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Serpentine Figures, Sinuous Relations: Thematic Geometry in Allison Hedge Coke's *Blood Run*

> Within Indigenous consciousness, science is also an art form, which incorporates both an objective explanation of how things happen in the natural world and a way of "looking."
> —Gregory Cajete, *Native Science: Natural Laws of Interdependence* (2000)

Across thousands of years, within broader practices of sacred science and civic art, Indigenous North Americans layered rock and packed soil into durable, multiply functional, highly graphic constructions of large-scale earthworks. These remarkable structures, which express Indigenous understandings of natural, human, and cosmic relationships through a concretized geometry of raised figures, include the estimated four hundred so-called mounds that once composed the Oneota site known as Blood Run, located on both sides of the Big Sioux River on what is now the Iowa–South Dakota border.

What remain of the largely devastated earthworks at Blood Run are mostly unknown to contemporary citizens of the continent, even to trained archaeologists and historians. They have entered literary consciousness, however, with the 2006 publication of *Blood Run*, a poetic sequence by Allison Hedge Coke, a writer of Cherokee, Huron, and Creek ancestry who is herself a descendant of mound builders and who has been both a private witness and a public advocate for the protection of the Blood Run site.[1] In her sequence of two narrative and sixty-four persona poems, Hedge Coke evokes the expressive

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presence of these obscure earthworks, the complexity of their still-unresolved histories, the multiplicity of their still-relevant contexts. She renders visible both the seemingly imperceptible pasts and the willfully unimagined futures of Blood Run. Working against colonial ideologies in which mysterious mounds offer treasured silence, and against dominant aesthetics in which lyrical Natives offer ecological sensitivity but no recognizable science, Hedge Coke simulates earthworks technologies in the rhythms and structures of her poems.

Hedge Coke engineers the geometry underlying the free verse structures of *Blood Run* to complement, contrast, and otherwise complicate the erudite language of individual poems and the dramatic arc of the sequence as a whole. This subtle mathematical patterning helps make legible both the unread signs of individual earthworks at Blood Run and the forgotten sign systems of a sophisticated earthworks complex. Readers are guided toward perception of messages still coded within Indigenous earthworks extant and destroyed, toward recognition of a still readable form of Indigenous writing—not simply *on* the land but literally *through the medium of* the land itself—toward nothing less than imagination of possible renewal.[2]

In the opening narrative poem, the speaker describes Blood Run as a "trading place" and "settlement" where "structures, from gathered earth hauled in baskets, / strategically placed, forming designs—animal, geometric—rose / reverent" (5). In the series of persona poems that follows, these earthen "structures" speak for themselves, countering the silence of colonial erasure with the poetic science of Indigenous technologies. Most remarkable in this respect is Hedge Coke's literary resurrection of a destroyed snake effigy once central to Blood Run. The strategic placement and serpentine structures of her "Snake Mound" and "Stone Snake Effigy" persona poems—with their sinuous allusions to both the biblical Serpent in the Garden and the extant Serpent Mound earthwork in Ohio—reclaim sacred reverence from the imposed discourses of Manifest Destiny and a pagan (pre-) history. Thus the thematic and structural complex Hedge Coke builds for and between her Snake Mound and Stone Snake Effigy personas, intricately designed to juxtapose "animal" and "geometric" forms, exemplifies her larger project in the sequence: to build a contemporary poetics for and between an activist witnessing of destruction and the explication of an older form of Indigenous writing, an expressive Indigenous technology based in Indigenous science.[3]

Designated "savage" ruins by dominant U.S. culture, razed by its agents to further their sense of "providence" and "progress," the seemingly lost figure of the sacred snake at Blood Run reasserts its celestially aligned body of mounded earth as an active Indigenous presence in the layered landscape of Hedge Coke's poems, an impetus to an activist present seeking Indigenous futures.

Sighting Indigenous Sitings

The raised forms of Indigenous earthworks marked territorial boundaries and significant roadways; they created focal points within urban settlements and within centers for economic trade, technological and artistic exchange, intellectual and spiritual practice. Platform, conical, pyramid, ridge-top, geometric, and effigy "mounds" thus represent achievements in science and aesthetics on a monumental scale. They integrate the precise observation of natural phenomena with geometry and other abstract forms of knowledge, as well as with practical skills in mathematics, architectural design, engineering, and construction. Many earthworks were sculpted to mirror perceived patterns in the sky, both in the bodies of individual works and in the arrangements of multiple works into complex sites and cities; moreover, particular works were often aligned with specific celestial events, such as an equinox or solstice sunrise or sunset point on the horizon.

The best-known examples of extant Indigenous earthworks include the well-preserved and, in some cases, reconstructed ceremonial, burial, and boundary-marking works in Cahokia, Illinois, located along the Mississippi River outside of what is now St. Louis, Missouri, which was itself once Cahokia's mounded suburb. The earthworks at Cahokia date from about a thousand years before the present, and they include the majestic Monks Mound, a platform rising in multiple terraces to a height of nearly one hundred feet. Within this solar-focused complex, Monks Mound is sited to correspond to the sunrise points of the vernal and autumnal equinoxes and the summer and winter solstices.

Other well-known examples include the large-scale geometric earthworks (outlines of circles, squares, and octagons) and the large-scale effigy earthworks (including Eagle Mound, Alligator Mound, and Serpent Mound) situated along the waterways of what is now central and southern Ohio. The oldest of these works date from more than

two thousand years ago and, depending on their specific locations, they are sited to correspond to important solar, lunar, or other celestial events. Contemporary researchers have determined, for instance, that the Octagon Earthworks located at what is now Newark, Ohio, is both a mathematically perfect octagon the size of a football field and a type of lunar calendar that marks the 18.6–year cycle of the moon's northernmost and southernmost rise and set points along the horizon. Remarkably, the accurate observation of these sky phenomena is possible in North America only within a restricted range of latitude.[4] The Octagon Earthworks is thus uniquely sited to facilitate a particular set of astronomical observations.

Researchers have also determined that the complex of large geometric earthworks at Newark, which includes relatively few burial mounds, is connected to a related complex of geometric earthworks located sixty miles to the southwest, near the town of Chillicothe, which includes a relatively large number of burial mounds and charnel houses. The two sites, each of which includes the mounded outline of a large octagon connected to the mounded outline of a large circle, appear to have been connected by a straight and bounded roadway approximately two hundred feet wide. At certain times of the year, this roadway became aligned beneath the visible stars of the Milky Way, creating a "star path" between the lunar observation site at Newark and the mixed solar-and-lunar internment site at Chillicothe.[5]

In response to these and other types of archaeologically based evidence, including the presence of natural materials and trade items originating great distances from central and southern Ohio (copper, obsidian, mica, silver, meteoric iron, marine shells, bear and shark teeth), contemporary researchers speculate that, beginning roughly two thousand years ago, the region was a center for Indigenous North American social, spiritual and, importantly, technological and artistic activity and exchange. Archaeologists have located over six hundred earthworks within the contemporary borders of Ohio, and there are literally thousands of individual earthworks and earthwork complexes sited across the North American continent, some dating to more than 5,000 years ago.[6]

Earthworks have been sketched, mapped, surveyed, sometimes excavated, and too often looted by non-Indigenous settlers and their descendants since at least the eighteenth century. However, it is a twentieth-century technology—aerial photography—that has enabled

contemporary viewers to see individual earthworks and earthwork complexes from a great height, the only perspective from which these works can be viewed as complete wholes. (Some archaeologists and art historians suggest that the geometric shapes and aesthetic forms of earthworks may not have been intended primarily for human viewing at all.[7]) Aerial photography has made it possible to consider how these large-scale constructions of packed earth function as and within sign systems in what are increasingly revealed to be regularized patterns.

