, and placement derived from the perfect number: sixteen, the sum of two anatomical integers (i.e., male height in feet added to the

quantity of fingers).³⁷ Marvell follows his praise for Nun Appleton's classical lines by taking up the trope of proportionality in his description of anatomical dimensions.

Leonardo's anatomical studies, which highlight the golden ratios of nature as they manifest in the human proportion, inspired Marvell as well as his English contemporaries.³⁸ The geometry of human anatomy, previously theorized in the writings of Vitruvius, famously inspired Leonardo's visual investigation of mankind's proportions.³⁹ Leonardo's drawing is emblematic of the Renaissance commingling of art and science, a theme pervasive in the poem. The drawing depicts what Marvell labels a "*Circle in the Quadrature!*" (46) through the overlay of two postures of the male form, one outstretched with limbs tangent to the sides of a square, the other with similarly extended arms and legs such that the body appears perfectly inscribed within a circle. Marvell's "holy Mathematicks" (47) relay classical architectural and Renaissance anatomical investigations. It is no coincidence that Leonardo's imagery depicts the human body symmetrically arranged. The sixth stanza of "Upon Appleton House" alludes to Leonardo's famous sketch of the *Vitruvian Man* (ca. 1490), also known as the "Canon of Proportions."⁴⁰

Humility alone designs
Those short but admirable Lines,
By which, ungirt and unconstrain'd,
Things greater are in less contain'd.
Let others vainly strive t'immure
The *Circle in the Quadrature!*
These *holy Mathematicks* can
In ev'ry Figure equal Man. (41–48)

In this passage, "*holy Mathematicks*" refer to the natural geometries shared by the human form and architecture. As Wittkower explains, "As man is the image of God and the proportions of his body are produced by divine will, so the proportions in architecture have to embrace and express the cosmic order."⁴¹ Like Vitruvius, who designed his columns around the anatomically-derived number sixteen, the poet finds the imprint of human proportion replicated everywhere in the built

environment. Less than a decade after “Upon Appleton House” was composed, Michelangelo (1475–1564) echoes a similar philosophy in his correspondence, “there is no question but that architectural members reflect the members of Man, and whoever has not been or is not a good master of the [human] figure and likewise of anatomy cannot understand [anything of them].”⁴² As Marvell suggests in the second stanza, humans “*measure out*” their habitats with their limbs. Notably, the poet finds that the anatomically-informed architectural formulas produce spaces that overcome their own boundaries, achieving a whole greater than the sum of their parts (“Things greater are in less contain’d” 44). These geometric ideas originate in Vitruvius, who argues that “The measures necessarily used in all buildings and other works, are derived from the members of the human body, as the digit, the palm, the foot, the cubit, and that these form a perfect number.”⁴³ Later, Marvell evokes Vitruvius by echoing his name as the touchstone of his architectural agenda. Marvell famously writes that “Nature is wholly Vitrifi’d” (688), suggesting that the Canon of Proportions maps onto the environment universally.⁴⁴ Thus, Vitruvian influence ripples toward Marvell from at least two springs, first through his observations of the designs of Webb and Jones, and second through the poet’s fascination with Leonardo’s works. This biographical context presents us with the distinct possibility that the works of Vitruvius inspired a measure of Marvell’s rhetoric in “Upon Appleton House.” A closer inspection of Vitruvius’s *De architectura* corroborates this hypothesis.

Marvell’s study of the Fairfacian country house likely began with the second book of *De architectura*, in which Vitruvius titles a chapter “The Origin of the Dwelling House.” This chapter provides a genealogy of human habitation in a series of phases. The first three are summarized as follows: (1) humans depart from an animalistic status when they discover comfort through fire and then develop language communities (2) community breeds society and

upright ambulation and humans develop animalistic shelters like dens, caves and nests (3) humans emulate others and later hone construction techniques resistant to weather. Notions from the second phase resonate in Marvell's second stanza: *Man unrul'd, unproportion'd dwellings, Dens exprest, equal Nest, Bodies measure out their Place*. Vitruvius's description of primitive dwellings on the European continent is striking for its similarity to Marvell's own introduction to Appleton House, where the tortoise first appears. His exposition of naturally occurring architecture of the forest and the dwellings at the outskirts of the Roman Empire is revealing for its reference to the tortoise:

