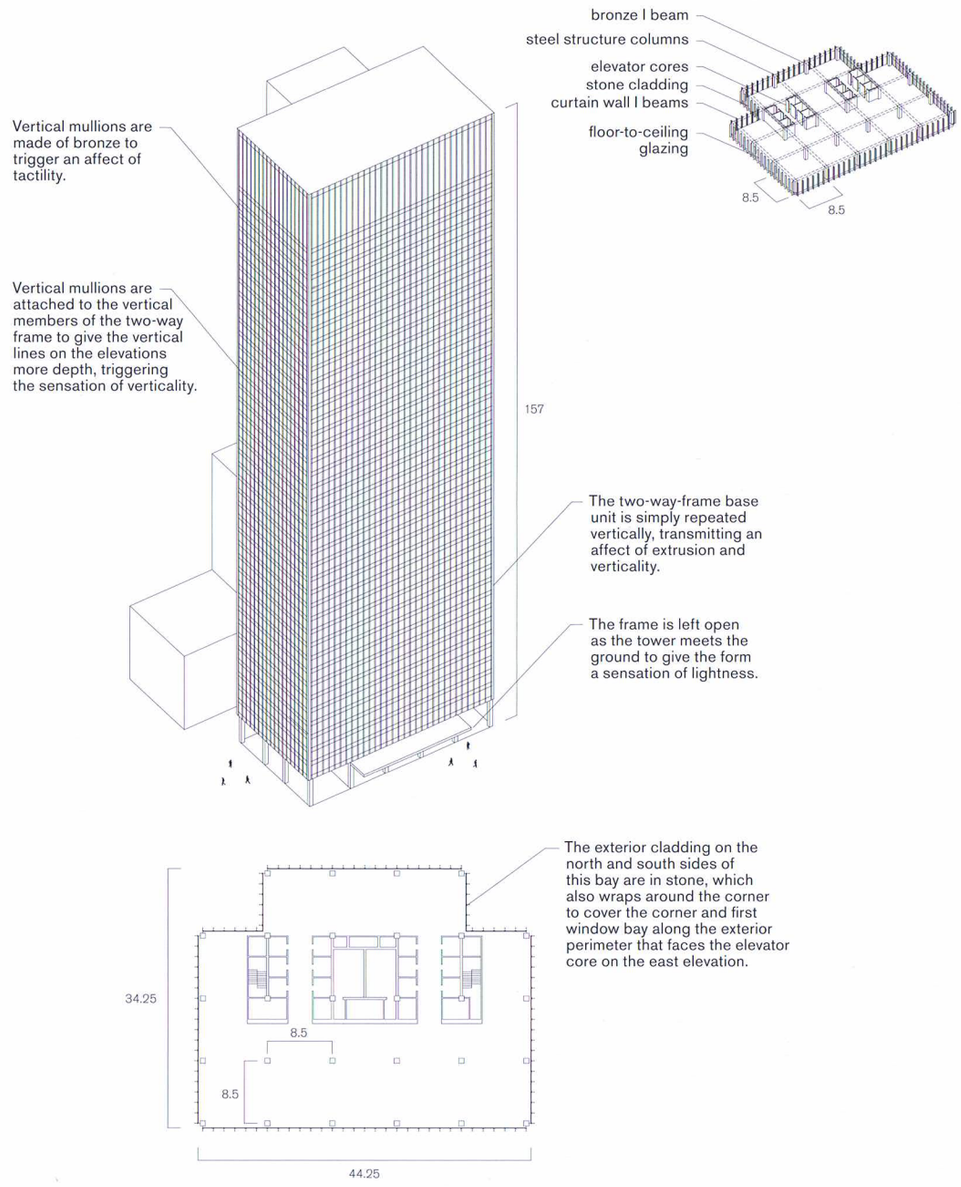
Extrusion, Verticality, Lightness, Tactility

