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Abstract

The rhythmic repetitions that run through weaving, dance, music, poetry, and prayer are guidelines that can be followed with eyes closed and hands outstretched toward a sensory experience of the sacred. This essay traces the synergies between these somatic practices and the potential of rhythmic entrainment to generate numinous states. As cultural paradigms shift from the disembodied mind to mindful embodiment, weaving and cloth provide models for relational thinking and nonhierarchical structures. The author forwards the notion that the act of weaving sensitizes the body-mind to a perception of the interconnected universe.

Keywords: Weaving; repetition; rhythm; embodiment; dance; prayer; meditation; sacred; grid

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Alluring Monotony + Luminous Grids

I. Cloth

I should have known I was a weaver.

In the sun-filled common room at St. Andrew's Scots Memorial Church outside the Old City of Jerusalem, I spent hours as a six-year-old child running from one tartan-upholstered lounge chair to another. I laid my cheek against the itch-inducing wool, scrutinized the geometry of the plaids from a nearly microscopic perspective, and mentally diagramed the sequences of threads. Thirty years later when I sat down at a loom for the first time, my brain—coded for lines in space—thrilled to the three-dimensional linear puzzle. It made sense: I could instantly see the infinite numerical sequences and geometric configurations. As I stood at the intersection of warp and weft on the kinesthetic map of the loom, the coordinates of the woven grid implied the concept of standing at a crossroads, a transitional moment in time. The phrase "x marks the spot" conjures a sense of *here*—of charting terrain, locating the body in space, identifying a specific site, searching for belonging. I had finally found a map to orient myself at the center of the grid-based universe; I had found textile thinking.

One Sunday a few years later I was sitting in church with a friend, something I had not done since childhood. The pastor asked the congregation to name those in need—the ill, aged, and financially destitute. Names were called out one by one into the quiet. As the cadence quickened, voices layered over one another. I watched as the nearly imperceptible sound-threads flew from parishioners' mouths and floated in arcs across the sanctuary like spiders traveling on the planetary electrical field (Yong 2018). The congregation members were wrapping each other in a community web; a luminous grid spun of compassion was being woven around me as they called out names in weft and warp.

In the realm of weaving, there is no distinct focal point and subjects are rarely singular. In this *pre*-one-point-perspective, the weaver scans a different landscape in which all lines are equal, tied together by points of intimate contact in an infinite continuum. In this sense, a woven piece of cloth is democratic—and plain weave is the most democratic of all. Each thread is suspended in an anti-individualistic grid, equally exposed to the same surface vulnerability and subjected to the same tension.

In "The Magic of Repetition," artist Helle Hove writes that in the territory of multiples, "components are first emptied of their individual meaning and then charged up with a new one—that of the totality" (2010, 104). The repetitive movement of weaving is a process that sinks or raises the weaver—I am not sure which—to an experience in which mundane nuances mingle undifferentiated and hierarchies dissolve. Weaving plain-weave cloth hour after hour trains the mind to a level playing field: to empathy, interconnectivity, inclusivity, and reciprocity. When weaving moved from hand to machine during the monetization and industrialization of cloth production, one avenue of

Figure 1
Shroud, linen, woven by the author, 2020, photograph by Deborah Valoma.

acquiring an embodied understanding of the communal—"one that thrives not on opposition and distinction, but on relations of affinity" (Küchler 2007, 126)—was lost.

When a four-selvage cloth is woven, the metaphors of collectivity and continuity are amplified. Warped in a figure eight with a continuously-spun thread, the cloth generates a self-contained, uninterrupted energy flow in four directions—a "vortex of infinity" as artist and writer Lois Martin notes in "How Does Cloth Mean?" In contrast to traditional painting, cloth subverts the idea of a single point of reference: laying on the horizontal plane as it is wont to do, cloth can be observed from multiple viewpoints (1996, 8). There is no fixed up or down, no right or left—a supple model of multiplicity. Whether woven slowly by hand or at breakneck speeds in ear-shattering factories, cloth is malleable; it rebels against the Western-colonialist concept of the rigid grid—the "representation of rationality," as scholar Claire Pajaczkowska remarks in "Of Stuff and Nonsense" (2005, 234).

Unlike graph paper, spreadsheets, and right-angled urban plans, the woven grid defies dualistic, two-dimensional logic to become three-dimensional. It is energetic and dynamic in its irrational physicality; its mutating foldability reshapes the planar into the sculptural—a grid folding in on itself, opening, and folding in again (Figure 1). Like the follower in a partner dance, cloth is receptive to the slightest pressure, the subtlest intention. Cloth falls heavy with its lover gravity, sways in the arms of wind, creases and folds when caressing bodies. This sensual mutability may seem a weakness, a vulnerability to minds trained to the idea of one-directional control—that power resides solely in the body of the lead. But as experienced *tangueros* know, the dance is an improvization between an active follower and a responsive leader, a collaboration of equals.

But I had seen the luminous grid before. It does not happen often, but I am most susceptible—and most perceptive—during and after prolonged weaving sessions. Sometimes while listening to Johannes Sebastian Bach or Thelonious Monk, my vision dilates to perceive the mathematical arrangements of notes and silences as undulating filaments woven in midair. And when dancing, I envision my body and the bodies of fellow dancers moving through space along set pathways—singular trajectories that interweave just above the horizontal plane of the stage. Likewise, while drumming, I perceive the Afro-Brazilian polyrhythmic interplay of percussion as sound-strands hovering over the drummers' heads. The sonorous hits of the heartbeat *surdo*, the melodious baritone *dobra*, the sharp cracks of the tenor *repique*, and the infill of the *caixa* lay on top of one another in a perfect composition—a soundscape of woven beats. The gaps between beats—the silence between the sounds—appear as voids between the intersecting threads. The faster the tempo, the tighter the weave.