[Four] trees enclose the space for the dwelling. Then upon these they place sticks of timber, one after the other on the four sides, crossing each other at the angles, and so, proceeding with their walls of trees laid perpendicularly above the lowest, they build up high towers. The interstices, which are left on account of the thickness of the building material, are stopped up with chips and mud. As for the roofs, by cutting away the ends of the crossbeams and making them converge gradually as they lay them across, they bring them up to the top from the four sides in the shape of a pyramid. They cover it with leaves and mud, and thus construct the roofs of their towers in a rude form of the tortoise style.⁴⁵

Vitruvius explicitly describes the tortoise style as a cubic structure that is ordered by four tree posts (one in each corner) and four walls at right angles, forming the shape of a cube. Here we are reminded of Marvell's lyrical form, which mimics cubic dimensionality. The thatching of a rudimentary roof causes the top of this structure to swell into a hemisphere, like a pyramid or tortoise shell.

Marvell's understanding of Vitruvian and Palladian architectural theories buttresses his praise of Lord Fairfax. It is no coincidence that the title, "Upon Appleton House, To My Lord Fairfax," includes a caesura that fuses Appleton House's inhabitant to the residence itself. The synthesis of dweller and dwelling is akin to the spinal bridge between a tortoise's torso and shell. Since the home and its owner are inextricable, any praise or criticism of the former reflects upon

the latter. Hence, the title and the first stanza indicate that Marvell conceives of Lord Fairfax and his home as an integral (economic) unit. The poet's praise for the estate at Nun Appleton serves as a metonymic celebration of its manager.

Within this sober Frame expect
Work of no Forrain *Architect*;
That unto Caves the Quarries drew,
And Forrests did to Pastures hew;
Who of his great Design in pain
Did for a Model vault his Brain,
Whose Columnes should so high be rais'd
To arch the Brows that on them gaz'd. (1–8)

The litotes, “Work of no Forrain *Architect*” (2), combines the various influencers of Appleton's design into a single phrase. Appleton House is simultaneously the product of its previous domestic builders, who supplied the foundation for its current designer, Webb. Moreover, the poem's first couplet hints at the foreign influences upon Appleton House's architecture, namely, those designers hailing from the Italian peninsula: Palladio, Leonardo da Vinci, and Vitruvius. The mention of forests, caves, and quarries is suggestive of the environment in which Vitruvius first discovered tortoise-shaped dwellings on the European continent. The adage of humility, “Within this sober Frame expect” (1), highlights the moderate proportions of both the country house and the pastoral poem which praises it.

Vitruvius writes of yet another tortoise, one that was especially apt as a model for his patron.⁴⁶ He details the form and function of the second tortoise shell structure in his tenth and final book, where he gives an account of the “*testudo*.” The *testudo* was a square shelter developed to protect soldiers and siege weapons (e.g. battering ram) during assaults on fortified structures.⁴⁷ Vitruvius describes the tortoise-like hut as a pyramidal shelter with a square base, and four wheeled posts to lend the structure mobility on the battlefield.

Let a base...be constructed, with each of its sides twenty-one feet long, and with four crosspieces...Let the trees be provided with pivots...so that the tortoise can move forward or back or towards its right or left side, or if necessary obliquely, all by the turning of the trees...Let two beams be laid on the base, projecting for six feet on each side, round the projections of which let two other beams be nailed,...and of the thickness and breadth prescribed in the case of the base...Over the beams let the rafters be set, tied one into another by means of tenons, and carried up twelve feet high. Over the rafters set the square beam by which the rafters are bound together.⁴⁸

The extended metaphor of the tortoise, given its layered architectural and military semantics, suits Marvell's patron, Lord General Fairfax. As Commander-in-Chief with Oliver Cromwell in the recently concluded English Civil War (1642-1651), Fairfax was a figurehead for the transition from swords to ploughshares in mid-17th century England. Additionally, the *testudo* siege structure, with its thatched roof meant to guard against incendiary attacks, inspired the architectural designs of Marvell's contemporary Inigo Jones. The original roof designs for the *testudo* bear strong resemblance to Jones's roof designs, which were recognized at the time as departures from Palladio.⁴⁹ This distinction is important because it clarifies the extent to which Jones drew upon Vitruvius's writings as primary source material.⁵⁰ Among other features of Appleton House, Marvell reveres the dwelling's well-proportioned ceilings, a compliment the poet folds into his praise for the "low roof'd" tortoise (13). It appears that Marvell adapts the Vitruvian tortoise to his own ends through a keen understanding of the Ten Books on Architecture.

