

Concave Worlds, Artificial Horizons

Reframing the urban public garden

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Introduction: garden as urban counterpoint

As a type, the urban public garden retains an important place-making role in cities. Unlike urban parks—which are increasingly indistinguishable from the neoliberal cities of spectacle in which they are set—gardens retain poetic distinctiveness in the public’s imagination.¹ The urban public garden is, nonetheless, afflicted by an enduring tension; on the one hand, the garden often assumes the role of a counterpoint to the disorientation of its surroundings, while on the other, this differential between the garden and its setting potentially leads to a destabilizing disjuncture. As Richard Ingersoll observes, the garden ‘establishes a reassuring sense of stability in its immediate vicinity’, while ‘also function[ing] as a scapegoat and antithesis to the reality outside’.² As is customary in the history of garden making, the physical frame remains the primary apparatus for enabling this paradoxical relationship. However, when the garden and its context become particularly estranged—as is the case with the traditional model of the walled garden set within the contemporary dispersed city—the agency of rigid framing is potentially undermined.

Set in contrast to the walled garden, the article investigates a more opened form of garden delineation shaped by topography.³ In particular, the threshold created by the upper lip of concaved landform is explored for its capacity to mediate between the garden and the city. More of a filter than a frame, this configuration potentially primes the public urban garden space to retain its



tradition as locus for retreat and orientation, whilst also accommodating more vigorous interactions with the urban context.

Historic context: de/framing the garden

Customarily, the conception of the garden relies on the frame to establish aesthetic distance from the world at large.⁴ Throughout the history of garden making, walls, fences, hedges and ha-has constitute recognizable tools in the designer's palette for physically framing off landscape. Numerous scholars and designers emphasize the primary nature of this representational mechanism: Denis Cosgrove notes that 'the primary act of gardening' involves 'fixing a boundary between the wild and the cultivated'; Peter Walker observes that 'most gardens, both historical and modern, are either defined, or referenced by walls'; Bernard St-Denis traces the origins of *garden* to *fence* as 'the inaugural act and demarcation device'; Peter Marcuse recounts the etymology of the garden as an 'enclosed space', observing that in many languages *wall* and *garden* are closely related; and Donata and Christoph Valentien relate *garden* to the High German *garto*, meaning 'something that is fenced in'.⁵ Indeed, historically the frame has been so vital to the idea of the garden that it forms what John Dixon Hunt terms the 'criterion of enclosure' from which the very representational essence of the garden is reliant (figure 1).⁶

The medieval cloister garden represents the most absolute use of the frame to implement complete enclosure. The *hortus conclusus* reflected an internalized medieval worldview in which the sacred vertical orientation bore primacy over the horizontal entanglements of the garden's forested earthly context (figure 2a). The surrounding wall or building effectively clarified the obscured natural horizon with an internal artificial one, in which the upper lip of the wall directly framed the expansive sky and heavens.⁷ From this condition of walled enclosure, the garden frame progressively opened up in parallel to the transformations of Modernity, whereby the terrestrial horizontal axis displaced the divine vertical dimension.⁸ This process was initially manifested as the partial opening and controlled external visual vistas of the Renaissance garden (figure 2b), and later as the Baroque



Figure 1. Full garden enclosure: Botanist's Garden by Gross.Max, Xi'an, China (author, 2011).

garden's illusory deferral of the garden/world threshold out towards the natural horizon as formed by the curvature of the Earth (figure 2c).⁹ Although evading containment, clear distinction remained behind this illusion; Vaux-le-Vicomte, for example, was founded on an unambiguous sense of *within* and *beyond*.¹⁰ The picturesque garden enacted the most nuanced rearticulation of the frame, seamlessly embedding an articulated representation of a landscape into that same landscape. Whereas up until the age of reason, a garden was defined largely by its edges, the picturesque landscape garden obfuscated these limits (figure 2d).¹¹ Nevertheless, this 'ambiguous transparency' still enclosed to a certain degree, with aesthetically framed scenes replacing the geometric demarcation of rigid boundaries.¹²

In the mid-19th century, the process of removing the walls that enclosed the hunting parks and urban pleasure gardens of European metropolises fulfilled the dissolution of demarcations between culture and nature that had begun with the elimination of city fortifications

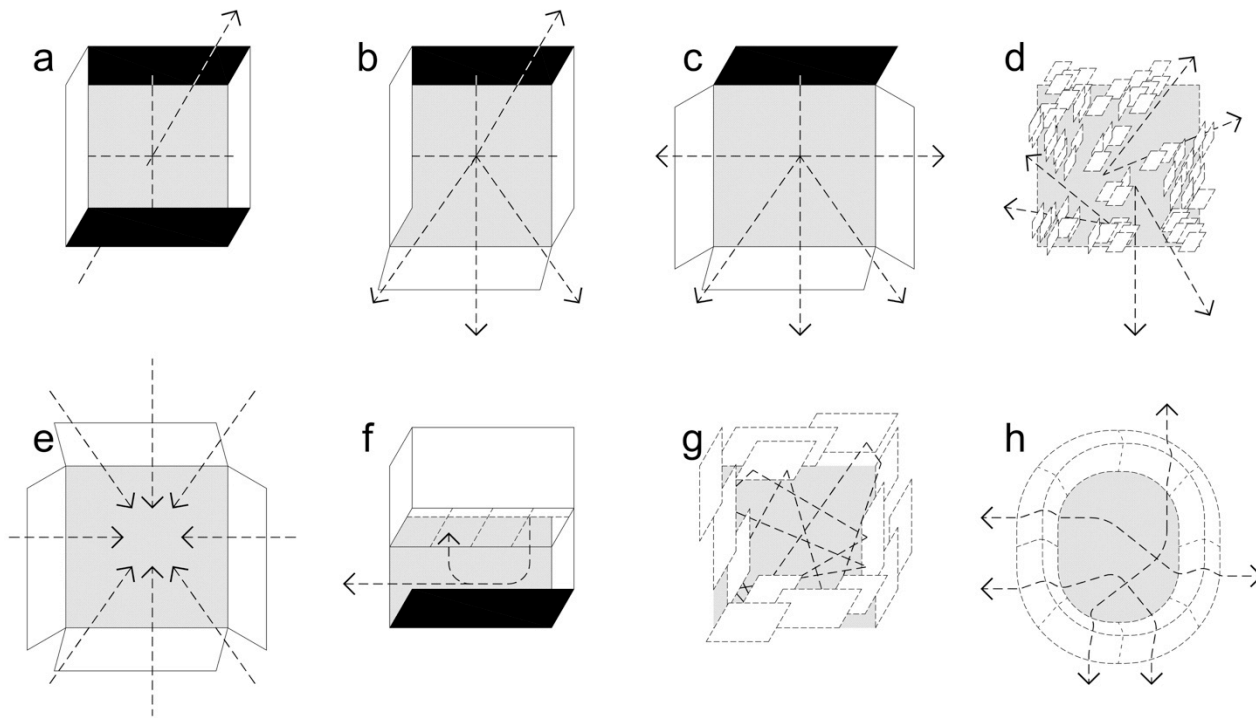


Figure 2. Typology of the evolution of garden enclosure and orientation: (a) medieval cloister garden; (b) renaissance garden; (c) baroque garden; (d) picturesque garden; (e) hunting park; (f) modern garden; (g) postmodern garden; (h) concave garden (referenced later in text)

(figure 2e).¹³ So strong was the role of enclosure in maintaining the exclusivity of royal parks and gardens that the archaic verb *dispark* means to ‘divest a park of its private use’ by ‘throw[ing] parkland open’.¹⁴ In the 20th century, modernism broke down the walls between the domestic interior and the garden. Somewhat contradictorily, modern suburbia simultaneously built walls that fortified the new privacy of the garden as a domestic living space by obscuring it from the gaze of the external public realm (figure 2f).¹⁵

Later in the 20th century, the postmodern garden exhibited a more convoluted and multivalent relationship with the frame. The presence or absence of a physical wall often masked more loaded ephemeral societal barriers within the corporatized setting of semi-public space.¹⁶ In this context, stylistic pastiche in the postmodern garden is more analogous to a stage enveloped by curtains and sets,

than a traditional locus of spiritual, cultural, or domestic orientation that characterized preceding garden types (figure 2g). Applying this definition, the climate-controlled dome of illusion, coercion and duplicity that ensconced Truman Burbank in the film *The Truman Show* becomes a sophisticated postmodern garden.¹⁷

Throughout all of these historical and contemporary types, the frame—both material and implied—assuages the representational ambiguity that has challenged garden art throughout the ages, whereby the artifice of the garden is fabricated from the same materiality as the world that it attempts to represent.¹⁸ By defining unequivocally what is in and what is out, the garden frame bolsters differentiation between unconscious nature and the elusiveness of its representation that in some form both precedes and follows the designer.¹⁹

