

# Refuge from Time

A Martian Architecture for Remembrance and Hope



**Forrest Rosenblum**

GSD of Harvard University, *MLA*, Year2

**Xiaolin Li**

GSD of Harvard University, *MLA*, Year2

**Senmiao Yang**

GSD of Harvard University, *MLA*, Year1



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# Forrest Rosenblum

Graduate Student of Landscape Architecture

I find no greater marvel than the patterns of landscape that reveal themselves at all scales and in all places for any who take the time to look. The sometimes subtle, sometimes obvious fractal forces are a key to the world beyond, capable of unlocking great gratitude. In my practice I hope to be able to share this vision.

I am also particularly interested in the ways that landscape construct consciousness. It might be said that the entirety of our human awareness has evolved in direct correspondence with the landscape that surrounds us. As a designer, then, I pay close attention to the forms and materials that we encounter on a regular basis and consider what types of consciousnesses might result from various configurations. Ultimately, I hope to help transition the explicitly human-built world (i.e., cities, towns, and buildings) into universes full of organic forms and matter that put us in closer touch with the non-human world and each other.

When I learned about this competition, I saw it as an incredible opportunity to imagine what the beginning of society might (have, will) look like. Implicit in this competition are deep questions regarding the fundamental moral, political, and economic nature of humankind. We as a group have deeply enjoyed this process, and hope you too will enjoy our work!

## Education

Harvard University, Graduate School of Design, Cambridge MA

Sept. 2020 - Present

**Master of Landscape Architecture**

Boston University, Boston, MA

GPA: 3.82/4.0, *Summa Cum Laude*

Sept. 2011 - May 2015

**Bachelor of Arts:** Majors: **Cultural Anthropology, Philosophy**

- Focuses: Middle Eastern culture and politics, cultural evolution, philosophy of mind, political philosophy

**Kilachand Honors College**

- Selective community of interdisciplinary students and faculty
- 4-6 credits per semester focused on shifting paradigms and solving open-ended problems

**Boğaziçi University Exchange**

- Semester in Istanbul focused on Ottoman history, Turkish language, medieval and Islamic philosophy

## Publications & Projects

**Rosenblum, Forrest L.** "Power and Politics: A Threat to the Global Brain." *Technological Forecasting and Social Change*, Volume 114, January 2017, pp. 43-47.

**Evolution, Complexity, and Cognition (ECCO) Group Seminar Series Presentation**, "From Theory to Action: Leveraging the Global Brain." June 2017. **Watch video:** [bit.ly/2PEhzpe](https://bit.ly/2PEhzpe)

**Senior Thesis Project**, "Transhumanism: The Merger of the Societal and Human Nervous Systems through Technology." May 2015, 47 pgs. **Watch video:** [bit.ly/2YILPU6](https://bit.ly/2YILPU6)

## Professional Experience

East Bay Nursery, Berkeley, CA

Nov. 2019 - March 2020

**Nurseryperson**

- Performed all standard duties of Nurseryperson as described below with expanded stock for warmer climate

Sloat Garden Center, San Francisco, CA

March 2018 - July 2019

**Nurseryperson, Cactus & Succulent Buyer**

- Placed weekly orders for all cacti and succulents at highest-volume Sloat location (~\$8,000/wk in cactus sales)
- Served as shift leader for up to 10 teammates, periodically managing all aspects of the store
- Learned basic garden design and horticultural techniques such as fertilization, pest management, pruning
- Maintained and displayed vast botanical stock including edibles, pollinators, CA natives, and more

Course Hero Inc., Redwood City, CA

March 2016 - Jan. 2018

**Customer Service Representative, Platform Moderator, Business Operations Associate**

- Created and managed recruitment, onboarding, and evaluation processes for over 2,000 online educators
- Built financial forecasts to determine team budget
- Collaborated closely with product and marketing teams to design a logical and effective user experience

# Xiaolin Li

Graduate Student of Landscape Architecture

I love observing things through the lens of visual arts. Also, fascinated by the rigorous critical thinking required and particularly interested in introducing to the public that spatial and social processes are always entwined, as well as the synthetic role of landscape design as a cultural practice.

My geography background has provided me with a solid theoretical foundation for my research and design practice. My work brings together several scales of design processes: from territorial strategies, public spaces, plazas, parks, cemeteries to objects, videos and maps.

This competition intrigued me as it is aesthetically appealing and allowing us to reflect on the past. Being a landscape architect, envisioning the journey to Mars brings so many questions to current human behaviours. Is it right to consider human and nature as a binary discourse? If not, is extracting all the resources on Earth and possibly Mars in the future natural processes? Is focusing on sustainability, adaptation and resiliency a human-centric act or thinking from the natural lenses? Why are we heading to Mars, and will there be any hope?

## EDUCATION

<b>Harvard University</b> , Graduate School of Design, Cambridge	Expected May 2023
Master in Landscape Architecture I	
<b>University College London</b> , Department of Geography, London	Jul 2019
Bachelor of Arts, Geography	

## EXPERIENCE

<i>Landscape Intern</i> , <b>Tongji Architectural Design Co., Ltd.</b> , Shanghai	Jul – Sept 2021
Concept Design / Site Analysis / Digital Modeling	
<i>Landscape Intern</i> , <b>July Cooperative Company</b> , Shanghai	Jun – Jul 2021
Model Making/ Site Analysis/ Graphic Design for Layout and Presentation Purpose	
<i>Landscape Intern</i> , <b>S.P.I. Design Co., Ltd.</b> , Guangzhou	Jun – Aug 2020
Design Research/ Brainstorming/ Written Communication	
<i>Marketing Research Assistant</i> , <b>LSE Confucius Institute for Business</b> , London	Sept – Dec 2018
Information Gathering, Analysis and Reporting/ Verbal Communication	

## PUBLICATION

Dittmer, J., Kunz, S., Cutmore, A., Brigati, L., Buckley, G., Budd, G., ...Holt, N. (2020). The Force of Events: the 'Brexit interval' and popular aspirations for Gibraltarian diplomacy. *Territory, Politics, Governance*, doi:10.1080/21622671.2020.1755892

## SKILLS

Rhino, GIS, Adobe Creative Suite, Sketchup, Lumion, AutoCAD

## ACTIVITIES

<b>Media Operator</b> , <i>XiaoTeng at Harvard Wechat Official Account</i>	Sept – Jul 2021
Researched, planned out and produced monthly engaging contents about Harvard to the general public	
<b>Peer Mentor</b> , <i>BeenThere</i>	Apr – Sept 2020
Provided online 1-on-1 peer support to improve mental wellness and personal development of Chinese	
<b>Data Analyst</b> , <i>A2N Anti-Coronavirus</i>	Mar – May 2020
Collected data of COVID across China to help specialists form up-to-date contact tracing visual maps	
<b>Student</b> , <i>[IN]LAND Program</i>	Jun – Jul 2019
Participated the landscape summer studio at University of California Berkeley	
<b>Variety Show Reviewer</b> , <i>iQIYI</i>	Jun – Aug 2018
Wrote feature articles to the most up to date shows	

# Senmiao Yang

Graduate Student of Landscape Architecture

I'm a graduate student in Landscape Architecture. I'm interested in the whole real world around me, especially urban ecology. To me, night sky is something I feel familiar and comfortable with. Whichever night I look upon the clear sky, the stars are like showing me time, season and direction, which makes me clam. Since I live in cities for most of the time, recognizing most of the lightest stars would be good enough for me to enjoy night sky.