Drawing on knowledge gained from conventional surveying, mapping, and excavation, as well as from aerial photography, the legibility of earthworks and their systematic patterning has been further enhanced by the development of computer-generated models for particular sites.[8] In addition, in 2008 researchers in Ohio began to survey earthworks through the aircraft-based use of the optical remote sensing technology known as Light Detection and Ranging (LiDAR), which deploys laser pulses to measure ground elevation. Combined with Global Positioning Satellite (GPS) data, LiDAR creates highly detailed, three-dimensional, color-coded imaging of topographic data. These vivid pictures make it possible to see evidence of earthworks no longer visible to the naked eye, as well as to conceptualize more precisely the specific siting, geometric patterning, and celestial alignments of individual earthworks and earthwork complexes.

The archaeologist William Romain and his colleagues have demonstrated how LiDAR imaging strengthens hypotheses about Ohio earthworks that are based on ground-level observations and measurements, such as that these works are consistently located near water and that they typically align with solar and/or lunar events. LiDAR has validated additional speculations as well, confirming that Ohio earthworks are consistently oriented to the lay of the land, often running parallel to natural ridges or embankments, and that geometric earthworks (outlines of circles, squares, and octagons) are typically "nested," that is, calibrated to fit within each other, even when located some distance apart. Perhaps most intriguingly, LiDAR has confirmed speculation that the sizes of the major Ohio earthworks all appear to be based on a consistent unit of measurement, that unit's multiples, and that unit's key geometric complements.[9] Romain suggests that any one of these aspects constitutes a striking achievement in the construction of earthworks. That Indigenous "mound building" cultures

spanning roughly fifteen hundred years of earthwork activity in Ohio were able to incorporate all of these aspects into the construction of specific sites at the same time is truly astounding.[10]

In short, the more legible the earthworks become through aerial-based technologies—that is, the better contemporary viewers are able to see these works both as individual constructions and as multigenerational components within larger sign systems and patterns—the better we are able to understand earthworks as Indigenous technologies related to Indigenous science and the better we are able to conceptualize earthworks as a form of Indigenous writing that employs "geometric regularity" and "geometrical harmony" in order to record natural, human, and cosmic relationships within durable structures.[11]

Building Indigenous Worlds

First occupancy of the Blood Run site dates to over 8,500 years ago, but Blood Run was most heavily populated by what are currently termed Oneota peoples at the beginning of the eighteenth century—not in the so-called prehistoric distant past, but rather within the period of written history—when the site may have been occupied by as many as 10,000 individuals. Like Cahokia in Illinois, Blood Run was an urban space, a large city, and it was a regional trade center. The available evidence suggests that as many as four hundred individual earthworks spread across some 2,300 acres may have been constructed at the site. An 1883 survey documented 276 then-extant earthworks spread across an area of about 1,200 acres, while subsequent mapping indicated only 176 earthworks as still visible. At the time of Hedge Coke's writing, after more than a century of looting, violent physical removal, and agricultural cropping directly on the site, fewer than 80 earthworks remained visible at Blood Run.[12]

Hedge Coke's sequence of poems gives voice to the traditions of Indigenous mound building cultures and, most strikingly, to the earthworks themselves. In the main body of her sequence of sixty-six poems, Hedge Coke creates a series of sixty-four persona poems through which a range of elements associated with the Blood Run site and its long history are enabled to "speak." These voices include the site's Ceremonial, Burial, and effigy Snake mounds, which speak both individually and collectively across the sequence, as well as the central River and the distant Horizon. They also include celestial bodies

(Morning Star, Sun, Moon, Blue Star, North Star), both wild and domesticated flora and fauna (Dog, Starwood, Corn, Redwing Blackbird, Sunflower, Deer, Beaver, Buffalo, Fox), Memory and a spiritual guide called Clan Sister, Skeletons and Ghosts of the deceased, evidence of Indigenous writing systems (Cupped Boulder, Pipestone Tablets), and, perhaps least expectedly, multiple non-Indigenous human and mechanical intruders to the site: Jesuit, Squatters, Tractor, Looters, Early Anthro, and Early Interpreter. The poems are divided into formal sections that suggest a temporal movement from a utopian distant past in sections I, "Dawning," and II, "Origin," to a disrupted near past and volatile present in section III, "Intrusions," to an anticipation of further danger in section IV, "Portend." The unnumbered "Epilogue" then points toward the still unknown future(s) of Blood Run. Across these sections, the individual persona poems work together as a kind of activist play, a series of dramatic speeches and staged conversations spoken from multiple relevant perspectives.[13] Through these monologues and dialogues, Hedge Coke endeavors to persuade readers/listeners (and readers/performers) that the Blood Run site carries intrinsic as well as historical value, that it deserves to be recognized as sacred and preserved for future generations.

Although Hedge Coke did not have access to LiDAR imaging technology when she wrote *Blood Run*, her multiply coded, three-dimensionally imagined, and highly patterned sequence of poems—dense with data—similarly reveals new ways of seeing and new ways of conceptualizing an important earthworks site. In contrast to the 3–D images produced by LiDAR, however, Hedge Coke's sequence of poems provides an added fourth dimension: perspectives that are explicitly and distinctly Indigenous.[14]

The titles of Hedge Coke's "Snake Mound" and "Stone Snake Effigy" mark the personas they animate as intimately connected, a before and after, perhaps, or a repetition with variation. Focused analysis reveals these "serpentine" poems to be interrelated on multiple levels: not only in their explicit content, intricate word play, biblical allusions, and overt themes, but also in their formal structures and subtle but elaborate structural patterning. These poems do more, though, than simply quote each other's language, lineation, and stanza breaks. Each cites, as well, central physical and astronomical characteristics of the majestic Serpent Mound extant in southwestern Ohio. Through their citation of the Serpent Mound's provocative terrestrial form and

cosmic alignments, "Snake Mound" and "Stone Snake Effigy" work to incite in readers an activist response. They advocate for the preservation, appreciation, and, ultimately, reactivation of the Blood Run site as a whole.