Intertwined destinies: gardens/maps/cities

In their most reductive conception, gardens are analogous to maps that harbour the geometries of both lost and future cities.²⁰ Accordingly, cartography—like the garden—also traditionally relies on the frame to separate out representation from the ground it depicts. As Denis Cosgrove notes, “mapping’ means to outline, to contour, to *frame*, in order to disclose the order of reality beyond surface appearance’.²¹ By marking out a field of reference, the frame is typically the first and most important feature to be established, after which coordinates, projection, scale and orientation are plotted within. In the representational traditions of cartography, neglecting the frame potentially creates a simulacrum of the territory, whereby the map becomes more real than the ground being mapped.²² This invokes the Borgesian fable where in a futile attempt to attain totalizing representation (and hence power), an emperor constructs a map at the same scale as the empire, only for the vast map to prove useless and be discarded to wither in the desert.²³

In the 20th and 21st centuries, several interrelated phenomena transformed such decisive application of the frame. The first was the ‘closure of the map’, whereby nation-states claimed all the land (and some of the water) on Earth, leaving the twentieth century without *terra incognita*.²⁴ Without any ‘otherness’ beyond the scope of global culture, the efficacy of being inside/outside representation that was essential for the frame was diminished. Second, postmodernism, and particularly postcolonialism, interrogated the modern distinctions between object/subject and reader/author, so that even the room within which a map is located bears influence over its interpretation.²⁵ Third, planetary urbanization continues to dissolve traditionally clear demarcations between the morphology of the city and the landscape hinterland into which it is set. In this context, it becomes increasingly difficult to discern—and statically map—the formal beginnings and ends of urban conurbations that sprawl over the horizon (figure 3).²⁶ And finally, the extensive coverage of Geographic Information System mapping that seeks to virtually replicate the world in both scope and detail further negates the frame. The 1:1 scale of this frameless

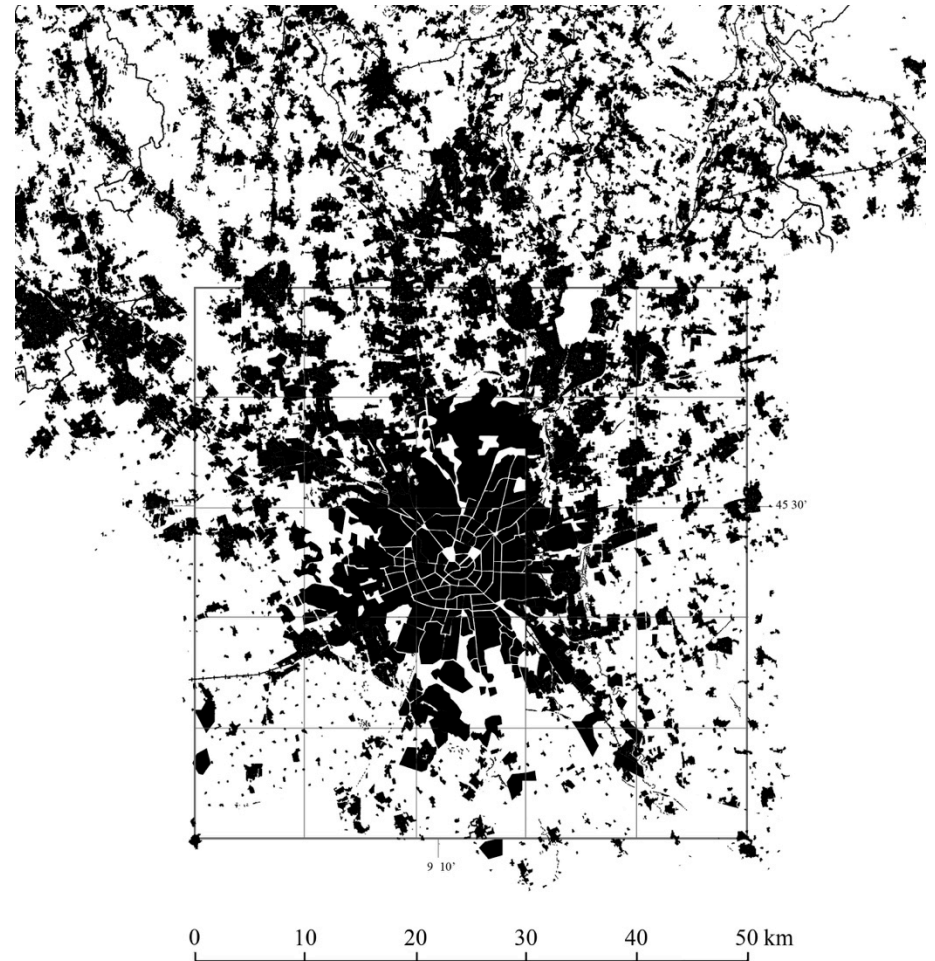


Figure 3. Un-frameable urbanism: figure/ground plan of Milan, Italy (courtesy of Peter Bosselmann).

digital cartographic revolution draws parallels with the simulacrum empire in Borges’s parable.²⁷

These transformations in both cartographic and urban framing may be interpreted as belatedly catching-up with the de-framing process underway for centuries in gardens. As Bernard Tschumi observes, the cartographic geometry of gardens routinely ‘anticipated the histories of cities’ with the gridded orchard preceding ‘the layouts of the first

military cities’, and the ‘perspectives and diagonals of the Renaissance garden’ predating the ‘squares and colonnades of Renaissance cities’.²⁸ Although this causal relationship may be historically consistent, the garden lost its predictive powers in the twentieth century. A disjunction emerged between the morphologies of the garden and the city that follows; on the one hand, urbanism became progressively amorphous and undelineated, while on the other the suburban garden became increasingly privatized and withdrawn.²⁹

One reason for this disjuncture is the practical limitations of using landscape as a culturally reflective and/or prophetic medium. Attempts to embody the abstractness of contemporary cosmology in the garden—such as Charles Jencks’s 1989 *Garden of Cosmic Speculation* in Dumfries, Scotland—are thwarted by the scruffy nature of the grounded materials from which they are constructed.³⁰ Earthworks, rocks, plants, grass and water struggle to cogently formalize the intangibles of the Einsteinian universe with lucidity comparable to the capturing of Religious, Copernican, Keplerian and Newtonian universes in antecedent parks and gardens. As discussed in the next section, a second reason lies with the enduring legacy of the garden as a place of refuge that finds a default role within the dispersed morphology of contemporary cities.

Retrograde strategies: re/framing the garden

In their comprehensive study into the evolution and re-potential of the enclosed garden, Rob Aben and Saskia de Wit observe the indeterminate expansion of the contemporary urban landscape, where:

‘density and void are replaced by objects and infrastructure set in an undefined field where identity and orientation can only be defined artificially. Both the material landscape and the way we experience it are getting more and more fragmented and superficial’.³¹

This account of contemporary urban culture fits within a broader theoretical context. Reacting to instantaneous communications, information saturation, and ubiquitous capital exchange, Fredric

Jameson observes that urban actors increasingly struggle to stay abreast and make historical sense of global phenomena. Jameson concludes that the individual human body is losing the capacity ‘to locate itself, to organize its immediate surroundings perceptually, and cognitively map its position within a mappable external world’.³² Similarly, Paul Virilio identifies loss of orientation as a new phenomenon facing contemporary urban actors, where in the face of progress, ‘the markers of position and location are disappearing one by one’.³³ Virilio argues that with the emergence of ‘world time’ from instantaneous communication, the ‘optical density of the landscape’ (depth of field) is diminishing, breeding confusion between the ‘apparent horizon’ (the background for all action), and the ‘deep horizon’ (of collective imaginations).³⁴

Against this depthless, disorienting, and dematerialized milieu, Aben and de Wit speculate on the potential for reintroducing the real, material enclosed garden into the contemporary urban fabric as a mechanism for respite, resistance and stability within the accelerating urban maelstrom. Drawing on their analysis of historic and contemporary gardens, the authors propose a ‘scopic’ taxonomy for the rediscovered enclosed garden, comprising: (a) the enclosed garden as a *telescope* that, comprises only the container of the space, so as to set up a conversation with the sky like a medieval garden; (b) the *kaleidoscope*, whereby the garden captures and reflects a fragment of reality, so as to create an illusion of nature and transcend the limits of space; (c) the *field glass*, in which windows onto the urban landscape place enclosure and openness in opposition and bring samples of the real horizon into the garden; and (d) the enclosed garden as a *magnifying glass* that focuses on detail while shutting out other aspects.³⁵

While the *kaleidoscope* and *field glass* taxa allow a degree of exchange with the hinterland, this is more as visual surveillance from a fortification than as a true reciprocity between the garden and its setting. Overall, Aben and de Wit position their revived taxonomy of the hortus conclusus as an other condition cleaved into the closed fabric of the global map, noting that with all corners of the earth

accessible, 'places falling outside this sphere of influence appear at first irrelevant yet ... can offer a counterweight to the hectic world'.³⁶ In this sense, the authors extend an age-old anchoring role that positions both the garden and landscape architecture within the arc of romanticism as the last line of resistance to Modernity.³⁷ The endurance of this disciplinary motivation is encapsulated in James Corner's 'key question' for the field, where he asks how might landscape architecture:

'contribute to a significant sense of continuity and wholeness within an increasingly estranged and withdrawn culture ...[and]... found an existential ground, a topos of continuity and reflection, orientation and direction?'³⁸

In a revealing disciplinary contrast to this sentiment, Rem Koolhaas contemporaneously urged architects to accept a world in flux by 'surfing' rather than resisting 'the waves of corporate capital'.³⁹

When placed in the context of both the history of garden frame transformation and the 'liquid landscape' of planetary urbanism, a position of resistance raises vital questions.⁴⁰ Are gardens of refuge, respite and orientation sufficiently primed to remain an effective strategy? Moreover, is the garden frame reconstituted as a solid—albeit selectively penetrated—border still potent within this context? As the sustained significance of the contemporary enclosed gardens in Parc André Citroën in Paris illustrates, there undoubtedly remains a role for the reinterpreted hortus conclusus in urban areas.⁴¹ Nonetheless, if the public garden is to recover potency as a culturally reflective and predictive medium, a need arises for alternative framing strategies to the near-total enclosure and withdrawal of the garden.