I joined the astronomy club in year 2 and played with them for the next 3 yeas. I hanged out with them for star gazing in late October, when it was extreme cold. And I also visited many observatories domestic and aboard. My life on campus was filled with star light. And of course the solar system is one of the key star in gazing. You can always see Mars, Jupiter, and sometimes Venus during the year. Among them, Mars is most likely to be recognized. It's red. It's similar. It has many potentials. It always shows up on News. I'm captured by first glance of the competition.

We will be the generation who can witness the colony of Mars, as it was said. But what does it mean to us, as children of the mother Earth? Excitement of new era in human's history? Fear of the unknow universe? What will Earth be like when we departure? Will we still have the connection with Mother Planet? With these questions in mind since my first space exploring movie, I started to dive into imagination.

## //EDUCATION

{2015.09-2020.06}	South China University of Technology
Guangzhou, China	Bachelor of Engineering in Landscape Architecture (5-yrs program)
{2020.09-2024.06}	Graduate School of Design, Harvard University
Guangzhou, China	Master of Landscape Architecture (in gap year now)

## //Awards

{2019}	Pubang Prize in recognition of <b>Excellent Course Design</b>
{2018}	<b>Outstanding Leader</b> of Student Union
{2017}	2015-2016 <b>Merit Student</b> of School (Top 15%)
{2017}	2015-2016 University <b>Second-class Scholarship</b> (Top 15%)

## //Workshop

{2019.05}	Incremental Urbanism Workshop
Guangzhou, China	Work participated in <b>2019 Seoul Biennale</b> of Architecture and Urbanism
	In charge of: Surveying & Mapping & Modeling
	Mapping & Making Workshop in Peking University
	Conducted resident interview/Film making/Photography/Exhibition

## //Professional-related

{2018.09}	2018 UIA Cup International Student Competition
	<b>Team Leader</b> : Decision maker of design project
	Structure exploded view/Displacement volume calculation/Rendering
	Research of Haizhu Wetland Waterfowl Foraging Environment
	<b>First place</b> : Team leader of six
	<b>First place</b> : Research of Jiangmen Cultural Resource Point
	Construction&Heritage Corridor Based on GIS

## //Internship

{2018.08-09}	PuBang Landscape Architecture Co.,Ltd
Guangzhou, China	Assistant Architect & Assistant Editor
	Main work: Field trip/ Interview/Material design
	LOLA Landscape Architecture
	Assistant Landscape Designer

## //Extracurricular

{2017}	Best Volunteer of 26th Ideas On Design International Design Conference
{2018-2019}	Vice President of Knowland Student Association Club
{2017-2018}	Head & TA of StarDust Astronomy Club
{2017}	Chinese Traditional Drama Performer (Class Outstanding Show)

## //Software

	Photoshop/Auto CAD/Autodesk Revit (Certified Level1)/GIS/In Design
	Rhino/Grasshopper/Adobe Premiere/Sketch-Up/Adobe Illustrator/V-ray

### The Materials:

On Mars, there is no shortage of Mars Brick. As settlers taking what few goods through space that we could, we prioritized small scale equipment that we guessed would empower us to develop the Martian resource we knew would encounter; rock; into further useful materials. Until we had time to develop more advanced technologies through this grindingly steady rock economy, it was the case that rudimentary, megalithic architecture proliferated in those early years. Though our tools and numbers were few, the will to live and the gentle Martian gravity inspired us to begin building then, in the year 1 M.E. (Mars Era).

*Year 0 was the year the world as we knew it ended and our convoy left our former home not knowing if there would be another convoy or if there would be another home. Our blue, and green, and brown, and white flecked marble receded and into our imaginations rose a dusty red horizon, brightened by the knowledge that we were surviving, we were living, if not forever then at least for a time longer.*

### The Build:

On the first day of year 1, Touchdown Day, we set foot on foreign soil. That night, the foreign soil had its revenge and there was no sleep until our first structure was built providing shelter from the terrible winds. This first interjection to the Martian landscape was so explicitly born of it that Mars itself could be said to be the true author. Windbreaks gave way to primitive houses, catalyzing a rapid evolution in our Martian technical capabilities. As our comfort grew, so did our capacity for reflection; in year 6, it was deemed that the first windbreak begun in year 1 would become developed into a monument. In year 9, it was completed and commemorated to the visceral experience of our past, present, and future.

*For the first three years on Mars, nobody spoke of the world they had left behind. The contradictions and confusions implied by the event had no place in the violent struggle for life. Yet this repression could not hold, and soon the fissures of the old ways of being surfaced as fractures exposed to force always must.*

### Collaboration:

Was it denial and self preservation that held us together for those first three long years? Or was it our collective hands on the rocks, grounding our embryonic society in a common goal? These were the questions that were answered in year 6, after three more long years of blameful feuding that again had threatened our fragile planetary existence. Thus it was established that the monument be

built by all and through this shared material practice, we remembered. Out of this remembrance came the realization that we may then spring forward into new possibilities and horizons, and a renewed commitment to the shared cycles of self and collective evolution was established. And somewhere in the middle of this contraction and expansion between past and future, so the present found us through the sparkling eyes and beating hearts of our fellows.

*It was said that "Idle hands are the Devil's workshop." Perhaps to this should be added that busy hands that expend their energy grappling with each other are equally as dangerous. The only viable social form, then, became an act of negation of these two principles.*

### Public Use:

The ever shifting Martian landscape foreshadowed the vast and turbulent sea of unmoored social and political improvisation. It was determined, then, that this monument would not only commemorate the arrival on Mars and first architectural act of survival, but would serve as an anchor of our cyclical experience, establishing and externalizing the rhythms essential to both our personal and social bodies. From this shared meter, it was thought, might emerge social coherent and stable social forms mandatory for life and capable of conscious evolution.

The monument, then, and its surrounding plaza became the home for all major public rituals that revisited, revised, and celebrated our conception of what it means to be a Martian. In addition to defining our relations with one another, the monument inextricably tied these relations to the rhythms and realities of the Martian landscape. Thus an ethical underpinning was erected in steel: that all social forms, however they may change through millenia, must never neglect to be in communion with the environment which supports their life. On each equinox, and again on each solstice, festivals fill the plaza with life and energies swirl as bonds are made through the sister vehicles of grief and hope.



Between festival-times, the plaza serves as a place of remembrance and contemplation for any who wish. It also functions as a public gathering and free space, where the original function of wind protection is performed admirably by the nearly full barrier ring. Both formal and informal events play out, deriving authority from the moral certitude of the site and its history of formation.