The weaving + dancing + drumming triad was revealed to me fifteen years ago in Havana when I witnessed

Figure 2
Tajona, Ban Rará Dance Company, Havana, 2005, photograph by Deborah Valoma.

the legendary Afro-Cuban dance company Ban Rará perform the *tajona*, a synthesis of African movement and rhythm with European maypole traditions (Figure 2). Moving in interlocking circles, the dancers stepped slowly and deliberately as they wove ribbons around the central pole. But as the music quickened, they suddenly reversed direction and repeated the sequence backward at breakneck speed—jumping, twirling, diving, somersaulting. It was not until that moment of *un*weaving that I realized the dancers had been moving in a choreographed over-and-under sequence. Years later, I had occasion to perform the *tajona* with Cuban dancers in San Francisco. The experience inside the circle was dizzying. The dancers were trained to look not at the weaving on the pole for guidance, but to follow the mind-map of interwoven movements at the edge of the circular dance-path. I could see those invisible routes, traced mentally as intricate patterns in space. In a sense, there was a double weaving, the seen and the unseen.

In its culminating line "Weaving and dancing the Tumba" (Viddal 2006, 57), a traditional *tajona* song affirms the analogous dynamics of weaving, dancing, and drumming. Although conventional Eurocentric thought classifies them as discrete, these disciplines are similarly structured on the principles of geometry, repetition, and cadence. In researching the parallel creative forms—visual, somatic, auditory—it quickly became apparent that they often share an internal logic of four: four harnesses on a floor loom, choreographic movements in intervals of four, and four beats in a measure. Grid-based systems of representation within each genre prove the point: weaving drafts, dance notation, and percussion diagrams display organizational and graphic similarities. But evidence is also found through embodied experience.

During periods of intense work—whether weaving at the loom, rehearsing in the dance studio, or drumming on the street—I see and move and listen in a rhythmic realm. I find myself locked in counts of four and multiples of four, calculating my steps from car to door and back again: 1, 2, 3, 4, 5, 6, 7, 8. I hear the crows outside my studio window calling out the

asymmetrical five-stroke rumba clave that lies tucked in a four-beat measure. And as the windshield-wiper metronome beats a 4/4 time signature, my fingers tap the steering wheel in counter-time. At moments, the three genres converge. When dancing and drumming next to a partner, our bodies sync and we weave translucent threads of sound in the air with our movements—wrapping us in a fabric of collective euphoria. Rhythm is dance is weaving; weaving is dance is rhythm.

Like a percussionist, the weaver plays the loom. Repetitive movements accent the silence—the treadles keep the downbeat and upbeat, the beater lays the groove as it strikes the fell of the cloth, the mid-range shuttle plays the melody as it slides from side to side through the shed, and the heddles beat staccato as the harnesses raise and lower. The mesmerizing sounds are gently percussive, rendering audible the movement of the body, the trajectory of the threads, and the structure of the cloth. My daughter remembers this lulling sound, which drifted into her bedroom from my studio and rocked her to sleep as a child like a soporific lullaby. Her experience mirrors that of ethnobotanist Wade Davis, who reported that while listening to the nighttime weaving of Adalberto Villafañe in the Colombian highlands, he "fell asleep to the sounds of a heddle separating the strands of the warp, a shuttle bound with cotton being shot from side to side, a shed stick thumping the woof into place" (1996, 56). These repetitive sounds can hold the listener in a hypnagogic state at the edge of slumber.

The weaver walks the warp, but dances the loom. Stepping first on one foot then the other, the weaver initiates the binary exchange of threads on the loom—up and down, in and out, over and under. With *the beat*, one movement to-and-fro, the weaver's body rocks vertically along the warp axis—forward, backward. The tempo of the shuttle flying between the hands causes the body to oscillate horizontally along the weft axis—rightward, leftward. This cross-shaped choreography continually marks the weaver's position on a coordinate plane, its four quadrants delineated by the four directions along the y (warp) and x (weft) axes—north, south, east, west.

Four-selvage Diné (Navajo) weaving echos this four-way directional logic, orienting the weaver to ancestral lands marked by the four sacred mountains and the four cardinal directions. Diné weaver Ilene Naegle explains that the first weft threads inserted in the warp "are placed there to honor the four directions" (Bigknife Antonio 2019, 126). Designs are generally woven in bilateral and inverted symmetry, resulting in a weaving that when folded vertically and horizontally presents the same composition on each quarter plane. The Diné creation story likewise reveals a fourfold structure: the *Diyin Dine'é* (Holy People) ascended through four consecutive worlds—black, blue, yellow, and white—and directed the divinity Spider Woman to "weave her pattern of the universe" (Pete and Ornelas 2018, 149). Following this same sequence, "the coming to know process unfolds cyclically through four stages: *nitsáhákees* (thinking), *nahat'á* (planning), *iiná* (life/action), and *siihasin* (fulfillment/completion)" (Bigknife Antonio 2019, 157). Weaving on the loom centers the Diné weaver in this four-square arrangement of the physical and spiritual world, affirming a sense of belonging and promoting *hozhó* (health, harmony, beauty, balance).

