

**The End of Architecture 2**

OLLI at PITT – Lecture I  
Zaha Hadid (2022.03.16)  
Matthew Schlueb, Instructor

**Welcome to The End of Architecture 2**

I am Matthew Schlueb, **registered architect**, practicing **residential for 2+ decades**. **6th year** teaching at Pitt Osher. **Thrilled to be back in person** in the classroom.

**Thankyou** for taking this course, a **pleasure for me to present** this material to you. I **welcome your feedback** to improve the class, as this is primarily **for your benefit**. Please **send me an email** and let me know **why you signed up for the class**, what about the class **sounded interesting** – so, I can **offer similar material in the future**.

Received the **syllabus handout**? Please check to make sure **cell phone is off**.

How many have **taken one of my previous classes**?

Anyone **take The End of Architecture**, 4 years ago?

That course concluded with an essay written by **Rem Koolhaas**, titled **Junkspace**, foretelling the **future of architectural space**, as **mindless over-expansion**, **emptiness**. (The Harvard Design School Guide to Shopping, 2001)

**“Junkspace is the residue mankind leaves on the planet**, what coagulates while modernization is in progress. Junkspace is the sum total of our current achievement, we have built more than did all previous generations put together.

We do not leave pyramids. **Architecture disappeared in the twentieth century**. The product of an encounter between **escalator** and **air-conditioning**, conceived in an incubator of **Sheetrock**.

How can architecture persist when the **conditional is the norm**, when there is **no form, only proliferation**, and when **spaces search for function** like hermit crabs looking for a vacant shell? Landscape has become Junkspace, Architecture is dead by this terminal **hollowness**.

We have **added nothing, just reconfigured**. Color has disappeared to dampen the resulting cacophony. We're united in **sedation**. **Why can't we tolerate stronger sensations? Dissonance? Awkwardness? Genius? Anarchy?** **Trees are tortured, lawns cover human manipulation** so like thick pelts, or even toupees. Entire **mountains are dismembered** to provide ever greater quantities of **authenticity**.”



For a course titled, **The End of Architecture**, first we have to **define architecture**.  
**Not a broad definition, but through a particular lens**, what I refer to as **rigor**.  
**Geometry, structure, organization, complexity, precision, layered, system, firmness**.  
 The **way a thing is put together**, the **mechanics that can be found throughout nature**.



Naturally, this idea of **rigor also applies to a building**, that any good architect thinks about when working on a design – **a certain logic in the fitting together of parts**.

In this case, Beijing's new airport, **completed in 2019** by **Zaha Hadid Architects**.  
**(Beijing Daxing International Airport, PKX, 北京大兴国际机场)**



**Functional logic** can be seen in the starfish configuration of the terminal wings,



**Structure** expressed in the **symmetry** of the soaring roof,



**Layering** of the **complexity** in the curving frame supporting **geometric** skylights,



**Organization** of **systems** (structure, circulation, program, ...),



**Precision** in the execution of materials, speaking to **form / gesture of sprouting bud**,



Despite **natural feel**, rendered with synthetic materials, **scale dwarfs occupant**,

This is not to say that architecture is ending (returning to title of this course).  
I named the course with a little theatrics, to peak your curiosity.

Architecture is just transitioning, away from a Humanist centered architecture,



“No longer one way things are done.  
Liberating, because truths are no longer  
imbued in the form.” 2022.03.15 6:10pm

to an amorphous, entropic, plasticity of space, disconnected, isolated, foreign to any  
natural or meaningful experience for its human inhabitant.



Grand sweeping lines, rendering a space overwhelming in its scale,  
becoming a mirage optically, delirium, obscuring interface/reference to humans,



1:15

This gets to the heart of the matter, what Rem Koolhaas labels a ‘Bigness’  
[5 years to construct, 7.5 million sq.ft., 18 sq.miles, world’s largest airport terminal,  
world’s fastest growing aviation sector, world’s most convenient, sustainable, and  
future-proof airport.]



“Beyond a certain scale, architecture acquires the properties of Bigness. ...the  
size of a building alone embodies an ideological program, independent of the will  
of its architects. ...structures taller & deeper – Bigger - than ever before conceived,  
with a parallel potential for the reorganization of the social world.”