*Grabbing hands, and spinning, the monument spun with us corkscrewing both down into the red rocks and yet simultaneously up. The Dual moons illuminated our human cyclone, offering their subtle provocation toward deeper understanding and awareness. Caught between falling, and rising, we were held only by our neighbors' own offering of strength.*

#### **Climate:**

The scathingly frigid Mars Winds and their associated barrage of dust constitute the single most deadly and unpredictable element in the Martian Landscape. Little in that regard has changed between now and the times of the first settlers. The 320 degrees of encompassing wall ensure that the plaza may be a place of respite at all times, with the largest wall oriented outward toward the origin of the most frequently observed wind and wind storms.

Yet the monument is not static. The tick marks of the Martian sun-dial, which double as seating and playful apparati, are allowed to accumulate dust and sand as it blows and swirls around different parts of the plaza at different years. Duning naturally occurs up against and at times over these stone extrusions, offering a dynamic spatial experience and a register of the more erratic forces in time that characterize the Martian Landscape.

*Over the underlying regularity spilled shifting forms marching to yet even more arcane patterns. We had learned much; there was much more to learn. The regularity of time, it then seemed, was the illusion. Far more real became the infinitely variable reality of ever-dancing currents.*

#### **Technology:**

Laser cutters and laser drills for mining suitable rock were among the first tools to make it aboard our craft. Small furnaces and chemical kits were next, in order to help process the mined materials. Bricking and soldering became standard architectural practice. Glass



production, from that second most copious Martian resource, sand, became what might be considered the first Martian niche craft. Sandblasting for a smooth finish, as it were, Mars managed to take care of. The largest furnace built to date is still the one that was built to fire the remains of our wreckage, making it pliable into the central form of the monument.

*Sparks in the night flew in direct contradiction to the streaking bands of dust. As long as they flew, we knew a Martian sunrise lay in our future.*

#### **Sustainability:**

All of the materials used in the building of the monument were gathered from the immediate area, from those omnipresent Martian Resources of rock and sand. Certain other pieces were made from scavenged and recycled materials from our own economic activity. It does not require electric power, nor does it produce any. Power on Earth was insatiable. Power on Mars is attributed less to the ability to move matter, and more on the ability to move emotion. A regulated individual harmonizes with their fellow; a regulated society harmonizes with its environment. It is a principle of balance that the form and function of the monument serves to unceasingly reinforce.

*Walk lightly, and thy feet shall not ache. Walk lightly, and the path will become clear. Walk lightly, and the harmonized vibrations will not cease to sing.*

#### **Aesthetic:**

Rising and falling, twisting and rooting, solidity and fluidity, free program and specific utility, interior and exteriority, past and future, coming and going, structure and chaos; these are but a few of the balances held within the monument's composition whose revolving elements give body to the universal fact of integration and disintegration. Strong, simple forms respond to the austere Martian landscape while serving as a capable receptacle for vast dimensions of symbolic content. Nestled softly and firmly into place yet reaching for the heavens, the monument signals a full embrace of polar duality.

*Shadows flit across the land, and across time. We are reminded that behind each solid is a void, and indeed more that each solid will become a void. And vice versa. Patterns of infinite suggestion engage our material reality. We have found our rhythm...all that's left to do is pay attention to and appreciate the symphony that surrounds us....*

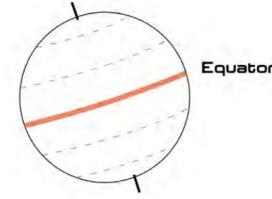
## The Founding of a Calendar

Establishing a sense of regular time is essential to the founding of civilization. Certainly, our bodies and their cycles respond naturally to conditions such as light and temperature. Yet to organize a society, these innate understandings must be externalized into the public fabric in order to give beat to which to move.

Remarkably, a Martian day is only 37 minutes and 22 seconds longer than a day on Earth. Yet a Martian year is almost twice as long as a year on Earth, containing 685 Martian days. The need to adjust to long seasons and form a method of counting time made the construction of sundials one of the fundamental architectural acts of the early colony.

Given the intensity of storms on Mars, only a sundial of this scale and materiality would provide a measure consistent enough to mark the passage of years, decades, centuries, and beyond for this reborn human race

of Martians.



## Equatorial Beginnings

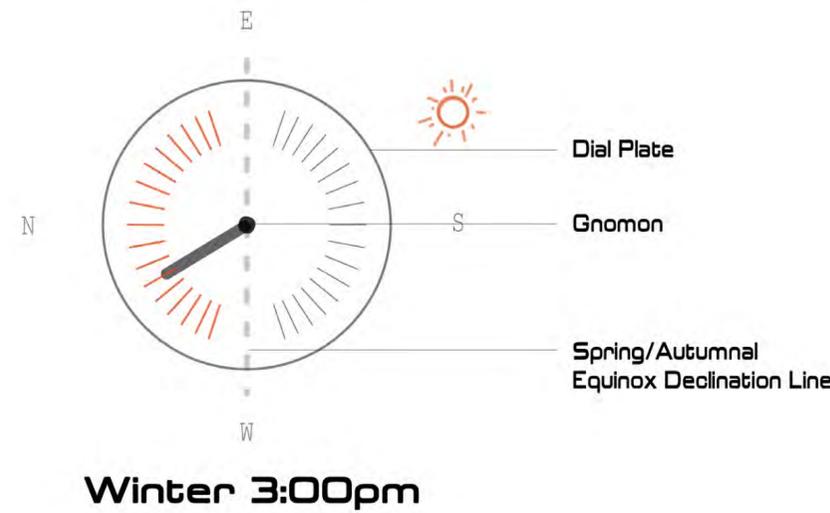
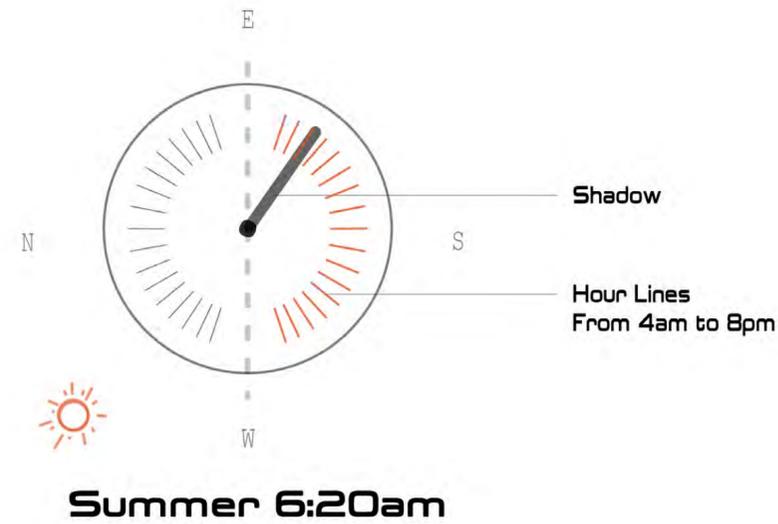
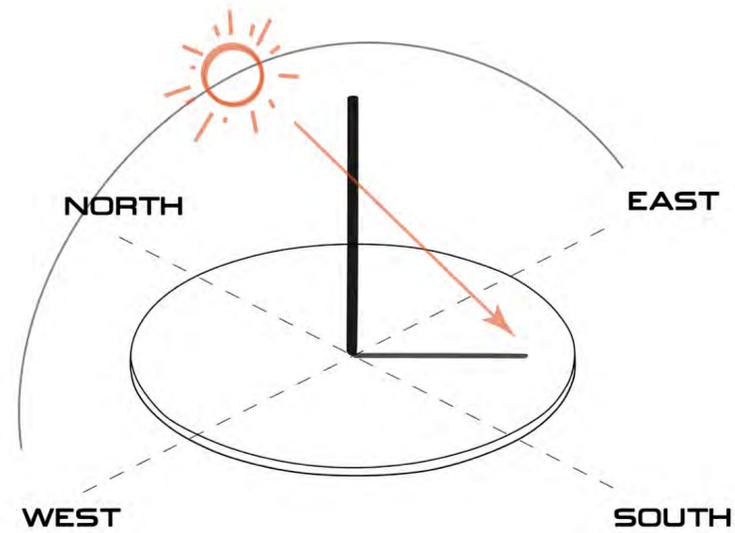
Due to its elliptical orbit, seasons on Mars are either shortened or elongated with respect to one's hemisphere. During the migration to Mars, the equatorial zone was deemed most suitable for human life for its relative climatic stability. Thus the birthplace of Martian civilization, and indeed location of the monument today, lies directly along the equator.