This is not to imply that the garden necessarily 'surf' the waves of ubiquitous capital and mimic the contemporary urban park as an unframed spectacle of events and perpetual programmatic renewal.⁴² Nor is the garden rendered irrelevant by the digital devices that became indispensable apparatus for negotiating the metropolis; whereas the smart phone's convenience is as tenuous as its network

connection and battery life, the dependable garden recharges on photosynthesis alone. Instead, to interpret Jameson, the challenge for the urban public garden becomes how to engage the contemporary sense of placelessness, whilst at the same time proposing ways to orientate to that placelessness.⁴³ Towards enabling the garden's simultaneous—but apparently contradictory—aims of placeless representation and place-forming orientation, the following section explores the concept of a semi-permeable threshold formed by topographical concavity.

In theory: cultivated horizon as garden frame

In juxtaposition to Aben and de Wit's sanctuary of the re-walled garden, Elizabeth Meyer advances the 'garden without walls' (*minimal garden*) as one of three repressed figures of the modern landscape. Breaking out from the figure/ground binary that was so marginalizing for landscape in the 20th century, the *minimal garden* is conditioned by patterning on the ground plane, which defines an implied space hovering above. In addition to this projected geometry, the delineation of the minimal garden is augmented with elements of Meyer's other two repressed modern landscape figures. From the *articulated space*, the *minimal garden* draws on the layered ambiguity of vegetation. From the *figured ground*, the *minimal garden* draws delineation from the undulating landform and geological structure of the ground.⁴⁴

Meyer's unpacking of the figure/ground binary through patterning and shaping the ground lays the foundations for an alternative configuration of the public garden within the urban landscape. Neither separate nor seamless, this undertaking is expressed in Margaret McAvin's key question for landscape architecture:

'How do we articulate space, making not enclosures but frames of reference that heighten our understanding of what lies beyond as well as what lies within? How do we define and transform space locally while still experiencing its essential fluidity and continuity...?'⁴⁵

The ingredients for this reconfiguration are already inherent. Despite the established predisposition towards the garden frame as an

immutable barrier, the frame is intrinsically a more composite threshold than a simple binary frontier that assertively separates representation from wildness, or quiet respite from noisy, endless urbanity. From an ecological perspective, thresholds are often the most dynamic places in ecosystems; far from a mathematically absolute delineation, the thickened or liminal edge is the zone of maximum activity, exchange, hybridization, and instability. The thick edge metaphor is also relevant to cities, where rather than necessarily implying an impediment or rupture in the urban fabric, edges can be evoked in the positive sense of a vibrant transitional space.⁴⁶

Like ecologies and cities, the garden itself is inherently liminal insofar as it exists in between the sacred and profane.⁴⁷ Denis Cosgrove correlates the liminal nature of national borders with the threshold of the lost garden (*Paradise*):

‘Just as many international frontiers were originally zones of transmontane communication rather than clear cut lines of sharp division, so Paradise seems to constitute a permeable boundary zone, a place where human space and time mix with divine infinity and eternity. Seen this way, Paradise is itself a boundary’.⁴⁸

Configured in this fashion, the garden frame is rediscovered in its purest sense; less as an absolute material barrier than as a membrane that filters combinations of spiritual and metaphysical state, physical movement, visual penetration, aural information, and even olfactory experience. Throughout the ages, the filtrating properties of the membrane enable gardens to absorb the external physical or social landscape while simultaneously maintaining a degree of separation from this surrounding territory.⁴⁹ The semi-permeable membrane that characterizes this delineation implies containment that simultaneously maintains a degree of openness.⁵⁰

While rendered in theory, invoking this selective porosity and open containment in the context of the material world is more challenging. Certainly, landscape designers historically deployed numerous variations on semi-permeability. The thicket, for example, was

invoked to enframe hidden clearings by impeding physical passage while providing fragmentary sight lines through entangled vegetation. The borrowed scenery of traditional East Asian garden design routinely extended the scope of the garden beyond the site. Similarly, the sense of visual unboundedness derived from the open vistas of the picturesque garden was often juxtaposed against ha-has (and societal norms) that discretely contained movement. However, the ‘filters’ in these examples facilitate visual, rather than physical, connection. Although potent under controlled conditions, this configuration is potentially problematic when considered in the context of creating democratic, accessible, and safe public spaces. Indeed, in the public realm, mechanisms that facilitate clear oversight while limiting physical passage risk creating fraught spaces that invoke incarceration and surveillance.⁵¹

A semi-permeable threshold that inverts this vision-mobility relationship is potentially more conducive to reconciling core design aspirations of discretion and freedom in the public realm. This inversion implies the facilitation of uniformly permeable physical passage while deflecting visual penetration. In a visual sense, a natural candidate for this line is the horizon, which encompasses the field of perception and tracks the body as it moves across the ground. Like the frame, the horizon adumbrates something beyond its immediate delineation and presents and thematises the features situated within its boundaries. Unlike the frame, the horizon outruns its contents. Always on the move, the horizon continuously reacts to the terrain as it is encountered; contracting in deference to a valley, and extending to its fullest delineation on the open plain or ocean.⁵² As apprehended by James J. Gibson, this expression of reciprocity between an observer and their environment dissolves subject/object oppositions.⁵³ That is, unlike the upper lip of the walls of a medieval garden, natural horizons are primarily a sensory construction and while the environment colludes in this artifice, it does not control it. The horizon can be penetrated without needing to rupture walls; except for the subject (owner) who is tethered to the horizon’s focal point, objects, forces, and events can pass through this membrane and into or out of play.

Nevertheless, such is the ephemeral, transient and individual nature of each person's horizon, that it is difficult to conceptualize the fabrication of an artificial horizon at the scale of the garden that avoids either the rigidity of walls or other illusory devices (as per the dome that ensconces Truman Burbank). As we comprehend it, the interaction of (nearly) straight lines of sight with the convex curvature of the earth forms the natural horizon (figure 4a). To attempt to recreate this effect within the limited scope of landscape formation implies fabricating a low, convex hill that elevates the viewer and actually displaces the horizon further into the distance (figure 4b). Instead, in order to fabricate a semi-permeable threshold, an artificial horizon must be contained within the site. Achieving this counter-intuitively requires a topographic inflection, since it is a concave landform that is most predisposed to encompassing an artificial horizon within its rim (figure 4c). To be certain, Gibson differentiates the transitional threshold of the distant natural horizon from the sharper threshold of an 'occluding edge' (artificial horizon) that is closer to the observer. Nevertheless, both real and artificial horizons establish a comparable sensation of framing a field of perception.⁵⁴

The concave landforms that are most conducive to containing artificial horizons are relatively atypical in nature. To expel water runoff, *endorheic* (internally draining) concave landforms feature porous substrata or are located in regions where evaporation outstrips precipitation. Examples include eolian sand (wind-formed), karst (porous limestone), and volcanic terrain, while the displacement of earth that results from the explosive forces associated with meteor impacts and modern weapons also creates concave forms (figure 5). In an urban context, concave morphologies are often associated with the 'new ground' that is a by-product of industrial activity. Examples include capped landfill sites and mine tailing piles that are yet to