In organizing this level of structural analysis I take my cue from reading practices developed for interpreting aerial photography and LiDAR-produced 3–D imaging of earthworks themselves. Viewed from the surface—that is, moving among the intricate language and specific content of individual poems—the formal structures of Hedge Coke's book appear rather flat or two-dimensional; they do not stand out as especially developed or regularized. Viewed from an "overhead" perspective and at a relatively great height, however, the book's macrostructure becomes more clearly visible and increasingly legible. The patterning of Hedge Coke's sequence of diverse but intimately related free-verse poetic forms is revealed to be highly complex, even, we might argue, three- or possibly four-dimensional.[15] From an aerial position we can better see the mathematics and geometry at the foundation of Hedge Coke's carefully constructed "earth"-works and better determine the specific units of measurement on which the poet has based individual constructions, complexes, their multiple alignments and, indeed, multiple nestings.[16]

Viewed from above, the Indigenous world built in Hedge Coke's *Blood Run* is revealed to be based on a principle of layering diverse forms and materials, the construction technique for building actual Indigenous earthworks. This textual world of sections, poems, stanzas, lines, words, and syllables is also revealed to be based on the repetition, recombination, and reconfiguration of a limited set of natural numbers—four, three, their sum, seven, and multiples of all three—as well as on the repetition, recombination, and reconfiguration of the sequence of primes, those natural numbers that can be divided only by themselves and the number one, which is itself unique in the sense that one is neither a prime nor a composite number. Hedge Coke's embedded manipulations of four, three, seven, and the sequence of the first twenty-four primes illustrates what Tewa scholar Gregory Cajete describes in *Native Science* as the "proper role of mathematics" within Indigenous scientific systems. As in contemporary physics, a field often engaged with phenomena "that cannot be explained in words," Cajete argues that within Indigenous fields of science mathematics helps render "transparent" certain "basic relationships, pat-

terns, and cycles in the world" through their quantification and symbolic "coding."[17]

On the surface, the sixty-four persona poems in *Blood Run* draw attention to what outsiders, invaders, and looters have viewed as mere inanimate objects and revivify these as living and articulate entities situated within multiple contexts, relationships, and narratives. Their voices bear witness to the site's former glory, historical and ongoing violation, and possible reclamation, repatriation, and renewal. The collective and singular personas of the earthworks at Blood Run—"The Mounds," "Ceremonial Mound," "Burial Mound," and "Snake Mound"—describe themselves as technologies for relating the human community to the earth and cosmos, that is, as technologies for connecting the "middle world" of their raised surfaces to both a "lower world" and an "upper world."[18] The earthworks form a vital middle space that is simultaneously natural and artistic, spiritual and civic. The mounds assert that the activities that take place on, in, and among their bodies of packed and sculpted earth place human beings within a matrix of relationships—with each other, with the natural forces of the universe, with the spirit world—that produce significant meaning. These assertions narrate an evolving story about place-identity and sacred geography.[19] Understood as extensions of the mathematics and geometry at the structural foundation of Hedge Coke's poetic sequence, these assertions develop, as well, a highly nuanced definition of what it means for human communities to legitimately settle: not simply to occupy a particular place or to exploit its resources, but to become integral to the regularities and harmonies of its dynamic systems.

Siting/Sighting/Citing

In the contemplation of Indigenous earthworks, the word *siting* evokes, foremost, the concept of position: where these precise structures of layered rock and soil stand within North American landscapes, why they occupy particular locations, how they relate to other physical phenomena, and how they both reflect and intersect with social, economic, political, and spiritual systems. Earthworks parallel natural ridges and embankments, follow the waterways of rivers and creeks, mirror the regular seasons of the sun and moon, the patterned coordinates of stars in transit. They occupy symbolic positions, too, aligning

within North American systems of representation, within complexes of ceremony and ritual, within economies of power and exchange.

The word *siting*, however, invites an obvious pun, the substitution of its more familiar homophone, *sighting*, evoking the equally relevant concept of perception. In our contemporary era, it is difficult to actually see Indigenous earthworks because they have been obscured in North American landscapes by centuries of erosion, reforestation, and human neglect, on the one hand, and by centuries of violent attack and removal by European settlers and their descendants on the other. The very presence of earthworks in North American physical and symbolic landscapes has been largely erased within U.S. institutions, evacuated from our formal education, our civil engineering, our rural and urban planning, our art, commerce, and politics. For too many North Americans living in the early twenty-first century, Indigenous earthworks are either completely invisible or, if seen, an illegible presence, a ghostly sign or a sign of forgotten ghosts. They appear to bear no inscribed meaning. *Sighting* thus evokes, as well, the great difficulty for most contemporary viewers to perceive earthworks in terms of the complexity of their interrelated structures, the conceptual power of their designs, the beauty of their architecture. It has become hard to imagine how the Indigenous peoples who built these structures applied their sophisticated observations of natural phenomena to planning and design, to techniques for construction, to the organization of necessary labor. All these achievements have been consistently devalued—or simply ignored—within the Western intellectual traditions that have come to dominate North America.

Siting can, of course, provoke an additional substitution. Academics especially may consider *siting*'s less obvious homophone *citing*, which evokes related concepts of the quotation of earthworks for the forms of Indigenous knowledge they continue to embody in the design and patterns of their structures, and the praise of earthworks for the remarkable achievements they represent in Indigenous mathematics, engineering, architecture, art, and astronomy. All three versions of *siting* apply to the contemplation of Indigenous earthworks themselves and to an analysis of Allison Hedge Coke's book-length sequence of poems, *Blood Run*, which animates a particular, largely unknown earthworks site. Like the physical earthworks that endure in North American landscapes, Hedge Coke's sequence invites readers to open their eyes, their intellects, and—importantly—their imaginations to

messages coded in and through the multiply layered, packed structures of poems.

"Sinuous, I am"

The persona of the effigy "Snake Mound," which speaks only once in the sequence of sixty-four persona poems and which Hedge Coke positions as the nineteenth poem in section II, "Origin," draws special attention in part for how it evokes the Serpent Mound located in what is now Adams County in southwestern Ohio. In her formal acknowledgments, positioned at the end of *Blood Run* rather than at the beginning, Hedge Coke writes: "Once, a snake mound effigy of a mile and a quarter length, much like the worldwide lauded Snake Mound in Ohio State, existed in this very place—Blood Run. The railroad used it for fill dirt" (93). Hedge Coke acknowledges this physical violation and spiritual sacrifice from the very beginning of her persona poem. Although modeled on the extant Serpent Mound in Ohio, Hedge Coke's "Snake Mound" speaks from a position of "present invisibility" and apparent absence at Blood Run (31).

Hedge Coke sites her "Snake Mound" on the individual page, within section II, and within the broader sequence so that it cites both the physical characteristics and known celestial alignments of the Serpent Mound effigy in Ohio. The body of the extant Serpent Mound runs roughly a quarter mile in length and is mounded to a height of about three feet. It begins at its southern end with its tail in a triple-coiled spiral, undulates along the plateau above the Brush Creek Valley in seven distinct body convolutions, and then straightens out toward its broad and horned head. The Serpent's mouth hinges wide open, poised to swallow a large, oval-shaped disk. Since the nineteenth century, some viewers have interpreted the effigy as a snake attempting to swallow an egg—or possibly a frog—and have assumed that the site was primarily used in rituals for fertility. Others have interpreted the effigy as the great horned serpent, a symbol of the lower world, attempting to swallow the disk of the sun, a symbol of the upper world, which can suggest an iconic representation of a solar eclipse. Still other viewers, including the archaeologist William Romain, have speculated that the effigy embodies the philosophical and spiritual concept of a cosmic balance, in which the forces of the lower world, represented by the horned serpent, are in productive ten-

sion with the forces of the upper world, represented by the sun. In this interpretation, the serpent symbolizes "dark" forces that include "the moon, night, winter, darkness, and death." The oval disk, in a contrasting symmetry, represents "the sun, daytime, summer, light, and life."[20]