The basin chosen for landing the craft sits nestled in the foothills of a jagged mountain range. This place of enclosure offered not only a landing surface, but a viable place to begin life on Mars. In time, it further lent itself toward the erection of tall, stable structures.



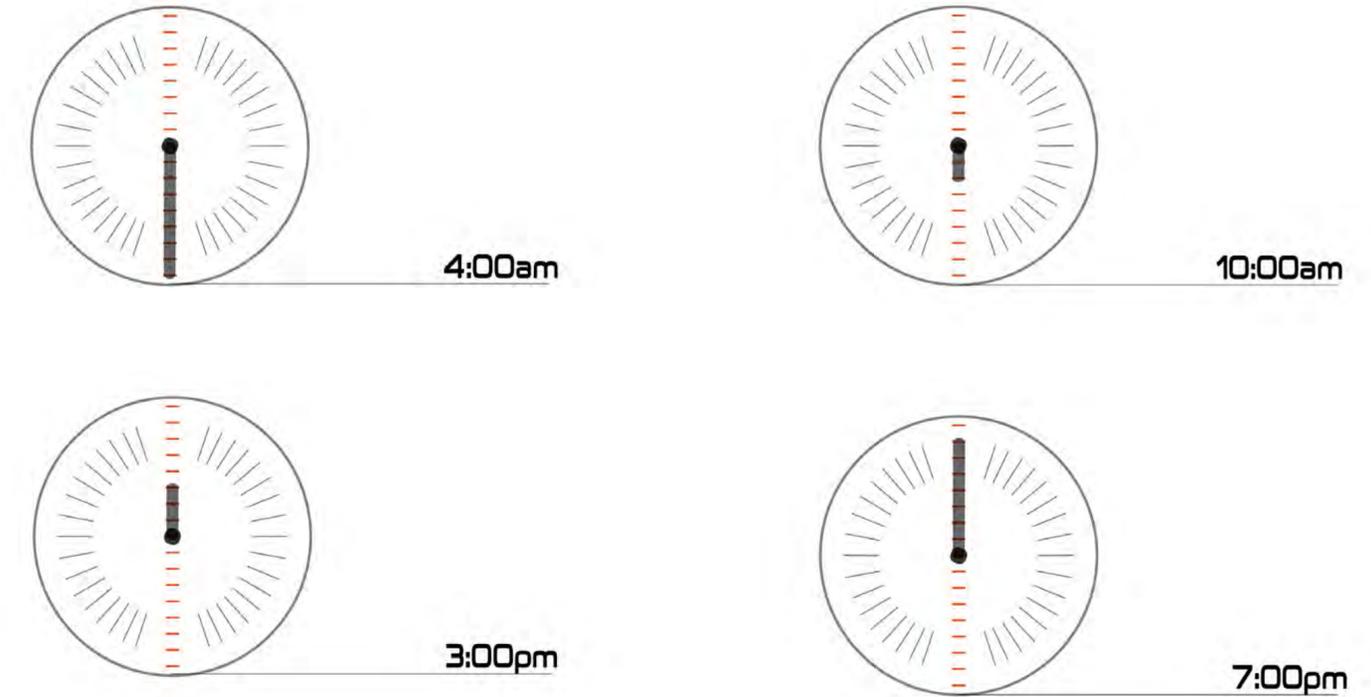
## A Martian Sundial

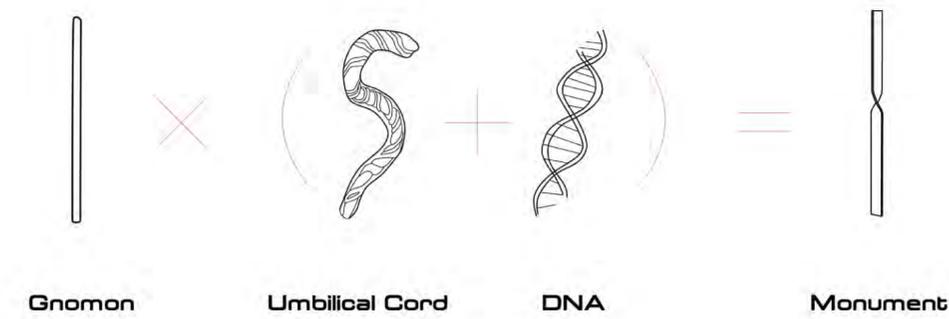
Regardless of the location on the Martian sphere, both the summer and winter seasons are very long. In the summer, the shadow moves in a semicircle on only the southern side of the greater circle. In the winter, it moves only across the northern half.



When a sundial is located along the equator and erected orthogonally to the ground, it may be observed that the sun creates a shrinking, and then growing shadow in a straight line across the ground on either side of the gnomon. It is in these moments of balance, of linear confidence, that the great rituals are performed.