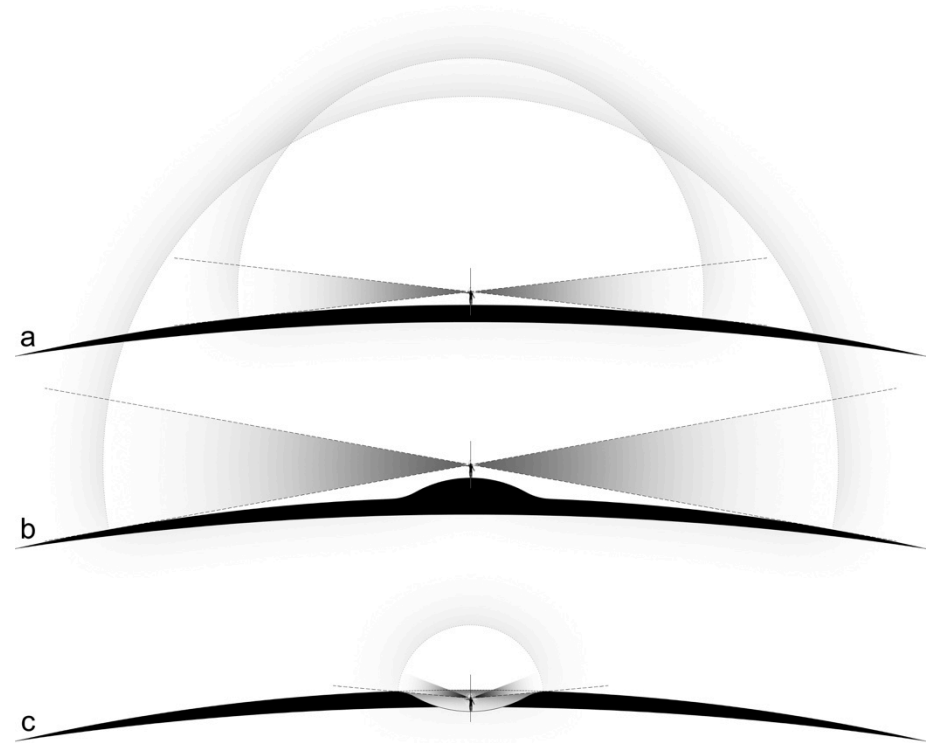


Figure 4. The influence of landform on horizon perception: (a) natural horizon formed by the curvature of the Earth on an open plain or ocean; (b) natural horizon further displaced by imposition of convex landform; (c) contained artificial horizon formed by concave landform.

undergo the process of compaction and hydraulic erosion that shapes and organizes terrain over a geological timeframe.⁵⁵ A feature common to all forms of *endorheic* terrain is the inherently complex and interiorizing structure. Whereas the flow of water in more common *dendritic* (externally draining) terrain forms a navigable structure of fluvial convergence, following water downhill in *endorheic* terrain is likely to terminate prematurely in an enclosed topographical feature, or in some instances, a cave (figure 6).

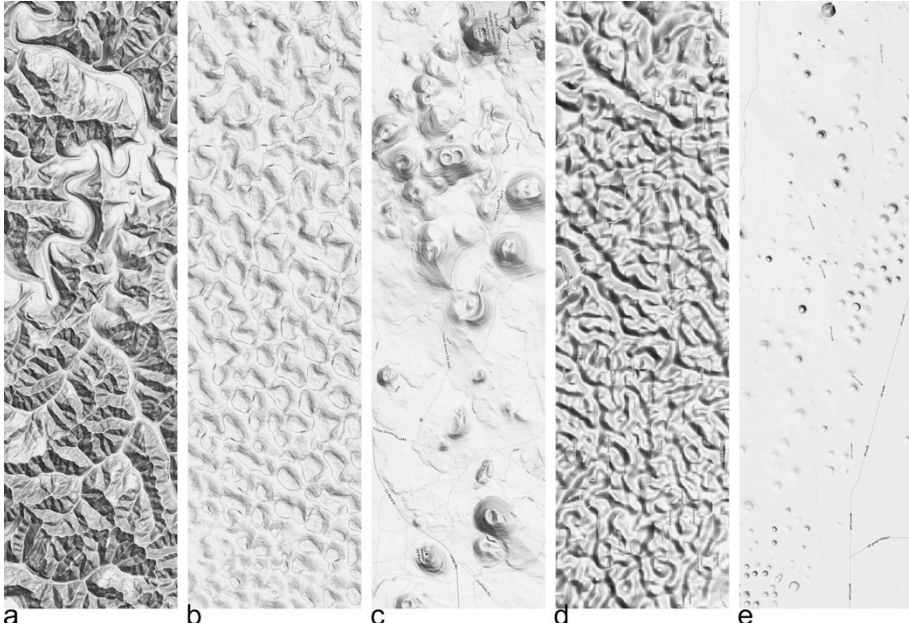


Figure 5. Typical geomorphologies: (a) dendritic terrain (Oregon); compared with examples of endorheic terrain; (b) aeolian (Lybia); (c) volcanic (Arizona); (d) karst (Guangxi); (e) nuclear craters (Nevada).

Concave spaces vary in degrees of declination, ranging from gentle hollows that only restrict view lines, through to steeper holes that physically curtail movement and approximate the containment of walled enclosures. In addition their unfortunate legacy as convenient receptacles of waste, steeper sinkholes and craters were historically purposed as paddocks and even readymade prisons.⁵⁶ Today, concave features are more likely to hold people willingly; as Norman Booth observes, concave spaces create ‘fundamental spaces of the landscape in which [many of] our activities are located’.⁵⁷ Examples include myriad performance and sporting arenas that utilize concaved topography to advantage (figure 7). In an extreme adaptation of the intrinsic collecting attributes of concave landform, karst terrain in Puerto Rico accommodates the 1,000 ft. diameter Arecibo Observatory radio telescope with minimal site manipulation (figure 8).⁵⁸



Figure 6. River flowing underground in karst terrain: Grotte du Mas d’Azil, Ariège, France (author, 2012).

In practice: traversable horizons in landscape-scaled artworks

Although the gathering capacity of concave topography has been appropriated to advantage throughout history for a range of functions, these tend to remain self-contained much in the same manner as the hortus conclusus. While this is self-evident where craters have been used for faunal and human incarceration, it also extends to the many amphitheatres that intentionally exclude the outside world and focus on the stage at the bottom of the bowl. Indeed, despite the absence of walls, the example of the Arecibo Observatory represents an acute hortus conclusus, whereby the dish is oriented vertically towards the cosmos whilst shutting the inhospitable surrounding karst jungle out. Absent from all these examples is a traversable edge around the concave space.



Figure 7. Concaved space appropriated for functional use: aerial view of football field set in volcanic crater, Parque Deportivo Teoca, Mexico.

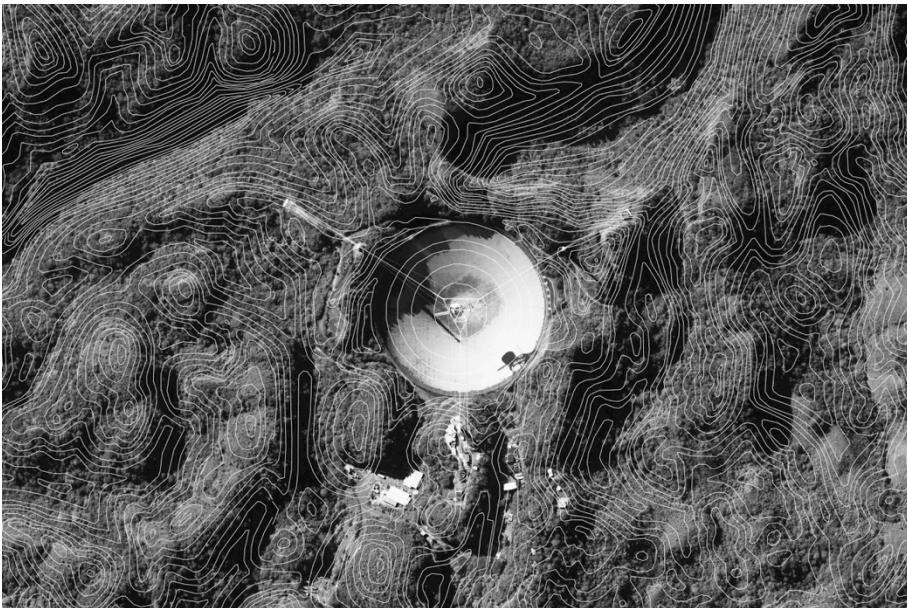


Figure 8. Orthophoto of Arecibo Observatory, Puerto Rico, located in naturally formed karst depression.

This section examines two projects that contain variations on concavity and traversability of their artificial horizons. Both created by artists, the first project adapts an existing endorheic landform, while the second is based on an artificial concave space created within a dendritic landscape. While both projects have been extensively reported in design media, the specific focus here is interpreting the concave and horizontal aspects of each site.⁵⁹ These interpretations draw on the respective artists' body of theory and my personal field observations and experiences. The purpose of this analysis is realized in the final section of the article, where techniques from these two experimental art projects are applied to the urban context in the form of the public garden.