Coast Miwok/Kashaya Pomo elder and basketweaver Julia Parker taught me the significance of the number four—directions in four, repetitions in four, completion in four. Native American basket designs are generally built on the cardinal points, an invisible cross forming the underlying quadruplicate structure of the woven spiral. Likewise, in the sanctified roundhouse, the four wooden pillars holding the roof are circled clockwise when entering and leaving. In prayer, Julia and her descendants turn east, south, west, and north, and in the sweat lodge, sacred songs and invocations are repeated in rounds of four. Four brings action to conclusion. When she first encouraged me to hike with the Native community along the Traditional Walk that traces the historic trade route from Yosemite Valley to Mono Lake, Julia instructed me that I must cross the Sierra Nevada four times: "The first time you walk, it is for remembering the old people. And the second time, it is for your families. And then the third time you walk, then you are more aware of what is up there and more aware of yourself. And then the fourth time is when you find yourself being healed" (Valoma 2013, 221).

According to the often-cited Gerardo Reichel-Dolmatoff article describing the weaving practices of the Kogi of the Sierra Nevada de Santa Marta in northern Colombia, the loom acts as an apparatus for cognitive orientation. The Indigenous frame loom embodies a set of intersecting concepts that organize Kogi thought—anatomical, geographical, and cosmological. The loom serves as a diagram of the body; the four

corners represent shoulders and hips, and where two stabilizing crossbars form an X, lies the heart (1978, 11–12). Simultaneously the corners symbolize the four Columbian cities of the Sierra Nevada and the epicenter marks the snow-covered peaks of the mountain range. The loom is a diagrammatic map of the land and the land is the loom on which the sun weaves the fabric of the unified universe: "In the four corners are the points of the solstices and equinoxes, the loci between which the divine weaver moves each day and night creating the worlds of light and darkness, of life and death" (Davis 1996, 60). In this way, Kogi weavers orient themselves to the physical and the metaphysical.

Weaving by hand—which requires incalculable hours to produce what might simply be purchased at a fabric store—might be defined as a nonsensical waste of time in industrialized production schemes that capitalize on resource and labor exploitation. But the facsimile produced by mechanization is a poor stand-in for the experiences generated by the rhythmic act of weaving. Momentum is excruciatingly slow, measured by the infinitesimal breadth of a single thread. And the physical gestures are mundane and monotonous—throwing, bending, reaching, beating. At times, especially under deadline, I impatiently calculate the rate of progress by obsessively multiplying weft inches by minutes. But when I can surrender to the archaic deceleration of time, my breath sometimes synchronizes with my movements, my movements with the loom, and the loom with the emergent cloth. In those instances, the repetitive tedium is punctuated without warning by fleeting moments of dreamlike lucidity and waves of bodily ecstasy.

II. Prayer

Although Western thinkers do not generally consider weaving a numinous practice, revelatory states can be induced involuntarily as well voluntarily. Weaving hour after hour can soothe the body and propel the mind into liminal space, which can hold the weaver for a time in a state of otherworldliness. Much like meditation or prayer, consciousness can shift from a single-minded emphasis on materiality to a soft-focus consideration of immateriality. Indeed, somatic repetition is a cornerstone of spiritual contemplation from Shamanistic to Abrahamic traditions, from time-honored Eastern to contemporary Western practices (Schmalzl et al. 2014, 1). For example, prayer in motion is customary in Ashkenazi Jewish traditions. One common movement is swaying, typically back and forth but sometimes left to right, known in English as shuckling or shokeling—from the Yiddish *shucklen* (shake, sway, rock). Various explanations have been forwarded by rabbinical scholars, but one provided in the nineteenth century by Lithuanian Rabbi Yehiel Michel Epstein asserts that rhythmic swaying during prayer kindles *kavannah* (spiritual intention) and directs the heart toward God (Rabin, n.d.). Shuckling is understood as a complement—a physical inducement of and response to the rhythm of verbal prayers—and is meant to elicit a profound state of religious devotion. But it is more: in "Subversive Repetition," interdisciplinary artist Li Lorian comments that a "person praying and rocking does not need a place of worship but it is in movement that she or he marks a space for worship" (2020, 13). Fixing attention on the repetition of physical gestures or vocal utterances can generate sacred *states* and sacred *spaces*.

Conservative Rabbi Alan Lew, founder of the world's first Jewish meditation center in San Francisco, observes that the textual meaning of prayer is critical to intellectual understanding, but the "real spirituality of the service lies elsewhere—in the rhythm of the service, in the flow of gesture and sound, and in the silences between and behind the language" (2000, 94). Strikingly similar in tone, Catholic theologian Peter Kwasniewski clarifies that along with other elements, movements, sounds, and silences are inherent in the language of liturgy. In "Poets, Lovers, Children, Madmen—and Worshipers," he argues that the 1962 Second Vatican Council reforms that purged what were interpreted to be "unprofitable" liturgical repetitions—both in word and gesture—were misguided. Kwasniewski affirms that "verbal and ceremonial repetition … suits the sphere of the sacred, defining it and setting it apart from the ordinary and the profane" (2019).

The modernization of Catholic liturgy appears to have roots in the Western-colonialist doctrine of binaries that debases repetition and corporality and elevates progress and rationality. These dualistic paradigms likewise flourish in Adolf Loos's early-twentieth-century treatise "Ornament and Crime," in which the Austrian architect infamously proclaims that "the evolution of culture is synonymous with the removal of ornament." Loos advocates for visual austerity in modern design and links repetition and ornamentation to the pathological: to the primitive, degenerate, criminal, and child ([1908] 1971,

19–20). Laying bare the racist and somatophobic ideology that assigned superior intellect to the colonizing European and inferior sensation to the colonized non-European "other," he accuses ornamental patterns of oozing erotic sensation. Loos's visual repetition can be likened to ritual repetition. And in both cases, anti-repetition discourse assigned repetition to the lower registers of Western-colonialist classification systems that declared a so-called evolution from savagery through barbarism to civilization.