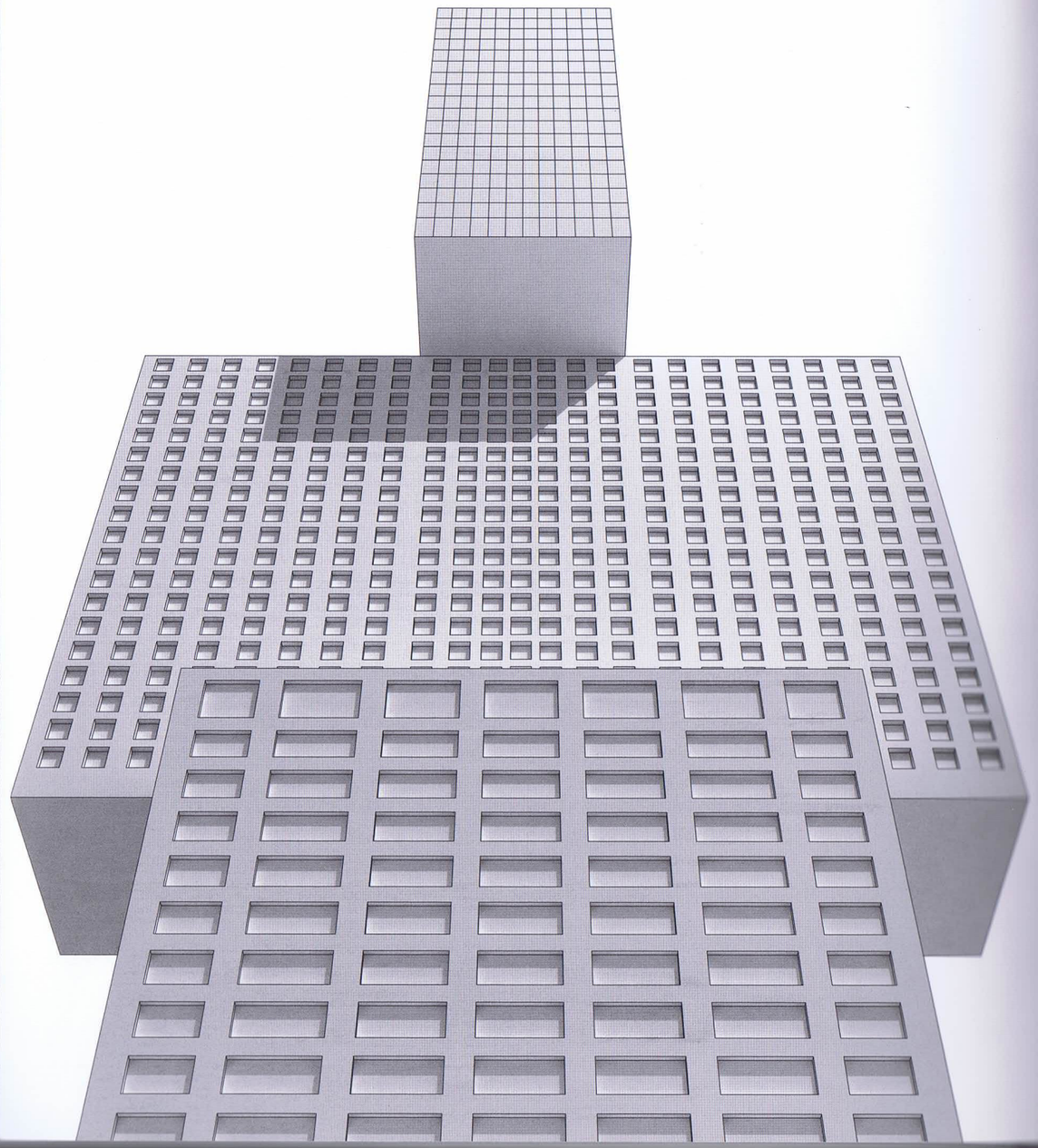
Vertical / Two-Way Frame

SEAGRAM BUILDING | L. MIES VAN DER ROHE AND P. JOHNSON; KAHN AND JACOBS | NEW YORK CITY, USA | 1954–58



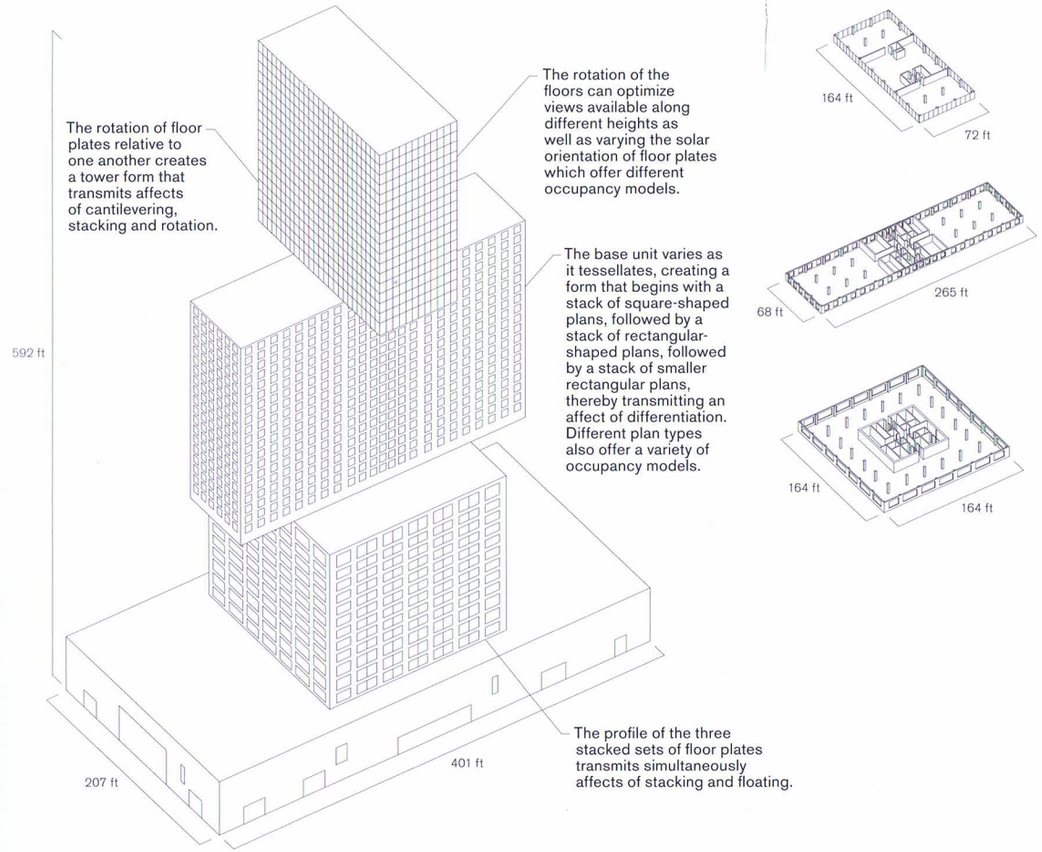
The Seagram Headquarters building is formed by the vertical tessellation of a base unit composed of a single floor made of steel columns and beams that behave like a two-way frame, working in conjunction with the elevator core. The base unit of the Seagram tower simply repeats vertically, but is also capable of being staggered or internally differentiated by the unequal distribution of the columns, which in turn varies the degree of transparency of the resulting vertical tube. The Seagram Headquarters building transmits an optical affect of extrusion, lightness, tactility and verticality.

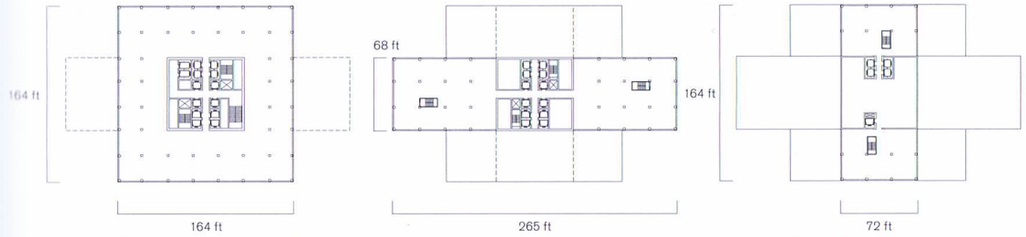
Cantilevering, Verticality, Stacking, Floating, Rotation, Differentiation



Vertical / Two-Way Frame

111 FIRST STREET | OFFICE FOR METROPOLITAN ARCHITECTURE; WSP CANTOR SEINUK | JERSEY CITY, USA | 2006

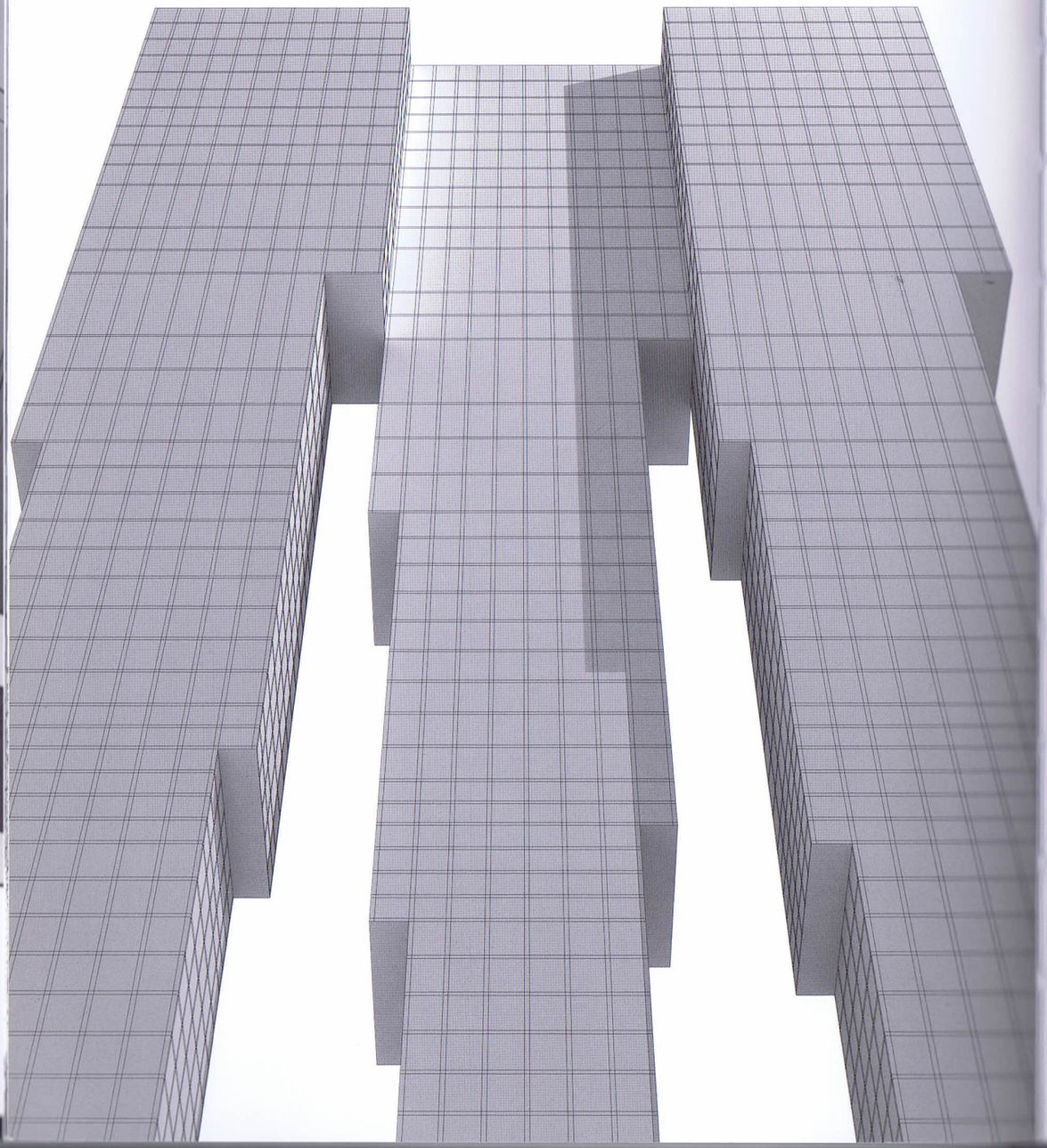




Typical plan: Lower stack | Typical plan: Middle stack | Typical plan: Upper stack

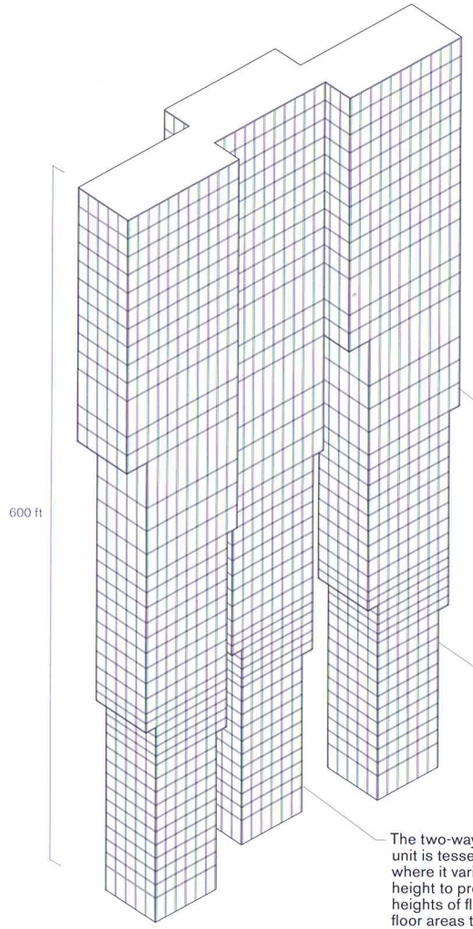
The proposal for 111 First Street in New York is formed by the vertical tessellation of a base unit composed of a single floor made up of steel columns and beams that behave like a two-way frame, working in conjunction with the elevator core. The base unit varies in scale and changes orientation as it tessellates, creating a vertical form that shifts orientation three times, transmitting affects of cantilevering, verticality, stacking, floating, rotation and differentiation.

Cantilevering, Verticality, Unity, Stepping, Inversion



Vertical / Two-Way Frame

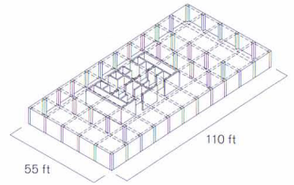
WORLD TRADE CENTER PROPOSAL | OFFICE FOR METROPOLITAN ARCHITECTURE | NEW YORK CITY, USA | 2001

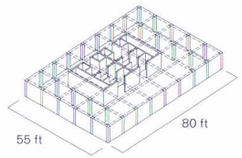


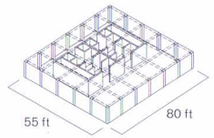
The base unit varies as it tessellates, creating a form that begins as three separate towers on the ground and joins into a single form at the top, transmitting affects of verticality and unity. Different plan types can also offer a variety of occupancy models.