Building on the work of earlier surveyors, Romain has confirmed eight astronomical alignments in the body of the Serpent Mound: true astronomical north, the summer solstice sunset point, and six lunar rise and set points on the horizon.[21] He hypothesizes that "the Mound Builders celebrated world renewal ceremonies at the site, in order to help strengthen the powers of the upperworld in the continuing struggle against the forces of the underworld. In this way," he concludes, "the Serpent Mound builders would have been able to exercise some control over the forces that ruled their universe and affected their lives" (253). Romain's speculation is strengthened by Cajete's characterization of the motivations behind Indigenous astronomy and, more broadly, behind attempts by Indigenous peoples "to align themselves and their societies with what they perceived was the cosmic order" (217). Cajete argues that "Native astronomers were driven not only by their own awe and curiosity, but were also serving the innermost needs of their societies—to *resonate* with the cosmos and to be the *power brokers* of their worlds."[22]

In *Blood Run*, "Snake Mound" is situated as the nineteenth poem within section II, "Origin," which consists of the first twenty-eight of the larger sequence's sixty-four persona poems. In an aerial analysis, we note immediately several numerical alignments: two is the first prime, nineteen is the eighth prime, twenty-eight is the result of multiplying four and seven, two of Hedge Coke's basic units of measurement for *Blood Run*, and sixty-four is the cube of four (4 x 4 x 4, or four made three-dimensional).[23] Four and seven are related, further, by the fact that seven is the fourth prime. In many Indigenous North American cultures, these numbers are associated with natural phenomena and with ritual activity and the sacred. Moreover, the number four can describe a two-dimensional schematic of the world divided into the four cardinal directions; the number seven can describe a three-dimensional schematic that adds to the four cardinal directions the three complementary spatial positions above, below, and center. If we divide the twenty-eight poems of section II into four sets of seven—into balanced quadrants, each composed of a three-

dimensional world—"Snake Mound" is positioned as the fifth poem within the third set, revealing further significant alignments. Five is the third prime and three is the second.

Within the third set of seven in section II, the first three poems that precede "Snake Mound" manifest cosmic forces that can be aligned with the specific siting of the Serpent Mound in Ohio: the personas "Moon," "Blue Star," and "North Star." The Moon is one of the "dark" forces associated with death and the lower world. Its poem begins by emphasizing practices of burial and mourning: "My children were buried 'neath altitude, / within masses of earth as their sisters mourned them / with painted faces resembling my spirit full" (27). The Blue Star, another name for the bright star better known as Sirius, is associated with the western direction and with the winter season ("In cold, I dangle in west"), other "dark" forces associated with death and the lower world. Its poem concludes by emphasizing constancy in the face of change: "Look to me when change requires courage. / My face bears all will, stability" (28). The North Star indicates the Serpent Mound's central alignment with true astronomical north. Its poem begins by emphasizing its centrality to processes of Indigenous orientation and navigation: "By me multitudes thread earthly blanket, / set their paths to come, go, / weave their ways nightly" (29).

The fourth poem in the set, which immediately precedes "Snake Mound," manifests the collective persona of "The Mounds," which appears in a total of seven poems across the sequence. This second appearance of the persona of "The Mounds" (two is the first prime) is placed in dialogue with "Snake Mound" across the central spine of the open book, suggesting their intimate relationship. Indeed, both poems are composed of the same number of lines, seventeen, which is the seventh prime. In this appearance, the collective persona of The Mounds articulates the imminent danger of violation and erasure of the earthworks at Blood Run: "Somewhere along the way, the world went inside out, / yielding, unfolding, to tools crafted to scrape unbearably ransomed. / In this turning, all we have come to hold, now exists in jeopardy" (30). This danger is especially acute for the site's effigy Snake Mound, which was destroyed during the construction of the railroad in the name of U.S. "progress."

Seventeen brief lines compose the "Snake Mound" persona poem, creating a narrow column of words on the page visually suggestive of

a snake. These seventeen lines are divided into eight stanzas: seven stanzas of two lines each and one stanza of three lines. As already noted, seventeen is the seventh prime; two is the first (and only even) prime, and three is the second prime. The eight stanzas of the poem can be aligned with the eight known astronomical alignments of the extant Serpent Mound in Ohio: true astronomical north, the summer solstice sunset point, and six lunar rise and set points. The poem's seventeen lines are also arranged into eight distinct statements of varying lengths: two statements of two lines each, one statement of four lines, one statement of five lines, and four statements of one line each. All of these numbers are either prime (two, five, seven), sacred (four, seven), or, in the case of the number one, unique in the sense that it is neither prime nor composite. Moreover, the particular sequencing of statement lengths (2—2—4—5—1—1—1—1) simulates the Serpent Mound's structure of complex head, long body, and tightly coiled tail. Finally, the poem's division into eight stanzas means that, on the page, there are seven "convolutions" or turns in the seven gaps of white space between stanzas, further mirroring the Serpent Mound in Ohio.

What we might call the poem's *thematic geometry*, that is, its multiple numerical structural alignments and the relationships of those alignments to the poem's significant ideas, including the idea that the imagined persona is linked to the extant Serpent Mound in Ohio, asserts both the sacredness of the Snake Mound effigy and its *primality*—its condition of originality, primacy, indivisibility. The specific content of the poem's seventeen lines, divided into eight stanzas and arranged into eight statements, positioned at the juncture of multiple prime and sacred numbers, reinforces these alignments and supports the hypothesis that the Serpent Mound may have been devoted to ceremonies designed for nothing less than world renewal:

Snake Mound
1 Present invisibility
2 need not concern. *statement 1*
[1]
3 My weight remains
4 heavy upon this land. *statement 2*
[2]
5 Winding,

6 weaving, incurve,
[3]
7 mouth undone,
8 for egg swallow. *statement 3*
[4]
9 Though my body
10 suffered sacrifice
11 to railway fill,
[5]
12 my vision bears
13 all even still. *statement 4*
[6]
14 Be not fooled. *statement 5*
15 Be not fooled. *statement 6*
[7]
16 I will appear again. *statement 7*
17 Sinuous, I am. *statement 8* (31)

Despite its apparent invisibility to the naked eye, and despite its history of violation, Snake Mound asserts its ongoing physical and spiritual presence, its ongoing roles, that is, as sacred *site* ("My weight remains / heavy upon this land"), sacred *cite* ("mouth undone, / for egg swallow"), and sacred *sight* ("my vision bears / all even still").[24] In its penultimate, seventh statement (the fourth prime), which occurs at line 16 (4 x 4, or four squared, that is, four made two-dimensional), Snake Mound asserts (in four words), "I will appear again." In its final, eighth statement (4 x 2, or 2 x 2 x 2, the cube of two, or the first and only balanced prime made three-dimensional), which occurs at line 17 (the seventh prime), Snake Mound then asserts (in three words) both the primacy of its curving physical form, "Sinuous," and the primacy of its spiritual being, "I am." For many readers, Snake Mound's final phrase, separated from the serpentine adjective *sinuous* by the singular curve of a comma, will evoke one of the self-reflexive self-representations of the invading settlers' Hebrew God as expressed in Exodus 3:14: "I am who I am."

It is worth drawing further attention to Hedge Coke's provocative use of the adjective *sinuous*, with which Snake Mound directly responds to the dominant ideologies that authorized the razing of its physical body in an assertion of the effigy's own self-reflexive self-

representation. Formed from the noun *sinus*, indicating a curve or bend, or a curving part or recess within a larger structure (not unlike the punctuation of a comma), *sinuous* indicates a serpentine or wavy physical form but also carries primary meanings of strong, lithe movements, intricacy or complexity, and indirectness. The related verb *sinuate* means to curve or wind in and out, while the verb *insinuate* means to suggest or hint slyly, to introduce by indirect or artful means.

