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“Seeds and Roots”: Hiddenness and Hendiadys

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In a 1981 *PMLA* article, George T. Wright bemoaned the lack of attention scholars had given to William Shakespeare’s frequent use of the classical rhetorical device known as *hendiadys*. According to Wright, “hendiadys deserves more thoughtful attention than it has ever been given, for Shakespeare uses it far more freely and frequently than his scholarly commentators have led us to believe—over three hundred times in all, mainly in the great plays of his middle career and most of all in *Hamlet*.”^[1] Despite Wright’s impassioned campaigning for the overlooked rhetorical figure, four decades later hendiadys remains a relatively obscure and understudied facet of Shakespeare scholarship.^[2] In this essay, therefore, I work toward some additional explication of hendiadys in Shakespeare – and more generally in early modern writing – by investigating a particular hendiadys, “the seeds and roots of...,” that appears only once in Shakespeare’s corpus but can be found in multiple texts of the period. In what follows, I want to suggest that the spatially proximate positioning of both the root and the germinating seed below or near the base of a vegetal body, essentially hidden from human vision, gave rise to this now obscure rhetorical expression that blended these two vegetal parts into one: “the seeds and roots of [insert abstract concept],” a hendiadys that combines both seeds and roots into a compounded metaphor for origin. Specifically, I argue that the hendiadysical expression “the seeds and roots of...” contains a material trace of the morphological identity of plant life, in the relation of parts to the whole, as highly rhetorical and discursive as it indeed may be.

The figure of hendiadys is underdiscussed perhaps because of its somewhat confusing nature and its overlapping or blurring with other similar rhetorical figures, such as *zeugma* or *pleonasm*; all of these rhetorical figures can involve a (potentially or apparently redundant) doubling or forming of word-pairs. A hendiadys expresses a single idea by using two words connected with “and,” often when only one word is apparently necessary, usually adding emphasis and changing the cadence of the expression. In *The Arte of English Poesie*, George Puttenham refers to “Endiadis” as “the figure of Twynnes,” giving as one example: “A proud people and wise and valiant / Fiercely fighting with horses and with barbes.”^[3] The first line contains a conjunction of adjectives but does not contain hendiadys since “wise” and “valiant” are separate attributes of these people. In the second line, however, “fighting with horses and with barbes” is a hendiadys because, as Puttenham explains, this phrase is for “barbd horses.” In other words, the words go together as one entity, but their separation with the conjunctive “and” creates a different rhetorical effect. Hendiadys differs from *zeugma* in that it expresses one idea, concept, or image while using two separate words, whereas *zeugma* uses two obviously contrasting concepts in conjunction (example: my love broke my heart and my bank account). Pleonasm denotes rhetorical redundancy and can be expressed with the conjunction of near synonyms (you know this “good and well”). Hence, “the seeds and roots of” might be viewed by some as a pleonastic expression, but I will maintain its hendiadysical construction in this essay because “seed” is not a synonym for “root,” even if they are both used in the expression to communicate the idea of arboreal origin.

Although my focus here is rhetorical and thus based in language, the vegetal images of seeds and roots contained in this expression point to living, material parts of plants that existed in the early modern world, as they still do today. The intersecting “materiality” of human and nonhuman networks has attracted the interest of many early modern ecocritical and cultural studies scholars.^[4] Indeed, scholarly attention to this “more-than-human” material world infuses a recent issue of *EMSJ* that celebrates the tenth anniversary of the Early Modern Recipe Collective Online (EMROC). Numerous examples of plant bodies and their parts that appear in early modern recipes are cited in the issue, such as when Grace Beacham mentions how some recipes for cough syrup call for fennel seed and aniseed (anise), and when Julia Nurse discusses medicinal receipts related to pregnancy that call for cumphry root, burlfroot, and parsley root.^[5] Any one of the particular vegetal ingredients like the ones Beacham and Nurse mention could be further explored and analyzed, perhaps by using contemporary herbals for context, to illustrate their imbrication within larger material networks. In tracing the bodies of plants in this essay, however, focusing on certain parts of their bodies, I want to move slightly away from the specificity of the single ingredient – the instrumentalized body part; in so doing, I hope to move toward the *common particularities* of plant parts that appear in early modern texts, in an attempt to see past the abstracted and extracted individual seed, for instance, that is associated with a specific plant type or species, to reach for some of the vibrancy of plant *life*, such as the living processes of vegetal sexual reproduction implied in the proliferation of “seeds” across multitudes of texts.^[6] Additionally, rather than tracing the peculiarities of the burlfroot or the cumphry root, I am interested here in “roots,” especially where they commingle in the discursive dirt with “seeds” in early modern texts, whether those texts are explicitly “about” plants or not.

Discussing the methodology of single-ingredient analysis, Keith Botelho highlights the value of using EEBO (Early English Books Online) to access John Gerard's *The herball or Generall historie of plantes* (1597).^[7] What one will find in Gerard's herbal, as well as in other herbals from the period, are the specific names of individual plants, followed by descriptions of their characteristics and "virtues."^[8] Moreover, the authors of herbals typically break down the virtues and potential uses of particular plants specifically by plant part – the leaves, the roots, the seeds, etc. – which have different effects on various parts of the human body. For example, in Gerard's herbal, under the entry for the reed, we find paired the specificity of plant part with its "virtuous" application: "The roots of reed stamped smal draw forth thorns and splinters fixed in any part of mans body."^[9] In early modern genres, such as receipt books, the bodies and parts of these nonhuman entities performed their virtues by alternately serving *as* ingredients themselves and unwittingly creating ingredients, such as their fruits, for the "human world" of culinary instruction and application. Specific bodies and extensions of those bodies alike are instrumentalized in texts – and *were* instrumentalized in practice. Writers who named, described, and otherwise identified plants and their parts in encyclopedic texts similarly helped to facilitate this process of instrumentalization.

So, in isolating these plant parts for analysis, in a sense I admittedly follow in the tradition of herbalists like Gerard. However, I am attempting to think with these parts and pieces of vegetal being more ontologically, or perhaps morphologically, that is, as bodies with body parts,^[10] as well as physiologically or functionally, more so roots-as-roots rather than roots as ingredients (although they obviously could be). Parts of plants in this sense persist across time, chronologically (and quite literally) – in the span of their long biological lives^[11]; situationally – in their particular orientations in space and within their environment in relation to other bodies, vegetal or otherwise; and categorically – in a more general sense than that of speciation. This morphological persistence of the seeds, roots, and other specific parts of plants in early modern texts connects us to our early modern past and even considered that such thoughts and shapes that emerged in distant antiquity. By thinking of plant parts from a physiological perspective, we might begin to understand or at least imagine how certain parts of plants serve the plants themselves, for example by extending their bodies into the world by means of growing root tips or reproducing themselves via pollination, fruiting, and seeding. To make this material *and* discursive analysis, I draw upon new materialist frameworks, particularly the concepts of "veering ecology" and "storied matter," which I discuss in the following section. After this methodology section, I examine textual moments in which the "seeds and roots" hendiadys occurs, beginning with literally minded botanical texts that refer to actual seeds and roots, before coming to figurative uses of the expression, to suggest that their coming together in space, time, and text unconsciously preserves a vibrant piece of early modern vegetality. The vegetal, preserved in hendiadys, goes against – or at least presents an alternative to – the tendency of botanical writers to pin down and name, taking textual "samples" in an attempt to "know" the identity and purview of a plant by making its parts legible as an ingredient or an encyclopedic entry, ready for consumption or application.