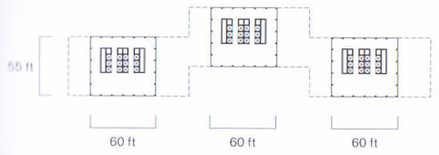
The profile of the three uniting towers transmits simultaneously affects of stepping and inversion.

The two-way-frame base unit is tessellated vertically, where it varies in width or height to produce different heights of floor and different floor areas that create cantilevered areas along the height of the towers.

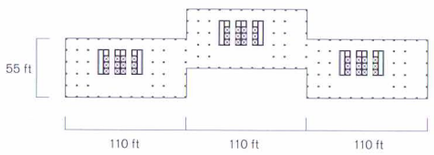








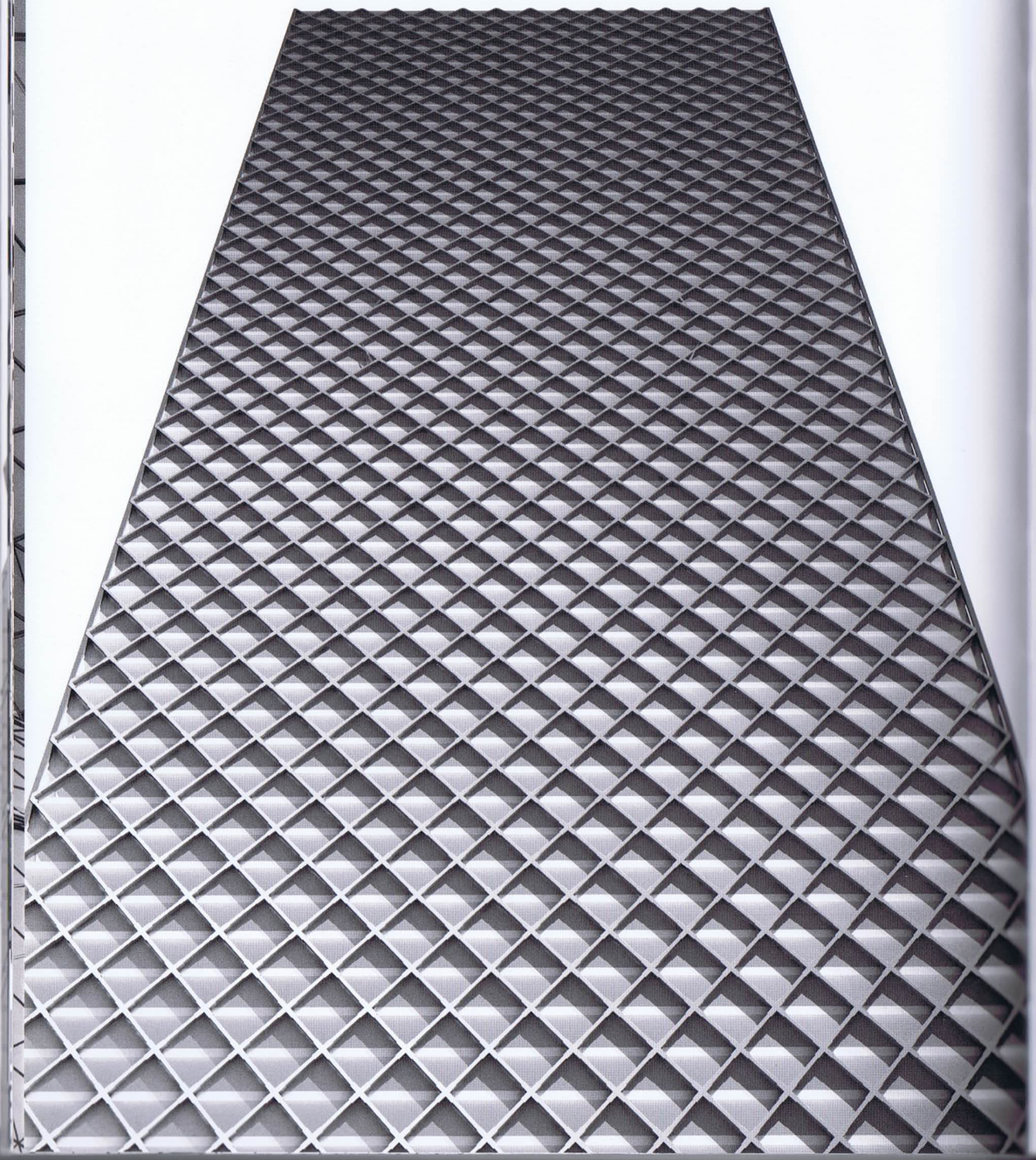
Typical plan: Lowest third section



Typical plan: Upper third section

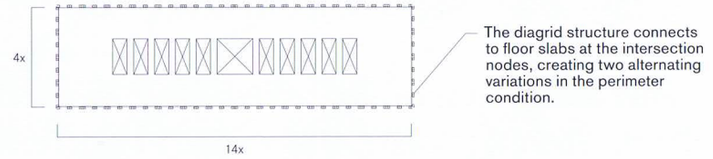
The WTC headquarters proposal is formed by the vertical tessellation of a base unit composed of a single floor made of steel columns and beams that behave like a two-way frame working in conjunction with the elevator core. The base unit varies as it tessellates, creating a form that begins with three separate towers on the ground and joins into a single form at the top, transmitting affects of cantilevering, verticality, unity, stepping and inversion.