In sum, tracing Marvell's testudinal imagery to Vitruvius improves critical insight into the sincerity of the former's praise for the design of Appleton House, and by extension, his reverence for his patron and the architects who shaped it. As Marvell's commenters attest, "Upon Appleton House" rhetorically interweaves ecological and architectural content, attributing the production of environmental features to nature. Marvell's tortoise, exemplary for its perfectly tailored habitat, resides at the intersection of the natural and built environments. Although ecological and zoological interpretations of Marvell's *tortoise-shell* abound, such readings

obfuscate the classical theories of proportion intrinsic to its original meaning. This essay argues that the classical tastes of Inigo Jones, and his pupil John Webb, find expression in the design of Appleton House, Marvell's primary inspiration for the poem. Significant portions of "Upon Appleton House" lend credence to the intellectual cross-pollination hypothesis and reveal numerous connections to Vitruvian architectural science and its correlates. First, Marvell constructs "cubic" verses which honour the tradition of Palladianism, that famed school of architecture that derived formulas for the design of Vitruvian symmetries. He then lauds Webb's symmetrical designs with quadratic stanzas, thereby recognizing the degree to which classical architectural influenced its lines. Next, Marvell's verses emphasize the notion of geometric fit through an allusion to Leonardo da Vinci's visual representation of Vitruvius's double inscription of the human form within a circle and a square. Third, and most importantly, Marvell bookends his longest poem with an allusion to Vitruvius's two tortoises, namely, the "low-roof'd" dwelling and the *testudo* housing used in siege tactics. The extended metaphor of the tortoise, in the end, encapsulates the poet's praise for Nun Appleton's balanced dimensionality. Marvell shows his sincere admiration for the estate through the selection of a metaphor rooted in architectural craft. The Vitruvian gloss to Marvell's tortoise metaphor provides a fresh perspective, focusing as it does on the proportional and symmetrical formulas that undergird his paean to the great house of Lord Fairfax. Notes

1. All citations from Marvell's poetry are taken from *Miscellaneous Poems*, the Scolar Press facsimile of the 1681 edition (British Library C.59.i.8). All references in the text refer to 'Upon Appleton House' by line number within the poem unless otherwise stated. This citation: Stanzas 2 and 97.

2. See Turner, *The Politics of Landscape*, 79.

3. Hirst and Zwicker, *High Summer*, 263. Hirst and Zwicker suggest that the absence of topical information in the first stanzas indicate that the architectural introduction to the poem was composed separately, and before, the rest of the poem.

4. See Evett, "Paradice's Only Map," 504–513.

5. See Whitaker, "Mowers of Nun Appleton," 72-94.

6. McColley, *Poetry and Ecology*, 21.

7. Xenophon, *Oeconomicus* 6

8. McColley, *Poetry and Ecology*, 1. "The modern term *ecology* describes the work of these poets better than the classical and early modern *economy*. Both derive from the Greek *oikos*, or household, but economy's other root is *nomos*, law, while ecology's is *logos*, word, knowledge, reason, or the expression of thought. Xenophon's *Oeconomicus* concerns rules for the efficient management of an estate; 'ecology' suggests that our use of knowledge needs to be good for the whole household of living things."

9. *Ibid.*, 7.

10. Marvell conflates the concepts of habitat and body in his description of the tortoise. Most critics regard the tortoise's shell as a habitat unto itself as Marvell also does. It is nevertheless important to differentiate the tortoise's shell from the bird's nest. The habitat of a tortoise is the ecosystem in which it lives; the shell of a tortoise is part of its skeleton.

11. Cotterhill, "Marvell's Watery Maze," 134–35; Molesworth, "Marvell's Upon Appleton House," 161. Cotterhill and Molesworth explain that salmon fishermen ride in "leathern" canoes and that they duck down into their boats when they hide, resembling turtles. Salmon fishermen also only use the resources they require, much like a tortoise takes up only the space it needs: its shell.

12. Swan, "Betwixt Two Labyrinths," 568. "Sir Thomas Browne's famous definition of man as 'that great and true *Amphibium*, whose nature is disposed to live not only like other creatures in diverse elements, but in divided and distinguished worlds.'"