Veering Plant Bodies: An Ecomaterialist Approach

The version or application of new materialism I employ here is called “veering,” an ecologically minded new materialism (or ecomaterialism) developed in Jeffrey Jerome Cohen and Lowell Duckert’s edited collection *Veer Ecology* (2017). Subtitled “A Companion for Environmental Thinking,” this experimental book asked each contributor to write about a single verb, such as “vegetate,” “globalize,” “compost,” and “environ,” among over twenty other verbs. In her forward to the book, Cheryll Glotfelty explains that with these verbs Cohen and Duckert hope “to send us in new directions and propel change.”^[12] In their own introductory words, Cohen and Duckert are “fostering ecological attentiveness and encouraging further wandering.”^[13] When I was writing my dissertation a few years ago, I used Cohen and Duckert’s concept of veering to help my “further wandering” into the many weeds of Shakespearean arboreal references and to hone my own “ecological attentiveness” in relation to the botanality of the Shakespearean corpus. I intentionally chose tree parts that can double as nouns or verbs (leaf, bark, thorn, and root), following Cohen and Duckert’s urging to do ever more veering: “Each word is a spur to more turns.”^[14] They elucidate, “To verb is to find the motion in the noun, the play in the preposition, the transport of the metaphor, the intensification of the adverb, the escalation of the adjective, the doing of the word.”^[15] Some of these verbs have changed in usage over time (e.g. “to bark” in the early modern period was used to indicate the removal of bark around a tree, which kills the tree above that ring^[16]), while others still convey similar meanings today as they did 400 or more years ago. Some verbs have vanished into obscurity and obsolescence, such as “to thorn.” Both “root” and “seed” are of course still in use today, as nouns and verbs, but the combined “seeds and roots of” construction has all but disappeared from common usage, allowing me to veer in a new direction with this essay as I revisit my original “root” veer from my *As You Like It* chapter, veering off into hendiadysical territory.

Although the expression “the seeds and roots of” contains two nouns, its ending prepositional suggestion of vegetal origin and growth also implies “the motion in the noun,” and indeed, the “doing of the word.” The phrase “doing of the word” aptly illustrates the “both-and” logics of new materialist thinking; the concept of “storied matter” in particular, developed by ecomaterialists Serpil Oppermann and Serenella Iovino, communicates a view of the world that embraces the “material-semiotic,” a hyphenated term meant to suggest the enmeshment of matter and language, positing that all matter is “storied,” just as all stories are attached in various ways to physical materials.^[17] Oppermann and Iovino are among numerous scholars in this field who have shown that the separation of ideas from matter is not tenable; the two are thoroughly intertwined.^[18] Similarly, the supposed separation of actor and action is not as concrete as we would like to believe, as Karen Barad demonstrates with her quantum physics-inspired concept of intra-action^[19]; *antimeria*, the rhetorical term describing the ability of nouns to shift into verbs, likewise testifies to this situation. Matter is dynamic, not stable, and therefore the “matter” of Shakespeare and other early modern “materials” are in fact ever changing. Veering with words like “root” and “seed” requires flexibility as these words take on different shapes and meanings depending on their context, although their veering history often has “roots” in the physical world, in the bodily material of vegetal beings that inhabited the earth (and continue to do so). Moreover, as Leah Knight reminds us, “Printed books, then as now, were made from plants at the most basic material level of the botanical pulp—then flax, now softwood—that formed their pages ... Plants and pages were thus quite literally bound

together.”[20] Knight writes of two apparently distinct forms of materiality, although essentially it is one and the same: plants. But what is written and communicated on the bodies of plants (on pages) constitutes not only materiality but a material-semiotic enmeshment, matter that is storied. Taking this connection yet further, Joshua Calhoun extends McKenzie’s bibliographic notion of a “sociology of texts” to the more-than-human world, the various plant materials that have composed textual objects in different times comprising an “ecology of texts” in which physical matter and the material environment in and around “text” is understood as part of the reading and rhetorical experience.[21]

Based on these insights, a veering ecomaterialist approach to early modern plant-life represents a potential for an alternative methodology to that of a long tradition in Shakespeare studies to catalog and compile the flora mentioned in Shakespeare’s corpus into exhaustive, encyclopedic books of horticultural knowledge. The most well-known early version of these efforts is Henry Ellacombe’s *Plant-Lore and Garden-Craft of Shakespeare*, first published in 1878, alphabetically organized, describing Shakespeare’s plants, trees, and flowers from *Aconitum* to *Yew*. This Shakespearean “botanical criticism,” to use John Charles Ryan’s term, has continued through the nineteenth, twentieth, and twenty-first centuries, with standout titles including Jessica Kerr’s *Shakespeare’s Flowers* (1969) and Quealy and Collins’ illustrated *Botanical Shakespeare* (2017). The encyclopedic impulse to organize, list, and describe Shakespeare’s botanical references also manifests strongly in Vivian Thomas and Nicki Faircloth’s *Shakespeare’s Plants and Gardens: A Dictionary* (2014), which contemporizes but also continues the tradition Ellacombe started over a century ago. In their dictionary, however, Thomas and Faircloth strive to include not only “all the plants and aspects of gardens that appear in Shakespeare’s works” but also terms related to plants such as “the many aspects or appendages (leaves, seeds, chaff),” “processes attaching to plants,” and “conditions or circumstances relating to growth.”[23] Their lexiconic explorations of the vegetal in Shakespeare are indeed prolific, ranging across the many names, parts, pieces, and processes of plant life. As they state, “Adjuncts or elements of plants are numerous: bark, branch, blossom, leaf, grain.”[24] While Thomas and Faircloth’s efforts at going beyond the description of plant species to include plant processes are admirable (and their book is frankly indispensable for the Shakespearean botanically minded), it also must be stated that the majority of the headwords in their dictionary are nouns, foregrounding a different grammatical focus than the verbs of “veer ecology.”

In contrast, a veering ecomaterialist orientation would move away from classifying plant bodies to a more ecological, material-semiotic understanding of plant processes, which include not just natural processes but also the relationship between humans and the nonhuman world, a relationship that is often temporally flexible as these worlds overlap in different times and spaces, one element of which is the discursive dimension of rhetoric that intersects with the morphological domains of plant life/lives.[25] While encyclopedias and dictionaries like Ellacombe’s and Thomas and Faircloth’s are extremely useful to scholars of early modern/Shakespeare plant studies, a veering ecomaterialist approach can “look between” the dictionary headwords and nouns to dwell on and think with the processes of plants so that the bodies of plants and their body parts do not become abstractions in text but evocative of living appendages that grow in surprising and unpredictable directions, sometimes fusing with other

plant bodies, and often defying our expectations. As plants reach across those entries to other plants, parts of some plants may brush against parts of others, such as “seeds and roots,” separated by the gulf between “S” and “R” in dictionaries, but which came together in rhetorical form to tell a particular story that goes beyond “roots” or “seeds” in isolation, a story of intersecting vegetal body parts, hidden underground.

While doing research for my chapter on *As You Like It*, I had noticed a peculiar paradox with the term “root” itself. “Root” can carry a twin meaning in early modern texts: it can suggest both young, emergent life, as a metaphor for origin, while at the same time evoking old age and antiquity. But further still, roots can also blur with seeds as figures of origin, merging in the muck with the vulnerable, newborn vegetal life that emerges following germination. Could this seed/root association be part of the reason for this “root” paradox? Just as veering nouns and verbs can blur into one another, roots and seeds, it seems, are also mixed and intertwined, both literally in the soils that make up the rhizospheric zones beneath trees and in the figurative language about plants we use to express ideas related to origin and the relationship of new and old life. In its hendiadysical form, “the seeds and roots of” tells a story of vegetal hiddenness, ambiguity, and multiplicity, despite its metaphorical instrumentalization of plants. Using “seeds” and “roots” as metaphors to stand in for the notion of “origin” (or some other meaning), just like identifying plants for reference or as ingredients, is an instrumental usage of these plant parts: we are using the bodies of plants to help us understand abstract concepts related to human processes or relationships. But as they come together in seeming redundancy in their hendiadysical form, they reveal something of their hidden physical properties and proximities: the conjunction “and” and the preposition “of” give and delineate space to these parts, showing nearness and relation, while still maintaining some distance and parsing functional autonomy. Hence, the conflation and rhetorical association of roots with seeds is a kind of intimate partnership: “seeds and roots of” is a different kind of entity from “seeds” and “roots” as standalone subjects, and this configuration opens possibilities for sensing subterranean processual motions, gesturing toward the idiosyncratic being of plants that otherwise may escape our notice or attention.[\[26\]](#)