Repetition generally carried the negative connotations of monotony, not meaning; of sensory impulses, not generative forces; of unoriginal collectivity, not imaginative individuality; of the "primitive," not the "civilized." As ethnomusicologist Luis-Manuel Garcia writes in "On and On: Repetition as Process and Pleasure in Electronic Dance Music": "From the earliest reports of the colonial encounter, rhythm and repetition have had a racial valence" (2005, 4). The radical transgression embedded in the concept of repetition is the proposition that culture moves with cloth-like foldability, rather than with a resolute advancement from low to high. By implication, the embrace of repetition as a legitimate expressive vehicle in any discipline challenges Western-colonialist notions of racial and cultural superiority.

In "Craft of the Senses," sensory anthropologist David Howes stresses that "conventional western hierarchy of the senses, which opposes sight to touch as mind is opposed to body … heaps honors on vision as 'the noblest sense' while relegating touch to the lowest, most 'primitive' rung of the sensorium" (2011, 1). Howes cites the unabashedly racist taxonomy of early nineteenth-century German naturalist Lorenz Oken, who ranked peoples in an evolutionary ascent from murky nadir to shining apex. Moving upward in an ever-whitening chromophobic scheme, Oken placed the black African "skin-man" at the bottom, followed by the brown Australian "tongue-man," the red Native American "nose-man," the yellow Asian "ear-man," and finally at the top, the so-called civilized white European "eye-man" (2003, 5). Loos's anti-ornamental stance and Catholicism's streamlined liturgical reform might rightly be located within this Western-colonialist continuum of value: this hierarchy of dark-embodied-below and light-disembodied-above. However, theologian Kwasniewski opposes the relegation of repetition to the lowly madman, fool, and child, and instead advocates body-mind reintegration: "The use of the entire body in prayer … inscribes the meaning of the words into our flesh and adds the sensible weight of our bodies to the intentions of the soul" (2019).

Sound repetition—rhyme, alliteration, assonance, consonance—are literary devices that build a corporeal cadence in poetry and liturgical texts. In analyzing the power of rhythm to evoke a state of mediation in "The Symbolism of Poetry," William Butler Yeats contends that "the purpose of rhythm … is to prolong the moment of contemplation, the moment when we are both asleep and awake, which is the one moment of creation, by hushing us with an alluring monotony" ([1903] 2019, 74). Repetition in language, chanted silently or spoken aloud, heightens understanding through the paradoxical tactics of focusing attention on the meaning of repeated words or phrases *and* by coaxing the mind away from sharp-edged intellectual rigor toward a fuzzy state of woolgathering. Repetition in poetry and prayer produces "semantic satiation" which temporarily clouds the explicit reading of word-for-word content (Perry et al. 2021, 12), but delivers implicit meaning to the body in a kinesthetic vocabulary below the conscious level.

In *Hypnotic Poetry*, Edward Snyder distinguishes between two structural categories: mind-alerting intellectualist and trance-inducing "spellweaving" poems. The high metric regularity of the latter is "dreamily persuasive," conjures hazy images with "soft, shadowy outlines," and has the potential to arouse "the ecstasy that betokens the sublime" (1930, 5, 42, 2). Citing Edgar Allen Poe's 1845 poem, Snyder points out that *The Raven* ends all but one of eighteen stanzas with "nothing more" or the raven's refrain "nevermore." Similarly, the flowing narrative of Psalm 136 in the *Tanakh* (Old Testament) is made sensually rhythmic by the repetition of its concluding line. The first lines in each stanza form a continuous narrative singing of God's praises, but are sliced through by the echoing "For his steadfast love endures forever" (New Revised Standard Version). Chanted twenty-six times in as many verses, the repeated phrase punctuates the flow, building a gently percussive declaration of God's love like a mother rocking her baby to-and-fro. Attributed to King David, Psalm 136 employs these contradictory, yet complementary, methods of bringing the devotee beyond discursive understanding. And in reciting these stanzas aloud, I cannot help but envision the internal logic of the psalm in thread—word-

threads dropped into the rise-and-fall of the warp meter.

Recognizing the power of repetition, Pope John Paul II declared in his 2002 apostolic letter “Rosarium Virginis Mariae” that recitation of the Rosary is a path toward “increasing knowledge” and is “destined to bring forth a harvest of holiness.” A passionate advocate for revival of the popular scripture-based prayer, John Paul II designated twelve months bridging 2002 and 2003 as the Year of the Rosary. From the Latin *rosarium* (rose garden), Rosary as prayer and rosary as object are tandem vocal and gestural prayers, the spoken phrases marked as the fingers travel around the continuous circle of beads. And although some of my lapsed Catholic friends report the hurried and impatient recitations of their youth as mind-numbing, the pious who maintain a prolonged and leisurely pace can pass through the threshold of boredom. It is there that the rhythmic waves of repetitive prayer can penetrate the worshiper, like Saint Teresa de Ávila’s ecstatic vision of an angel repeatedly piercing her heart with a flaming golden arrow. Gian Lorenzo Bernini’s Baroque masterpiece of paradoxes *Ecstasy of Saint Teresa* (1652)—head thrown back, lips parted, and electrified skin-like cloth enveloping her body—not only belies the solidity and coolness of her stoniness, but scandalously pairs religious devotion with erotic fervor.