13. McColley, *Poetry and Ecology*, 23; 145; DuRocher, review of *Poetry and Ecology*, 928. DuRocher describes McColley's discussion of the tortoise in the Renaissance as follows, "McColley's ark of animals gives pride of place to the tortoise, celebrated of course for its shell, read as a 'shield of virtue' in English emblem books, as a boat in case of need by Du Bartas in his *Divine Weeks*, and as the packaging for a tasty meat by Thomas Hariot in his account of Raleigh's Roanoke expedition."

14. Skulsky, "Marvell's Comedy of Discourse," 593. "The decorum of tortoise architecture is all too perfect; strictly, the shell of a tortoise is no more a case made of tortoise shell—of a product derived from tortoises—than the hair of a horse is made of horsehair. The joke turns on the fact that English in 1652 had no literal names for organic tissues of various kinds; they have to be coined by metonymy from the names of the relevant organs... The materials of the shell is 'fit' for the tortoise, it turns out, because it is material belonging to the tortoise's shell!"

15. Colie, *My Echoing Song*, 273; Berger, "An Interpretation," 11; Norford, "Holy Mathematicks," 252; Faust, *Liminal Lyrics*, 46. Norford summarizes the observations of Colie and quotes Berger, "Of course Appleton House was not exactly a hut... 'man learns from animals, not by imitating them literally, but by converting the model to a mental figure, by reflecting on the differences and correcting the model as needed.'"

16. Schwenger, "Deceit in Appleton House," 104; Roth, "A Study in Perspective," 280–81. Schwenger and Roth note that the tortoise is a rational (amphibian) actor. Schwenger writes, "Each man carries as burden his hemisphere of awareness, his lesser world, projected upon by the very mind it encloses... this hemisphere, this world, is made by man into a metaphor for himself. It is made to take on an amphibian quality that is really his alone."

17. Evett, "Paradise's Only Map," 511. "The tortoise closes the circle of the poem. It also raises the theme of time and change."

18. Beeching, "H.C. Beeching on the lyrics," 290.

19. Pitman, "Andrew Marvell and Sir Henry Wotton," 157. "He first enclos'd within the Gardens square / A dead and standing pool of Air:"

20. Schoenfeldt, "Marvell and the designs of art," 93.

21. Myers, "Literature and Architecture in Early Modern England," 72.

22. Milton, "Letter of Mr. Milton Concerning Mr. Marvaile," 329–30.

23. Jordan, "Inigo Jones," 297–300. Jordan argues that Marvell's poem "is a signal example of mid-seventeenth-century English reflections of Jones's new morality and new classicism. Jones's insistence on using human proportion as a guide for measuring the harmony between building and owner is everything present in the poem... the transference of ideas of imitation, decorum, and magnificence from Italy across the channel can largely be ascribed to Jones."

24. Birrell, *Andrew Marvell*, 221. Moffitt, "Hut—and—Tortoise," 39–41; Smith, *Andrew Marvell: The Chameleon*; Stocker, *Apocalyptic Marvell*, 257; Swan, "Betwixt Two Labyrinths," 553. Several contemporaries could have served as interlocutors and intermediaries for the transmission of architectural theory to Marvell. Smith's recent biography of Marvell highlights the blanket of privacy that envelops much of the documentary evidence about the poet, and this problematizes the work of evaluating Marvell's knowledge of or connections to Jones or his social circle. However, Smith does highlight Marvell's friendship with Milton in letters from 1653. It remains possible that Milton may have introduced Marvell to the work of Inigo Jones due to a shared interest in masques. Swan and Stocker attest that Jones's masques inspired Marvell. Additionally, Birrell presents circumstantial evidence for the Jones–Marvell link. Birrell explains that Jones designed and paid for the memorial his friend George Chapman, and that his Roman monument was placed in close proximity to Marvell's own memorial at Church of St Giles—in—the—Fields.

Finally, Moffitt presents an alternative vector for Marvell's introduction to Vitruvian science. Moffitt suggests the hut—and—tortoise imagery in George Wither's *Collection of Emblemes* (1635) bears a strong resemblance to the Vitruvian tortoise, and this leaves open the possibility that Wither's works inspired Marvell's poetry.

25. Gotch, *Inigo Jones*, 22; Jordan, "Inigo Jones," 280.

26. McClung, *The Country House*, 19, 58, 79, 94–100. McClung suggests that Palladian architecture had little influence upon English architects at the time of Appleton House’s design and that Marvell wrote “Upon Appleton House” before Palladian-style houses had been built in the country.