The derivation of *sinuous* from *sinus* is most evocative in the specific connotations it draws from the field of anatomy. Here *sinus* indicates a recess or passage: the hollow in a bird bone, cavities in a skull. In human bodies, the *sinuses* evoke connection to the nasal passages and thus to life-giving breath. The sinuses are also receptacles and channels for fluids, especially for venous blood, that is, blood that has been deoxygenated and charged with carbon dioxide, ready to pass through the respiratory organs to release carbon dioxide and to renew its supply of life-giving oxygen. "Sinuous, I am" thus does more than simply indicate the (apparently absent) effigy's serpentine physical form. Within the line's overt biblical syntax and tone and its subtle numerical alignments, *sinuous* slyly suggests, as well, Snake Mound's assertion of its central role as a technology for activating the physical and spiritual life of Blood Run. It is through the vehicle of this presently invisible, narrow, and curving passageway that life-giving breath will return.[25]

That the celestially aligned Snake Mound evokes a renewing breath links Hedge Coke's representation of the effigy to Cajete's assertion that "[t]he historic efforts of Native cultures to resonate with the heavens also represent their attempts to live up to an ideal ecological relationship with the Earth" (256). Resonance and renewing breath link this representation of the Snake Mound effigy, as well, back to Hedge Coke's opening narrative poem in section I, "Dawning." Titled "Before Next Dawning," the narrative poem offers an expansive overview of Indigenous history, moving from the ancient North American past to world events of the early twenty-first century in a total of 176 lines. This number indexes the 176 earthworks still extant when the Blood Run site was mapped at the end of the nineteenth century, a fact to which Hedge Coke draws attention in her author note (xiv). It can be factored as 4 x 44, emphasizing the book's sacred basic unit of measurement, four, and in effect evoking its cube; this factoring of 176 thus evokes the number sixty-four (4 x 4 x 4), the number of persona

poems that make up *Blood Run*. "Before Next Dawning" ends in ritualized prayer organized into a four-part, nearly palindromic structure. Through the metaphor of "breath" and "breathing," the speaker prays for the renewal of the endangered land, the violated earthworks, the desecrated human remains at Blood Run, ultimately, for the renewal of the entire planet:

> Yet,
> testament in danger still, monstrous machines,
> bulldozing scars upon soil,
> lifting the earth's very skin up,
> baring her bones, bones
> of her People for raking, then smothering her
> breath with concrete, brick, mortar—
> Never more allowing her to freely breathe.
>
> May she breathe again.
> May she breathe.
> . . . . . .
> May she breathe.
> May she breathe again. (9–10)

"Sinuous, I am" asserts Snake Mound's central role in this prayed-for physical and spiritual renewal.

In Snake Mound's invocation of a breathing, life-giving passageway, we can discern, too, Hedge Coke's thematic alignment of the Snake Mound persona with that of the central, life-giving River at Blood Run. River appears twice in the sequence: first in the privileged (and unique) position of the first persona to speak in *Blood Run*, poem one in section II, "Origin," and then in the similarly privileged position of the sixteenth poem (4 x 4, or the square of the sacred basic unit of measurement, four) in section III, "Intrusions."[26] This second appearance is simultaneously the forty-fourth persona poem within the larger sequence of sixty-four, again emphasizing River's connection to the sacred number four and aligning her, as well, with the significant factoring of the 176 lines of the opening narrative poem (4 x 44).

Across the sequence, other personas allude to River and her unparalleled power, especially the collective physical entity The Mounds and the singular spiritual guide Clan Sister. In her fourth appearance, for instance, positioned in section III, "Intrusions," Clan Sister prophesies:

River will come for them [the intruders].
She only rests till time
needs her to bathe, wash over.

Without offerings
She will come swollen,
snatch them up like pollen,
disperse, dispense, derogate. (62)

In her sixth, penultimate appearance, positioned in section IV, "Portend," Clan Sister then explicitly links the serpentine shape of River to the serpentine shape of snakes (80). The Mounds, in their seventh, final appearance, positioned as the seventh poem in section IV, "Portend" (seven is the fourth prime), reiterate this connection between Snake Mound, which they describe as an "elegant effigy" whose purpose is "immaculate,"[27] and Clan Sister's prophecy of River's power:

When the animals leave this place,
now without protective honorary sculpture.
When River returns with her greatest force.
. . . . . .
when The Reclaiming comes to pass,
all will know our great wombed hollows,
the stores of Story safely put by.
All will come to truth. (82)

River makes her most powerful appearance, however, in the book's second narrative poem and second poem in the "Epilogue," "When the Animals Leave This Place," with which Hedge Coke concludes her poetic sequence and fulfills Clan Sister's prophecy. In eighty-nine lines (the twenty-fourth prime) and in the imagery of the serpentine River flooding its banks to reclaim Blood Run, Snake Mound's sinuous promise of world renewal is brought to physical fruition.[28] The poem and the sequence end with the three words (and four syllables) "It has begun" (92).

Following "Snake Mound," the final two persona poems in the third set of seven in section II reinforce the role of the effigy in the spiritual life at Blood Run. The sixth poem, which immediately follows "Snake Mound," animates the mysterious persona "Esoterica," which represents Indigenous sacred and medicinal knowledge: "[S]park between Creator, Creation. / I am sacrament for some nearby" (32).

Composed of fifty-three lines, "Esoterica" is the longest persona poem in the sequence, and it is the only poem divided into numbered sections. At this point in the analysis, it will come as no surprise that fifty-three is the sixteenth prime; sixteen, as already noted, is the square of four, the sacred basic unit of measurement for *Blood Run*.[29] Moreover, the number of sections in the poem, seven, is the fourth prime and another number associated with the sacred. Finally, the set ends with the seventh persona poem, the spiritual guide Clan Sister, who, like the collective persona The Mounds, appears seven times across the sequence. This is Clan Sister's second appearance (two is the first prime); her poem consists of sixteen lines divided evenly into four stanzas of four lines each, accentuating her relationships to natural phenomena, ritual activity, and the sacred. Mid-poem, anticipating her coming prophecy, Clan Sister states: "Wondrous revelations / occur rarely. / Once a lifetime" (35).

"Recognize me to free thyself"

Although Snake Mound speaks only once, in section II, its persona returns in an altered form and under an altered name in section III. Section II, "Origin," is composed of twenty-eight persona poems, the result of the sacred number four multiplied by the sacred number seven; section III, "Intrusions," is composed of twenty-seven persona poems. Twenty-seven is the cube of the book's other basic unit of measurement, three (3 x 3 x 3, or three made three-dimensional). In contrast to the number four or other even numbers, in many Indigenous North American cultures three is associated with creative activity and with action that is ongoing and incomplete.[30] Here, in the section that highlights the intrusion into Blood Run of violent ideologies, people, and machines, "Snake Mound" manifests as "Stone Snake Effigy."[31]