Case Study 1: Roden Crater

Situated in the crater of an extinct volcano located to the north east of Flagstaff, Arizona, *Roden Crater* expands James Turrell's sky-room installations out into the wider landscape (figure 9). Using the existing asymmetrical cinder cone as a geometrical cue, the crater was re-graded into a 1,000 ft. wide uniformly elliptical dished space. The precisely level rim that results from the earthworks distinguishes the crater from neighbouring volcanoes in the dormant San Francisco Volcanic Field (figure 10). On the genesis of this epic and on-going transformation, Turrell references the aviator's inverted sensation of 'celestial vaulting'. In this phenomenon, the convex shape of the earth appears to inflect and become concave to pilots flying at low altitude.⁶⁰ Drawing on the outdoor perception theory of Marcel Minnaert, Turrell observes that a muted rendition of this impression is also discernible from the ground. When standing on an open plain, one becomes aware 'that the sky is not limitless and it has a definable shape and sense of enclosure' that can be manipulated with movement.⁶¹

To control and enhance the sensation of celestial vaulting from the ground, the concave crater is the primary mechanism for modifying perceptions of the shape of the sky. Several conditions are critical to this effect. The first is the altitude in relation to the surrounding plain, with *Roden Crater's* relative elevation of 600 ft. falling within the

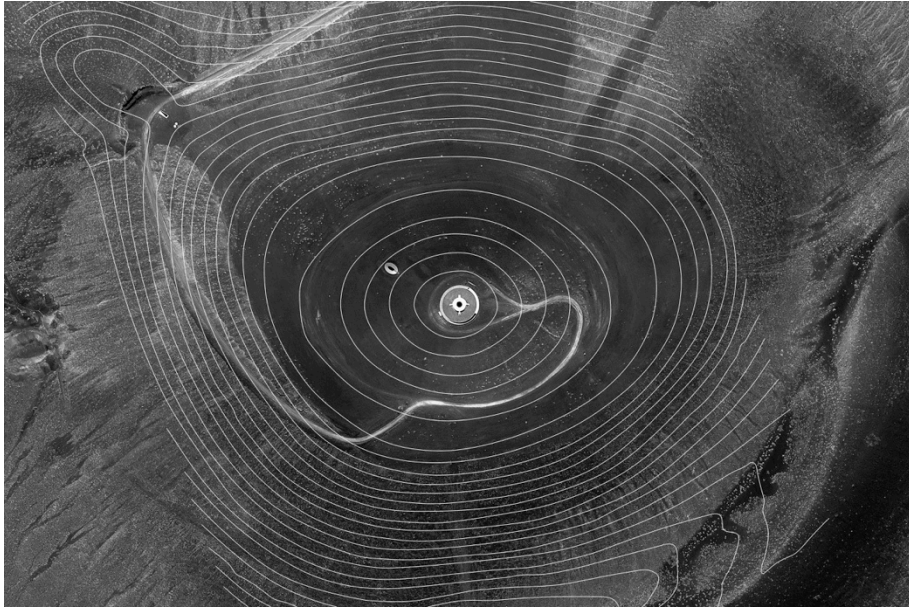


Figure 9. Orthophoto of Roden Crater, Arizona.

range of the low altitude flight that typically engenders the aviator's sense of concave curvature of the earth. The second is the elliptical planform of the crater that enhances the experienter's sense of participation in the vaulting effect. Within the variable curvature of the ellipse, head movements alter the shape of the sky to a greater degree than a perfect circle.⁶² And the third condition is the smooth transition of the profile of the concave form of the crater bowl into the rounded convex profile of the crater rim. As the experienter moves up out of the crater, this cross-sectional inflection facilitates a seamless transition. The impression of celestial vaulting shifts from an attachment to the artificial horizon of the rim to an expansive connection with the real horizon.⁶³

Through these dynamics, the volcano is recalibrated as a training device to re-tune the spatial-cosmic perceptions of experienters. The procession is carefully orchestrated, with the crater bowl entered from underground via a long sloping tunnel, through which only sky is visible, and the far side of the crater edge is obscured. From the floor



Figure 10. View of approach to Roden Crater, showing horizontally graded crater lip (author, 2010).

of the crater, the impression of compressed space initiates the sense of celestial vaulting that crystallizes once the experienter climbs up onto the crater lip (figure 11). Emerging from an autonomous world down in the hollow, the experienter is opened out into a conversation with the wider landscape. Standing now on what was formerly the artificial horizon (as viewed from within the crater), the vast plain below (that was formerly convex and defined by the real horizon) is inflected. Still imprinted with the experience of the artificial horizon, this impression is superimposed onto the real horizon so that each cancels the other out. For a fleeting moment before perceptions inevitably revert, the experienter's fragile sensing apparatus are primed to register a sensation of concave immersion that defies the habituated norms of Cartesian space.⁶⁴



Figure 11. View of the lip (artificial horizon) of Roden Crater from within the re-graded cinder cone.

Beyond amplifying the individual experiencer's awareness of the tenuous association of body, world, and cosmos, the ultimate purpose of this inversion remains undeclared. In one possible interpretation, the large-scale inversion of convex with concave invokes archaic Concave Hollow Earth cosmologies that interpret the Earth's surface as concave and enclosing the universe.⁶⁵ In another, inverting the concepts of inside and outside and framing the void may be understood to have an environmental 'nurturing earth' undertone, although the mining-scaled earthworks calls such a reading into serious question.⁶⁶

Case Study 2: Site of Reversible Destiny

Located at Yoro in Gifu Prefecture, Japan, the open-air *Site of Reversible Destiny* is the landscape-scaled fulfilment of artists Shusaku Arakawa and Madeline Gins's almost half-century exploration of the relationship between body, world, meaning and time. In a literal embodiment of Raoul Bunschoten's description of



Figure 12. Oblique aerial view of the Site of Reversible Destiny, Yoro, Japan (courtesy of Yoro Park Office, date unknown).

design creativity as a 'crater in which all perceptions and contemplations are mingled', the project is described in the visitor brochure as a 'crater-like cosmos of opportunities' (figure 12).⁶⁷ From the perimeter, the five acre / 475 ft. diameter elliptical crater presents an eclectic concoction of elements that conjure the impression of a sculpture park crossed with a theme park, mini-golf course and garden trade-show (figure 13). In keeping with the ambiguous nature of the project, a new onus to 'amuse oneself' replaces the age-old theme-park visitor's mandate to 'be amused'. Visitors are challenged to align to 'a new horizon' with which to 'escape from normal mental captivity and find a new destiny'.⁶⁸ To fulfil these goals, the artists invest in the ability of meaning to reside in an individual's engagement with the real world rather than a universal body of knowledge.⁶⁹ Accordingly, when moving around the main concaved area of the *Site of Reversible Destiny*, practical measures such as predictably level paths and vertical walls are absent. Without these familiar datums, the maintenance of a regular



Figure 13. Panoramic view of crater lip, Site of Reversible Destiny (author, 2008).

sense of balance and clear line of thought becomes more difficult. In a controlled return to infancy, the experienter is instructed to become reacquainted with their intuition and adjust their body to relearn everything from the environment at hand (and foot).⁷⁰

The experience of moving over this alien landscape with few reliable reference points (such as vertical walls or natural horizons) requires an investment of physical and mental effort. After some exploration, the contents of the crater become familiar. However, when crossing over the same junctions from disparate directions, situations that remain foreign repeatedly surprise the experienter. This condition results from a preoccupation with the immediacies of haptic sensing (touch) and proprioceptive action (the relative alignment of parts of the body) at the expense of maintaining overall spatial cognition. In this situation, the experienter is primed to be vulnerable to disorientation, or at least, dislocation.

In addition to the rugged and busy topographic features on the surface of the crater, the disorienting sensations at the *Site of Reversible Destiny* are dependent on the underlying morphology. The concaved nature of the main field facilitates the rim of the crater that in turn supplants the real horizon (as formed by the curvature of the

earth) with a substitute artificial horizon. Importantly, this semi-permeable perimeter constrains view but not physical passage, remaining traversable from both sides (figure 14). When exiting the complex and immersive crater space and crossing the threshold of the artificial horizon, the experienter is likely to be unable to readily reconcile their point of entry into the crater with their point of exit. In this moment, the artists exploit the temporal and spatial slippage that is fleetingly created when the artificial horizon neutralizes the real horizon and neither predominates as the primary mechanism for re-establishing the experienter's bearings.⁷¹

Like Turrell, the artists orchestrate this experience to un-tether the experienter from the fixed horizons of established perceptions. But whereas Turrell aims to tinker with the experienter's spatial acuties to broadcast an experience normally witnessed only by aviators, Arakawa and Gins hope to completely rewire the tendency to perceive time and space as a linear and inevitable chain of events. While the real horizon may be described as temporally immutable in the way it dispenses the future from just beyond its forward limit (insofar as we perceive the future as being 'over the horizon'), the artificial horizon is temporally weak. Unlike the real horizon that evades transcendence through constant deferral, the



Figure 14. View of experiencers crossing the threshold (artificial horizon) of the crater lip (author, 2008).

artificial horizon can be physically penetrated and stepped over—back and forth—as a ‘reversible destiny’.

When viewed in this way, the concave form of the *Site of Reversible Destiny* confounds the Modern template of history, in which the rational flow of events mimics the prevailing dendritic surface drainage of hydrological systems. Serving as an allegory for time, water originates in many disparate sources, but ultimately converges into one river valley through a hierarchy of stream gullies. Conversely, concave space is topologically read in a more temporally relative manner; instead of flowing in one direction, the localized inflections of concave space imply that time varies directions.⁷² Giving credence to Arakawa and Gins’s strategy of associating the aspiration of a ‘reversible destiny’ with a cratorious landform, this concept of variable time may also be adapted to the contemporary urban garden. Whereas Aben and de Wit position the enclosed garden as ‘time-out’ from the rapid futurism of globalized urbanism, an ‘open containment’

garden formed by concave topography may be interpreted as engaging the pace of the city in a more temporally variable manner.