The Rosary can be likened to the Prayer of the Heart in Eastern and Oriental Orthodox traditions. Predating the Catholic form, the Orthodox practice arose in the early centuries of Christianity founded on the doctrine that the beating heart is the site of beatific encounter. The prayer is a central component of *hesychasm*—from the Greek *hḗsukhos* (quiet, still)—the centuries-old Orthodox mystical theology and monastic practice that encourages uninterrupted prayer. The requisite repetitions are often tallied with the use of a prayer rope tied with interlocking cross-shaped knots. One simple iteration, the four-word prayer “Lord Jesus, have mercy,” is spoken in one breath to internalize the rhythm so that a prayerful state is not achieved momentarily, but experienced continuously. Synchronized to the ebb and flow of breath, eventually “the prayer may gradually settle into the heart and begin to repeat itself” (2001, 201). In my ancestral religion, the Armenian Apostolic Church, *tʿazbeh* (prayer beads) were adapted from the Islamic Turkish *tespih*. In a ca. 1870 family photograph, my three-times great grandfather, a priest in Ottoman Armenia, holds a string of beads that he presumably used to recite the mantra-like prayer in Armenian—*Der voghormia* (Lord have mercy). This method of tracing repetitions provides a multi-sensory cadence, both tactile and auditory, as one loosely strung bead falls against the next.

In Islamic mysticism, the receptive body is similarly a site of divine communion. The Ṣūfī practice of *dhikr*—from the Arabic *ḏikr* (remembrance)—prescribes the recitation of Allāh’s name as a means of calling the divine presence and manifesting a state of heightened awareness. Diverse formulas of words, gestures, and breathing practices have developed over centuries, but all are “explicitly repetitive” and “fully embodied” (Loevy 2018, 163). According to the eleventh-century treatise *Tartīb al-Sulūk*, *dhikr* unfolds in three stages: the first fluctuates between a loss of self, *ghayba* (absence), and a heightened sense of consciousness, *ḥudūr* (presence); the second brings *wurūd* (revelation); and in the last stage the *sirr al-ghayb* (secret of the unseen) is revealed. Finally, the transformative experience takes its own agency and “the physical senses are dimmed and the *dhikr* shifts, as if on its own, to the heart” (Stern 2012, 73).

Likewise, Hinduism, Buddhism, Jainism, Sikhism, and Shintoism incorporate repetitive prayer. Various traditions and schools of thought teach distinct practices, but chanting and meditation in Eastern religious traditions are invariably intended to bring the practitioner into increasing proximity to the divine. In Hinduism, *namjapa*—from the Sanskrit *nāma* (name) and *jap* (repetition)—is the recitation of a holy name to “evoke spiritual force or align oneself with a particular deity.” Much like a string of rosary beads, *japa mala*—from the Sanskrit *mālā* (garland)—is used as a tallying device and with prolonged practice the conscious act of repetition is internalized. At the most evolved stage, comments scholar E. James Baesler in “The Prayer of the Holy Name in Eastern and Western Spiritual Traditions,” the prayer shifts and the rhythm of the chant streams unconsciously into daily life. The devotee *listens* to rather than *speaks* the sacred utterances (2001, 201–202). The synchronization of psychosomatic responses such as rhythms of breath and heart is a kind of internal metronome, and remembrance of the divine becomes continuous—a prayer within the breath-beat, a prayer within the heart-beat.

Each of these practices falls within Baesler’s “Relational Prayer Model” defined as profound dialogue with the divine in a “prayer progression”

from active to receptive (2001, 199)—from mind to body. In a 2001 study on the physiological effects of rhythmic breathing and chanting, researchers discovered that repeated recitation of Yoga mantras and Rosary prayers stabilizes the respiratory rate to a remarkably similar six breaths per minute. These seemingly dissimilar cultural practices bring the breath into coordination with spontaneous cardiovascular rhythms, increase oxygenation of the blood, and strengthen the arterial baroreflex—the body's mechanism to maintain regulated blood pressure (Bernardi et al. 2001, 1447). Without the use of stopwatches or breathing apps, these rhythmic forms of chanted prayer have the potential to magnify kinesthetic awareness and induce a state of well-being, even euphoria.

Contemporary theories of the mind have nullified the long outdated seventeenth-century dualism advanced by René Descartes, as well as the mid-nineteenth-century concepts that interpreted the brain as a computational device. Rejecting binary assumptions that relegated somatic experience to the periphery of cognitive function, the relational theories of embodied cognition emphasize the dynamic interplay of body and mind. In a recent study on rhythmic chanting, researchers observe that susceptibility to transcendent experience is linked to traits such as absorption, altruism, and religiosity. Absorption, the ability to sustain "heightened internal focus," and altruism, associated with empathy, are correlated with sensitivity to hypnotic states and rhythmic stimuli respectively. But interestingly, religiosity is not a single predictor. Practitioners of Taketina reported revelatory experiences while chanting more often than other traditions stipulated in the survey (Perry et al. 2021, 10). A complex form of polyrhythmic meditation using voice, hands, and feet, this contemporary group process designed by Austrian composer Reinhard Flatischler produces rhythmic flow, but has no explicit doctrine of faith. This deep absorption may also be experienced by the weaver who likewise engages in multi-layered rhythmic movement hours on end. Without conscious intent, at times the beating of the loom resonates with the heartbeat and the in-and-out of the breath with the over-and-under of the threads. Perhaps at those synchronized moments, the weaver moves in a progression from active to receptive and is able to sense the cloth weaving itself.