(Small, Medium, Large, Extra-Large, 1995) [‘Groundscraper’, 2009]

Rem is correct, architecture of the last century has been changing in size,  
responding to a change in the human population. What began as tribes of humans,  
ventured out into the world, domesticating plants and animals to our needs, thereby  
prospering into settlements of multiple families living in a community of people.  
Over time, these became more industrious, growing into city-states, eventually a  
metropolis, where humans are now the masses, needing sheltered, fed, entertained.  
There has been a shift in needs, what we architects call the program for a building.  
And, architecture is responding, morphing into a landscape to contain, no longer a  
shelter to protect and stimulate the individual human body and mind.



**Rem Koolhaas** was a mentor for Zaha Hadid, one of her teachers when she attended the **Architectural Association** in London from 1972-77 and later working in his office, where she was according to Rem, “a planet in her own orbit.”

The span of **Zaha's work** beautifully outlines this transition in architecture of our current time, beginning with her first paintings ('paper' Architecture) in 1976 to the moment Architecture ended, as defined by **Vitruvius, Brunelleschi, Gaudí, Wright, Le Corbusier**, with her death in 2016.

Beijing's new airport, first major project completed by her office after her passing, where we can only see traces of her signature, known as the **Queen of the Curve**.



1:20

Before we get into her work, venturing off to the End, if you will pardon a brief aside, to define Architecture in its earliest form, it's Origins.

**Manfred Honeck** (PSO) when describing the emotional energy of a composition to his musicians, he fondly says "every musical piece is either a polka or a waltz"

Likewise, Architecture, with its origins in primitive settlements over 12K years ago, can be divided into two defining elements, either a roof or a wall.

Walls to enclose space from the horizon, a roof to provide shelter from the sky.

2022.03.13 9:51am oo



An example right here in our region, from the earliest traces of inhabitants along the **Ohi-yo River**, the mound builders.



**Great circle mound** created 2K years ago. [fork Raccoon Creek & Licking River]





Part of a larger complex of earthworks, the **largest system of geometric earthworks in the world**, Octagon could contain 4 **Roman Coliseums**, Observatory Circle could contain the **Giza's Great Pyramid**, now overrun by the growth of **Newark, Ohio**, **1855 railroad stop btwn. Pgh. / Chicago / St. Louis**. [Moundbuilders Country Club]

The **Moundbuilders** have **remained a mystery to modern archeologists**, still debating **who built them?, how they built them?, why they built them?, ...**

One of my undergraduate professors used to say, “the **architecture that remains after a civilization is gone, can be read like a book**, the forms telling us about the culture, how spaces were used, for what purpose, revealing their daily lives, ...”.

1:25

**Architecture is a physical medium**. And, the most amazing thing about architecture is that, long after its creators are gone, we might **not know what they were thinking**, but, by **experiencing their spaces in person, we can still connect with their feelings**, **how the space felt** for them as an inhabitant.



Two weeks ago, I visited the **Great Circle mound** for the first time. I wanted to see if I could figure out the mystery, by feeling the sensations locked within the space.



**Sense of crossing a threshold**, **entering into a distinct space**, despite the lack of roof, created by the mounded perimeter wall with an articulated opening.



Once inside, **surrounded completely by earthen walls that rise above eyelevel**, there is a **palpable sensation of enclosure**, the original function of walls, when man began to modify the landscape to their needs. The **first needs emotional, to feel enclosed**, apart from the endless wilderness, now outside by **the creation of an insideness**.

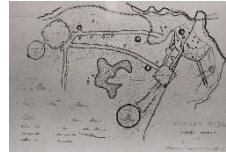
Now, to return to the premise of this course, The End of Architecture, it is this emotional sense of space, defined by individual human feelings, which is being lost by an industrialized, specialized, microscopic view of architecture as a system, mechanism, building science, an assembly of claddings and fenestrations, to moderate the passage of water vapor and conditioning of interior space for masses with the lowest carbon footprint on an environment we no longer ponder or feel.

1:30

“... more than solve problems”



To place this in context, 5K years ago near modern day London, a circular mound measuring 360 ft. dia. and 6 ft. in height was built (large entrance to northeast), that about 500 years later became Stonehenge erecting the sarsen stones (108 ft. dia.). The circle mound here enlarged up to 9 ft. in height (5ft to 14ft.) and 1,200 ft. dia.