In application: designed concavity in urban contexts

Whilst exhibiting differing scales, contexts, materiality, and conceptual aspirations, both *Roden Crater* and the *Site of Reversible Destiny* demonstrate the conceptual potency of concaved landform coupled with a traversable artificial horizon. In both projects, the artifice of the horizon proves to be radically independent, challenging and undermining of experiencers’ corporeal intentionality.⁷³ To arrive at this threshold, the artistic trajectories of both Turrell and Arakawa/Gins began with early variations on architectural enclosure, with Turrell’s sky-room installations and Arakawa/Gins’s perception-machines preceding their latter experiments with more opened forms of topographical containment. In this regard, the evolution of the artists’ bodies of creative work can be interpreted as microcosms of the historical step-by-step dematerialization of the garden frame. Moreover, given that art recurrently prefigures conceptual innovations in landscape architecture, the landscape-scaled artworks of Turrell and Arakawa/Gins prefigure the applicability of concave morphology to the contemporary urban public garden. Following this causal logic, this section explores the question of applicability through numerous extant examples located in urban and peri-urban contexts.

Throughout the history of landscape and urban design, landform was manipulated to create concavity and artificial horizons for a range of motives. In the 17th century, a limited sphere of vision was used to impart the illusion of extensive power at Vaux-le-Vicomte. With no grand elevated prospect available, Andre Le Nôtre’s design uses the subtly bowl-shaped landform to bring the horizon and subsequently the ‘world’ within the garden’s borders.⁷⁴ At either end of the 20th century, urban theorists Herman Sörgel and Camillo Sitte observed the tendency of successful public urban spaces to be arranged around concave geometries in both plan and section.⁷⁵ Even at the diminutive scale of the residential garden, the horizon is appropriated into the landscape designer’s palette in order to manipulate the sense of depth of field. For example, in the 1980s Terry Harkness detailed a



Figure 15. View of the concave plateau of Halde Norddeutschland, Duisburg, Germany (author, 2014).

design for a ‘horizon garden’ that utilized a ‘false horizon line’ to create a ‘background/horizon that merges into the sky overhead’.⁷⁶

In the contemporary urban and peri-urban context numerous public spaces appropriate *pre-existing* concave morphologies. *Mount Eden Domain* in Auckland, New Zealand, incorporates the 450 ft. diameter x 150 ft. deep crater of a dormant volcano that rises 600 ft. above the urban fabric. Originally used as a fortified hill pā by Māori tribes and believed to contain the deity of hidden earthly secrets, the crater is now grassed with a circular ridge trail around the lip. At *Halde Norddeutschland* near Duisburg, Germany, a 300 ft. high decommissioned coal tailings pile contains a 450 ft. diameter depression at the summit. With minimal intervention, WES & Partner’s landscape design adapts this found topography to function alternately as contemplative ‘sky space’, an event venue, and a sheltered staging area for hang-glidors (figure 15).



Figure 16. Aerial view of Hemels Gewelf, Kijkduin den Haag, Netherlands (© 2012 Aerodata International Surveys; © 2012 Google).

Turrell’s sky earthwork *Hemels Gewelf* (Celestial Vault) in The Netherlands demonstrates the instrumentality of an *intentionally* designed and constructed concave form in an urban context (figure 16). Commissioned for the 1992 International Federation of Landscape Architects’ conference and sited in coastal sand dunes at Kijkduin den Haag, the project is interpreted as a 1/10th scale maquette of the as then unconstructed *Roden Crater*.⁷⁷ In contrast to *Roden Crater*, the installation is both entered and exited through a single tunnel leading to the lowest point of the hollow, with external fencing and shrubbery rendering the 15 ft. high lip of the crater non-traversable. In this sense the containment of the frame acts more as a combination of an enclosed garden and a surveillance fortification (akin to a Renaissance star-fort) than as a semi-permeable horizontal threshold. This caveat notwithstanding, the space retains value as a partially opened containment with an artificial horizon line, which while un-crossable, can be approached and circumnavigated by walking along the rim (figure 17). Moreover, the project is sized at a



Figure 17. View of crater and lip of Hemels Gewelf (author, 2014).

scale that is potentially compatible with the fabric of a more intensely urban or suburban setting.

Of similar scale, a topographic feature in the historic colonial port city of Fremantle, Australia, more closely approximates the ideal of open containment as explored in the case studies. Known colloquially as *the mound*, the 130 ft. diameter elliptical grassed berm frames a moderately sloped hollow. At the top, a fully traversable horizontal threshold circumscribes most of the lip, with a single horseshoe opening on one side providing level access from the surrounding grass field (figure 18). Formed serendipitously by the city's public works department from spare earth left over during local redevelopment for the 1987 America's Cup regatta, the earthwork continues to be the most popular location in an otherwise flat and level urban park.



Figure 18. Panoramic view of the crater and lip of the mound (author, 2011).

The allure of the earthwork is grounded in several factors. First, without being completely enclosed, the form offers protection from the prevailing sea breeze (termed the *Fremantle Doctor*) and provides myriad microclimatic options on either side of the lip of the crater. Second, the intermediate dimensions and sectional symmetry of the landform configures a space that is conducive to the informal gathering of small groups, whilst avoiding the performer/audience dualism of traditional amphitheatres. Third, at 7 ft. high, the cross-sectional proportions along the crest are just over head-height. This corroborates Booth's account of concavity in general as a landform of 'seclusion, isolation, refuge, confinement, privacy and ... protection from the surrounding environment'.⁷⁸ And finally, this feeling of refuge is simultaneously compensated by the rounded form of the upper lip (horizon) of the earthwork that enables immediate access and egress in all directions (figure 18).

Enabling egress in all directions imbues *the mound* with a dynamic quality as experiencers tend to depart in a different direction from their angle of arrival. This experience is similar to that of the unrestricted horizon along one side of the *Site of Reversible Destiny* but differs from the more controlled subterranean approaches to *Roden Crater* and in particular *Hemels Gewelf*. Moreover, whereas the *Site of Reversible Destiny* orchestrates a disorienting rupture between the experiencer's angles of arrival and departure through complexity, distraction and immersion, *the mound* utilizes the only the phenomenology of landform to produce a more subtle realignment of orientation.

Conclusion: motifs for open containment

Roden Crater and the *Site of Reversible Destiny* demonstrate the influence of carefully articulated concave spaces on spatial perception and orientation. While the locations, scale, and other elements associated with both projects are designed to invoke acute perceptual effects, more subtle applications of topographic horizons also demonstrate potential for framing public garden spaces at the urban scale. From these examples, several motifs appear crucial to the successful design of open containment in the urban context (depicted diagrammatically in figure 2h).

First, the ability to physically traverse the rim of the concave space is a consistent theme and appears vital to the sense of physical openness. Traversability in all directions also holds potential benefits for real and perceived personal safety in the public realm.⁷⁹ Second, in all of the examples studied, the cross-sectional profile of the craterous landform is consistently above head height. This feature appears essential for obscuring horizontal sight lines from within the crater and establishing the ephemeral sense of semi-containment. Third, elliptical—as opposed to circular—planform is a common template for concave space. While only Turrell provides clear instrumental rationale for this geometry (whereby the variable curvature of the ellipse exaggerates the perceptual influence of bodily movement), it can be surmised that a similar reasoning applies to Arakawa and Gins's

work. And finally—with the notable exception of the eclectic materiality of the *Site of Reversible Destiny* crater—consistent surface treatment is a common theme, with grass or bare earth enabling the space to appear to flow beyond its borders and remain programmatically flexible.

Using these motifs as a guide, the open-containment formed by concave morphology reconfigures urban public gardens as spaces that retain some function as loci of retreat and orientation within the city, whilst simultaneously facilitating a greater degree of physical permeability with the surrounding urban context. To subvert the surveillance-oriented language of Aben and de Wit's 'scopic' garden taxonomy (*telescope, kaleidoscope, field glass, and magnifying glass*), the traversable-horizon concave garden space resembles a *gyroscope*. In contrast to the more static counter-balancing role of the traditional enclosed garden, the landscape *gyroscope* maintains equilibrium and orientation through dynamic movement. Conceptualized in this way, the urban garden does not sit outside of the logic of the city but is a part of it; in topological language, rather than being removed from the tapestry of the city, the garden takes the form of a fold or crease in the urban fabric.

The garden as an enfolding or inflection of the city diffuses the destabilizing differential between the fixed traditions of the enclosed garden and the pace of its metropolitan setting. Any disorientation that may result from this configuration initiates neither a fearful disruption nor maze-like light-hearted indulgence in daily life. Instead, just as Turrell and Arakawa/Gins recalibrate spatial perception through a constructive dis/orientation, the garden becomes a mind-body training ground for negotiating the accelerating, disorienting and immersive qualities of contemporary urbanism.

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Notes

¹ See. Karl Kullmann, 'The Usefulness of Uselessness: Towards a Landscape Framework for Un-activated Urban Public Space', *Architectural Theory Review*, vol. 19, no. 2, 2015, pp. 154–173. Karl Kullmann 'The Garden of Entangled Paths: Landscape Phenomena at the Albany Bulb Wasteland', *Landscape Review*, vol. 17, no. 1, 2016, in press.