The Material Roots of “Seeds and Roots”

Both buried seeds and emerging roots exist largely underground, their movements invisible to the human gaze, evading detection, yet ever growing and intertwining in that hidden underground world as well as in the human imagination, which cannot seem to help but fill in the gaps of its unknowing. In this section, therefore, I begin with the “hiddenness” of literal seeds and roots. “Seeds” and “roots” in early modern discourse are often nonfigurative botanical references to the actual plant parts, which, though not identical or interchangeable, do sometimes appear in proximity to one another in texts in almost hendiadysical fashion, perhaps the very “seeds and roots” of the hendiadys itself. Both “root” and “seed” take turns in early modern writing as nouns and verbs. Roots as nouns sometimes appear in physical form, consumed, for example, by the exiled Timon in Shakespeare’s *Timon of Athens*, which calls for roots as stage props and directs the actor playing Timon to “dig” for roots onstage, commanding the earth to “yield me roots” (4.3.23).[\[27\]](#) The *Oxford English Dictionary* cites the first appearance of “root” in a medicinal recipe in *Leechdoms, Wortcunning, & Starcraft* that calls

for arboreal ingredients: “horsellenes rota & eftgewæxen barc” (roots and bark).^[28] As these two examples demonstrate, premoderns generally valued roots as either food-stuff or healing material, illustrating the instrumentalized relationship people established in relation to plants either as use-objects or as objects of consumption. But these examples also attest to the hiddenness of roots in the earth, Timon’s demands only amplifying his frenzied digging; the recipe’s call for horse-heal roots likewise implicitly directs the reader to break the ground and dig into previously unseen territory.

“Seed” as a noun was generally understood in a similar way to “root,” an object of agricultural or medicinal provision.^[29] As a verb, “seed” is of course also associated with husbandry, as in “seeding the land,” but additionally it can mean “To provide with the germ or latent beginning of some future growth or development”^[30]; this latter sense is the basis for its figurative meaning as “origin.” “To seed” indicates reproduction “by means of seed; to germinate and grow from a seed.”^[31] Seeding, then, describes the seed’s own movement out of itself. To seed is to be a seed, which implies an outgrowth of vegetal being, rooting below and shooting up above. On the other hand, “rooting,” a term often combined with “out,” “up,” or “away” in early modern discourse, took on a negative identity (like “barking” mentioned above): to “root” was to un-root, to annihilate the vegetal being by removing a plant by its root, destroying its existence utterly and completely. The act of “rooting” was an equivalent to what gardeners today call “weeding.” In *Henry VIII*, for example, the Gardiner complains of Cromwell, “He’s a rank weed Sir Thomas, / And we must root him out” (5.1.52-53). By the early sixteenth century, “root” had also become associated with the digging of pigs or hogs into the ground with their snouts; of course, they were often rooting for acorns, another material-semiotic connection between the shared domain of “root” and “seed.”^[32] From a physical standpoint, many seeds were also noted for their diminutive size, especially considering that giant trees would grow out of some of them; the well-known biblical parable of the tiny mustard seed, epitome of the miniscule, further reinforces the notion of vegetal hiddenness, as the tiny seed is nearly invisible to human eyes.

Thus, when they are not being brought up and out from the soil for human consumption and other uses, roots and seeds live something of an invisible life, at least from our perspective. In the treatise *A plaine path to perfect virtue* (1568), for example, Dominicus Mancinus emphasizes from a humoralist perspective the long amount of time that seeds are buried below the soil, living in secrecy, before sprouting up before human eyes:

For seede that in the soile is sowne lies hidden long below,
And many monthes is vnder grounde, but yet at last doth grow:
And all the while in bellie of his mother Earth it lies,
The want of humour in the seede. the moistie soile supplies.^[33]

In *Sylva Sylvarum* (1627), Francis Bacon similarly speculates about this invisible existence, discussing the relative strengths of a plant’s “spirit,” depending on the part of the plant in which that spirit resides:

Plants (for the most part) are more strong, both in Taste, and Smell, in the Seed, than in the Leafe, and Root. The Cause is, for that in Plants, that are not of a Fierce and Eager Spirit, the Vertue is increased by Concoction, and Maturation, which is euer most in the Seed; But in Plants, that are of a Fierce and Eager Spirit, they are stronger whilst the Spirit is enclosed in the Root; And the Spirits doe but weaken, and dissipate, when they come to the Aire, and Sunne; As we see it in Onions, Garlicke, Dragon, &c. Nay there be Plants, that haue their Roots very Hot, and Aromaticall; And their Seeds rather Insipide; As Ginger. The Cause is (as was touched before,) for that the Heat of those Plants is very Dissipable; which vnder the Earth is contained and held in; But when it commeth to the Aire, it exhaleth." [34]

Although Bacon's proto-scientific approach was beginning to move away from humoralism, his thinking here about the hidden realm of botanical life, particularly that of seeds and roots, is based on suppositions about the heat "contained and held in" "vnder the Earth," providing "virtuous" qualities of fierceness or eagerness to the body parts of plants in that vicinity. Not until they "commeth to the Air" do they "exhaleth" or breathe out the vigor they maintained while in the subterranean. Coming at this notion of subterranean vegetal vitality from a similar angle, French author Pierre de Ronsard suggests in his sixteenth-century poem "Hymne de l'or" ("Hymn to Gold") that this vitality can be transferred to minerals, namely gold, that have been unearthed. Phillip John Usher refers to this transferability phenomenon represented in the poem as the "exterranean," that which has been extracted from the earth but retains a trace of its hidden origins.[35] The "seeds and roots" configuration in hendiadys likewise exhibits an exterranean quality in addition to having a subterranean association, the "invisibility" of these vegetal parts made visible at distinct points in their development and/or extraction by humans or animals.

Modern biological perspectives would confirm that the root is indeed related to the seed in that roots are the first thing to appear out from the seed following germination: "the single root, which grows downward, soon gives rise to lateral branches, which grow and produce other branches, which in turn branch out again." [36] Furthermore, the humoralistic reaching for explanations of the mysterious powers of the subterranean by writers like Mancinus and Bacon is now finding new expression in some scientific studies of underground. The rhizosphere, the area comprised of the soil that is in proximity to a plant's or tree's root system, is a complex zone of biological and chemical interactions. As the German forester Peter Wohlleben points out, "most individual trees of the same species growing in the same stand are connected through their root systems ... forests are superorganisms with interconnections much like ant colonies." [37] Moreover, fungal networks, composed of symbiotic mycorrhizae, intercede in the midst of the already diffuse root systems of these "superorganisms." The underground network becomes even more extensive with the presence of these collaborative fungi.[38] Amongst the myriad activities within these complex mycorrhizal networks, seeds also become part of the rhizospheric environment, with some mycorrhizae accelerating seed germination and development.[39]

In this dense, hidden space of vegetal and nonvegetal interaction, seeds and roots occupy a space at once proximate and indeterminate, their "virtuous" effects as described in early modern texts sometimes closely associated, conflated, or interchangeable, as I will show with the following

examples. To be clear, these “seeds and roots” and “seeds *or* roots” references are not hendiadyses, but their textual proximities, in line with their physical proximity, help to establish their close physical association and thus their ability to unify metaphorically and rhetorically in the hendiadysical expression. This first example comes from a medicinal recipe, titled “To kill wormes that gnaw and eate the heare”:

TAke a quantitie of the séedes or rootes of marshe Mallowes, and boyle them a little, then let it coole, and of the Mucillage which shalbe taken thereof, you shall annoynt the heare. The like effect is séene by annointing the heare with the Mucillage made of the leaues of Willowes.[\[40\]](#)

The “or” conjunction in this case between “seedes” and “rootes” highlights the interchangeability of this vegetal ingredient, differentiating the two plant parts but also simultaneously drawing them closer together, in the sense that they are both presumed to have the same effect as the other. In another highly instrumental example from a hunting manual, Juliana Berners presents a recipe of sorts for making duck-bait or geese-bait:

TAke the seed of Belenge, and the rootes also, and steepe them in water the space of a day and a night: then seeth the said séeds and roots in the water that they were stéeped in, so that the séeds may well drinke & soke vp the water, then lay the sayd seedes or graine in the places where wilde Duckes and wilde Geese and woont to resort, and they will eat this graine or seede so prepared, and thereupon will sleepe as they were drunke, and in the meane time you may take them with your hands.[\[41\]](#)

Notice here that both seeds and roots are to be used in the steeping process, but only insofar as the seeds “may well drinke & soke vp the water.” The roots are to be abandoned when it comes to baiting the poor birds. However, once again, there is a strong association between seeds and roots in this text, and their syntactical proximity in the compound subject “seeds and roots” reinforces that association the more strongly.

Figurative Seeds and Roots: Vegetal Hiddenness and Latency

Numerous other examples of literal “seeds and roots” like these exist alongside each other in early modern texts, including variations such as “roots and seeds” (in multiple sources, for example, the roots and seeds of peony constitute part of a cure for epilepsy, the “falling sickness”[\[42\]](#)). These references to literal seeds and roots complement the many figurative uses of seeds and roots as metaphors, representing concepts such as hiddenness, depth, and origin. Figuring humans metaphorically as plants or trees has a long history that traces back at least as far as the image of the Tree of Jesse, portrayed in the book of Isaiah’s eleventh chapter. The Tree of Jesse was a common, though potentially confusing, metaphor for family genealogy, which is perhaps another reason for the blurring of “seeds and roots” in discourse. References to the Tree of Jesse refer variously to the “root,” “stem,” “rod,” “branch,” “shoots,” and “seed” of Jesse, the variations of plant parts apparently due to different translations or simply paraphrasing. However, part of this confusion may have come from the facts of vegetal reproduction itself; indeed, the overlapping or blurring of vegetal parts in discussions or representations of the Tree of Jesse may have resulted because of the nonsexual reproductive

strategies of vegetal life that exist alongside its sexual ones, trees springing not only from seed but often from branches which “shall grow out of his roots,” the seemingly spontaneous generation of life.[\[43\]](#)

Some of the confusion also results, however, from the way the image is portrayed in Isaiah itself, with differences between verse 1 and verse 10 allowing for conflicting interpretations of what the “roots” in each of those verses signify. As Jacob Stromberg explains, while verse 10 uses “root of Jesse,” the first verse “talks about a ‘branch from the stem of Jesse’ ... and a ‘shoot from his roots.’”[\[44\]](#) For some biblical scholars, the “root of Jesse” in verse 10 refers to “the community that survived the exile,”[\[45\]](#) illustrating a confusion over descendancy or ancestry, root or shoot. Perhaps this blurring is due to the fact that vegetal anatomy can be somewhat indeterminate; who is to say what constitutes a root or a branch or a stem when vegetal being moves unpredictably and can often transform itself when the situation requires? Moreover, many premodern writers, including Shakespeare, do not seem overly concerned with the accuracy or consistency of their vegetal metaphors regarding which vegetal part was supposed to correspond with whatever anthropocentric concept being represented; therefore, they would often isolate plant body parts abstractly away from their context, isolated for rhetorical effect more than logical analogy, also tapping in loosely to the well-known Tree-of-Jesse phenomenon. In *Richard II*, for example, Shakespeare plays on Tree-of-Jesse-like imagery when the Duchess of Gloucester tells John of Gaunt, “Edward’s seven sons, whereof thyself art one, / Were as seven vials of his sacred blood, / Or seven fair branches springing from one root / ... / One flourishing branch of his most royal root” (1.2.11-13, 18). Similarly, in *The Winter’s Tale*, Camillo tells Archidamus, “Sicilia cannot show himself over-kind to Bohemia. They were trained together in their childhoods, and there rooted betwixt them then such an affection which cannot choose but branch now” (1.1.21-24). Branches proceed from roots in these examples, but the rest of the tree is not necessarily relevant.

I’ve taken this detour into the confusion around the details relating to the Tree of Jesse because I am suggesting that the “seeds and roots of” expression comes about potentially because of such conflation and seeming indifference to anatomical or physiological precision with regard to plant bodies. However, I also want to argue that the “seeds and roots of” construction is a specific kind of conflation that resulted from more than just a musical chairs rotation of vegetal parts in ancient and early modern metaphor. In part, this has to do with the way that “root” has colonized or assimilated other similar metaphors. Christy Wampole discusses the root as metaphor in contrast to three other metaphors for origin: foundation, source, and seed. She states, “The root is a powerful metaphor because it groups in a single figure the primary features of the others: like the foundation, it embodies the stabilizing precondition for upward development; like the source, it approximates water in its fluvial form and its function as a channel for fluids; and like the seed, it is a botanical figure for potential and growth. Combining the stability of architecture, the fluidity of water, and the vitality of plant life, the root is a kind of supermetaphor that subsumes the others.”[\[46\]](#) The relationship of this “supermetaphor” to “seed,” however, is a special one because it is not merely “subsuming” another metaphorical concept but as fellow vegetal part also associating with it metonymically. That is, it is more than just a similar “botanical figure”; like the seed, the root is a part of the whole body of a vegetal organism. And more than that, both seeds and roots can be found in the soil within

proximity to one another, their physiological functions crossing paths at certain stages of their development.

For Shakespeare, roots sometimes signify some combination of (old) age, antiquity, longevity, long life, depth, or something hidden and difficult to get to the bottom of. To give a few examples: in *Coriolanus*, Aufidius refers to “A root of ancient envy” (4.5.106); in *Cymbeline*, a gentleman proclaims, “I cannot delve him to the root”; and in *1 Henry VI*, Warwick asks, “Spring crestless yeomen from so deep a root?” (2.4.85) But roots in Shakespeare can also refer to origin or source, as in *3 Henry VI*: “...for ‘tis Clifford, / Who, not contended that he lopp’d the branch / In hewing Rutland when his leaves put forth, / But set his murdering knife unto the root / From whence that tender spray did sweetly spring – / I mean our princely father, Duke of York” (2.6.46-51), and in *Macbeth*: “But that myself should be the root and father / Of many kings” (3.1.5-6). In both of these latter examples, Shakespeare again plays upon the Tree-of-Jesse genealogical imagery, the “root” of the tree equivalent to the “father,” and generally a royal father.^[47] Note in the first example, though, how the associations with youth, the “tender spray” that “springs” from the root, blend into and thus blur the concept of the root being old, such that Richard, Duke of Gloucester, who speaks these lines, has to clarify himself at the end of his speech, compelled to name his father explicitly as the root in his genealogical analogy. In the lines from *Macbeth*, spoken by Banquo, an interesting thing happens because Shakespeare employs another hendiadys – “the root and father of...” – which is only slightly different from the “seeds and roots of” hendiadys, also including a word alongside “root” that is possibly unnecessary, but metonymically substituting “father” for “seed.” It is not necessary for Shakespeare to include “father” as well as “root,” considering how prevalent the Tree-of-Jesse imagery is, but it reminds the audience, like Richard who clarifies for his audience, of which direction the vegetal analogy goes. This “root and father of” hendiadys anticipates Shakespeare’s use of the actual “seeds and roots of” hendiadys in his later play *Pericles*, when Lysimachus identifies Marina’s “principal,” or head of the household (in this case, a brothel), as “your herb woman; she that sets seeds and roots of shame and iniquity” (4.6.82-83). Lysimachus in fact employs a double-hendiadys here, “shame and iniquity” just as much an apparently unnecessary repetition as “seeds and roots.” But in its doubling, one can appreciate its symmetry, almost as though the seeds are producing shame and the roots, iniquity. In any case, the hendiadys “seeds and roots of” here stands for an origin or cause, even at the same time it orients itself toward the future, showing the temporal dissonance or paradox I mentioned in relation to “root” above. “Seeds and roots” as hendiadys obscure visibility and certainty because they stand at both the beginning and the end of time, depending on one’s vantage point.