III. Dance

Little, if anything, has been written about the act of weaving as a mode of achieving exalted states of consciousness, but extensive research has been done on the trance-inducing characteristics of dancing. Religious scholar Kimerer LaMothe observes in "What Bodies Know" that humans have long "performed rhythmic bodily movement, individually or in groups, in forms carefully choreographed or spontaneously exuded, as an integral part of their religious lives." LaMothe challenges religious scholars who continue to be mired in Western-colonialist hostility to the visceral and elevation of the textual, and argues that the body holds pathways to religious ecstasy (2008, 581). Moving simultaneously with external rhythm induces entrainment—the sense of becoming one with the music. Entrainment theory describes the harmonization of independent rhythmic systems—what bio-musicologists define as the *voluntary* synchronization of physical gestures and *involuntary* attunement of physiological patterns to exterior rhythm (Fachner 2011, 358; Perry et al. 2021, 3). Rhythmic entrainment can induce trance states that encompass a constellation of experiences but generally include certain critical elements: loss of the sense of self, profound focus, and revelation of hidden knowledge not otherwise perceived (Becker 1994, 41).

Although I use the words trance—from the Latin *transīre* (pass over) and ecstasy—from the Greek *ékstasis* (outside oneself)—interchangeably, some scholars distinguish between the two based on sensory hyperarousal (sound, movement) and sensory deprivation (silence, stillness) respectively (Fachner 2011, 356). These paradoxical strategies lead to analogous states of awareness and can be likened to the inducement of beauty. In some cultural contexts, the somatic experience of beauty is a consequence of sensorial abundance, and in others, sensorial diminution. The difference feels directional. At a Hindu wedding in Bengaluru (Bangalore), India my response to boisterous color and quivering patterns, to bright smells and riotous tastes produced a sensation of being lifted up breathless toward beauty. In contrast, as a guest at a traditional *chado* (tea ceremony) at the Urasenke Foundation in San Francisco, the bitter-green taste of frothy tea held in the moon of a night-black bowl produced a sense of sinking, of being knocked down breathless toward beauty.

The upward (stimulating) and downward (de-stimulating) trajectories in esthetic awareness mirror movement-based contemplative practices. The mystic practice of the Mevlevi Order, the so-called Turkish whirling

dervishes, was founded in Anatolia in 1273 by Ṣūfī followers of the Persian poet Rūmī. The prayer *Samâ* (hearing) takes the form of an ecstatic dance spinning counterclockwise, arms outstretched, head tilted to the right, weight on the left foot, the continuous turns powered by the right foot. During the ritual, thousands of smoothly-cadenced revolutions are coordinated with rhythmic music and an inward chanting of Allāh's name. The eyes remain open but unfocused to blur the vision and expose the heart to the experience of *wajd* (ecstasy) that sensitizes the "mind to cosmic relations" (Erzen 2008). In contrast, Wáng Xiāngzhāi, the founder of the internal martial art form Yìquán expresses the conviction that "big movement is not as good a small movement, a small movement is not as good as stillness, one must know that only stillness is the endless movement" (cited in Schmalzl et al. 2014, 2). These divergent strategies—stimulation and de-stimulation—generate "endless movement" and lead from opposite directions to states of altered consciousness.

Union with divine energy can also be experienced through the devotional dance of the African-diasporic religion Santería, developed by enslaved Africans forcibly brought to Cuba and their descendants. For centuries, Yoruba-Lucumí practitioners wrapped African belief systems in a cloak of Catholicism, which provided a powerful, yet covert, tactic to resist cultural annihilation and racial violence. In the current renaissance of Santería, the *orishas* (deities) continue to be called through their signature songs, bilateral dance sequences, and polyrhythms (Murphy 2012, 69). Dance historian Yvonne Daniel explains in *Dancing Wisdom* that at the height of the *toque de santo* (rhythm of the saint), the energy escalates and "the body is filled with praiseful movement" (2005, 161). It is then that the *orisha* might descend and merge with the dancer-devotee. These sacred moments, as I have witnessed them, electrify the air; sparks fly on the cognitive map of the universe and a sense of connectedness permeates the room. As Daniel describes, in the longitudinal-latitudinal spatial dynamics of the dance, "two planes of existence interact simultaneously, the coronal or cosmic plane and the horizontal plane of human existence" (85). The vertical and horizontal converge and the interwoven symmetry of the cosmos materializes.

The south Indian ceremonial dance Bharatanatyam is similar in structure, though not in style. Originally performed by *devadasis* (female temple dancers), the sung narratives, facial expressions, and *hasta mudra*—from the Sanskrit *hastā* (hand) and *mudrā* (gesture)—convey the interpretive content, the sacred narratives of the Hindu pantheon. But it is the geometric forms traced by the body and the mathematical precision of the complex footwork that string the composition together and evoke contemplative states. As anyone who has attended an uninterrupted multiple-hour solo performance has experienced, the repetitive cadence of the feet, accented by bells worn on the ankles, and the synchronization of drums and mantras, sung one alliterative syllable per beat, wrap the viewer in a mesmerizing spatial and temporal geometry (Figure 3). Ramya Shankaran, who characterizes herself as bound to the cosmos through dance, remarks that Bharatanatyam is "a sequence of lines and geometrical patterns that are deeply meditated on and represent specific aspects of bodily response to the basic elements of ground, ether and sky; gravity, space and the limits of perception" (2019, 35).

Anthropologist Tim Ingold reasons that all making is a collaboration between maker and material. He rejects Aristotle's hylomorphism—from Greek *hylē* (matter) and *morphē* (form)—in which masculine form is imposed on feminine matter. Rather than the forcible imposition of will, he argues that making is a receptive, reciprocal call-and-response with materials. Ingold proposes weaving as a blueprint for this co-generative process: a technology of emergence, of continuous becoming "through the rhythmic repetition of movement" (2000, 281). In "The Textility of Making," Ingold states:

The forms of things arise within fields of force and flows of material. It is by intervening in these force-fields and following the lines of flow that practitioners make things. In this view, making is a practice of weaving, in which practitioners bind their own pathways or lines of becoming into the texture of material flows comprising the lifeworld. Rather than reading creativity 'backwards', from a finished object to an initial intention in the mind of an agent, this entails reading it forwards, in an ongoing generative movement that is at once itinerant, improvisatory and rhythmic (2010, 91).