### Spring/Autumnal Equinox

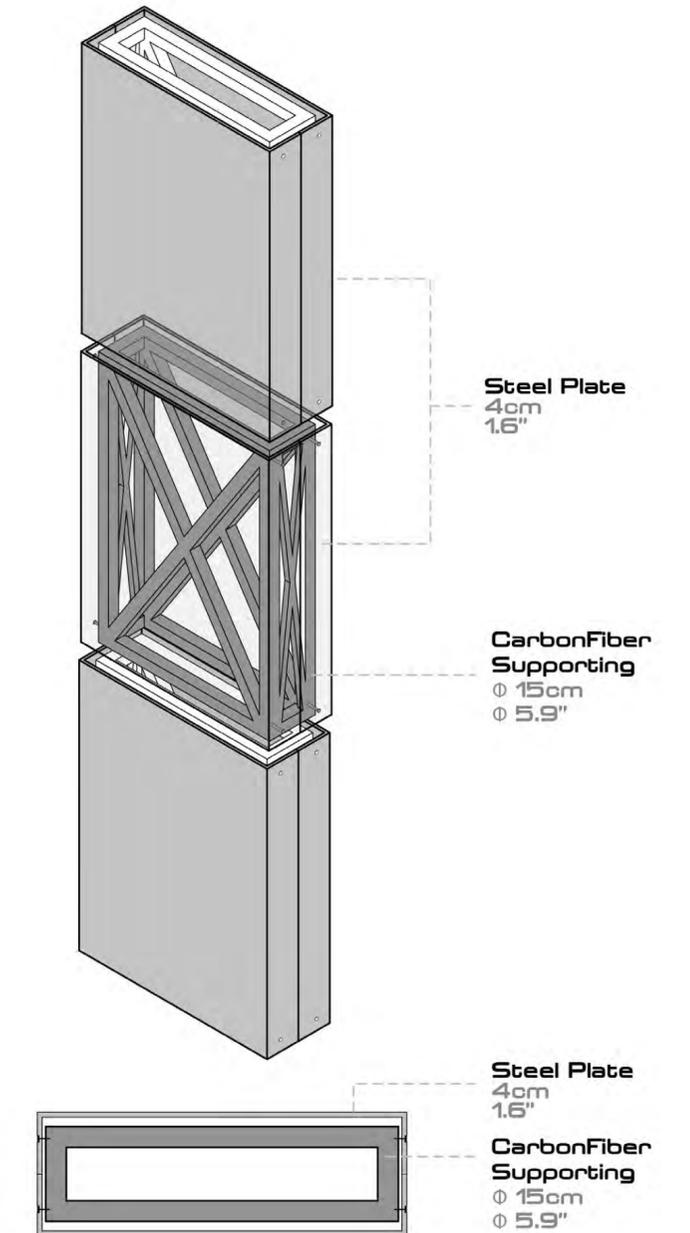
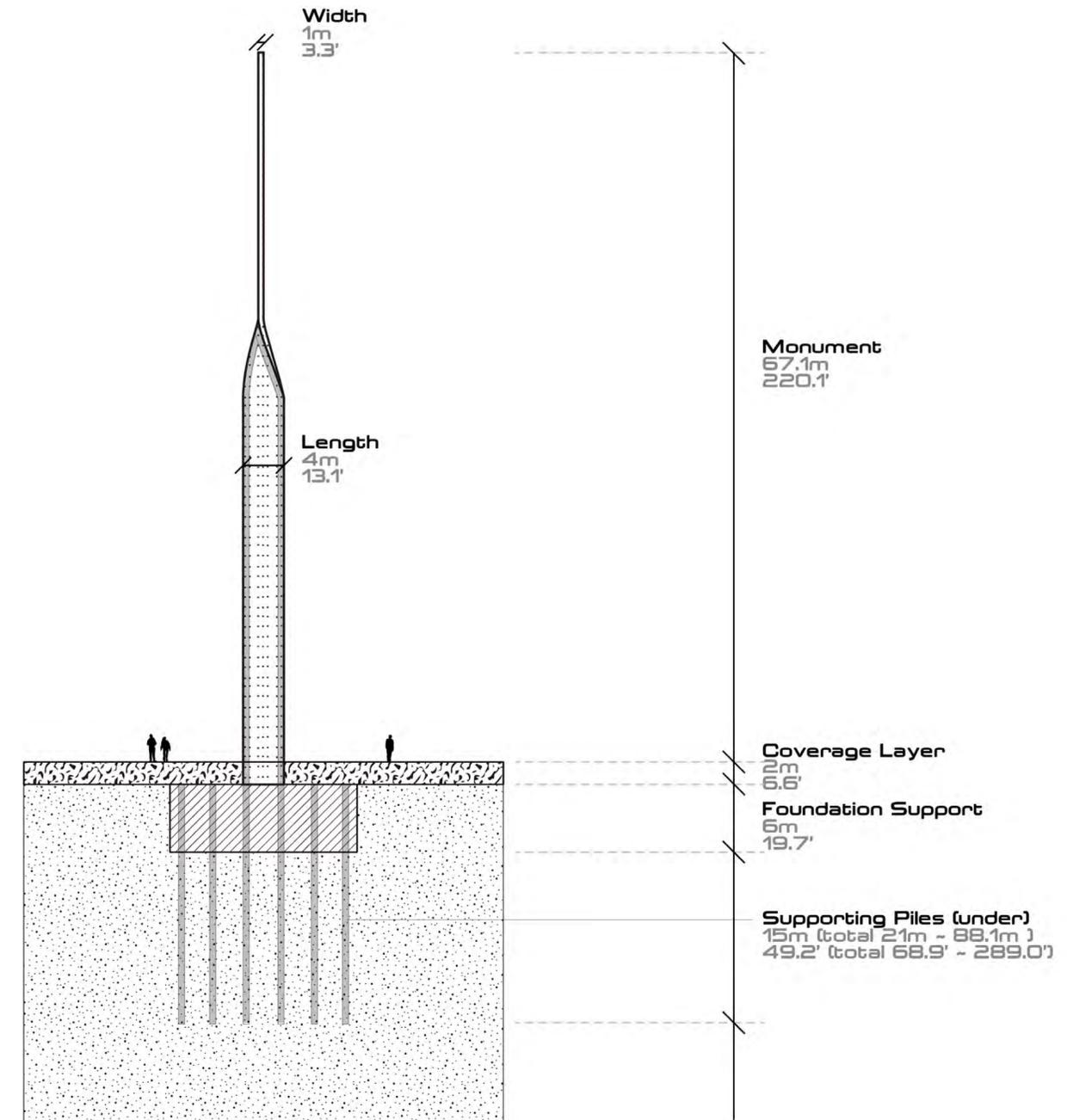
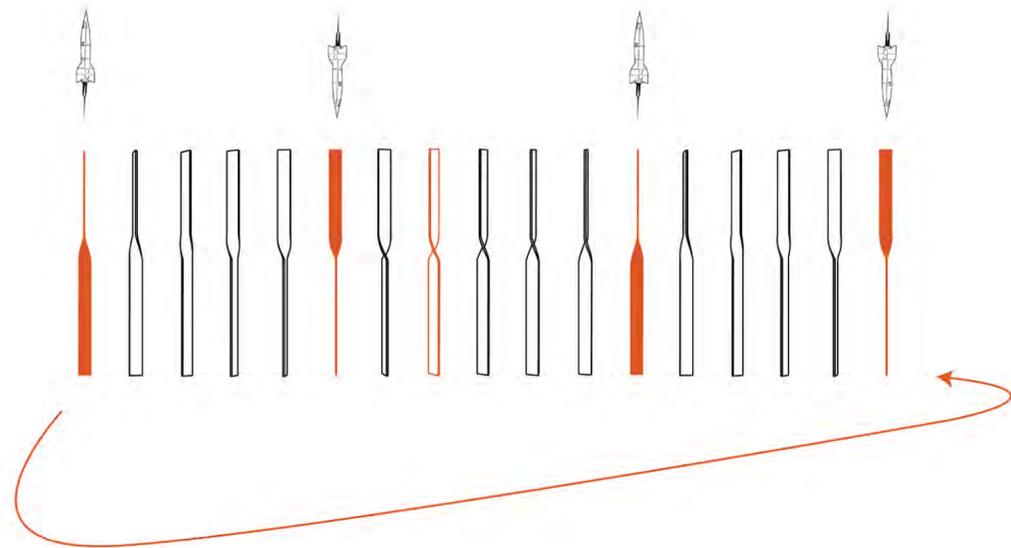