Repetition, Latticing, Verticality



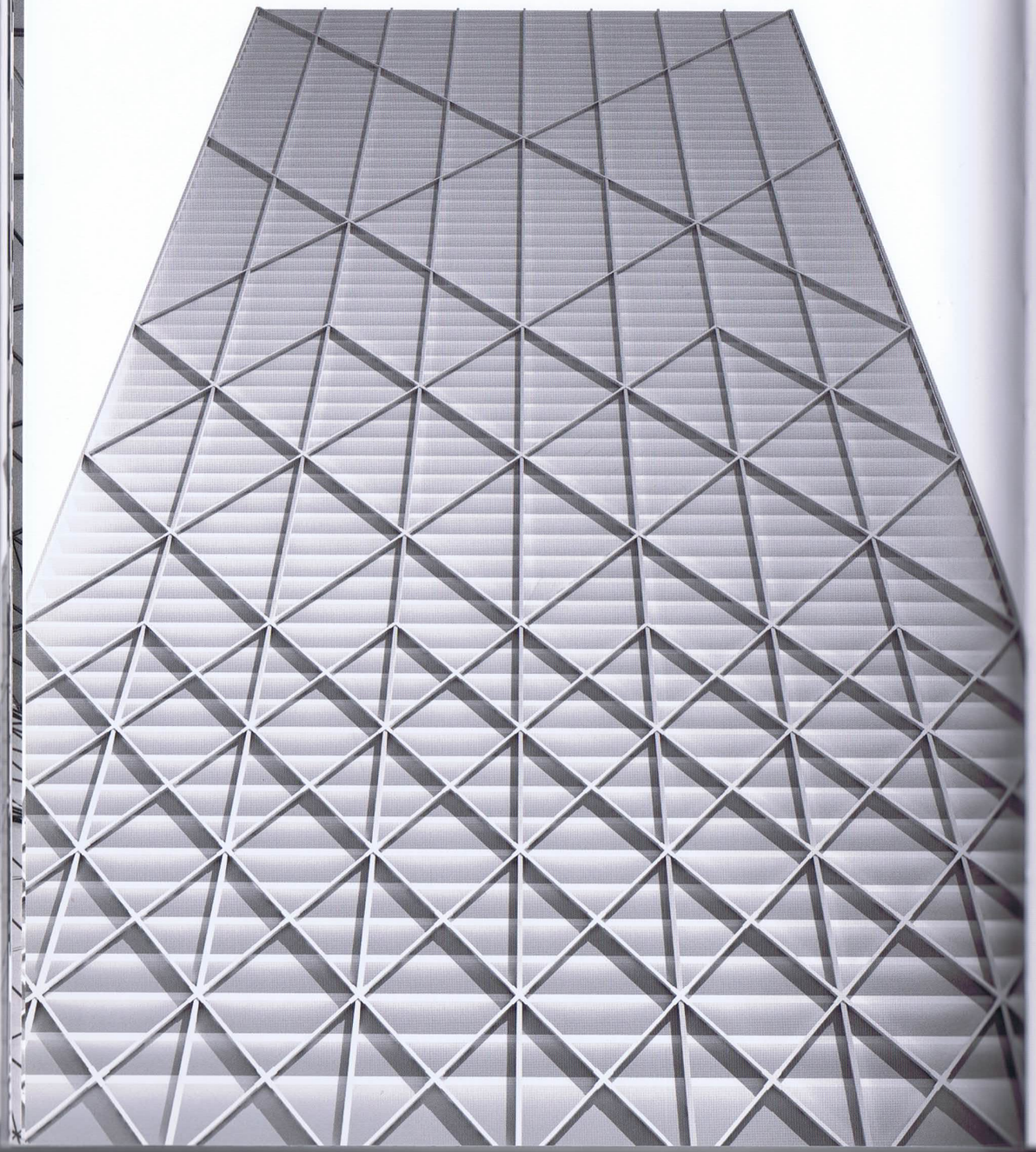
Vertical / Diagrid

MASTER THESIS, TALL BUILDING STRUCTURAL TYPE | M. GOLDSMITH, ADVISOR: L. MIES VAN DER ROHE | 1953



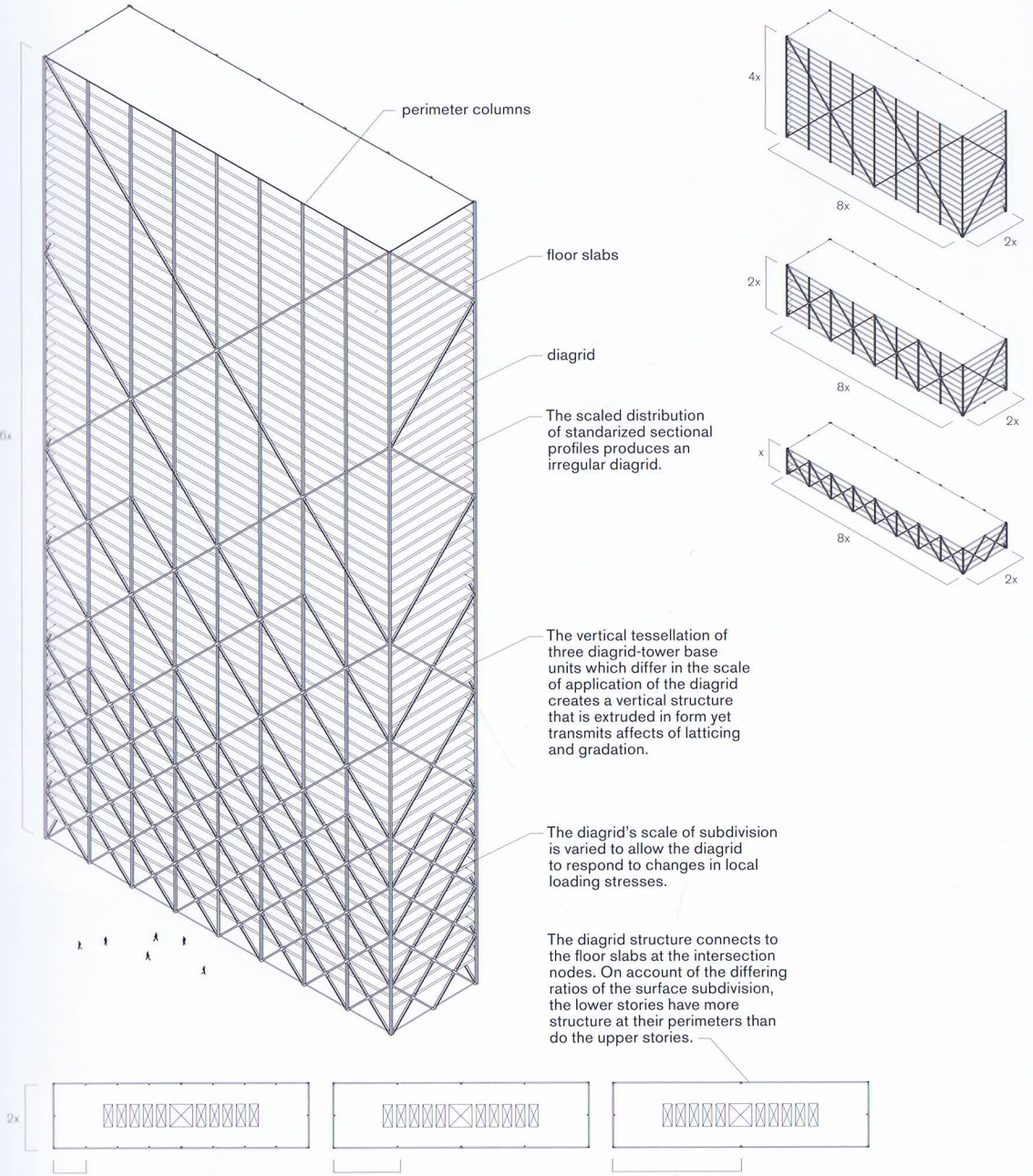
This first Tall Building Thesis is formed by the vertical tessellation of a diagrid base unit to create a regular latticed tower. The base unit is a section that includes the floor slabs, the elevator cores, and the building envelope, which in this case is a diamond grid, the height of two stories. When tessellated vertically it encloses a 32-story tower. This Tall Building Thesis project transmits an optical affect of repetition, latticing and verticality.

Gradation, Latticing



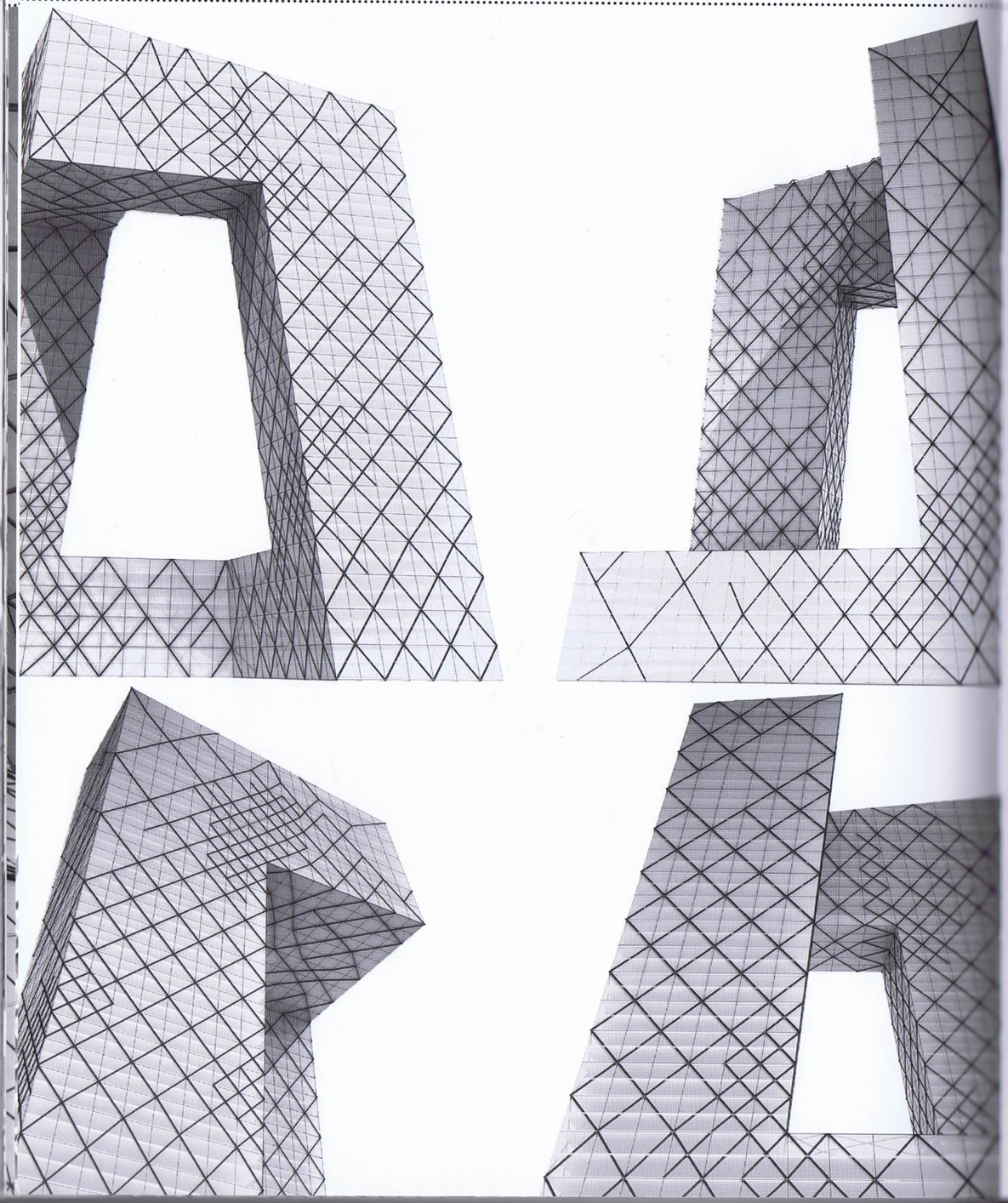
Vertical / Diagrid

MASTER THESIS, TALL BUILDING STRUCTURAL TYPE | M. GOLDSMITH, ADVISOR: L. MIES VAN DER ROHE | 1953



This second Tall Building Thesis is formed by the vertical tessellation of a diagrid base unit to create a latticed tower which is irregularly subdivided. The base unit is a section that includes the floor slabs, the elevator cores, and the exterior envelope in the form of a diamond grid, the scale of which increases gradually as it ascends. The scale of the diamonds ranges from four stories in the lower section, at their smallest scale, all the way to between sixteen and twenty stories in the upper section. This Tall Building Thesis project transmits an optical affect of gradation and latticing.