Among the section's six "Intruding" personas, which appear in seven poems, the collective "Squatters" is especially connected to the related personas of Snake Mound and Stone Snake Effigy. These unlawful occupiers of the land justify their "settling" of "wilderness" and their "tam[ing]" of "savages" by damning unwanted "beasts" and railing against "blasphemous symbols—Snakes!" (51). That they invoke the specific language of blasphemy and snakes helps explain why the section's intruders as a whole and the Squatters' poem in particular occupy a seemingly exalted status within the thematic

geometry of *Blood Run*. The six intruders claim a total of seven poems (the fourth prime), with "Squatters" positioned as the seventh poem within section III and simultaneously as the thirty-fifth persona poem (7 x 5) within the overall sequence. Moreover, "Squatters" is composed of twenty-eight lines (7 x 4) arranged into sixteen statements (4 x 4, or the square of the book's sacred basic unit of measurement).[32] Unlike the sins of irreverence, impiety, or sacrilege, which manifest in multiple forms, the sin of blasphemy typically manifests as spoken language or inscribed speech. Thus, in coupling "blasphemous symbols" and "—Snakes!" (the drama of the coupling accentuated by the dash, capital *S*, and exclamation point) the Squatters implicitly recognize—and explicitly recoil from—Snake Mound as both biblical Serpent (that sly tempter to knowledge) and Indigenous text. In their own inscribed speech, the Squatters claim rights guaranteed by "Manifest Destiny," "God's will," and "providence"—rights to "raze," "exterminate," "obliterate." Their claims are structured, however, as an unlawful occupation of the sacred numbers seven and four. It is thus the Squatters—and the six intruders as a whole—who commit sins of profanity and defamation, who blaspheme, within the symbolic economy and thematic geometry of *Blood Run*.[33]

Within section III, "Stone Snake Effigy" follows the embedded sequence of the six named intruders to the Blood Run site. The twenty-first poem within the section (3 x 7), "Stone Snake Effigy" is simultaneously the forty-ninth persona poem (7 x 7, or seven squared) within the larger sequence of sixty-four. Like "Snake Mound," "Stone Snake Effigy" is composed of seventeen lines divided into eight stanzas, with seven gaps or "convolutions" of white space on the page, and arranged into eight statements, and it is similarly sited across the open spine of the book in dialogue with the collective persona of The Mounds. And like the Snake Mound, the Stone Snake Effigy asserts its ongoing centrality at Blood Run and its ongoing relevance for the human community:

Stone Snake Effigy
1 Before ignorance
2 my length was modeled
3 for protection,
4 sacred presence. *statement 1*
[1]
5 Presenting myself fully so long. *statement 2*

[2]
6 Now these stones, still mark
7 glorious envisioned
8 being I once was. *statement 3*
[3]
9 What is now considered miles
10 once stretched by rope-lengths. *statement 4*
[4]
11 Walk along my length made
12 considering what is done, will be. *statement 5*
[5]
13 What is necessary surely remains so,
14 regardless of hands, or hearts of man. *statement 6*
[6]
15 My purpose thus exists among needs
16 of the world to this very day. *statement 7*
[7]
17 Recognize me to free thyself. *statement 8* (65)

Stone Snake Effigy's imperative at line 17 (the seventh prime), "Recognize me to free thyself," echoes Snake Mound's self-representation at its line 17, "Sinuous, I am," in its biblical diction, syntax, and tone. Only now, situated within section III, "Intrusions," the biblical discourse resonates not only with the Old Testament (the Serpent's role in prompting the primal couple toward knowledge) but also with the New. Combined with the poem's references to "length," "presenting," "stones," "glorious," and "miles," and with the invitation to "Walk along my length made / considering what is done, will be," beginning at line 11 (the fifth prime), the imperative to "Recognize me" in order "to free thyself" is suggestive of the story of Christ's recognition at Easter as presented in the Gospel of Luke, especially the story of the two disciples who fail to recognize the risen Christ as they "walk along" the Road to Emmaus.[34] With the Emmaus allusion in mind, we can discern the poem's subtle play with the details of the "stones" of Christ's tomb, a "mark" of his resurrection, and with its emphasis on the details of "walk[ing]," "length," and "miles."[35]

In the story of the Road to Emmaus, the risen Christ challenges his unseeing disciples to recognize his glory and thereby to gain their freedom from the Old Law. Through the persona of the Stone Snake Effigy, the contemporary Indigenous poet challenges readers to recog-

nize—and, significantly, to engage in—an Indigenous scientific rather than a Western scientific understanding of earthworks technologies: to assume not a detached view of the world but rather to actively participate with the living earth and cosmos. Cajete describes this understanding of Indigenous science: "Native science embodies the central premises of phenomenology (the philosophical study of phenomena) by rooting the entire tree of knowledge in the soil of direct physical and perceptual experience of the earth. In other words, to know yourself you must first know the earth" (23–24). The imperative to "[r]ecognize me to free thyself" thus directly depends upon the invitation to "[w]alk along my length made / considering what is done, will be."

Hedge Coke's complex sequence of poems demands nothing less of its readers than to understand the multiple sitings of civic and sacred earthworks at Blood Run—and across the North American continent—in specifically Indigenous scientific terms. In the thematic geometry of her poetic forms, based in the natural numbers four, three, and seven and in the sequence of the first twenty-four primes, she actively demonstrates the efficacy of Indigenous earthworks technologies, for it is at this level that she literally embodies aspects of those technologies within her contemporary poetic practice. Through the poetic sequence of *Blood Run* she orients readers to see regular, persistent systems of natural, cosmic, and human patterning, and thus she positions readers to imagine the ongoing persistence and the potential renewal of Indigenous worlds rather than to accept the colonial fictions of their erasure.[36] This is the dramatic and political power of Hedge Coke's earthworks poetics. As the speaker reflects toward the end of the opening narrative poem, "It is in this dawning consciousness is raised. A chance" (9).

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Notes

1 Allison Hedge Coke, *Blood Run: Free Verse Play* (Cambridge, Eng.: Salt Publishing, 2006). Hedge Coke is also the author of the award-winning poetry collections *Dog Road Woman* (1997) and *Off-Season City Pipe* (2005) and of the powerful memoir *Rock, Ghost, Willow, Deer: A Story of Survival* (2004). In her author note to *Blood Run*, she explains that "Oneota designates an Indigenous building culture on the Midwest Prairie Peninsula"

(xiv). Peoples associated with the Blood Run site include "Ho-Chunk, Otoe, Ioway, Kansa, Omaha, Missouri, Quapaw, Osage, Ponca, Arikara, Dakota, and Cheyenne Nations" (xv). Although she otherwise downplays her personal role in attempts to protect Blood Run, Hedge Coke notes at the end of the volume that her opening narrative poem, "Before Next Dawning," "is a version of the author's oral testimony that urged the State of South Dakota Game Fish & Parks Department to vote unanimously to secure the site after twenty-three years of deliberation" (94).