A more recent circular structure, Apple Park (Cupertino, CA) opened in 2017, designed by London architect Norman Foster, has a 1,512 ft. dia. and 4 stories tall. Called a ‘Groundscraper’, a term coined in 2009, a play on the term ‘Skyscraper’



first used to describe the towers completed in 1876 for the Brooklyn Bridge, that reached such new heights, they appeared to scrape the sky.

And, over the long arc of history, we see the progression of Rem’s ‘Bigness’ with today’s ‘Extra-Large’ horizontal structures, that scrape the distant horizon.

**End of Architecture**, we will be examining the intersection of these two elements, the sky and horizon, the roof and wall becoming integrated into a singular element, amorphous, entropic, plasticity, as we will see in the work of Zaha Hadid, a merging that has been coming since the Enlightenment, accelerated by the Industrial Revolution and fully realized by the Computer Age shifting focus toward technology, no longer the individual human’s sensations.

[which is a return to an indigenous way of building roof and wall as one. we have come full circle, to the End of Architecture, to begin again.] 2021.12.10 7:56am oo

In that context, Zaha's work:



**Malevich's Tektonik** (London, UK, **AA Graduate Thesis**, 1976-1977) **puzzled** Fourteen-level hotel on the Hungerford Bridge across the river Thames, linking 19<sup>th</sup> century buildings on the north shore with the Brutalist South Bank Complex. Inspired by the **Russian Suprematist and Constructivist Avant Garde artists** Ilya **Chashnik**, El **Lissitzky**, Kasimir **Malevich**, Alexander Rodchenko, Nikolai Suetin. Exploring ideas of **abstraction, distortion, fragmentation and flotation**, utilizing the **tecktonik** to create new possibilities for interior space.

“**Painting** formed a critical part of my early career as the design tool that allowed us the intense **experimentation in both form and movement** leading to our radical approach to **developing a new language for architecture**. I felt limited by the poverty of the traditional system of drawing in architecture and was searching for **new means of representation**. I mean everything was done through plan and section. So the paintings really began because I thought the projections required a **degree of distortion** at the time, but eventually it affected the work of course. The work became much **more malleable** because the origin of the work was also about layering – like an **historical layering or archeology**.”



**The Peak Leisure Club** (Hong Kong, China, 1982-1983) **shards**

Landmark to stand apart above the congestion and intensity of Hong Kong, centered on the creation of a ‘**man made polished granite mountain**’. Excavated subterranean spaces, distinctive horizontal layers and floating voids house the club's various activities within a unique ‘geology’.



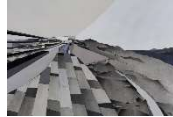
The club itself is a **void** thirteen meters high **suspended between the roof of the second layer and the underside of the penthouse**. Seen from Hong Kong, the **mountain cliffs forms a backdrop to both leisure and intellectual activities**, which are **suspended in the air**. These suspended satellites constitute a modern geology. Offering and symbolizing the pinnacle of the high life. A gentle seismic shift on an immovable mass.



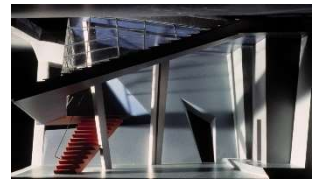
“These **drawings** allowed us to see a project from every possible and impossible perspective. The nice thing about the elaborate drawing is that, because they take such a long time to construct, they **give you the time to develop** and experiment on so many layers.”



“A lot of people didn’t know where it was coming from – those many very abstract layers. I think part of it was **calligraphy**, I mean **fluid** calligraphy like in **Turkish** is very different from **Kufi**, which is very **geometric** and some of the calligraphy is based on certain **mathematical** roots.”



“For me, **fragmentation** came from suprematism. And in the seventies, there was another preoccupation – with breaking things, with putting things in a modern context of shattering. But that all seemed quite disorganized, so I’ve begun looking at things in terms of **fragmentary organization** – as a composition like one of **Kandinsky’s** paintings, with a certain interesting **equilibrium**.”