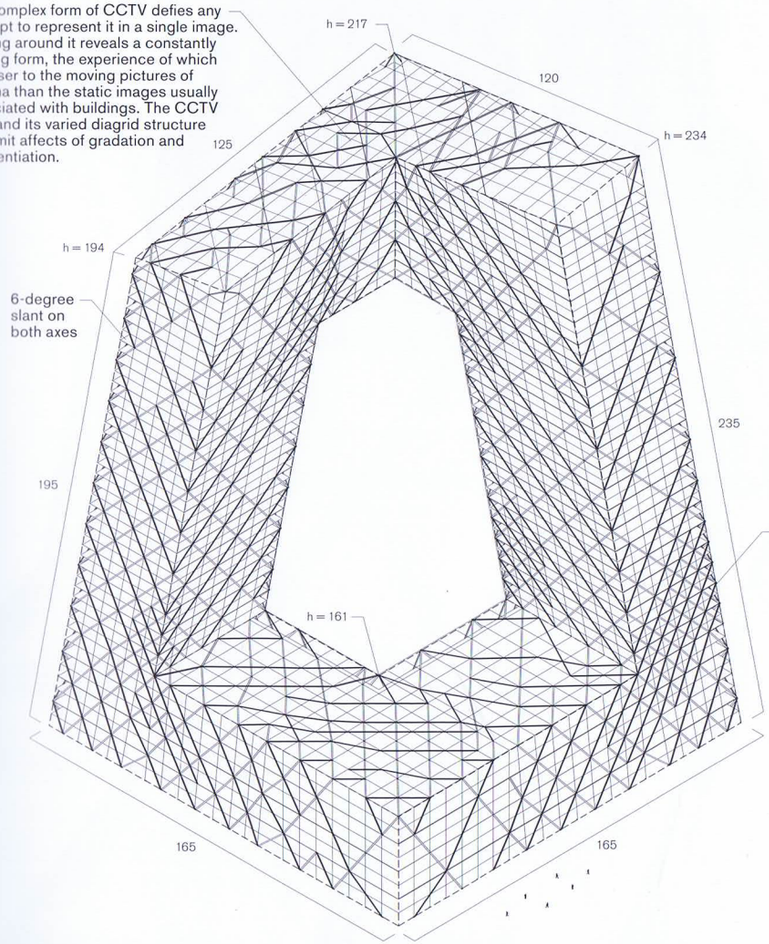
Gradation, Differentiation, Latticing

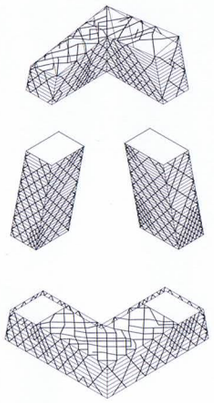


Vertical / Diagrid and Frame

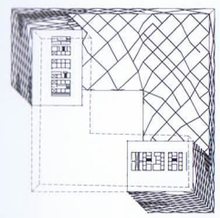
CCTV - TV STATION AND HEADQUARTERS | OFFICE FOR METROPOLITAN ARCHITECTURE, ARUP, SANDY BROWN ASSOCIATES (BROADCAST), DHV BUILDING AND INDUSTRY (ACOUSTIC) | BEIJING, CHINA | 2002–09

The complex form of CCTV defies any attempt to represent it in a single image. Moving around it reveals a constantly varying form, the experience of which is closer to the moving pictures of cinema than the static images usually associated with buildings. The CCTV form and its varied diagrid structure transmit affects of gradation and differentiation.

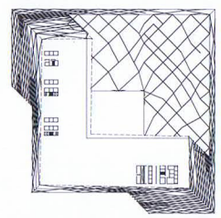




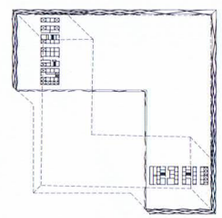
The CCTV form exploits the redundancies of the diagrid structure relative to a non-extruded form to introduce differentiation within the enclosing envelope while exploiting also its capacity as a surface structure to wrap around almost any shape.



Typical plan: lower section of tower



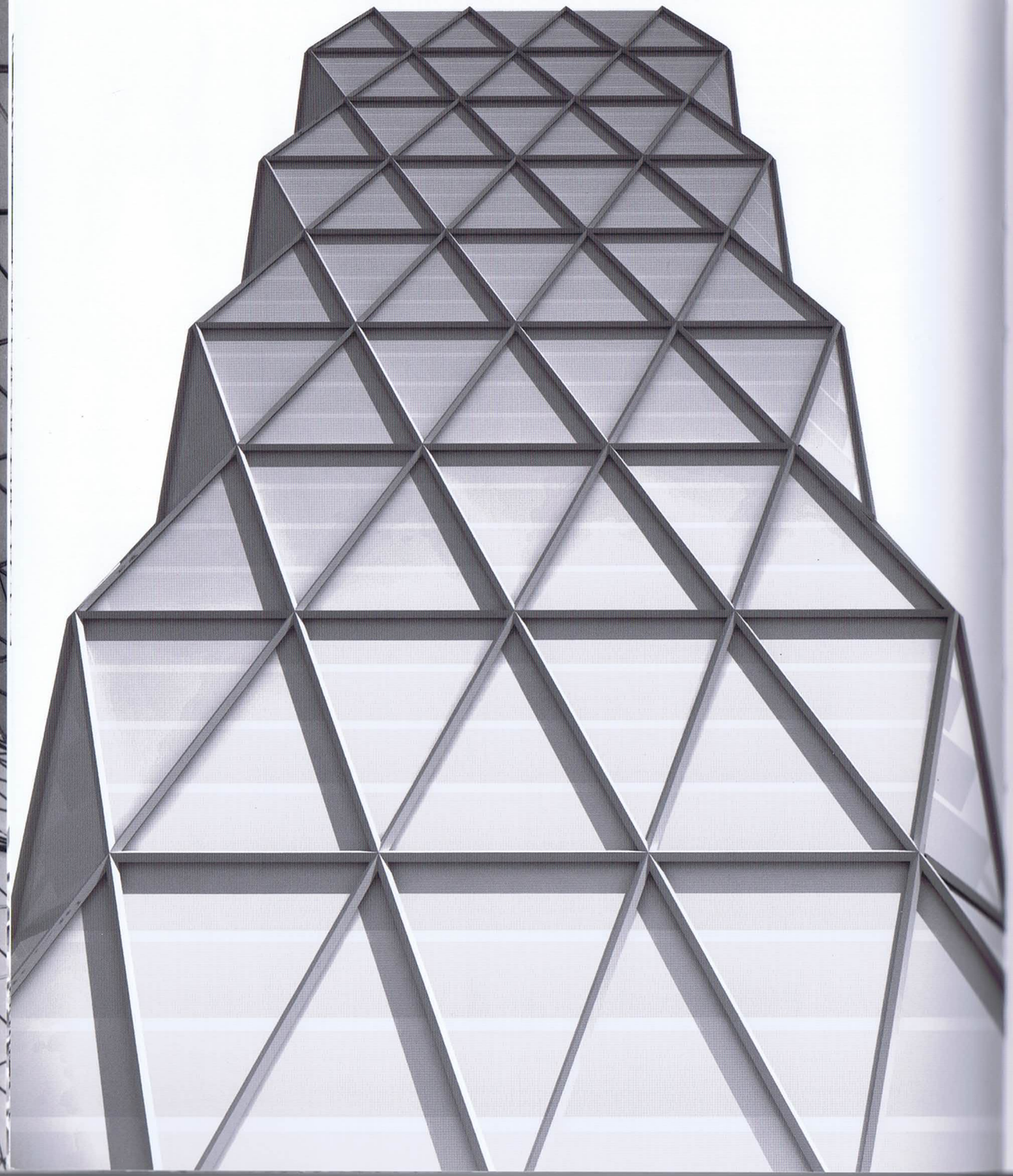
Typical plan: middle section of tower



Typical plan: upper section of tower

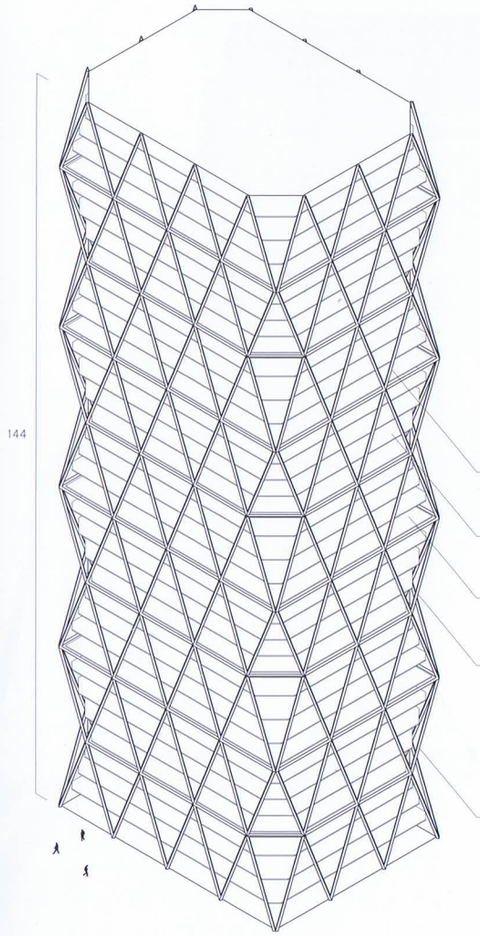
The CCTV headquarters building is formed by the vertical tessellation of a base unit including a diagrid and a frame system to create a hybrid form. The base unit is composed of a number of sections that include the floor slabs, the elevator cores, the interior structure of reinforced concrete, and the exterior envelope in the form of an irregular recessed diagrid. The scale of the diagrid ranges from diamonds which are two stories tall, to diamonds that span fourteen to sixteen stories. The CCTV headquarters building transmits an optical affect of gradation, differentiation and latticing.