² Richard Ingersoll, 'Landscapegoat', in Nan Ellin, ed, *Architecture of Fear* (New York: Princeton Architectural Press, 1997), p. 255.

³ The article develops themes initially explored in Karl Kullmann, 'De/framed Visions: Reading Two Collections of Gardens at the Xi'an International Horticultural Exposition', *Studies in the History of Gardens and Designed Landscapes*, vol. 32, no. 3, 2012, pp. 182–200. Alternate positions for the re-potential of the enclosed garden include: Rob Aben and Saskia de Wit, *The Enclosed Garden: History and Development of the Hortus Conclusus and its Reintroduction into the Present-day Urban Landscape* (Rotterdam: O10 Publishers, 1999). Johan N. Prinsloo, 'Dramatic transitions for poetic spaces: notes on the potential of public walled gardens in cities', *Studies in the History of Gardens & Designed Landscapes*, vol. 35, no. 4, 2015, pp. 257–267.

⁴ See. Karsten Harries, *The Broken Frame: Three Lectures* (Washington DC: The Catholic University of America Press, 1989).

⁵ Denis Cosgrove, *Geography and Vision: Seeing, Imagining and Representing the World* (London and New York: I.B. Taurus, 2008), p. 53, my emphasis. Peter Walker, 'Minimalist Gardens without Walls', in Mark Francis and Randolph T. Hester, Jr., eds, *Meanings of the Garden* (Davis CA: University of California, 1987), p. 155. Bernard St-Denis, 'Just what is a garden?', *Studies in the History of Gardens & Designed Landscapes*, vol. 27, no. 1, 2007, pp. 61–76, p. 64. Peter Marcuse, 'Walls of Fear and Walls of Support', in Nan Ellin, ed, *Architecture of Fear* (New York: Princeton Architectural Press, 1997), p. 103. Donata Valentien and Christoph Valentien, eds, *Shanghai: Neuer Botanischer Garten / New Botanic Garden* (Berlin: Jovis, 2008), p. 39.

⁶ John Dixon Hunt, *Greater Perfections: The Practice of Garden Theory* (University of Pennsylvania Press, 2000), p. 23.

⁷ Rob Aben and Saskia de Wit, *The Enclosed Garden: History and Development of the Hortus Conclusus and its Reintroduction into the Present-day Urban Landscape* (Rotterdam: O10 Publishers, 1999).

⁸ Yi-Fu Tuan, *Topophilia: A Study of Environmental Perception, Attitudes and Values* (New York: Columbia University Press, 1974), p. 129.

⁹ Allen S. Weiss, *Unnatural Horizons: Paradox and Contradiction in Landscape Architecture* (New York: Princeton Architectural Press, 1998).

¹⁰ John Dixon Hunt, *Greater Perfections: The Practice of Garden Theory* (University of Pennsylvania Press, 2000).

¹¹ Thilo Folkerts, ed, *Topotek 1: Martin Rein-Cano, Lorenz Dexler and Rosemarie Trockel, Eine Landschaftsskulptur für München / A Landscape Sculpture for Munich* (Basel: Birkhäuser, 2011).

¹² Linda Pollak, 'Pieces of the world: nature-object and nature-space', *Daidalos*, no. 65, 1997, p. 29. Susan Herrington, 'Framed again: the picturesque aesthetics of contemporary landscapes', *Landscape Journal*, vol. 25, no. 1, 2006, pp. 22–37. John Dixon Hunt, *Greater Perfections: The Practice of Garden Theory* (University of Pennsylvania Press, 2000), p. 20.

¹³ Henry W. Lawrence, 'Changing Forms and Persistent Values: Historical Perspectives on the Urban Forest', in Gordon A. Bradley, ed, *Urban Forest Landscapes* (Seattle WA: University of Washington Press, 1995).

¹⁴ C. T. Onions, ed, *The Shorter English Dictionary on Historical Principals* (Oxford: Clarendon Press, 1964), p. 530.

¹⁵ (Lewis 1993) Pierce Lewis, 'American Landscape Tastes', in Marc Treib, ed, *Modern Landscape Architecture: A Critical Review* (Cambridge MA: MIT Press, 1993).

¹⁶ See. Michael Sorkin, ed, *Variations on a Theme Park: The New American City and the End of Public Space*. (New York: Hill and Wang, 1992).

¹⁷ Peter Weir, director, *The Truman Show* (Scott Rudin Productions, 1998). See. Nina Gerlach, 'Greenscape as screenscape: the cinematic urban garden', *The Brock Review*, vol. 10, no. 1, 2008, pp. 72–85.

¹⁸ Allen S. Weiss, *Unnatural Horizons: Paradox and Contradiction in Landscape Architecture* (Princeton Architectural Press: New York, 1998). Bernard St-Denis, 'Just what is a garden?', *Studies in the History of Gardens & Designed Landscapes*, vol. 27, no. 1, 2007, pp. 61–76.

¹⁹ Christophe Girod, 'Towards a general theory of landscape', *Topos*, no. 28, 1999, p. 33.

²⁰ Bernard Tschumi, 'The pleasure of architecture', *Architectural Design*, vol. 47, no. 3, 1977, pp. 214–218. William A. McClung, *The Architecture of Paradise: Survivals of Eden and Jerusalem* (Berkeley: University of California Press, 1983). Richard Sennett, *Flesh and Stone: The Body and the City in Western Civilization* (London: W. W. Norton & Company, 1994).

²¹ Denis Cosgrove, 'Introduction: Mapping Meaning', in, Denis Cosgrove, ed, *Mappings* (London: Reaktion Books, 1999), pp. 1–23, my emphasis.

²² Jean Baudrillard, 'Simulacrum and Simulations', in M. Poster, ed, *Jean Baudrillard: Selected Writings*, (Cambridge: Polity Press, 1989), pp. 169–187.

²³ Jorge Luis Borges, 'Of Exactitude in Science', in *A Universal History of Infamy* (London: Penguin Books, 1954).

²⁴ Stephen Bann, introduction and translation, 'The landscape approach of Bernard Lassus', *Journal of Garden History*, vol. 3, no. 2, 1983, pp. 79–107. Placed in the context of postcolonialism, this point is more complex. While the map may be officially 'closed' from the hegemonic and spatially exclusive perspective of Western cartography, in many instances it was never open to begin with. For example, in the case of European settlement of Australia, the British legal definition of *terra nullius* conveniently dismissed the pre-existing mappings of the indigenous residents of the island continent. Moreover, the world-map continues to be cleaved open and overwritten as nation-states fail or are rewritten by internal or external forces.

²⁵ Edward W. Soja, *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places* (Oxford: Blackwell Publishers, 1996). Holger van den Boom, 'Extreme building ventures: computer calculations', *Daidalos*, no. 37, 1990, pp. 122–127.

²⁶ The primary mandate of landscape urbanism is to engage this dispersed, undifferentiated, edgeless post-urban condition, to which Rem Koolhaas assigned (and mock-copyrighted) the prefix-less term *scape*. Charles Waldheim, 'Landscape Urbanism: a Genealogy', *Praxis*, no. 4, 2002, pp. 10–17. Rem Koolhaas, 'Pearl River Delta: the City of Exacerbated Difference', in *Poleitics: Documenta X*, (Cantz: Ostfildern-Ruit, 1997), pp. 557–592, p. 585.

²⁷ Jean Baudrillard, Shiela F. Glaser, trans, *Simulacra and Simulation* (Ann Arbor MI: University of Michigan Press, 1994). Jason Farman, 'Mapping the digital empire: Google Earth and the process of postmodern cartography', *New Media Society*, vol. 12, no. 6, 2010, pp. 869–888.

²⁸ Bernard Tschumi, 'The pleasure of architecture', *Architectural Design*, vol. 47, no. 3, 1977, pp. 214–218, p. 216.

²⁹ Steven Flusty, 'Building Paranoia', in Nan Ellin, ed, *Architecture of Fear* (New York: Princeton Architectural Press, 1997).

³⁰ For discussion on the representational limitations of landscape architecture, See. Karl Kullmann, 'Hyper-realism and Loose-reality: the Limitations of Digital Realism and Alternative Principles in Landscape Design Visualization', *Journal of Landscape Architecture*, vol. 9, no. 3, 2014, pp. 20–31.

³¹ Rob Aben and Saskia de Wit, *The Enclosed Garden*, p. 11.

³² Fredric Jameson, 'Postmodernism, or, the cultural logic of late capitalism', *New Left Review*, no. 146, 1984, pp. 53–92, p. 83.

³³ Paul Virilio, *Open Sky* (New York: Verso, 1997), p. 62.

³⁴ Ibid. p. 22.

What Jameson and Virilio could not foresee was our solution to this 'post-urban' condition, where we adopted sophisticated hand-held devices that substitute orientation off hilltops and steeples with triangulation off invisible satellites.

³⁵ Rob Aben and Saskia de Wit, *The Enclosed Garden*, pp. 155–156.