2 Scholars working in several fields—archaeology and anthropology, art history, history, literary and cultural studies, literacy studies, and rhetoric—identify a range of Indigenous writing systems in use across the Americas prior to the introduction of alphabetic literacy, including not only the Mayan codices but also petroglyphs and pictographic "rock art"; pictographs painted on tanned animal hides (Plains Indian "winter counts" and "brag skins," for instance) or inscribed in birchbark (Anishinaabe and Passamaquoddy birchbark scrolls); and strings or belts of wampum. These and other Indigenous writing systems and mnemonic devices were used to complement oral performance traditions. A number of these systems continued to be used into and through the so-called contact era, often in modified forms that responded to changes in social conditions and available resources (such as the development of a more narrative style of Plains Indian "ledger art" on paper, or the incorporation of alphabetic writing in French or English into birchbark scrolls); many continue into the present. Within literary and rhetorical studies, see, for example, Craig Howe, "Keep Your Thoughts above the Trees: Ideas on Developing and Presenting Tribal Histories" in *Clearing a Path: Theorizing the Past in Native American Studies*, ed. Nancy Shoemaker (New York: Routledge, 2002), 161–79; Angela M. Haas, "Wampum as Hypertext: An American Indian Intellectual Tradition of Multimedia Theory and Practice" (*Studies in American Indian Literatures* 19 [winter 2007]: 77–100); Lisa Brooks, *The Common Pot: The Recovery of Native Space in the Northeast* (Minneapolis: Univ. of Minnesota Press, 2008); Matt Cohen, *The Networked Wilderness: Communicating in Early New England* (Minneapolis: Univ. of Minnesota Press, 2010). I am suggesting that we add the construction of earthworks to our broadening understanding of Indigenous writing systems and their multiple media.

3 A number of contemporary American Indian writers exemplify a poetics of activist witnessing. One thinks immediately of Simon Ortiz (Acoma), Joy Harjo (Creek), Wendy Rose (Hopi/Miwok), Linda Hogan (Chickasaw), Sherman Alexie (Spokane/Coeur d'Alene), and Deborah Miranda (Esselen/Chumash), among others. Hedge Coke has described her own work in these terms at a number of venues, including "Writing Presence: Earth, Rivers—A Workshop in Witness," which she offered during the Western Literature Association conference in Spearfish, South

Dakota, on 2 October 2009. Toward the end of the opening narrative poem in *Blood Run*, Hedge Coke's speaker links the historical destruction of North American earthworks to the ongoing destruction of sacred sites around the globe: "Let us count, how often we witness sacred sites demolished, / toppled during yet another overthrow" (9).

4 See, for instance, Ray Hively and Robert Horn, "Geometry and Astronomy in Prehistoric Ohio" in *Foundations of New World Cultural Astronomy: A Reader with Commentary*, ed. Anthony Aveni (1982; reprint, Boulder: Univ. Press of Colorado, 2008), 39–60; and Bradley T. Lepper, *The Newark Earthworks: A Wonder of the Ancient World* (Columbus: Ohio Historical Society, 2002). For broader accounts of Indigenous astronomy in the Americas, see *Foundations*, ed. Aveni.

5 For an early account of the research for establishing the so-called Great Hopewell Road, see Bradley T. Lepper, "Tracking Ohio's Great Hopewell Road," *Archaeology* 48 (November/December 1995): 52–56. Many of Lepper's early theories, based on archival data, ground survey, and aerial photography, have been substantiated and expanded by more recent work involving LiDAR technologies, which I discuss below.

6 The oldest earthworks built in North America are believed to have been constructed in what is now the U.S. state of Louisiana, possibly between 6,500 and 7,000 years before the present. For information about one of the largest and most remarkable of these sites, believed to have been constructed around 1800 BC, see the Web site for the Poverty Point Earthworks, sponsored by the Louisiana Office of State Parks and by Louisiana Public Broadcasting at www.lpb.org/programs/povertypoint/povertypoint.html.

7 Joyce M. Szabo, "Native American Art History: Questions of the Canon," in *Essays on Native Modernism: Complexity and Contradiction in American Indian Art* (Washington, D.C.: National Museum of the American Indian, 2006), 74.

8 Computer-based interactive exhibits of earthworks sites have been developed by the Center for the Electronic Reconstruction of Historical and Archaeological Sites (CERHAS) at the University of Cincinnati; see the EarthWorks Web site at www.earthworks.uc.edu. Also see the Web site for the Ancient Ohio Trail, a collaborative site geared toward earthworks tourism created by the Ohio Historical Society, the U.S. National Park Service, the Newark Earthworks Center at the Ohio State University at Newark, and CERHAS at www.ancientohiotrail.org.

9 As early as 1982, Hively and Horn argued that the earthworks at Newark, Ohio, demonstrate "a remarkable degree of symmetry, precision, and geometrical harmony, apparently based on a single length [of measurement]" ("Prehistoric Ohio," 57).

10 In 2008, William F. Romain and his colleague Jarrod Burks published several online essays on the preliminary findings of their LiDAR research

in Ohio, from which my information is taken. See "LiDAR Assessment of the Newark Earthworks," *Current Research in Ohio Archaeology 2008*, Ohio Archaeological Council, February 2008, and "LiDAR Analyses of Prehistoric Earthworks in Ross County, Ohio," *Current Research in Ohio Archaeology 2008*, Ohio Archaeological Council, 3 March 2008, www.ohioarchaeology.org. I also had the pleasure of hearing Romain present many of these findings in a lecture at the Ohio State University ("LiDAR Imaging of Ohio Hopewell Earthworks: New Images of Ancient sites," 23 October 2008).

11 I am borrowing the language of "geometric regularity" and "geometrical harmony" from Hively and Horn ("Prehistoric Ohio," 58).

12 These details are provided by Hedge Coke in her author note to *Blood Run* (xiv–v) and by the Anishinaabe poet and scholar Margaret Noori in her introduction to *Blood Run* (ix–xi); they are also available on Web sites devoted to the Blood Run site, such as those sponsored by the University of Iowa at www.uiowa.edu/~osa/IAM/2007Ioway/blood_run.htm and by the Iowa Historical Society at www.iowahistory.org/historic-sites/blood-run/background-information.html.

13 Hedge Coke makes the performance aspect of the text explicit on the title page of *Blood Run*, where she describes the sequence of poems as "*Free Verse Play*."

14 The vast majority of twentieth-century and early twenty-first-century scholarship and interpretive materials on earthworks includes relatively little or no information about Indigenous understandings of these sites and technologies.

15 Above, I employ the concept of a fourth dimension metaphorically to highlight the activist politics of Hedge Coke's inclusion of explicitly Indigenous perspectives in *Blood Run*. Within Western mathematics and philosophy, however, the concept of a fourth dimension generally refers to time. Here, I evoke the possibility of a four-dimensional quality to Hedge Coke's poetic structures to suggest their potential to link the present to the past and to project into the future.

16 Elsewhere I offer an extended analysis of the sequence produced from this "aerial" perspective; see Chadwick Allen, "Siting Earthworks, Navigating Waka: Technologies for Settlement; or, Patterning Indigenous Worlds," in *Trans-Indigenous: Reading Across* (unpublished manuscript). In the manuscript chapter I juxtapose Hedge Coke's *Blood Run* with the book-length sequence of poems titled *Star Waka* by the Maori poet Robert Sullivan (Auckland, NZ: Auckland Univ. Press, 1999).

17 Gregory Cajete, *Native Science: Natural Laws of Interdependence*, with a foreword by Leroy Little Bear (Santa Fe, N.M.: Clear Light, 2000), 65, 234.

18 William F. Romain and other anthropologists describe the mound-building cultures of Ohio and elsewhere as having this kind of three-worlds world-

view; see, for instance, *Mysteries of the Hopewell: Astronomers, Geometers, and Magicians of the Eastern Woodlands* (Akron, Ohio: Univ. of Akron Press, 2000). Cajete states in *Native Science* that "[h]umans live in all three worlds, but we are conscious of only one. Many Native ceremonies are intended to make participants aware of the three levels or the overlaps between them. These ancient rituals alter participants' everyday consciousness to acquire knowledge from the underworld and the universe" (41). As Hedge Coke describes them in *Blood Run*, earthworks function similarly to help the human community become more aware of upper and lower worlds.