Crystallinity, Latticing, Extrusion, Infinity



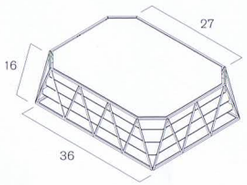
Vertical / Diagrid

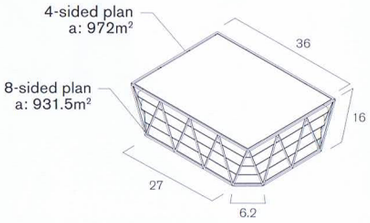
HEARST HEADQUARTERS | FOSTER + PARTNERS, ADAMSON ASSOCIATES; CANTOR SEINUK GROUP; SANDY BROWN ASSOCIATES | NEW YORK CITY, USA | 2000–06



The diagrid is scaled so that each triangle fits to the height of each floor, thereby enabling it to tilt inwards or outwards on alternate floors, creating a vertical form with chiseled corners which transmits affects of crystallinity, latticing and extrusion.

The regular diagrid surface retains the same surface subdivision and width-to-height ratio throughout.



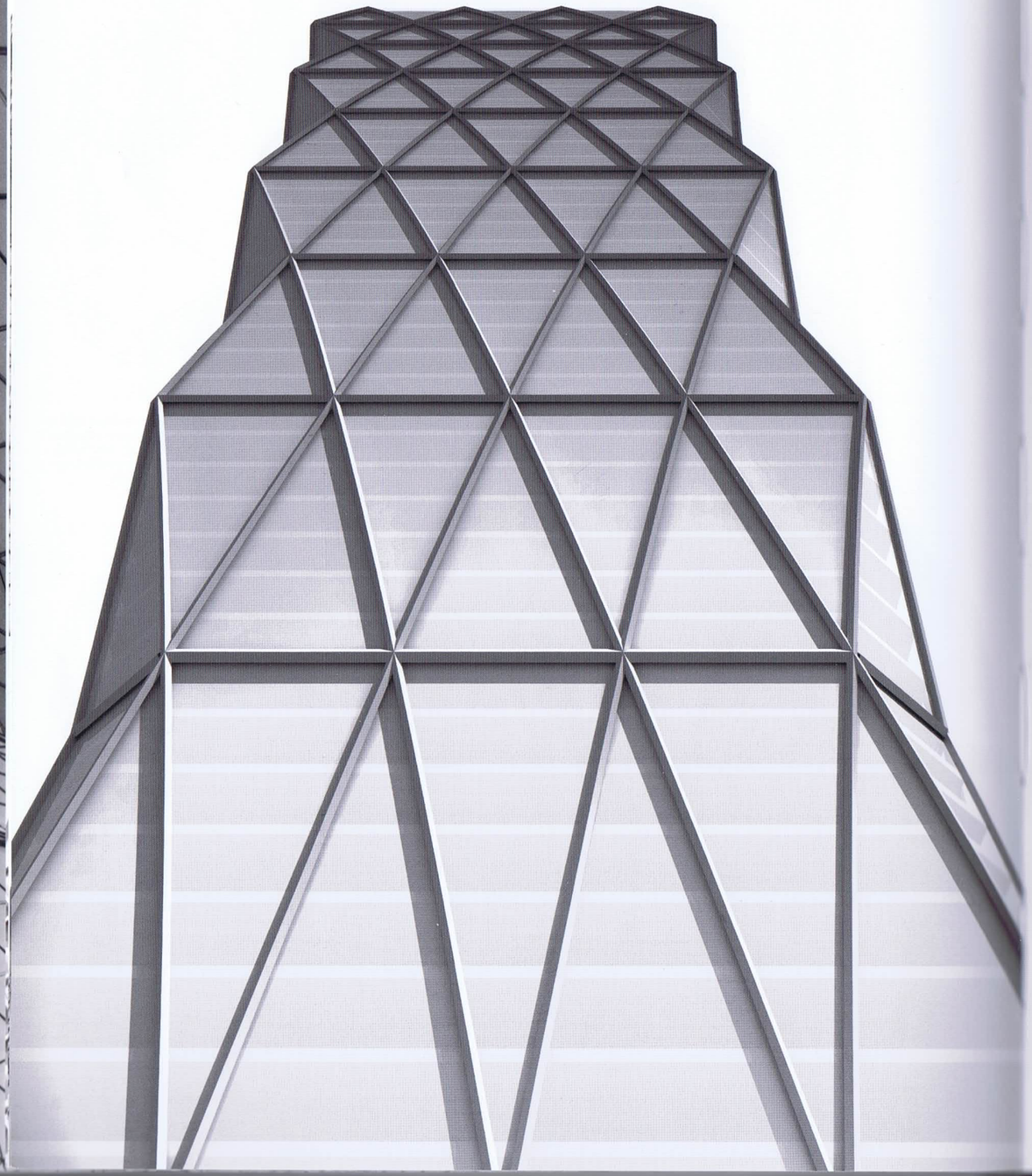


The diagrid is terminated at different edge points, allowing the perimeter to accommodate the change in plan profile from octagon to rectangle.

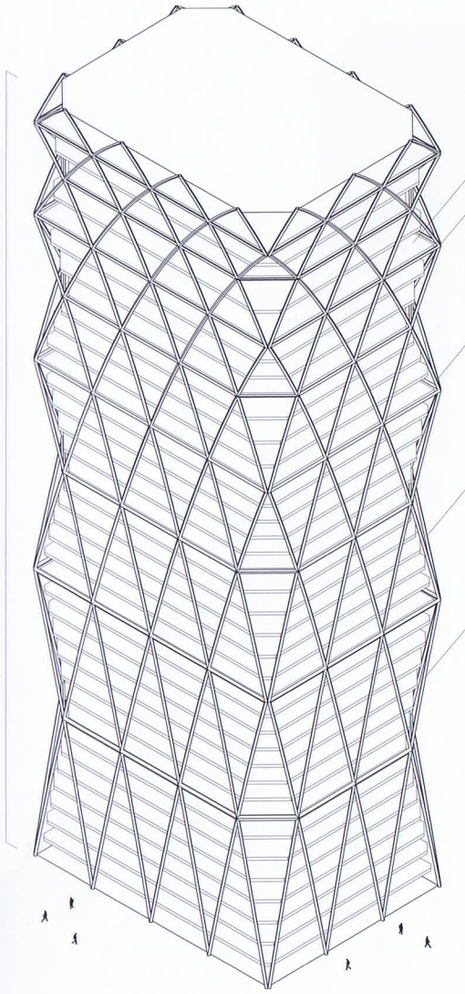
Each base unit spans across four floors which vary between a rectangular plan and an octagonal plan with chiseled corners. This set of five plans is mirrored along the vertical axis and simply repeated to create a tower that transmits an affect of infinity.

The Hearst Tower is produced by the vertical tessellation of a diagrid base unit to create a regular vertical form. The base unit is a four-story section including the floor slabs, the central elevator core, and the exterior envelope. Each diamond in the diagrid is made up of two triangles, each representing two base units and totalling eight stories in height. The scale of the diagrid remains regular throughout, providing two plan types and giving shape to the tower's profiles as the diamond grid meets the edges of the building. The use of a diagonal structural grid in the building envelope yields a thirty percent reduction in the overall structure, compared with the conventional use of corner columns. Hearst Tower transmits an optical affect of crystallinity, latticing and extrusion.

Gradation, Latticing, Crystallinity, Finiteness



Vertical / Diagrid



floor slabs

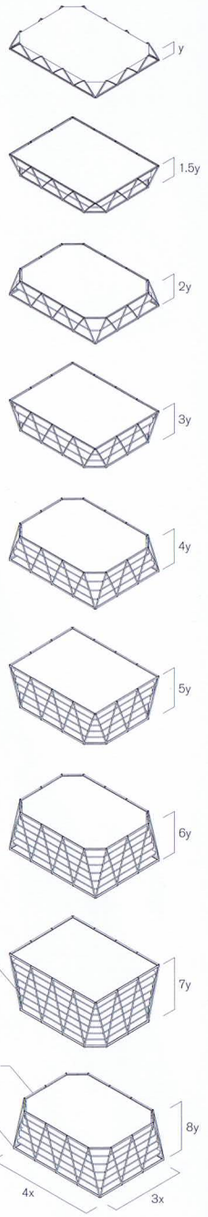
diagrid

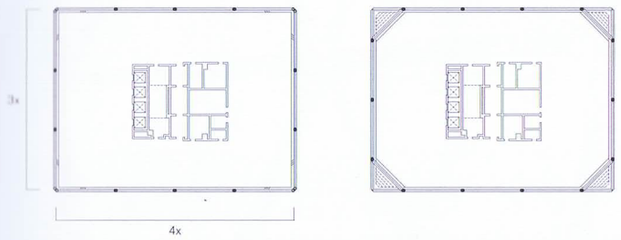
The diagrid's height-to-width ratio is gradually varied in the elevation, allowing the diagrid structure to counter vertical loading more efficiently at the bottom and lateral loading at the top.

The change in scale of the diagrid along the height of the tower creates a form that transmits affects of gradation as well as crystallinity and latticing.

This diagrid tower is formed by the vertical tessellation of nine varying base units which progressively contain fewer stories as they repeat vertically, thereby transmitting an affect of finiteness.