Much like Paul Klee's often-recounted definition of drawing as "taking a line for a walk"—to which Anni Albers famously replied, "I will take thread everywhere I can"—Ingold takes a theoretical thread for a walk.

Figure 3
Bharatanatyam dancer, India, photograph by Viktoriya Samir Dixit.

He postulates that weaving, or any making, is a matter of itineration rather than iteration. Itineration implies movement, journey, travel; each step repeated along the itinerant's path responds to the one before and prepares for the next, each a delicate, almost imperceptible variation of the last (2010, 98). Venturing further down this road, I propose that the weaver takes a thread for a *dance*. If repetitive movement is central to form-generating processes and weaving is the quintessential model, then it can then be argued that dancing, like all making, is a subset of weaving. Along Ingold's lines of flow, the dancer weaves and the weaver dances.

When students weave for the first time, I require them to draft patterns with graph paper and pencil. Although this laborious task can be accomplished with greater efficiency and iterative ease using computerized programs, students better understand the draft as a gestural-spatial-temporal map if they grapple with the internal logic: the arrangement of threads through the heddles (threading), the treadles secured to the shafts (tie-up), the sequence of raising and lowering the harnesses (treadling), and the resulting visual pattern (drawdown). But I want to suggest something further: the body of the weaving itself—not just the draft—is diagrammatic. With its undulating three-dimensional interplay of thread, cloth becomes documentation: the experienced weaver is able to reverse engineer the sequence of threads and retrace the movements of the body. Cloth can therefore be seen as a notational system, a choreography, a map that locates the weaver—if threads extending infinitely in four directions can be envisioned—along the longitude and latitude lines of the interconnected universe.

IV. Cosmos

For the last several decades, the concept of the "cosmic web" has guided astrophysicists in visualizing the large-scale architecture of the universe as a three-dimensional "network of galaxies linked by filaments" (Neyrinck et al. 2018, 1–2). Because observation of gaseous structures is problematic due to low-level luminosity, most of what was known remained theoretical until 2019 when scientists were able to observe and chart the gaseous sheets and strings in the cosmic web within the galaxy protocluster SSA22. Predictions suggest that sixty percent of the hydrogen in the universe travels along this network of intergalactic filaments separated by massive voids. And where the strands crisscross in colossal protoclusters, the formation of galaxies and massive black holes is fueled by congregating streams of cooling gas pulled along by the force of gravity (Umehata et al. 2019, 97–98).

Inspired by this cloth-like topology of the universe, textile artist Isaac Facio and computational astrophysicist Benedikt Diemer teamed up to "investigate the connection between dark matter structures and woven textiles." The choice of thread as a medium was inspired by the structural similarities between gaseous and

fibrous filaments, but responsive art making, not accurate depiction, was their intention (Diemer and Facio 2017, 5). In the 2018 Phase III of *The Fabric of the Universe*, the collaborators installed a three-dimensional weaving in a multi-story stairwell of the Adler Planetarium in Chicago. The form reflected a computer-generated simulation of a cubic volume of space representing a staggering three hundred billion light-years on each side and a billion dark web particles. The data set had to be simplified to accommodate translation to material form, but retained the most pronounced filaments and twenty-five of the largest and most dense "knots of dark matter," the halos that encircle galaxies. Fabricated on an industrial jacquard loom, the volumetric map was woven with sets of black weft and white warp that intersect, the connection points representing the dark-matter halos (The Fabric of the Universe, n.d.).

String might be considered unconventional material for scientific modeling, but the marriage of cosmological theories and textile thinking is not unprecedented in historical contexts. In some traditions, the woven threads of the universe were not understood as topographical replicas or poetic metaphors but as technology-based conceptualizations of how the universe was structured—how order was called into being and is continually called into being. Scholar David Pankenier explains that the universe was envisioned in early Chinese philosophy as created by the astral goddess, the Weaving Maid (Vega), when she wove *wen* (patterns) in the warp and weft of heaven and earth. In the Han Dynasty, the noun *jing* (warp) denoted a multifaceted set of ideas including longitude and north-south alignment. Correspondingly, the noun *wei* (weft) represented, among other interrelated meanings, latitude and the "visible planets 'shuttling' among the stars" (2015, 4). The systematic arrangement of threads by the cosmic weaver determined the well-ordered routes of the planets and stars and collapsed the notions of cloth and cosmos.

Likewise, in ancient Mesoamerican cosmology, strings—both self-organizing and self-entangling—were hypothesized as the foundational materials of the universe. Art historian Cecelia Klein writes in "Woven Heaven, Tangled Earth" that celestial architecture was woven of linear elements portrayed variously as aquatic plants, snakes, ropes, and hair, and that these sacred cords linked "disparate points and thus provide a means of passage and communication" (1982, 2). Mesoamerican theories bifurcated the universe into an above-ground terrain neatly woven of straight lines and an underworld of unruly twisted filaments, their loose ends penetrating the surface of the earth from below (11). This textile doctrine hints at the foldability of the cloth cosmos, attested to by Nezahualpilli, the ruler of the city-state Texcoco depicted in the sixteenth-century Codex Mendoza, when he spoke of "the nine folds of the heavens" (25).