As evidenced in this last example from Shakespeare, the phrase “seeds and roots of” during the early modern period came to be by the mid-seventeenth century a rhetorical commonplace referring to an origin of or the consequences resulting from a behavior, habit, or choice of lifestyle, consequences that could be negative or positive, depending on the particular choice.

For example, *Of wisdom three bookes* by Pierre Charron (translated by Samson Lennard and published in 1608, the same year *Pericles* is believed to have been written) refers to the “seed and root of ambition,” as well as noting that “the seeds and roots” of the virtue prudence “are

hidden, and such as the nature of man cannot find, nor ought to seeke after.”^[48] Contemporary texts use similar expressions such as “root of ambition” or the “seed of ambition,” but by using the hendiadys, Charron, like Shakespeare in *Pericles*, amplifies the rhetorical effect, doubling the stigma that the intended audience was expected to associate with ambition. With respect to virtue, Charron’s hendiadys also emphasizes its hiddenness: virtue is something that is buried deeply, not only among seeds but also roots.

Toward the end of the seventeenth century, the expression was still being used, similarly voicing both positive and negative connotations. In one positive example from a mid-century treatise on Christian conduct, the author relates: “Government is a defence to tender Plants in Christs Congregation: It gives countenance and a guarding presence to the Seeds and Roots of Grace and Piety.”^[49] Here, “Grace and Piety” symmetrically align with “Seeds and Roots,” much as “shame and iniquity” do so in *Pericles*. Negative uses of the hendiadys often came in the form of warnings or urgings to essentially “nip it in the bud,” to use another vegetal expression, such as this one: “it is both the Prudence, and Duty of his Function to Prevent Mischiefs in the very Seeds and Roots, before they come to a Head.”^[50] Similarly, Thomas Nevett uses it with regard to health and medicine: “These Antiphthisicks are really impregnated with such Volatile Spirits and Salts, that like unto Lightning they penetrate the remotest Corners of the Body, exterminating the very Seeds and Roots of this grievous Disease, powerfully and effectually, yet pleasantly and securely, if plentifully taken in the manner of a Dyet.”^[51] Clearly, Nevett favors the “and” conjunction in general to add emphasis to his prose, but he goes even further with his use of the “seeds and roots” hendiadys, adding “very” ahead of it to assure it is as emphatic as possible.

Finally, some early modern examples of this hendiadys evoke not only the hiddenness inherent in vegetal parts submerged in soil but also their latent capacities, equally “hidden” in those body parts until the future time arrives at which they will emerge and appear. To illustrate this particular quality of the hendiadys, I offer first another example from Francis Bacon, who complains of the potential burden of “the addition of further Empire and Territory” because “it hath kept alive the seeds and roots of Revolts and Rebellions for many Ages.”^[52] In this application of the hendiadys, “the seeds and roots of” functions not merely as origin or cause but also a perpetual latency or regenerating potential, the seeds and roots working in tandem to produce not just vegetal being but vegetal *beings*. A similar use of the expression can be found in the following example from an “essay in morality” from 1696: “every man hath the seeds and roots of all particular Vices in his nature.”^[53] This example is different from, say, the “seeds and roots of ambition,” for a couple of reasons. First, it represents the concept of origin in a slightly different way; that is, it understands “seeds and roots” less as figures of early or emergent versions of a larger, more developed thing than as figures of an invisible latency that may or may not emerge from that invisibility. Second, the essay’s author applies the hendiadys not to a single vice like ambition but to “all particular Vices in his nature,” associating “seeds and roots” more with fundamental character traits – already platonically whole whether or not they manifest in the world. This neo-platonic sense of “seeds and roots of” also comes through strongly in the following example from a religious treatise from 1685, in which “seeds and roots” is used in its literal sense, even as the author employs a different

hendiadys, “the seeds and principles of,” to suggest that the act of humans learning artistic and scientific principles resembles the natural process of germination:

...the seeds and principles of all these arts and sciences are planted and sowed in our minds as the purest and truest Philosophy doth teach, and all arts and sciences do Immediately sprout and spring forth from these seeds and principles Immediately planted in us, as the Flouers and fruits of Herbs and Trees do spring and grow from their Seeds and Roots.[\[54\]](#)

Again, the hendiadys appears wont to create like symmetries around it, such that “Flouers and fruits” of “Herbs and Trees” do “spring and grow” from the “Seeds and Roots.” One possible interpretation of this splitting is to assign each respective verb, “spring” and “grow,” to its correlative noun, which would mean the flowers and herbs spring from seeds while the fruits and trees grow from roots. But this is not necessarily the case, for the expression “seeds and roots” works retroactively to apply across all of these vegetal forms, their conjunction (grammatically and literally) in the material-semiotic soil influencing not just themselves but words and entities nearby. In this way, despite the highly conventional and rhetorical nature of its own form, this hendiadys preserves something of the material, locational being and becoming of plant-life expressed in the functioning of vegetal body parts located at a plant’s lower extremities, which need not correspond with human parts or principles.

In the introduction to her book on roots, Wampole explains that “to prevent this from becoming a theme project that would involve merely listing conspicuous appearances of the term, I have been very careful in my selection of examples. If the word *root* could simply be replaced by *origin*, I generally dismissed it. The metaphor in this petrified form is neither interesting nor telling.”[\[55\]](#) In contrast, in selecting the phrase “the seeds and roots of” from examples in early modern texts, I have chosen such a “petrified form” for the very reason that its obscurity and non-continuance in today’s vernacular English attest to the living activities of plants and trees long ago, *in spite of* the constant exploitation of their bodies and body parts. The repetition of the form in multiple texts, as well as the repetition and even redundancy in the form itself, allows for a toggling back and forth between “seeds” and “roots” along the conjunctive “and” that continually forgets these entities are not equivalent. Edward Reyner, dictating precepts for good Christian behavior in a text from 1656, touches on the “latency” hendiadys when he compares people’s behaviors and actions to natural processes, implying that virtues as well as vices are hidden inside people in the same way that flowers and fruits are “hid” in the seeds, or roots are “hid” in the earth, which contain these future blossomings and fruitions:

Christians have their severall states, as the year hath its seasons, to wit, their winter or dead time of Tentation [*sic*] and desertion, wherein all seems dead & withered with them as with the earth; and grace is hid in the heart, as sap in the Roots of Trees, as flowers and fruits are hid in the seeds, or Roots, in the Earth, in the winter, as well as their spring of growth, and summer of joy; when the Lord is as dew to them, and they revive as the Corn, and grow as the Vine, and blossom as the Lillie, and cast forth their roots, spread their branches, and their beauty is as the Olive Tree, and their smell as Lebanon.[\[56\]](#)

The hidden grace in Christians' hearts that will eventually emerge, according to Reyner, is like the future processes not yet unfolded in the hiddenness of vegetal being, the "seeds, or Roots" hiding such a future deep in the earth over the long winter, the coming moments associated with the "spring of growth" and "summer of joy" physically held in the material of their bodies, awaiting the right time.