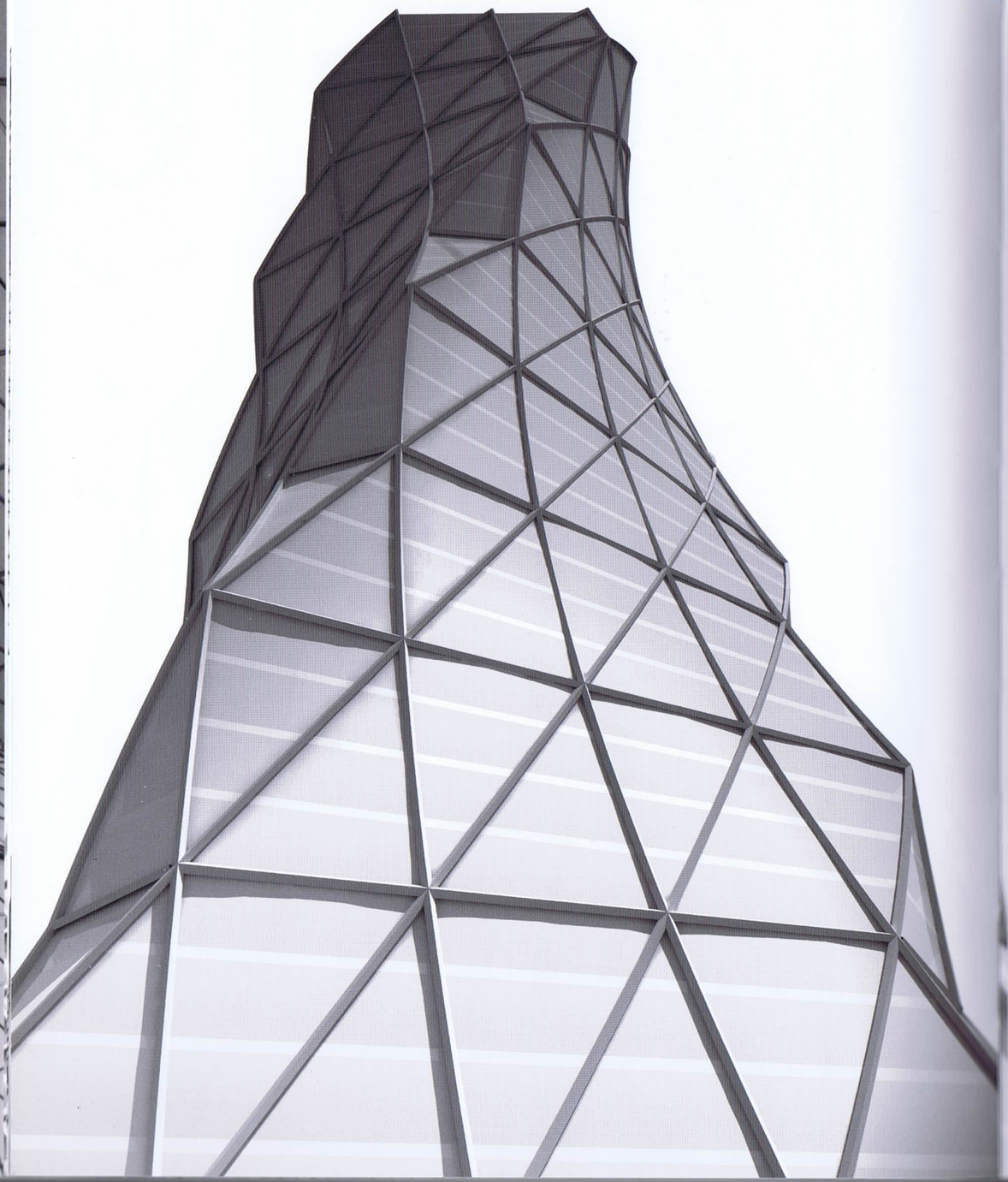
Each base unit spans across a set of floors that vary in shape. The extreme floors, in each case a rectangle and an octagon, converge with the diagrid structure, which transmits an affect of crystallinity.



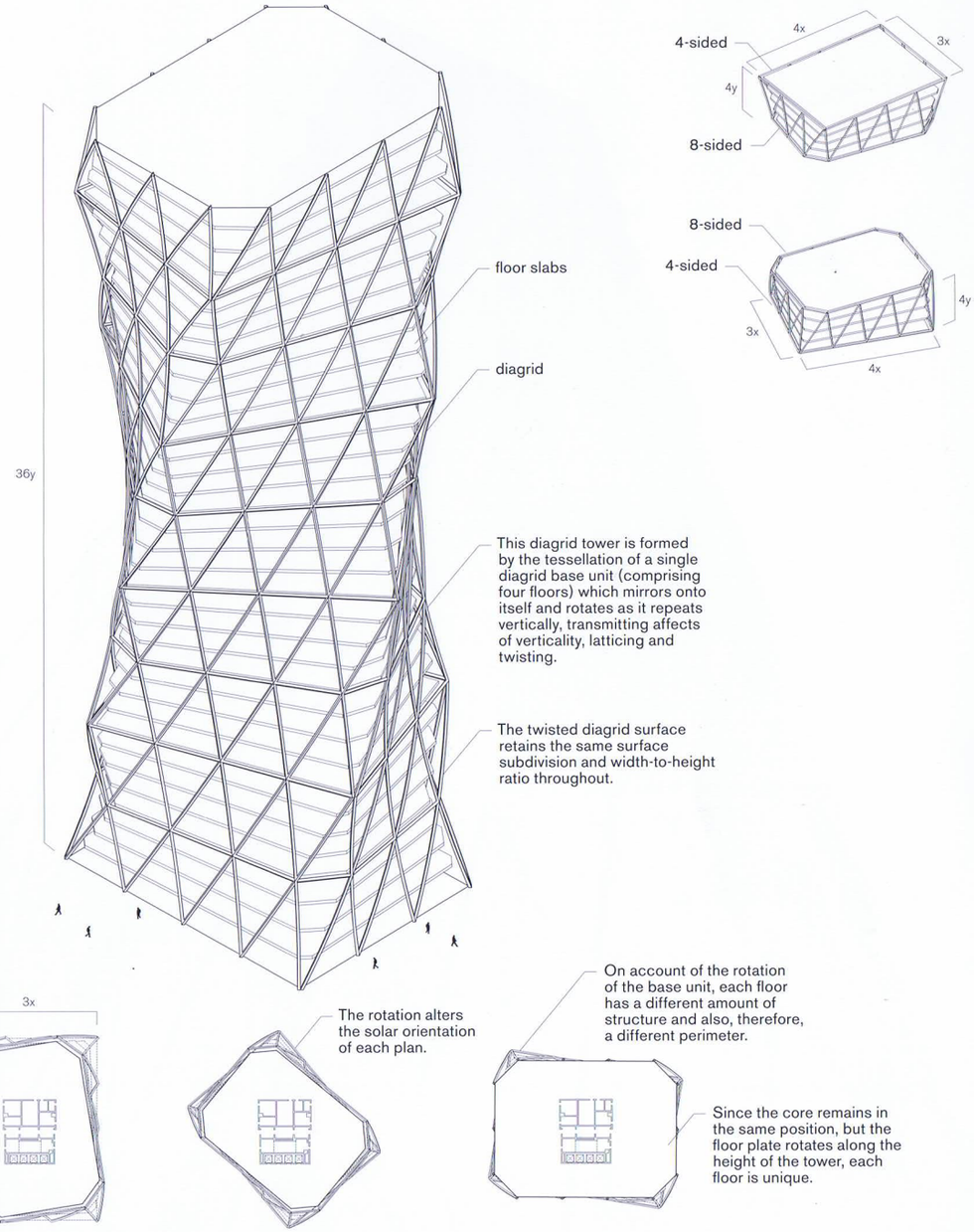


This irregular form is produced by the vertical tessellation of a diagrid base unit. The base unit, a diamond composed of two triangles, is a section that includes the floor slabs, the central elevator core, and the exterior envelope, the scale of which gradually decreases as the building gets taller. The scale of the diagrid varies along the height of the tower and, as it gets taller, the building's profile gradually changes where the diamond grid meets the edges of the building. This diagrid frame assembly transmits an optical affect of gradation, latticing, and crystallinity.

Twisting, Latticing, Verticality



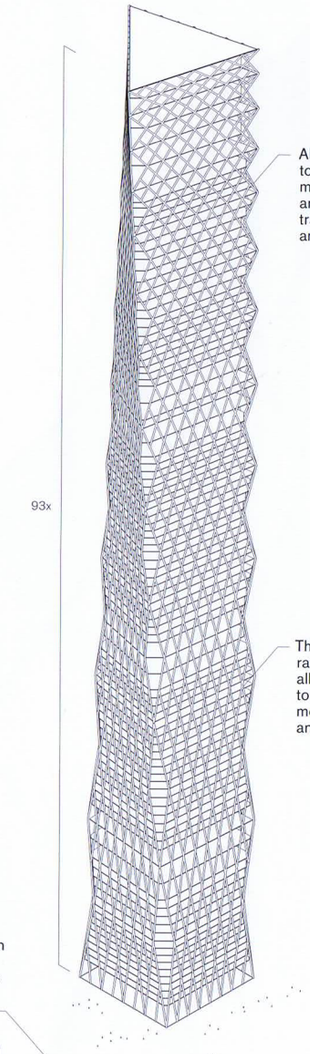
Vertical / Diagrid



This irregular form is produced by the vertical tessellation of a diagrid base unit. The base unit, a diamond composed of triangles, is a section four stories high that includes the floor slabs and the central elevator core as well as the exterior envelope, which, as the building gets taller, gradually introduces a rotation between the floor planes and the ceiling planes. The scale of the diagrid remains regular throughout the height of the tower, giving shape to its profiles as the diamond grid meets the edges of the building. This diagrid tower transmits an optical affect of twisting, latticing and verticality.