Contemporary Shipibo-Konibo communities, the Indigenous inhabitants of the Amazon rainforest living along on the eastern slopes of the Peruvian Andes, are renowned for rectilinear *kené* designs that permeate invisible dreamscapes and adorn visible landscapes. Architectural structures, objects, and bodies are wrapped in grid-based patterns, a graphic encoding of earthly surfaces with the energy matrix that threads through nature. Although more pervasive in the past when even "the choreography of the festive round dances followed an imaginary pattern on the ground," Shipibo-Konibo women continue to adorn the manifest surfaces of the mundane world with woven, embroidered, and painted patterns (Gebhart-Sayer 1985, 143–144). According to Shipibo-Konibo ceramicist Agustina Valera, *kené* designs appear in dreams and visions, aided by the ritual application of *piripiri* (*Cyperus articulatus*) extract to the navel or eyes (Belaunde 2016, 81–82).

The labyrinth-like compositions are powered by medicinal plants and are synesthetic—visual and tactile, but also olfactory and auditory. In healing rituals, shamans under the influence of the hallucinogen ayahuasca chant the curative and sweet-scented songs of the *kené*, which descend and saturate the patient's body with therapeutic designs to restore health. But the *kené* are not self-contained. Each is linked to the dynamic web that extends infinitely outward and intersects multiple worlds in a "geometric frame-work (*canòa*) of pathways through which beings move, traveling, communicating with each other, and transporting knowledge, objects, and powers" (Belaunde 2016, 83–86).

While researching my experiences weaving—the alluring monotony of sensorial repetition and accompanying visions of luminous grids—I found myself stumbling headlong into a body of religious scholarship and popular literature. In hindsight it seems absurd, but I was startled at the terrain I found myself walking into like a wide-eyed foreigner. Numerous books on faith and spirituality harness the metaphor of weaving in their

titles: *The Weaving of Mantra* (2000); *Weaving Prayer into the Tapestry of Life* (2013); *Weaving the Divine Thread* (2019). And a quick search online for the phrase "luminous web" produced more than six-thousand entries on the popular *The Luminous Web: Essays on Science and Religion*, written by three-time New York Times bestselling author Barbara Brown Taylor. As though I had written the words myself, she eloquently describes what we both see: "an infinite web of relationship, flung across the vastness of space like a luminous net." (2000, 54). And yet I found no reference to weaving beyond the metaphorical, no discussion of weaving as an embodied cognitive process, no analysis of weaving as an act with the potential to deliver the weaver across the threshold to a transformative state.

In *Network Esthetic*, digital media theorist Patrick Jagoda evaluates the "relentless usage" of the word *network* in the contemporary moment: "To call something a network often serves as a cliché rather than, as it once did, an evocative metaphor of relationality or a nonhierarchical model of interconnection" (2016, 4). But as decolonial thinkers challenge colonial modernity and global communities reassert local Indigenous wisdom practices, weaving is more than a metaphor. In line with decolonial scholar Walter Mignolo's "body-politics of knowing/sensing/understanding" (2013, 132), weaving is an embodied knowing, an embodied sensing, an embodied understanding. Weaving reintegrates binaries: south and north, black and white, low and high, body and mind. Weaving is empathetic *thought*. Weaving is plurality *of thought*. Weaving is nonhierarchical *action*. Weaving is the desecularization *of action*. And the hypnotic power of repetition in weaving, as it is in worship, is indispensable because divine mysteries are just that: "unknowable, unmasterable, and ungraspable" through purely rational pathways (Loevy 2018, 162). As cultural paradigms shift from the *disembodied mind* to *mindful embodiment*, this is the moment to reclaim the so-called irrational and inefficient.

In the fast-paced world of Insta-this this and Insta-that, it is through the alluring monotony of entrainment that embodied meaning can be uncovered. Flowing ornamentally through my body, rhythmic repetition is not an encumbrance; it is not unnecessary; it is not unprofitable. Indeed, efficiency in prayer, as in handweaving—if weaving is to be considered a prayerful practice—is *counter*productive. Modern rationality and efficiency, for the worshipful and the weaver alike, engages the outer intellect but cannot activate the "inner sensorium" (Kwasniewski 2019)—the source and site of mystical insight. It is through the radical act of weaving that I am able to see the luminous web of the animate universe.

The rhythmic repetitions that run through weaving, dance, music, poetry, and prayer are, like Ariadne's thread, guidelines that can be followed with eyes closed and hands outstretched toward a numinous state, toward the perception of a cosmological matrix. Attunement to rhythmic systems has the potential to bring practitioners to an awareness of the relational universe as it dances in a synchronized choreography: the metronomic pulse of breath flowing in and out of lungs, the beat of the heart in the chest cavity, the tempo of the walked gait, the rocking cadence of the waves rushing to shore and sliding back to sea, the waning and waxing of the moon, the migration of the constellations east to west, the four-square seasons of the year. This is the woven, rhythmically pulsating universe that can be *sensed* through practices of entrainment.

And there is pleasure in doing so. Consistent with empirical evidence that shows that rhythmic synchrony induces pleasure by releasing dopamine, serotonin, and oxytocin (Perry et al. 2021, 11), poet Mary Oliver writes that "rhythm is one of the most powerful of pleasures, and when we feel a pleasurable rhythm we hope it will continue. When it does, it grows sweeter. When it becomes reliable, we are in a kind of body-heaven" (1994, 42). For the weaver, there is pleasure in repetition of mathematical sequences and interlocking patterns. There is pleasure in rhythmic bobbing and swaying on the fourfold axis. There is pleasure in prolonged meditation of the line-by-line emergence of the flexible grid. There is pleasure in consciousness radiating outward, traveling leisurely along the invisible pathways of the interconnected universe. My synchronistic, quasi-synesthetic experiences induced by the rhythm of weaving inhabit a kind of transcendent zone, in which I find myself drumming the loom, weaving the rhythm, reciting the thread, and dancing the cloth.

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