19 Hedge Coke's ideas about place-identity can be linked to the ideas of N. Scott Momaday (Kiowa) about how individuals and communities "invest" themselves in particular landscapes and at the same time "incorporate" those landscapes into their "fundamental experience" and thus into their sense of self. See Chadwick Allen, "N. Scott Momaday: Becoming the Bear," in the *Cambridge Companion to Native American Literature*, ed. Joy Porter and Kenneth M. Roemer (Cambridge, Eng.: Cambridge Univ. Press, 2005), 207–19.

20 Romain, *Mysteries of the Hopewell*, 253. Hedge Coke appears to affirm this interpretation in her persona poem "North Star," which includes the line "engraved serpents, hawk wings to commemorate lower, upper [worlds]" (*Blood Run*, 29).

21 Romain, *Mysteries of the Hopewell*, 247. Romain demonstrates true astronomical north in a line running from the tip of the Serpent Mound's coiled tail through the base of its head; the summer solstice sunset point from this line through the center of the serpent's head and the oval disk; and the six lunar rise and set points running through six of the serpent's seven body convolutions. If we work from the head toward the tail, these six alignments are ordered 1) moon maximum southern set point, 2) moon minimum northern rise point, 3) moon mid-point set point, 4) moon mid-point rise point, 5) moon minimum northern set point, and 6) moon maximum southern rise point. The Ohio Historical Society's Web site suggests the possibility, as well, that the coils of the Serpent Mound's tail may point to the winter solstice sunrise point or to the equinox sunrise point.

22 Cajete, *Native Science*, 217–18, my emphasis. Cajete argues further: "Native astronomies were predicated upon a participation-resonance-creative imagination-relational orientation that characterized the participatory nature of Native interaction with other aspects of the natural world. In other words, Native cultures applied a participatory consciousness to their conception of the heavens, whose goal was to establish a kind of resonance with what they perceived in the night sky and their activities on Earth. They approached the stars with their creative imaginations as well as with their skills of observation and astronomical tech-

nology" (216). In *Lakota Star Knowledge: Studies in Lakota Stellar Theology*, Ronald Goodman argues similarly that "[a] fundamental archetype in Lakota thought and one which shapes first the conceptions and then the perceptions of Lakota stellar theology is the notion of mirroring; the concept that what is below on earth is like what is above in the star world" (Rosebud, S.D.: Sinte Gleska Univ. Press, 1992, 15).

23 The number nineteen's position as the eighth prime aligns "Snake Mound" not only with the factoring 2 x 4, emphasizing its relationship to the sacred number four, but also with the factoring 2 x 2 x 2, or the cube of two, the first (and only even) prime, that is, the first prime made three-dimensional.

24 The lines "my vision bears / all even still" play with the multiple meanings of "still," evoking not only time but also the Snake Mound's apparent lack of movement and, thus, apparent lack of life.

25 It is tempting to point to what seems an overdetermined pun in the Snake Mound's final line: that *sinuous* can suggest *sin-you-us*, or *Sin you [against] us*.

26 Sixteen can be factored, as well, as 2 x 2 x 2 x 2, or the first (and only even) prime raised to the fourth power.

27 Hedge Coke's word choice here is significant and pointed. "Elegant" links the snake effigy's aesthetic achievement—its artistic refinement and formal grace—to its scientific exactness and precision, likening it to an elegant *theory*, *equation*, or *proof*. In its suggestion of purity of purpose, "immaculate" responds to the dominant culture's damning of Indigenous snake imagery as unholy. Moreover, "immaculate" carries the specific connotation of the Christian concept of the Immaculate Conception—that Mary the mother of Christ was conceived in her own mother's womb without sin—linking to the assertion, articulated across the sequence, that the burial mounds at Blood Run, in particular, function as "earthly wombs" for the honored dead (*Blood Run*, 17). The personas of The Mounds and Burial Mound describe themselves as a "venter" [belly, uterus] (19), a "seed coat," "testa," and "womb" (58), and "wombed hollows" (82).

28 We might note that the number twenty-four is the *factorial* of the number four. A factorial is the product of all the positive integers from 1 up to a given number, typically designated within mathematics by a given number followed by an exclamation point. Thus, for the number four: 4! = 1 x 2 x 3 x 4 = 24.

29 "Esoterica" includes further numerical resonances. Esoterica is the nineteenth distinct persona to appear in the book's sequence of thirty-seven total personas. Nineteen is the eighth prime (eight is the double of the sacred number four, and the cube of two, the first prime), as well as the mid-point or fulcrum in the sequence of thirty-seven distinct personas, with eighteen preceding and eighteen following. (Thirty-seven

is the twelfth prime, and twelve is the product of Hedge Coke's basic units of measurement, four and three.) "Snake Mound," which immediately precedes "Esoterica," is the nineteenth persona poem in the book's sequence of sixty-four total persona poems.

30 See, for example, the discussion of the number three in Navajo philosophical systems in Gary Witherspoon, *Language and Art in the Navajo Universe* (Ann Arbor: Univ. of Michigan Press, 1977), 166, 172.

31 We can note that the shift in titles from "Snake Mound" to "Stone Snake Effigy" is a shift from two words to three, from an even to an odd number, both prime. A number of Indigenous snake effigies constructed from piled stones remain extant in North America, including what are known as the Kern Serpents located near the Fort Ancient earthworks site in southern Ohio, which align with the summer solstice sunrise. It may be useful to note, as well, that the total number of poems in *Blood Run*, sixty-six, can be read as mirroring the number of books in the Christian Bible. In standard Protestant and Catholic versions, the Bible is composed of an Old Testament with thirty-nine books and a New Testament with twenty-seven books. Of most immediate relevance for the analysis of "Snake Mound" and "Stone Snake Effigy," the number of books in the New Testament mirrors the number of poems in section II, "Intrusions." The first named intruder in section II is Jesuit.

32 "Squatters" is also divided into nine stanzas (3 x 3, the square of three, or three made two-dimensional), emphasizing the intruding persona's relationship to action that is ongoing and incomplete.

33 These details similarly link "Squatters" to "Pipestone Tablets." The twenty-eighth poem (4 x 7) in section II, "Origin," "Pipestone Tablets" is composed of sixteen lines (4 x 4, or four squared); its persona represents another form of Indigenous writing that will be "obliterated" by the intruding "Stranger" (42).

34 See Luke 24:13–35. We might also note that Easter Day is the third day after the crucifixion; three is the second prime.

35 In typical English translations of the verses from Luke, the distance from Emmaus to Jerusalem is rendered as seven miles (the rough equivalent of sixty Greek stadia), another reference to one of the sacred basic units of measurement for *Blood Run*.

36 Hedge Coke's mathematical and geometric coding is thus related to what Dean Rader, in a different context, refers to as the "semiotic gesture" of form that can signify, in its own right, beyond the specific content of a poem's language. Rader argues that a Native poet's embrace of prose forms, for example, "signifies to the reader *story*, *narrative*, *tale* as opposed to *lyric*, *interiority*, *monologic*" ("When Function Invents Form: The American Indian Prose Poem," *Sentence: A Journal of Prose Poetics* 7 [2009]: 87). Hedge Coke's embrace of mathematics and geometry, I argue, signifies Indigenous technology and science.