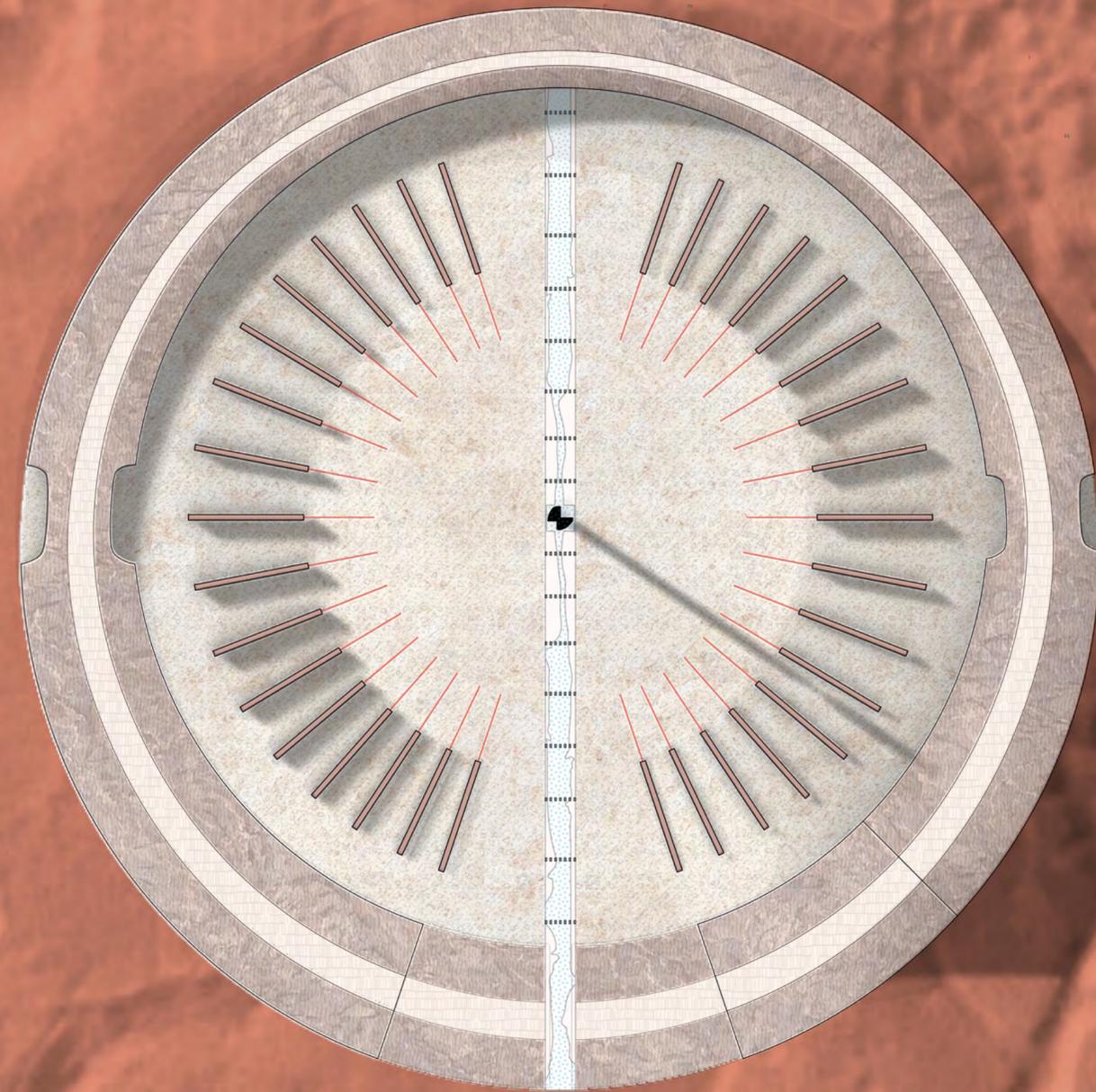


## Monumental Form

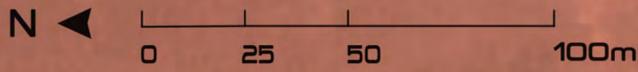
The twisting form of the sundial's gnomon was inspired equally by two twisting phenomena central to human life: the umbilical cord that ties a child to their mother, and DNA, the code of life itself. The resultant form serves to connect Martian society to the core of the planet while at the same time suggesting our orientation around a higher frontier. No matter how high Martians fly, they never lose sight of their Source.

As one changes their angle of relationship to the monument, one's vision may be drawn into the ground and then ekyward, setting up a dialogue between these binary oppositions. Should one choose to walk many circuits around this gnomon, this pattern would come to ingrain itself as a reliable rhythm and fundamental set of relationships.