In a similar vein, when Michael Marder discusses Hildegard of Bingen's thinking about the grace of the Virgin Mary, he insists that "Hildegard's Mary is not *gratia plena* (full of grace) but *viriditate plena* (full of greenness and greening) ... A modality of existence prevails over abstract being in this phenomenology of the verge, where *spring* is the name for the time of coming to appearance, the flourishing of and on the surface, and the confluence of greening and greenness." [57] Rebecca Bushnell observes this complex form of latent vegetal temporality in early modern constructions of more-than-human virtues as "potentiality," such as in herbalist John Parkinson's "sense that in 'many herbes and flowers that haue small beautie or savour to commend them, haue much more good vse and vertue: so many men of excellent rare parts and good qualities doe lye hid vnknown and not respected, untill time and use of them doe set forth their properties.'" [58] Like Hildegard and Parkinson, Reyner represents such a time as well, but specifically in seeds and roots, hidden in "greening" bodies, but ready to come to "the surface," that is, to the eyes of human observers – or perhaps, their faces, that particular sur-face interfacing with that particular part of the vegetal body in its emergence. [59] Although they may have appeared hidden in and from time, at their emergence it will become known that they had already been there, a future anterior that shows a vegetal latency anticipating its own far-flung future, ready to flow, both through the roots in the material, sappy life-blood of the vegetal body and through the expectant, metaphorical "seeds of time," to use Banquo's words to the witches in *Macbeth*, foretelling "which grain will grow, and which will not" (1.3.58-59).

Additionally, the titular character of *Macbeth* attaches a temporalizing affect to a vegetal part when he tells the doctor, upon hearing the news of his wife's illness, "Cure her of that. /.../ Pluck from the memory a rooted sorrow" (5.3.39, 41). In this "root," styled as a participial adjective, the noun and the verb of vegetal body and motion merge, just as the experiences and emotions of the human and the vegetal overlap and blur in this material-semiotic body part. This root conveys depth, hiddenness, origin, and longevity all at once, anchoring sorrow to the memory yet also still growing in Lady Macbeth, slowly but steadily growing downward into further depths of hiddenness. The spatial proximities implied in "the seeds and roots of" that I have explored in this essay also gesture toward such complex intertwining of space and time across the human and vegetal worlds, preserved in many examples in early modern print but also still growing through time in their potential reception and re-use. Expressions of the hendiadysical gathering together of "seeds and roots" may lie dormant in discourse "untill time and use of them doe set forth their properties," to quote Parkinson again. However, because of the expression's basis in vegetation's anatomy and physiology, concurrent with the stories that plants are telling the world, this relationship will always continue to matter, irrespective of how we might use these vegetal parts and pieces.

Seeds and roots came together at this time of printed communication, temporarily locking this veering vegetal matter into seemingly static, hendiadysical embrace. However, the short phrase

“seeds and roots of” not only contains material-semiotic traces of physical proximity and comparable hiddenness, but also depicts in its syntax the basic chronological narrative of formative vegetal growth; that is, the “storied matter” of “the seeds and roots of” speaks to the vegetal’s own storytelling of its own bodily becoming, as actual seeds produce actual roots in real time. The “seeds and roots of” hendiadys ultimately shows itself to be anything but random, arbitrary, or redundant. Moreover, this chronology of vegetal narrative implied in “seeds and roots” suggests that the ecomaterialist notion of storied matter, while useful and important, must be modified to accommodate more spatiotemporal understandings of vegetal being and embodiment, which need to be theorized irrespective of anthropocentric temporal orientations (that is, theorizing vegetal space-time itself) along with points of intersections between human and vegetal apprehensions of time. Such narrative nodes potentially exist in places where the interests, bodies, and body parts of plants and humans cross through recorded and natural history.

In the broadest terms, both “seed” and “root” represent parts of plant-life that could stand in as synecdoches for “tree,” that is, a solitary member of the large-scale megafloora that humans literally look up to as their bodily frames tower over us with their solid trunks, extending branches, and photosynthesizing leaves. The roots, largely invisible to us, search for water and nutrients in the soil, as well as anchoring the rest of the arboreal body. Seeds, too, hide in fruits or nuts among the foliage and then disappear into the soil below to spend some time with those roots in the dark rhizospheric unknown before sprouting roots themselves. Yet both of these parts have well-recognized synecdochal potential as “referring” to the “whole” entity of the more visible tree. Significantly, however, in the act of such standing in, the seed and the root also seem to become a “whole” being in themselves when they take the place of the tree in language, the slicing of synecdoche always undermining its aim with its creation of new entities as a result of this symbolic fragmentation. And, together, as illustrated in this essay, “seeds and roots” represents a single hendiadysical moment in the written record that narrativizes (storying this “matter”) some of the complexity of vegetal spatio-temporality by simultaneously compounding and overextending reductive arboreal synecdoche and effectively dismantling this very part-for-whole substitution scheme. The rhetorical expression dismantles synecdochal substitution through the joining of *two* parts – *not* for the whole – the plurality of parts in unison working to subvert the notion of wholeness altogether. The hendiadys, conventional as it briefly became, pinpoints recognizable manifestations of related vegetal anatomy that function mutually in the material world and that, for a short space of time, functioned in the world of discourse and rhetoric.

[1] George T. Wright, “Hendiadys and *Hamlet*,” *PMLA* 96.2 (1981), 168.

[2] A few exceptions, typically studies interested in questions related to style and authorship, do exist. For example, see Brian Vickers, “Rhetoric: The Shakespearean ‘Hendiadys,’” in *Counterfeiting Shakespeare: Evidence, Authorship and John Ford’s Funerall Elegye* (Cambridge University Press, 2002), 163-188; Joe Falocco, “The ‘Doubling’ Life of John Florio: Revaluating His Influence on Shakespeare’s Style,” *Early Modern Literary Studies* 19.1 (2016), 1-21; and Charles Mercier, “Where Did Shakespeare Learn Hendiadys?” *The Oxfordian* 25 (2023): 241-270.

[3] George Puttenham, *The Arte of English Poesie*, eds. Gladys Doidge Willcock and Alice Walker (Cambridge: Cambridge University Press, 1936).

[4] The broad term “nonhuman” conveys all that is not human or directly influenced by human society; some writers choose the similar if not completely synonymous terms “more than human” or “other than human” to suggest the same basic idea. I believe these terms offer a useful distinction, but it should also be said that at times such a distinction runs the risk of homogenizing all the complex creatures and different beings in nature into the same general category. For example, some premodern studies focus more narrowly on what Karl Steel calls “the ‘creeping’ or ‘swarming’ life of the fifth and sixth days of creation ... crustaceans, snakes, insects, reptiles,” in “Creeping Things: Spontaneous Generation and Material Creativity,” in *Elemental Ecocriticism: Thinking with Earth, Air, Water, and Fire*, eds. Jeffrey Jerome Cohen and Lowell Duckert (Minneapolis: University of Minnesota Press, 2015), 213. On insects and other “creeping” life in the early modern period, see also the two volumes of *Lesser Living Creatures of the Renaissance*, edited by Keith Botelho and Joseph Campana (University Park: Penn State University Press, 2023).

[5] Grace Beacham, “Preserving the Spirit of Antony and Cleopatra,” *EMSJ* 8 (2022), 76; Julia Nurse, “Top Tips from Early Modern Women: Examining Medical Cures in Two Recipe Manuscripts from the Royal College of Physicians and the Wellcome Collection,” *EMSJ* 8 (2022), 107 (birlfroot and cumphry roots), 108 (birlfroot), and 109 (parsley roots).

[6] The idea of “vibrant” life evokes Jane Bennett’s influential book *Vibrant Matter*, in which she constructs a theory of “vital materialism”; I discuss my debts to new materialist thinking in the next section. Additionally, it may be noted here that plants can also reproduce asexually, either with the assistance of humans in propagation or grafting or on their own, via methods such as fragmentation and budding. In asexual reproduction, the offspring will be genetically identical clones to their parent plants.

[7] Keith Botelho, “‘A gallon of the finest honey you can get’: Considering Quantity and Domestic Work in Mary Baumfylde’s Receipt Book,” *EMSJ* 7 (2021).