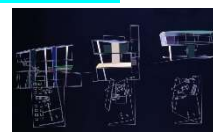


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### **Tomigaya Building** (Tokyo, Japan, 1986) **geometries**

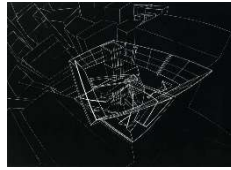
Glass pavilion set above a void or courtyard, curved upwards to provide access to a series of submerged spaces – **continuous floor** or **sequenced platforms** – for use as office, retail space or residence.

This project single-handedly set the **standard for drawings and models** during my years as an undergraduate student.



“There is an issue we suffer from as architects: during the period when we all had no work in the 1970s, we were very productive with drawings. It was always criticized as ‘**paper architecture**’ – as if we were trying to avoid engaging with the real world or didn’t understand how to make a building. But I’m convinced it was a very important period, a very **critical time of investigation**, and they helped the development of all the work that followed over the next thirty years.”



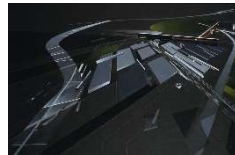


“The presentation began to inform the work and gives you ideas. These very difficult drawings where we saw everything simultaneously in 3D, at the same time contouring the site in (clear) plexi we began to see a similarity between liquid space and rock. What does it mean to see in a transparent way through building? One of the realizations for us was that we do not have to have the vertical circulation operate like an extrusion or vertical core, but rather allow the vertical path to shift from one level to the next. This was discovered because we had the different plans overlaid with each other, to construct a way to connect the levels in a new way.”

1:45

[ 10 MINUTE BREAK ]

1:55



**Vitra Fire Station** (Weil am Rhein, Germany, 1990-1993) splinters

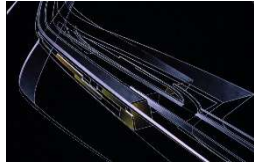
An end note to existing factory buildings. Representation of ‘movement frozen’, an ‘alert’ structure, ready to explode into action at any moment. Linear landscaped zone, artificial extension of the linear patterns of the adjacent agricultural fields and vineyards, developed as the outer edge, defining space rather than occupying space, stretching the program into a long, narrow building.



Surrealist. Superimposition of fisheye perspectives to the literal bending and melt down of space (and form).



Space-defining and screening functions, a linear layered series of walls, which puncture, tilt, break according to functional requirements, revealing the interiors only from a perpendicular viewpoint.

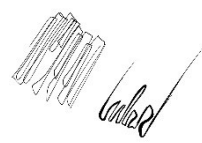


**Landesgartenschau** (Weil am Rhein, Germany, 1996-1999) **ribbons**

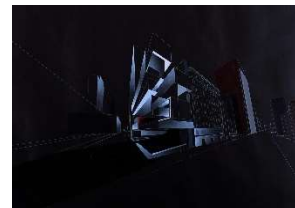
Rejects the concept of building as ‘isolated object’ – bleeding out of and **dissolving back into the surrounding landscape** – a network of **entangled paths and interwoven** spaces to create a structure that contain exhibition hall, café, environmental center.

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2pm



“**Sketching** is absolutely critical. I privilege the motion of the sketching hand as a **literal option in my architecture**. The **dynamic fluidity** of the sketches has become increasingly possible to manifest due to the advances in digital imaging software and construction techniques.”



Late 1990s, the **computer-aided software** (**parametric splines**, smoothly deformable **meshes**, Blobs, **NURBS** and **Booleans**) was still not convincing, Zaha continuing to use paintings. It wasn’t until the completion of **Frank Gehry’s Bilbao Guggenheim** in **1997**, that the mood shifted, opening opportunity for more complex built forms.



**Lois & Richard Rosenthal Center for Contemporary Art** (Cincinnati, USA, 1997-2003) **continuous**

Dynamic public space, an ‘**urban carpet**’ leads pedestrians into and through the interior space via a **gentle slope, which becomes, in turn, wall, ramp**, walkway and even a ‘**landscaped**’ expanse that reads as an artificial park space.