-  Steel
-  Mars Brick
-  Martian Rock
-  Mars Glass from Mars Sand

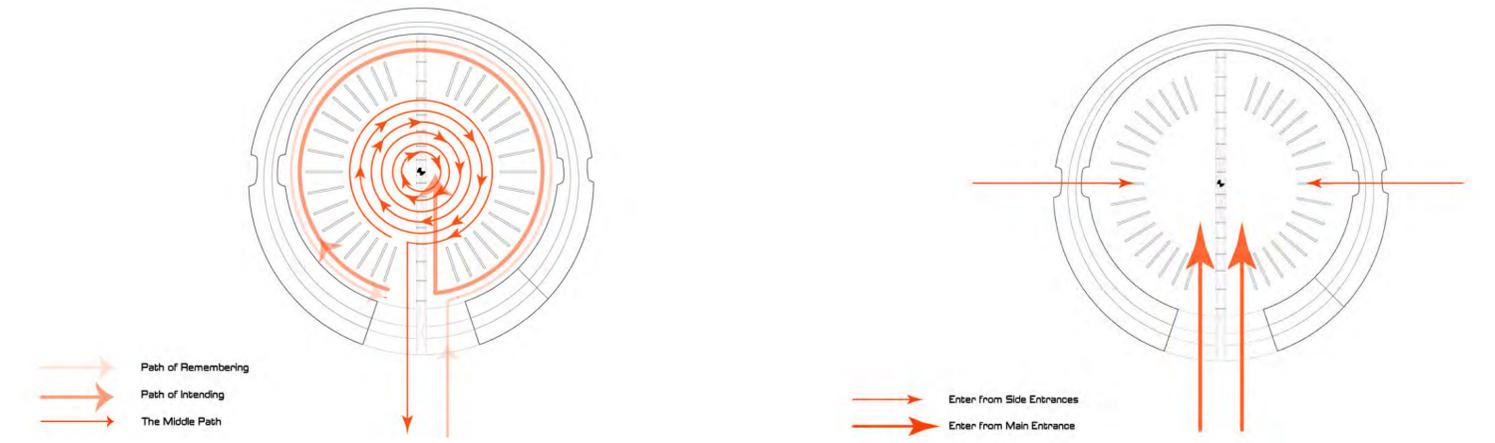


## Spatial Layout

The plaza may be entered from the West, or alternatively from two secondary entrances on the North and South walls. The primary entrance is aligned with the water-glass strip that defines the path of the shadow on the Equinox, drawing an immediate relationship between the viewer and the primary axis of the monument. Between the tick-marks and the wall, space is set aside for circulation. While one may leave the outer track and move around the monument at any time, the closeness of the tick-marks encourages a circular pattern conducive to meditative states.

During rituals, participants may walk this path first in a counterclockwise direction, winding back the wheels of time and allowing one's self to slip into memories both shared and personal. The route may then be reversed, bringing one's awareness to forward-thinking intentionality. They are then led to the middle, by way of the glass path, to meet their fellows fully in the present.

The plaza's diameter was set to 300M, providing enough room for the entire colony to participate in rituals all together should they please. At all times, however, the relatively human scale of the plaza makes it a comfortable place for small groups or individuals to enact whatever personal rituals they may have.



-  Path of Remembering
-  Path of Intending
-  The Middle Path

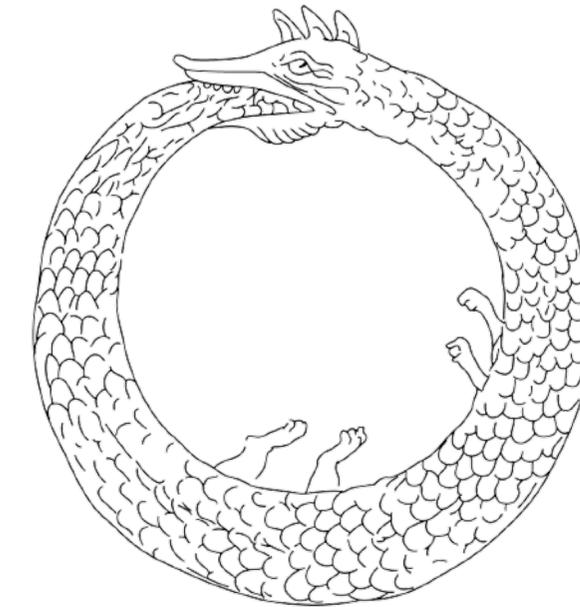
-  Enter from Side Entrances
-  Enter from Main Entrance

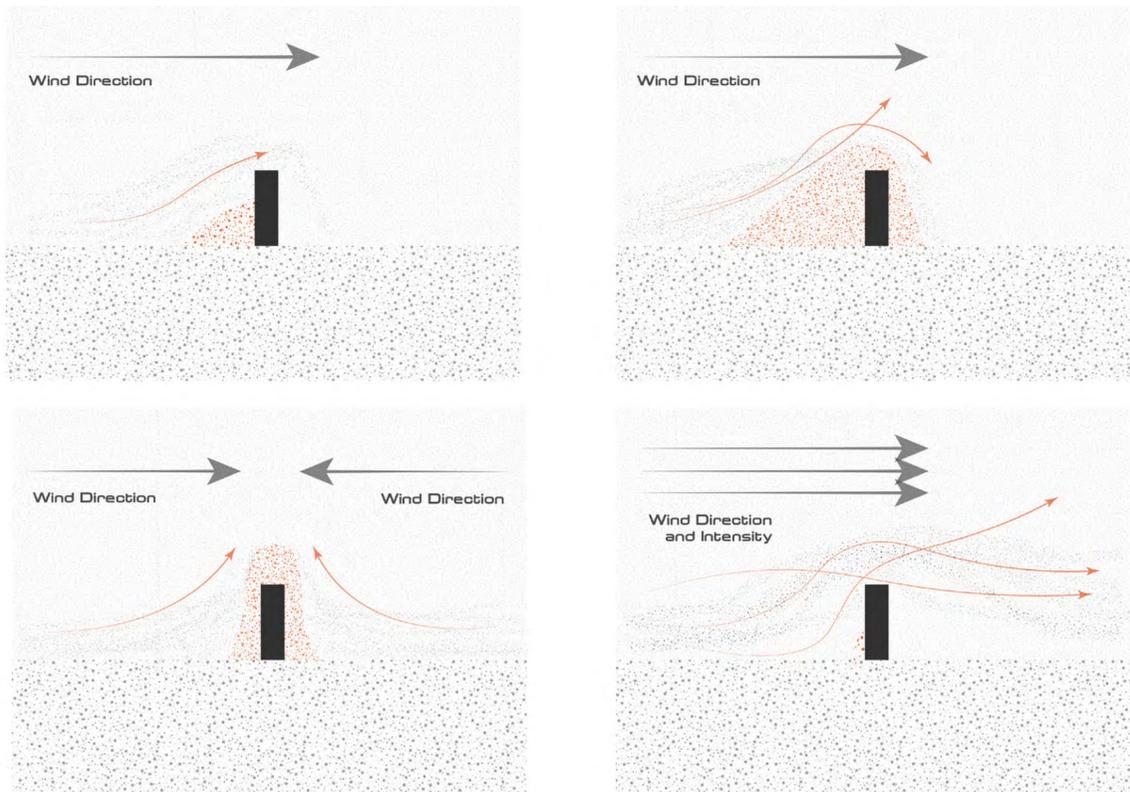


## Rising and Falling Walls

Layered onto the plaza wall' original protective function, is its social function generated by its gentle ramping form, allowing visitors to scale and walk along it in peaceful weather. From this vantage point, the Martian landscape unfolds below and the articulation of the sundial becomes clear. There is no finer place in the colony to watch the Martian sunset, which never disappoints. This structure furthermore appeals to its youngest visitors, for whom there's no greater joy than jumping and sliding through weak Martian gravity.

Following the wall allows visitors to walk in step with the tides of time. Invoking the form of the mythical Ouroboros, "The World Serpent,": it is within these walls that time is ultimately suspended and naught but the present remains.