[8] On how early modern botanical discourse employs the term “virtue” to indicate vegetal powers and capacities, see Rebecca Bushnell, “Vegetable Virtues,” in *Shakespeare’s Botanical Imagination*, ed. Susan Staub (Amsterdam: Amsterdam University Press, 2023), 43-62. See also Jessica Rosenberg, *Botanical Poetics: Early Modern Plant Books and the Husbandry of Print* (Philadelphia: University of Pennsylvania Press, 2023), especially Chapter 2, “On ‘Virtue’: Textual Force and Vegetable Capacity.”

[9] John Gerard, *The Herball Or Generall Historie of Plantes. Gathered by Iohn Gerarde of London Master in Chirurgerie very Much Enlarged and Amended by Thomas Iohnson Citizen and Apothecarye of London* (London: 1633), 37.

[10] See David Hillman and Carla Mazzio, eds., *The Body in Parts: Fantasies of Corporeality in Early Modern Europe* (New York: Routledge, 1997). In the introduction, Hillman and Mazzio

explain, "Because corporeal parts have individuated functions, locations, and differentiated relations to the body as a whole, they can become concentrated sites where meaning is invested and often apparently stabilized" (xii). They are, of course, discussing human bodies rather than plant bodies, but some of their thinking related to part-whole relations can apply to my argument here, even if ultimately proving insufficient in thinking about and with the parts of plants, whose bodies obviously differ from animal and human bodies in various important ways.

[11] On arboreal lifespan, see especially Jessica Rosenberg, "Before and After Plants," *postmedieval* 9, no. 4 (2018): 467-77.

[12] Cheryll Glotfelty, "Foreword," in *Veer Ecology: A Companion for Environmental Thinking*, eds. Jeffrey Jerome Cohen and Lowell Duckert (Minneapolis: University of Minnesota Press, 2017), viii.

[13] Jeffrey Jerome Cohen and Lowell Duckert, eds., *Veer Ecology: A Companion for Environmental Thinking* (Minneapolis: University of Minnesota Press, 2017), 1.

[14] Cohen and Duckert, 3.

[15] Cohen and Duckert, 4.

[16] *Oxford English Dictionary* (OED hereafter), v.2, 3.a.

[17] Serenella Iovino and Serpil Oppermann, eds., *Material Ecocriticism* (Bloomington: Indiana University Press, 2014).

[18] See also, to name just two prominent examples, Stacy Alaimo, *Bodily Natures: Science, Environment, and the Material Self* (Bloomington: Indiana University Press, 2010), and Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010).

[19] Karen Barad, *Meeting the University Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007).

[20] Leah Knight, *Of Books and Botany in Early Modern England: Sixteenth-Century Plants and Print Culture* (Burlington: Ashgate, 2009), xi. A number of early modernists are now working at the intersection of new materialism and critical plant studies, the latter field emerging in the light of scientific breakthroughs that suggest plants are more intelligent and agentive than what has previously been assumed. Early modern scholars Rebecca Laroche and Jennifer Munroe have argued from this perspective in *Shakespeare and Ecofeminist Theory* (London: Bloomsbury Arden Shakespeare, 2017), in which they herald the "material turn" as a "promising direction upon which ecofeminist work might build.... materialist feminists have directed our attention to how bodies, even physical environments, indeed matter itself, are linked" (p. 6). On critical plant studies, see the foundational work of Matthew

Hall, *Plants as Persons: A Philosophical Botany* (New York: SUNY Press, 2011), and Michael Marder, *Plant-Thinking: A Philosophy of Vegetal Life* (New York: Columbia University Press, 2013). More recent scholarship in the field includes Prudence Gibson, *The Plant Contract: Art's Return to Vegetal Life* (Leiden: Brill Rodopi, 2018), and John C. Ryan, Patricia Vieira, and Monica Gagliano, *The Mind of Plants* (Santa Fe, Synergetic Press, 2021). For work on plant intelligence, agency, signaling, etc., see for example Daniel Chamovitz, *What a Plant Knows: A Field Guide to the Senses* (New York: Scientific American, 2012); Stefano Mancuso and Alessandra Viola, *Brilliant Green: The Surprising History and Science of Plant Intelligence* (Washington: Island Press, 2015); Peter Wohlleben, *The Heartbeat of Trees: Embracing Our Ancient Bond with Forests and Nature*, trans. Jane Billingham (Vancouver: Greystone Books, 2021); and Suzanne Simard, *Finding the Mother Tree: Discovering the Wisdom of the Forest* (New York: Knopf, 2021). On early modern plant studies, see *postmedieval* 9, no. 4 (2018), eds. Rob Barrett and Vin Nardizzi. See also Susan Staub's recently published collection *Shakespeare's Botanical Imagination* (Amsterdam: Amsterdam University Press, 2023).

[21] Joshua Calhoun, *The Nature of the Page: Poetry, Papermaking, and the Ecology of Texts in Renaissance England* (Philadelphia: University of Pennsylvania Press, 2020), 16.

[22] John Charles Ryan, *Plants in Contemporary Poetry: Ecocriticism and the Botanical Imagination* (New York: Routledge, 2018), 9; Jessica Kerr, *Shakespeare's Flowers* (New York: Thomas Y. Crowell, 1969); Gerit Quealy and Sumie Hasegawa Collins, *Botanical Shakespeare: An Illustrated Compendium of All the Flowers, Fruits, Herbs, Trees, Seeds, and Grasses Cited by the World's Greatest Playwright* (New York: HarperCollins, 2017).

[23] Vivian Thomas and Nicki Faircloth, *Shakespeare's Plants and Gardens: A Dictionary* (London: Bloomsbury Arden Shakespeare, 2014), 1.

[24] Thomas and Faircloth, 4.

[25] On this relationship, see also George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago: University of Chicago Press, 1980). For example, they state, "the structure of our spatial concepts emerges from our constant spatial experience, that is, our interaction with the physical environment. Concepts that emerge in this way are concepts that we live by in the most fundamental way" (57). Plants constitute a large part of our "physical environment." Although Lakoff and Johnson are not concerned with posthumanist ideas, it may also be said that humans are a large part of the physical environments of plants.

[26] On the tendency of humans to overlook plants because they are part of the "background," see, for example, Mung Balding and Kathryn Williams, "Plant Blindness and the Implications for Plant Conservation," *Conservation Biology* 30, no. 6 (2016): 1192-99. This is also a central preoccupation of Marder, in *Plant-Thinking*. Furthermore, see Phillip John Usher, *Exterranean: Extraction in the Humanist Anthropocene* (New York: Fordham University Press, 2019), in which Usher coins the term "exterranean" to emphasize that elements (like fossil fuels) extracted from the earth were once a part of the earth itself before

being removed. Usher draws attention to the extraction process itself, which climate change rhetoric often overlooks, focusing rather on the issue of “carbon emissions,” as though these emissions did not have an origin rooted in extraction. The “exterranean” thus also illustrates a material-semiotic dynamic at work, when that which is literally hidden underground remains largely hidden in language, sub-merged beneath competing, overwriting rhetorical emphases.

[27] All Shakespeare quotes in this essay are from *The Arden Shakespeare Complete Works* (third series), eds. Richard Proudfoot, Ann Thompson, and David Scott Kastan (Walton-on-Thames: Nelson and Sons, 1998).

[28] This recipe is for pain in the chest. “Horsellenes rota” translates to root of the horse-heal plant, more commonly known today as Elecampane (*Inula helenium*), an herb possessing both medicinal and gustatory properties. “Eftgewæxen barc” means, curiously, “bark that has grown again” (see *Bosworth-Toller Anglo-Saxon Dictionary*).

[29] Although “seed” was common enough, a common synonym for the noun “seed” in this period and earlier was “kernel” (*OED*, *n.1*, 1.), a word that still retains a connection to “seed” today, but which is not entirely synonymous anymore.