³⁶ Ibid., pp. 11–12.

³⁷ See. Julia Czerniak, 'Challenging the pictorial: recent landscape practice', *Assemblage*, no. 34, 1998, pp. 110–120.

³⁸ James Corner, 'Most Important Questions [in Landscape Architecture]: landscape as question', *Landscape Journal*, vol. 11, no. 2, 1992, p. 164.

³⁹ Rem Koolhaas, 'What Ever Happened to Urbanism?', in Rem Koolhaas, Bruce Mau and Hans Werlemann, eds, *SMLXL* (Rotterdam: 010 Publishers / New York: Monacelli Press, 1994), pp. 961–971, p. 971. For further discussion on disciplinary interactions between landscape architecture and architecture, See. Karl Kullmann, 'Disciplinary Convergence: Landscape Architecture and the Spatial Design Disciplines', *Journal of Landscape Architecture*, vol. 11, no. 1, 2016, pp. 30–41.

⁴⁰ 'Liquid landscape' from Johan N. Prinsloo, 'Dramatic transitions for poetic spaces: notes on the potential of public walled gardens in cities', *Studies in the History of Gardens & Designed Landscapes*, vol. 35, no. 4, 2015, pp. 257–267.

⁴¹ See. Chip Sullivan and Elizabeth Boult, *Illustrated History of Landscape Design* (Hoboken NJ: Wiley, 2010).

⁴² Karl Kullmann, 'The Usefulness of Uselessness: Towards a Landscape Framework for Un-activated Urban Public Space', *Architectural Theory Review*, vol. 19, no. 2, 2015, pp. 154–173. Karl Kullmann, 'Ecologies of Spectacle: Reflecting on the New Presidio Parklands Design Competition', *Ground Up*, no. 4, 2015, pp. 100–105. John Hannigan, *Fantasy City: Pleasure and Profit in the Postmodern Metropolis* (New York: Routledge, 1998).

⁴³ Interpretation of: Fredric Jameson, 'Postmodernism, or, the cultural logic of late capitalism', *New Left Review*, no. 146, 1984, pp. 53–92.

⁴⁴ Elizabeth K. Meyer, 'The Expanded Field of Landscape Architecture', in George F. Thompson and Frederick R. Steiner, eds, *Ecological Design and Planning* (New York: Wiley, 1997), pp. 45–79.

⁴⁵ Margaret McAvin, 'Most Important Questions [in Landscape Architecture]', *Landscape Journal*, vol. 11, no. 2, 1992, p. 174.

⁴⁶ Karl Kullmann, 'Thin Parks / Thick Edges: Towards a Linear Park Typology for (Post)infrastructural Sites', *Journal of Landscape Architecture*, vol. 6, no.2, 2011, pp. 70–81.

⁴⁷ Edward S. Casey, *Getting Back into Place: Toward a Renewed Understanding of the Place-World* (Bloomington IN: Indiana University Press, 1993), pp. 154–155.

⁴⁸ Denis Cosgrove, 'Introduction: Mapping Meaning', in Denis Cosgrove, ed, *Mappings*, pp. 1–23 (London: Reaktion Books, 1999), pp. 57–58.

⁴⁹ See. John Dixon Hunt, 'Introduction: the immediate garden and the larger landscape', *Studies in the History of Gardens & Designed Landscapes*, vol. 19, no. 1, 1999, pp. 3–6.

⁵⁰ See. Shusaku Arakawa and Madeline Gins, 'The tentative constructed plan as intervening device', *Architecture and Urbanism*, December, 1991, pp. 48–57. Manfredo Tafuri, *House of Cards* (New York: Oxford University Press, 1987).

⁵¹ See. Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York: Vintage Books, 1979). Richard Sennett, *The Conscience of the Eye: the Design and Social Life of Cities* (London: Faber & Faber, 1993). Robin Evans, *The Projective Cast: Architecture and its Three Geometries* (Cambridge MA: MIT Press, 1995). Linda Pollak, 'The absent wall and other boundary stories: contradictory constructs of space and gender', *Daidalos*, no. 67, 1998, pp. 94–105.

⁵² James J. Gibson, *The Ecological Approach to Visual Perception* (Hillsdale NJ: Lawrence Erlbaum Associates, 1986), p. 164.

⁵³ Edward S. Casey, *Representing Place: Landscape Painting and Maps* (Minneapolis MI: University of Minnesota Press), pp. 234–235. Roger Thiel, 'The art of the fugue', *Daidalos*, no. 48, 1993, pp. 68–77.

⁵⁴ James J. Gibson, *The Ecological Approach to Visual Perception* (Hillsdale NJ: Lawrence Erlbaum Associates, 1986), p. 85.

⁵⁵ Karl Kullmann 'The Garden of Entangled Paths: Landscape Phenomena at the Albany Bulb Wasteland', *Landscape Review*, vol. 17, no. 1, 2016, in press.

⁵⁶ The natural enclosure of Wilpena Pound (a concaved sedimentary syncline surrounded by cliffs in outback South Australia) was used as a sheep paddock by the first European pastoralists.

⁵⁷ Norman, K. Booth, *Basic Elements of Landscape Architectural Design* (Long Grove IL: Waveland Press, 1983), p. 47.

⁵⁸ Thomas C. Kavanagh, '1,000-Ft Telescope Takes Shape in Mountain Hollow', *Engineering News Record*, 10 January 1963, pp. 22–23.

⁵⁹ GA Japan, 'Site of Reversible Destiny-Yoro Park, Gifu, 1990–95', *GA Japan*, no. 18, 1996, pp. 76–81. Bauwelt, 'Yoro Park: the Site of Reversible Destiny', *Bauwelt*, vol. 89, no. 35, 1998, pp. 1946–1949. Jeffrey Hogrefe, 'In pursuit of God's light', *Metropolis*, vol. 20, no. 1, 2000, pp. 80–83, 99–100. Eric Fredericksen, 'Roden Crater', *Architecture*, vol. 91, no. 4, 2002, p. 90. Catherine Slessor, 'Delight: Roden Crater, Arizona', *Architectural Review*, no. 213, 2003, p. 98. Agostino De Rosa, 'Where the earth meets the sky', *Anfione e Zeto* no. 20, 2008, pp. 157–165.

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⁶² Cornel Bierens, 'Taming the sky: James Turrell in Kijkduin', *Archis*, no. 10, 1996, pp. 2–4.

⁶³ James Turrell, 'Roden Crater', *Lotus International*, no. 114, 2002, pp. 10–21.

⁶⁴ James Turrell, 'Powerful places', *Places*, vol. 1, no. 1, 1983, pp. 32–37.

⁶⁵ See. Roberto Casati and Achille C. Varzi, *Holes and Other Superficialities* (Cambridge MA: MIT Press, 1994).

⁶⁶ See. Janet Byron, 'Roden Crater: men as plunderers, letter to the editor', *The New York Times* (19 April 2001), p. 4.

⁶⁷ Raoul Bunschoten, 'Spinoza's Garden', *AA Files*, no. 11, 1986, pp. 54–57. Japan National Tourist Organization (hereafter JNTO), *Site of Reversible Destiny* (JNTO, 2008), visitor's pamphlet available in hard copy from Yoro Park field office.

⁶⁸ JNTO, *Site of Reversible Destiny*.

⁶⁹ Michael Govan, 'Introduction', in Shusaku Arakawa and Madeline Gins, eds, *Reversible Destiny* (New York: Guggenheim, 1997).

⁷⁰ Shusaku Arakawa and Madeline Gins, 'Gifu – critical resemblance house and elliptical field', *Architectural Design Profile*, vol. 121, 1996, pp. 27–34.

⁷¹ Shusaku Arakawa and Madeline Gins, *Architecture: Sites of Reversible Destiny* (London: Academy Editions, 1994).

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⁷⁴ Clemens Steenbergen and Wouter Reh, *Architecture and Landscape: The Design Experiment of the Great European Gardens and Landscapes* (Bussum: THOTH Publishers, 1996).

⁷⁵ Herman Sörgel, *Einführung in Die Architektur-Ästhetik* (München: Piloty & Loehle, 1918), p. 62–67. Camillo Sitte, *The Birth of Modern City Planning* (New York: Rizzoli, 1986).

⁷⁶ Terry Harkness, 'Gardens from Region', in Mark Francis and Randolph T. Hester, Jr., eds, *The Meaning of Gardens* (Cambridge MA: MIT Press, 1990), p. 113.

⁷⁷ Gerrit Willems, 'Celestial Vault in Kijkduin', in James Turrell and Lily van Ginneken, *James Turrell: Hemels Gewelf in Kijkduin / Celestial Vault in the Dunes* (The Hague NL: Stroom, 1996). Cornel Bierens, 'Taming the sky: James Turrell in Kijkduin', *Archis*, no. 10, 1996, pp. 2–4.

⁷⁸ Norman, K. Booth, *Basic Elements of Landscape Architectural Design* (Long Grove IL: Waveland Press, 1983), p. 47.

⁷⁹ Although conversely, the slopes associated with each side of the rim may present design challenges with regards to facilitating universal (disabled) access to the crater space.