27. von Maltzahn, “An Andrew Marvell Chronology,” 33-34. “Jan 30, 1649: AM witnesses the execution of Charles I at Whitehall, outside the Banqueting House.”

28. Partner, “The Swelling Hall,” 234.

29. See Jones, *Inigo Jones on Palladio*.

30. See Hart, *Art and Magic*, 201–206. Scholars continue to debate the intellectual roles played by Jones and Webb.

31. Bold, *John Webb*, 164–65. Evidence for Webb’s role as designer of Appleton House is based on an inscription on architectural minutiae, including an inscription, the Fairfax lion, and military trophies.

32. Vitruvius, 6.3.8. All quotations from Vitruvius originate from two transcriptions by Bill Thayer. Latin text originates from the 1899 Teubner second edition of Vitruvius, whereas all English translations of Vitruvius belong to the Gwilt 1826 translation.

“The height of all oblong rooms is thus regulated: add their length and breadth together, of which take one half, and it will give the dimension of the height. If, however, *exedrae* or *oeci* are square, their height is equal to once and a half their width.”

“altitudines omnium conclavium, quae oblonga fuerint, sic habere debent rationem uti longitudinis et latitudinis mensura componatur et ex ea summa dimidium sumatur et quantum fuerit tantum altitudini detur. sin autem exhedrae aut oeci quadrati fuerint, latitudinis dimidia addita altitudines educantur.”

33. Palladio 1.23. See also Suppes, “Rules of Proportion,” 352–358.

34. Suppes, “Rules of Proportion,” 354. Suppes explains Palladio’s three formulas, which are based on arithmetic, geometric, and harmonic means.

35. McColley, *Poetry and Ecology*, 19-20.

36. Wheeler, *Andrew Marvell Revisited*, 53.

37. Vitruvius, 3.1.7

38. Colie, *My Echoing Song*, 231.

39. Vitruvius, 3.1.2. Leonardo da Vinci configures his art according to the third book of Vitruvius’s *De architectura*, “For the human body is so designed by nature that the face... is a tenth part of the whole height; the open hand from the wrist to the tip of the middle finger is just the same; the head from the chin to the crown is an eighth, and with the neck and shoulder from the top of the breast to the lowest roots of the hair is a sixth; from the middle of the breast to the summit of the crown is a fourth. If we take the height of the face itself, the distance from the bottom of the chin to the under side of the nostrils is one third of it; the nose from the under side of the nostrils to a line between the eyebrows is the same; from there to the lowest roots of the hair is also a third, comprising the forehead. The length of the foot is one sixth of the height of the body; of the forearm, one fourth; and the breadth of the breast is also one fourth. The other members, too, have their own symmetrical proportions.”

40. See Norford, “Holy Mathematicks,” 242–43.

41. See Wittkower, *Architectural Principles*, 104; Panofsky, *Meaning in the Visual Arts*, 101.

42. Buonarroti to Cardinal Rodolfo Pio, 1560, 554; Ackerman, “Architectural Practice,” 3–11.

Michelangelo writes, “E però è cosa certa, che le membra dell' architettura dipendono dalle membra dell'uomo. Chi non è stato o non è buon maestro di figure, e massime di notomia, non se ne può intendere.”

43. See Vitruvius 3.1.5.

“Nec minus mensurarum rationes, quae in omnibus operibus videntur necessariae esse, ex corporis membris collegerunt, uti digitum palmum pedem cubitum, et eas distribuerunt in perfectum numerum, quam Graeci *τελειον* dicunt, perfectum autem antiqui instituerunt numerum qui decem dicitur. namque ex manibus digitorum numero ab palmo pes est inventus. si autem in utrisque palmis ex articulis ab natura decem sunt perfecti, etiam Platoni placuit esse eum numerum ea re perfectum qui ex singularibus rebus, quae *μοναδες* apud Graecos dicuntur, perficitur decussis. simul autem undecim aut duodecim sunt facti, quod superaverint, non possunt esse perfecti, donec ad alterum decussim perveniant. singulares enim res particulae sunt eius numeri.”