[30] *OED*, *v.*, 2.a.; 2.b.

[31] *OED*, *v.*, 3.a.

[32] The practice of forest husbandry called “pannage,” the fattening of domestic pigs on acorns and beech mast had long been in decline by Shakespeare’s day, land being converted to alternative uses such as for parks, coppices, or agricultural use. See Oliver Rackham, *Trees and Woodland in the British Landscape: The Complete History of Britain’s Trees, Woods & Hedgerows*, Rev. ed. (London: Phoenix Press, 1990), 144.

[33] Dominicus Mancinus, *A plaine path to perfect vertue: deuised and found out by Mancinus a Latine poet, and translated into English by G. Turberuile gentleman* (London, 1568).

[34] Francis Bacon, *Sylua Syluarum: Or A Naturall Historie in Ten Centuries. VVritten by the Right Honourable Francis Lo. Verulam Viscount St. Alban. Published After the Authors Death, by VVilliam Rawley Doctor of Diuinitie, Late His Lordships Chaplaine* (London, 1627), 159.

[35] Usher, *Exterranean*, 45-47.

[36] Andreas Feininger, *Trees* (New York: Rizzoli, 1991), 123.

[37] Peter Wohlleben, *The Hidden Life of Trees: What They Feel, How They Communicate* (Vancouver: Greystone Books, 2016), 3. See also Simard, *Finding the Mother Tree*.

[38] Wohlleben mentions, for example, “a honey fungus in Switzerland that covers almost 120 acres and is about a thousand years old” (50). The web-like material of fungus is called the mycelium, of which different species of mycelia routinely correspond with specific species of trees, the oak milkcap belonging to the oak tree, which helps allow the tree’s roots to spread out even more and take in more water and nutrients. For an accessible but in-depth introduction to mycology, see Merlin Sheldrake, *Entangled Life: How Fungi Make Our Worlds, Change Our Minds & Shape Our Futures* (New York: Random House, 2020).

[39] Valeria Gutowski, “The Effect of Mycorrhizae on Seed Germination, Development, and Reproductive Yield of Rapid Gro Radish,” *ESSAI*, vol. 13, article 18 (2015): 43-46.

[40] Girolamo Ruscelli, *A Verye Excellent and Profitable Booke Conteyning Sixe Hundred Foure Score and Odde Experienced Medicines Apperteyning Unto Phisick and Surgerie, Long Tyme Practysed of the Expert and Reuerend Mayster Alexis, which He Termeth the Fourth and Finall Booke of His Secretes ... Translated Out of Italian into Englishe by Richard Androse* (London, 1569), Image 16 (unnumbered page).

[41] Juliana Berners, *Hawking, Hunting, Foulng, and Fishing, with the True Measures of Blowing A Vvorke Right Pleasant and Profitable for all Estates, Vvhoso Loueth it to Practise, and Exceeding Delightfull, to Refresh the Irsomnesse of Tedious Time. Whereunto is Annexed the Maner and Order in Keeping of Hawkes, their Diseases, and Cures: And all such Speciall Poynts, as any Wise Apperraine to so Gentlemanlike Qualitie.* (London, 1596), Image 33 (unnumbered page).

[42] One source, for example: G. Hartman, *The True Preserver and Restorer of Health being a Choice Collection of Select and Experienced Remedies for all Distempers Incident to Men, Women, and Children: Selected from and Experienced by the most Famous Physicians and Chyrurgeons in Europe: Together with Excellent Directions for Cookery ... : With the Description of an Ingenious and Useful Engin for Dressing of Meat and for Distilling Th[e] Choicest Cordial Waters with-Out Wood Coals, Candle Or Oyl* (London: 1682).

[43] Geneva Bible (1599), Isaiah 11:1. Many plants are notable for their totipotency, that is, their cells are able to differentiate into all cell types, including placental tissue. On seventeenth-century natural philosophy and its thinking related to spontaneous generation, see Marjorie Swann, “‘Procreate Like Trees’: Generation and Society in Thomas Browne’s *Religio Medici*,” in *Engaging with Nature: Essays on the Natural World in Medieval and Early Modern Europe*, eds. Barbara A. Hanawalt and Lisa J. Kiser (Notre Dame: University of Notre Dame Press, 2008), 137-54. On the popularity of images of the Tree of Jesse, see Victoria Bladen, *The Tree of Life and Arboreal Aesthetics in Early Modern Literature* (New York: Routledge, 2022). See also Amy L. Tigner, *Literature and the Renaissance Garden from Elizabeth I to Charles II* (Burlington: Ashgate, 2012), 74-75.

[44] Jacob Stromberg, “The ‘Root of Jesse’ in Isaiah 10: Postexilic Judah, or Postexilic Davidic King,” *Journal of Biblical Literature*, vol. 127, no. 4 (2008): 656.

[45] Stromberg, 657.

[46] Christy Wampole, *Rootedness: The Ramifications of a Metaphor* (Chicago: The University of Chicago Press, 2016), 17.

[47] Jean Feerick investigates the Renaissance commonplace that human flesh (particularly royal flesh) is comparable to the “mere” substance of the earth: that is, soil. See Feerick, “Groveling with Earth in Kyd and Shakespeare’s Historical Tragedies,” in *The Indistinct Human in Renaissance Literature*, eds. Jean E. Feerick and Vin Nardizzi (New York: Palgrave Macmillan, 2012), especially 232-33 on royal bodies.

[48] Pierre Charron, *Of Wisdome Three Bookes Written in French by Peter Charro[n] Doctr of Lawe in Paris. Translated by Samson Lennard* (London, 1608), 76, 350.

[49] Fr. Stanley, *Christianity indeed, or, the well-disciplin'd christian the delight of christ shewing how believers in christ ought to go in and out each before other in gospel-order, governing and being governed as the children of one father* (London, 1667), 23.

[50] Roger L'Estrange, *Two cases submitted to consideration* (London, 1687), 2.

[51] Thomas Nevett, *A treatise of consumptions in which their nature, causes and symptoms are briefly explained, and a new and extraordinary method by specifick medicines is proposed for the cure of consumptions, even such as proceed from ulcers of the lungs* (London, 1697), 58-59.

[52] Francis Bacon, *The union of the two kingdoms of scotland and england, or, the elaborate papers of Sir Francis Bacon* (Edinburgh, 1670), 38.

[53] G. B., *An essay in morality written by G.B. to his friend H.P., esquire ; in which the nature of virtue and vice is distinctly stated, their respective reasonableness and unreasonableness demonstrated, and several useful conclusions inferred* (London, 1682), 128.

[54] George Keith, *Divine Immediate Revelation and Inspiration, Continued in the True Church Second Part. in Two Treatises: The First being an Answer to Jo. W. Bajer Doctor and Professor of Divinity, so Called, at Jena in Germany, Published First in Latine, and Now in English. the Second being an Answer to George Hicks, Stiled Doctor of Divinity, His Sermon Preached at Oxford, 1681. and Printed with the Title of, the Spirit of Enthusiasm Exorcised; Where this Pretended Exorcist is Detected. Together, with some Testimonies of Truth, Collected Out of Diverse Ancient Writers and Fathers, so Called* (London, 1685), 78.

[55] Wampole, 6.

[56] Edward Reyner, *Rules for the Government of the Tongue: Together, with Directions in Six Particular Cases* (London, 1656), 282.

[57] Michael Marder, *Green Mass: The Ecological Theology of St. Hildegard of Bingen* (Stanford: Stanford University Press, 2021), 16-17.

[58] Bushnell, "Vegetable Virtues," 50.

[59] On the use of the term "surface" vis-à-vis "face," see Lucy Razzall, "'Like to a Title Leafe': Surface, Face, and Material Text in Early Modern England," *Journal of the Northern Renaissance* 8 (2017).