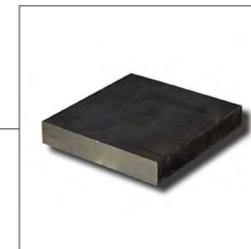
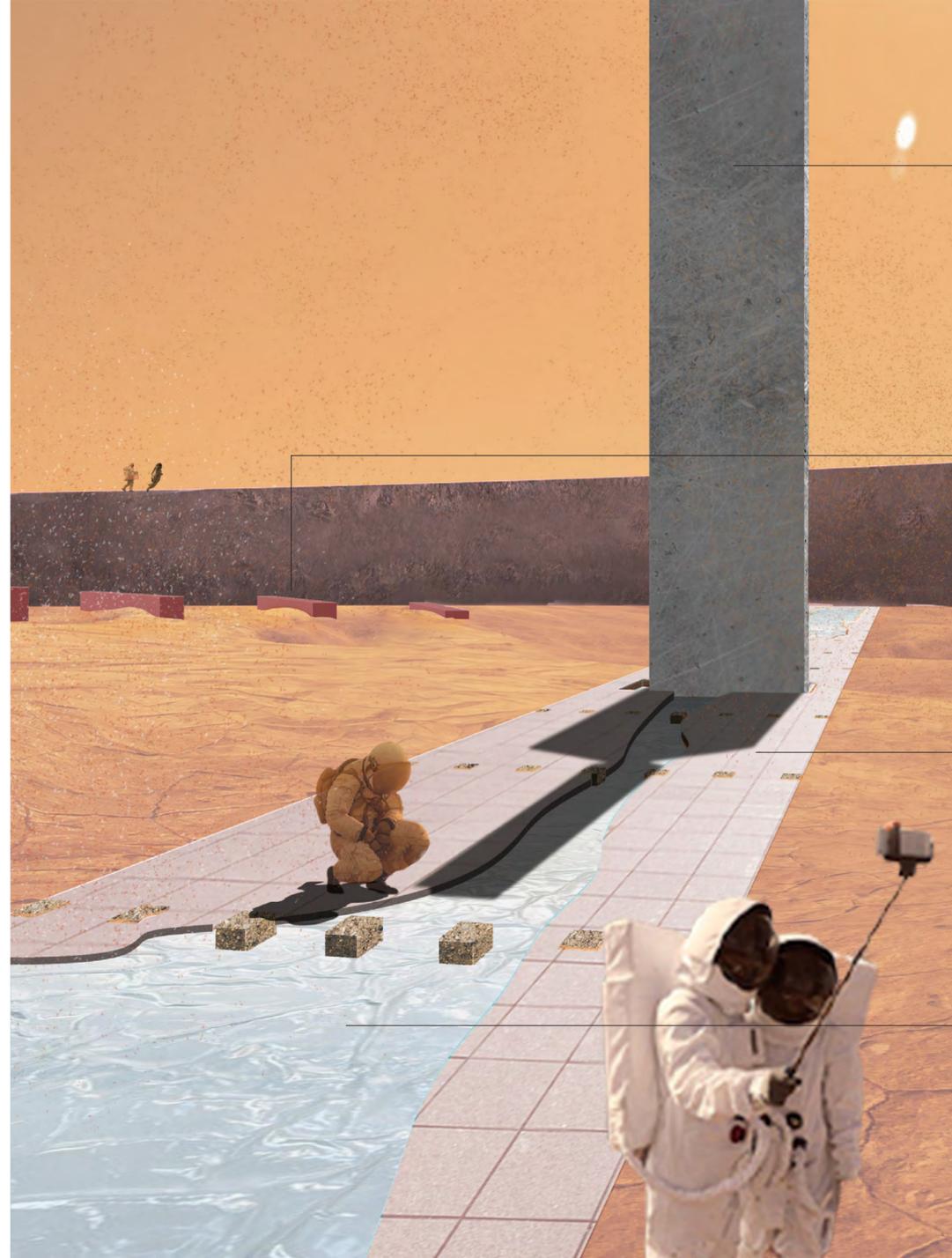




## Duning & Water Glass

The tickmarks of the sundial stand as solid markers of regularly passing Martian time. Yet these reliable forms are quickly converted into living registers of dynamic Martian landscape processes. As whipping winds buttress them with ever-shifting dunes. By skewing the gnomon's shadow and embracing infinite variability, the resulting space lends itself toward a notion of distorted time that challenges our assumptions of cause and effect, ultimately returning us to the only reliable refuge: the present.

Liquid water is an impossibility in the cold open Martian expanse. Yet water remains fundamental to life, and its symbolic qualities are invoked through the use of waterglass, creating a calming, purifying atmosphere along the E-W axis.



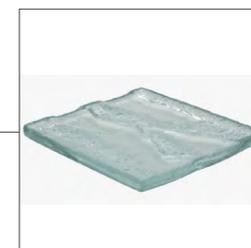
**Steel**  
From Space Trash



**Mars Brick**  
Pressed from Mars Soil



**Plaza Brick**  
From Daily Plastic Trash



**Water Glass**  
From Martin Sand

## Economy and Budget

The demon of consumptive greed masquerading as rational economic policy drove our species to the brink of extinction, and it is only due to our innovative ingenuity and pooling of collective resources that we were able to extend our survival into the cosmos and onto this neighboring red rock. Nevertheless, nearly all did not make it. To sustain life here and truly honor their sacrifice, we were inspired to evolve past those extractive, growth minded socioeconomic forms; evolution not passive as in the form of self-correcting markets, but evolution in the form of ever heightening self-conscious awareness of our individual persons, each other, and our new physical surrounds. Our budget, then, is not based on currency or any other register of scarcity-derived value, but rather on the work-hours required for our fellow to develop each aspect from raw material to finished structure.

Material	Work Hours	Quantity
Mars Brick	72,000	4200m <sup>3</sup>
Steel Wreckage	4,000	315m <sup>3</sup>
Recycled Brick	2,000	363m <sup>2</sup>
Mars Sand	0	0

## Dynamic Symbol of Time

With the wind and storm, the sand will accumulate and decline, thus creating a shifting view of tickmarks. When the dune is high, the shadow of the monument is higher and easier to be seen. When the storm is mild, visitors can sit on the stone benches by the walls. The walls create a refuge from changing time.



*Mother....You gave us life and you did not withhold from us even our most trifling whims....  
Even now my throat swells and words threaten to fail me. We loved you... but not enough.  
Yet tonight, I feel you in that impossibly deep place in my heart, and I know that though  
you are gone, you are not lost....*

- 1. In what ways can built projects operate simultaneously and successfully on both the geo-physical and psycho-social planes?**
- 2. How can architectural form be built in such a way that it celebrates its own solidity while gracefully acknowledging the ever-changing, dynamic nature of the universe in Time?**
- 3. What roles do Time and memory play in the formation of our identity?**