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An ‘urban graft,’ streams of parallel walls, variously converge and dissect, generating patterns of interior and exterior spaces. Circulation follows the overall drift of the geometry, vertical and oblique circulation elements are located at areas of confluence, interference and turbulence. Promoting a disinheriting of the ‘object’ oriented gallery space, instead ‘drift’ takes on an embodied form, a way to navigate experientially through the museum, a more pliable and porous organism.

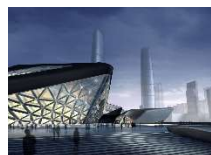
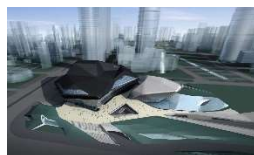


Wall is the primary space making device, across the site, cursively and gesturally, incidents where walls become floor or twist to become ceiling or are voided to become large window. 2D splines crucially lifted into 3D (3d Max), integration between the primary levels was elaborated by means of voids, terracing galleries and ramps.



### **MAXXI: Museum of XXI Century Arts** (Rome, Italy, 1998-2009) layers

With no firm boundary between what is ‘within’ and what is ‘without’, confluent lines – walls intersecting and separating to create interior and exterior spaces.



### **Guangzhou Opera House** (Guangzhou, China, 2003-2010) cubes

Monument to the new millennium overlooking the Pearl River. Contoured profile, twin boulder design and approach promenade enhances urban relationships, creating a new dialogue between cultural traditions and the emerging town.



Pebbles in a stream smoothed by erosion, in perfect harmony with its riverside location. Twin boulder. River valley, and the way in which they are transformed by erosion.



Bldgs. not  
replicate  
renders

**Fold lines** in this landscape, cutting dramatic interior and exterior canyons for circulation. **Custom molded glass-fibre reinforced gypsum (GFRC)**. Fluidity and seamlessness.



**Changes in surface material do not coincide (reinforce) changes in geometry.**



2:10

**Ice Storm** (Vienna, Austria, Museum für Angewandte Kunst retrospective, 2003)

Built **manifesto** exploring the potential for a **new domestic language** of architecture driven by the **new digital design and manufacturing capabilities**.

“The new **digital design tools** allow us to integrate highly complex forms into a fluid and **seamless whole**. We like to work a lot with **curvilinearity** because we believe it **visually simplifies the configuration**, and you can then cope with more **complexity without crowding or cluttering** the visual scene.”



Dramatically lit pockets, passageways, niches and projections, appeared **carved or eroded** from a singular mass – an architecture achieved not by construction, but **by reduction**. Fluid form and **smooth surfaces rendered the boundaries** between the pieces of furniture and the structure containing them **ambiguous**.



**Carved from a single continuous mass, semi-functional insertions which hint** towards the potential for (hard) sofas, day-bed, desk, tables, etc. Complex curve-linearity, **seamlessness** and the smooth transition, technique of **‘morphing’**, **preexisting furniture pieces are embedded** within the overall fluid mass, integrated organs of the overall organism. Loose **fragments that drift**.





New types of living / lounging environments, **latent** rather than manifest. **Neither familiar typologies nor any codes of conduct are yet associated with its morphology.** **Reinvent ourselves** in terms of **posture**, **demeanor**, and **life-style**. We do not want to offer optimized and thus predetermined use-patterns, a margin of strangeness and **indeterminacy** is desired, stimulation emerges **between abstraction and metaphor**.

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2004 awarded **Pritzker Prize** (despite only four built projects to date).

Mid 2000s, **Building Information Modeling (BIM)** was introduced, bringing structural and mechanical analysis to architectural design (Revit in 2013).

In 2005, **Gehry Technologies** created **Digital Project**, bringing an architectural visual interface to CATIA (V.5, digital information sent directly to manufacture).



+6



**Silken (Hotel) Puerta America** (Madrid, Spain, 2005) **mirage**

Thirty guest rooms and common areas, enveloped within **contiguous acrylic surface** in a **monochromatic scheme** of white, black or orange. Interiors flow seamlessly, walls, bed, desk, bath fixtures emerging organically from the continuous curve. Digital designs used by **computerized milling machine (CNC)** that cut the molds used to **thermoform the plastic surface elements**.