44. Ellrodt, “*L’inspiration personelle*,” 153–54. Marvell’s ambiguous usage of vitrified, or the transformation into glass, is subject to interpretation. Ellrodt notes Marvell’s affinity for the peculiar transparency of liquid-solids (“gelid”) and microscopic and telescopic lenses. Ellrodt writes, “This poet takes pleasure in congealing the air and the wave, in vitrifying nature... The stream, like the strawberries, is ‘gelid’, an epithet which unites freshness with the impression of congelation.”

45. Vitruvius 2.1.4. Here Vitruvius uses the word *testudinata*.

“Haec autem ex is quae supra scriptae sunt originibus instituta esse possumus sic animadvertere quod ad hunc diem nationibus exteris ex his rebus aedificia constituuntur, ut in Gallia Hispania Lusitania Aquitania, scandulis robusteis aut stramentis. apud nationem Colchorum in Ponte propter silvarum abundantiam arboribus perpetuis planis dextra ac sinistra in terra positis, spatio inter eas relicto quanto arborum longitudines patiuntur, conlocantur in extremis partibus earum supra alterae transversae, quae circumcludunt medium spatium habitationis. tum insuper alternis trabibus ex quattuor partibus angulos iugumentantes et ita parietes arboribus stauentes ad perpendicularum imarum educunt ad altitudinem turre, intervallaque, quae relinquuntur propter crassitudinem materiae, schidiis et luto obstruunt. item tecta, recidentes ab extremo transtra, traiciunt gradatim contrahentes, et ita ex quattuor partibus ad altitudinem educunt medio metas, quas fronde et luto tegentes efficiunt barbarico more testudinata turrium tecta.”

46. James, “Heraldic Canting,” 494–95. According to James, the family crest of the Third Lord Fairfax of Cameron was a lion. Fairfax’s seal bore the head of a lion that visually dissected the words of the family motto: *Fare Fac*, Latin for, “Say and do...or Preach and practise.” Additionally, this phrase was spoken as two syllables instead of three so that the Latin motto would sound like the English family name.

47. Vitruvius 10.14.1–3; Vitruvius, *Zehn Bücher*, 341, figure 38, 343, figure 39. Illustrations of the *testudo* originate in Franz von Reber’s edition of Vitruvius.

48. *Ibid.*

“1. Testudo, quae ad congestionem fossarum paratur et qua etiam accessus ad murum potest haberi, sic erit facienda. basis compingatur, quae graece ἐσχάρᾳ dicitur, quadrata habens quoqueversus latera singula pedum XXI et transversaria IIII. haec autem contineantur ab alteris duobus crassis F Z latis Szzz, distent autem transversaria inter se circiter pedes III et S supponanturque in singulis intervallis eorum arbusculae, quae graece ἀμαξοποδες dicuntur, in quibus versantur rotarum axes conclusi lamnes ferreis. eaeque arbusculae ita sint temperatae ut habeant cardines et foramina, quo vectes traieci versationes earum expediant, uti ante et post et ad dextrum seu sinistrum latus, sive oblique ad angulos opus fuerit, ad id per arbusculas versatas progredi potest.

2. conlocentur autem insuper basim tigna duo in utramque partem proiecta pedes senos, quorum circa proiecturas figantur altera proiecta duo tigna ante frontes pedes XII, crassa et lata uti in basi sunt scripta. insuper hanc compactionem erigantur postes compactiles praeter cardines pedum VIII, crassitudine quoqueversus palmipedales, intervalla habentes inter se sesquipedis. ei concludantur superne intercardinatis trabibus. supra trabes conlocentur capreoli cardinibus alius in alium conclusi, in altitudine excitati pedes XII. supra capreolos conlocetur quadratum tignum, quo capreoli coniungantur.

3. ipsi autem laterariis circa fixis contineantur teganturque tabulis maxime prininis, si non, ex cetera materia quae maxime habere potest virtutem, praeter pinum aut alnum. haec enim sunt fragilia et faciliter recipiunt ignem. circum tabulata conlocentur crates ex tenuibus virgis creberrime textae maximeque recentibus. percrudis coriis duplicibus consutis fartis alga aut paleis in aceto maceratis circa tegatur machina tota. ita ab his reiciuntur plagae ballistarum et impetus incendiorum.”

49. See Yeomans, *Inigo Jones's Roof Structures*, 89. See also note 23 above.

50. Marcus, *The Politics of Mirth*, 132. Ben Jonson famously caricatured Inigo Jones with the character “Colonel Iniquo Vitruvius” in *Love’s Welcome at Bolsover* (1634).

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