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2:15

**ThyssenKrupp Headquarters** (Essen, Germany, 2006) **modulation**

“Using **3D visualization software** to define building **forms by logic or algebraic formulas** enables all elements of architecture to be **parametrically malleable** and thus able to adapt to each other and to the environment via **scripted correlations**. This implies an overall intensification of relations both internally within the building, as well as externally with the context.”

**As buildings respond more to code, than to humans – resonate? meaningful?**

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**Heydar Aliyev Centre** (Baku, Azerbaijan, 2007-2012) **flow**

**Independence** in 1991, departing from its legacy of normative Soviet Modernism, breaks from rigid and often monumental, to express **sensibilities of Azeri culture**. Continuous fluid relationship between surrounding plaza and the building's interior. **Plaza as the ground surface, accessible to all, rises to envelope a public interior**. Undulations, bifurcations, folds, and inflections modify this plaza surface, welcoming, embracing, and directing visitors, **blurs the conventional differentiation between architectural object and urban landscape**.



+5



**Non-hierarchical space**, calligraphic and ornamental patterns flow from carpets to walls, walls to ceilings. **Blurring distinctions between architectural elements**.

**Contemporary interpretation**, reflecting a more nuanced understanding. Surface so continuous that it appears homogeneous.



+7



Advanced computing. Concrete structure combined with a space frame system, **large-scale column-free spaces, fluidity of the interior**. **Curved 'boot columns'** for inverse peel of surface from the ground. **'Dovetail' tapering of the cantilever beams** that support the building envelope. **Substructure was developed to incorporate a flexible relationship between the rigid grid of the space frame and the free-formed exterior cladding system**. **Glass Fibre Reinforced Concrete (GFRC) > Glass Fibre Reinforced Polyester (GFRP)**. (Disneyland's "House of the Future", 1956-7) **Plasticity**. **Seams emphasize implied motion** of its fluid geometry, while solutions to manufacturing, transportation, assembly, deflection, loads, temperatures.



+5



**Day**, building's volume reflects light, **constantly altering** by time of day, semi-reflective glass arousing curiosity without revealing the fluid trajectory inside.

**Night**, this character is **gradually transformed**, washes from the interior onto the exterior surfaces, unfolding the formal composition, maintaining the fluidity between interior and exterior.



### **Sunrise Tower** (Kuala Lumpur, Malaysia, 2009-TBC) **cctv concept**

Flexible volume employing **parametric grid principles**, 66 floor ‘**vertical landscape**’ is inherently fluid, change in response to changing demands.



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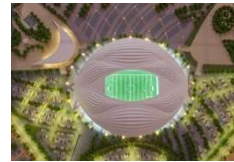


### **Morpheus Hotel at City of Dreams** (Macau, China, 2013-2018) **cctv built**

Informed by the fluid forms within China’s rich tradition of **jade carving**, with innovative engineering and formal cohesion.

### **Zaha’s Circular Mound:**

### **Al Janoub Stadium** (Qatar, UAE, 2014-2019)



+5



Commissioned for 2022 World Cup. Conceptual Animation, Nov.18, 2013. “...the stadium's lead architect Zaha Hadid seems to be striving to make **equality** for our **planet's architectural genitalia** by continuously designing some of the world's most **vulvic buildings**. She's like the **Georgia O'Keeffe** of things you can walk inside!" (Jon Stewart, The Daily Show, Nov.19, 2013) “What are they saying? **Everything with a hole in it is a vagina?** That’s ridiculous.” – Zaha Hadid Inspired by dhow boat that carried generations of local fishermen and pearl divers.

### **Leeza SOHO** (Beijing, China, 2015-2019) **transparent**

Last building designed by **Zaha Hadid**, before passing in **March 2016**.

45 story sm.business tower between city center and new Beijing Daxing Airport, **multi-modal urban plan to accommodate growth**.

**Straddles a sub-surface tunnel** that diagonally bisects the site creating a tower of **two halves with the vertical atrium**, rise, they **gently twist** to face Beijing’s primary east-west transport artery, extends the full height through all the office floors offering natural daylight, ventilation and views. Stepped windows allow for natural ventilation. Self-shading for atrium lobby. **3D BIM energy management system** will monitor in real-time environmental control and energy efficiency. Grey water will be recycled for toilet flushing and irrigation.



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