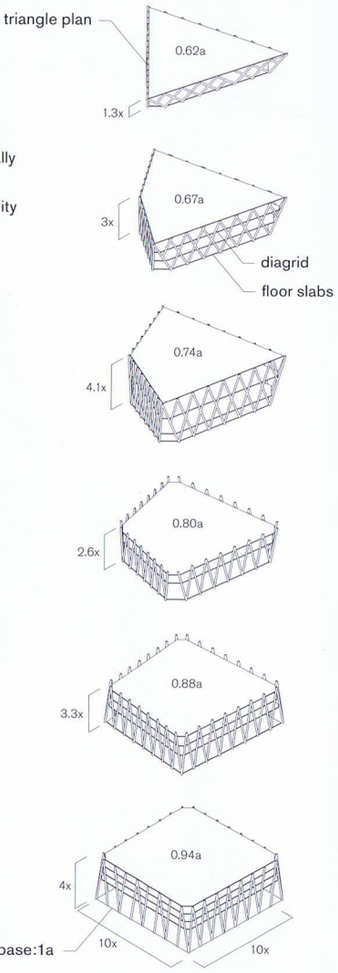
Twisting, Crystallinity, Gradation, Variegation

Vertical / Diagrid

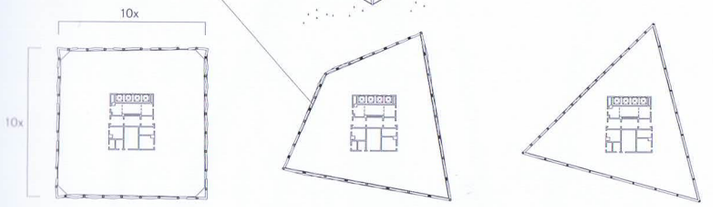


All diagrid members are angled to connect between the gradually morphing square, trapezoidal and triangular floors plans, transmitting affects of crystallinity and twisting.

The diagrid's height-to-width ratio is varied in the elevation, allowing the diagrid structure to counter vertical loading more efficiently at the bottom and lateral loading at the top.



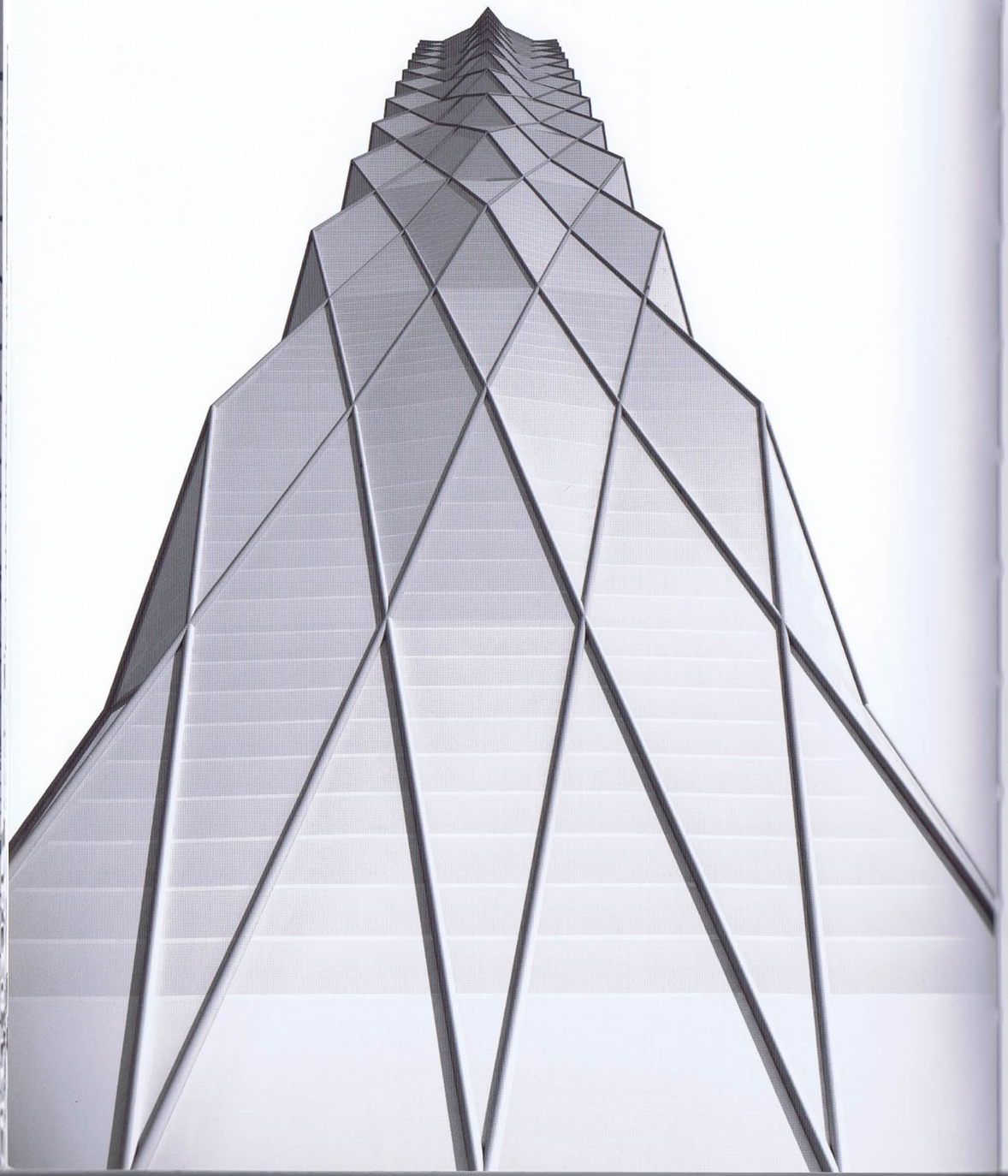
The plan transformation creates changes in plan orientation as one progresses vertically through the building.



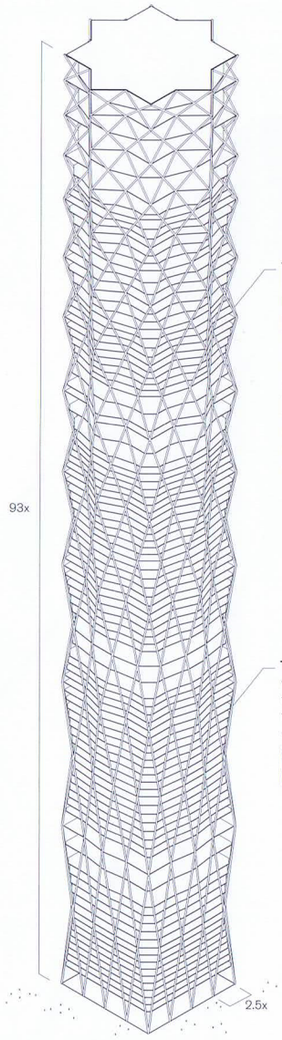
As each floor cuts the irregular diagrid at a different point, the structure along its perimeter is uniquely spaced and therefore different from the perimeter structures of the adjacent floors.

This irregular vertical form is produced by the tessellation of a diagrid base unit. The base unit is composed of a number of sections that include the floor slabs and the central elevator core as well as the exterior envelope. The floor plan of each base unit gradually changes, from a square at the base of the building to a triangle at the top. Each of the base units decreases in height to include fewer floors as the building rises, with the scale of the diagrid also decreasing. This also gradually changes the profile of the overall volume where the diamond grid meets the edges of the building. This diagrid frame assembly transmits an optical affect of twisting, crystallinity, gradation and variegation.

Stellatedness, Crystallinity, Latticing, Variegation

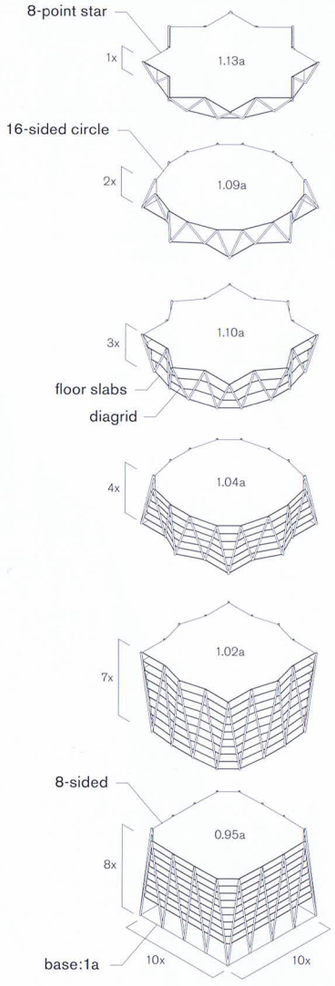


Vertical / Diagrid



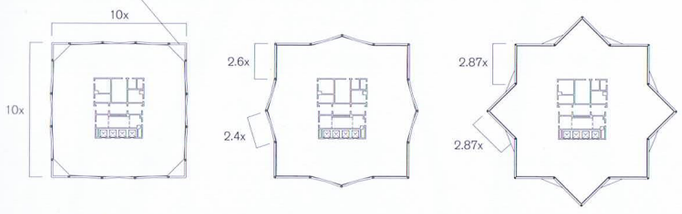
The tessellation of the base unit from a four-sided plan form to a sixteen-sided plan form increases the scale of corrugation of each plan as it repeats vertically, creating a vertical tower form that transmits affects of stellatedness, crystallinity, latticing and variegation.

The diagrid's height-to-width ratio is varied in the elevation, allowing the diagrid structure to counter vertical loading more efficiently at the bottom and lateral loading at the top.



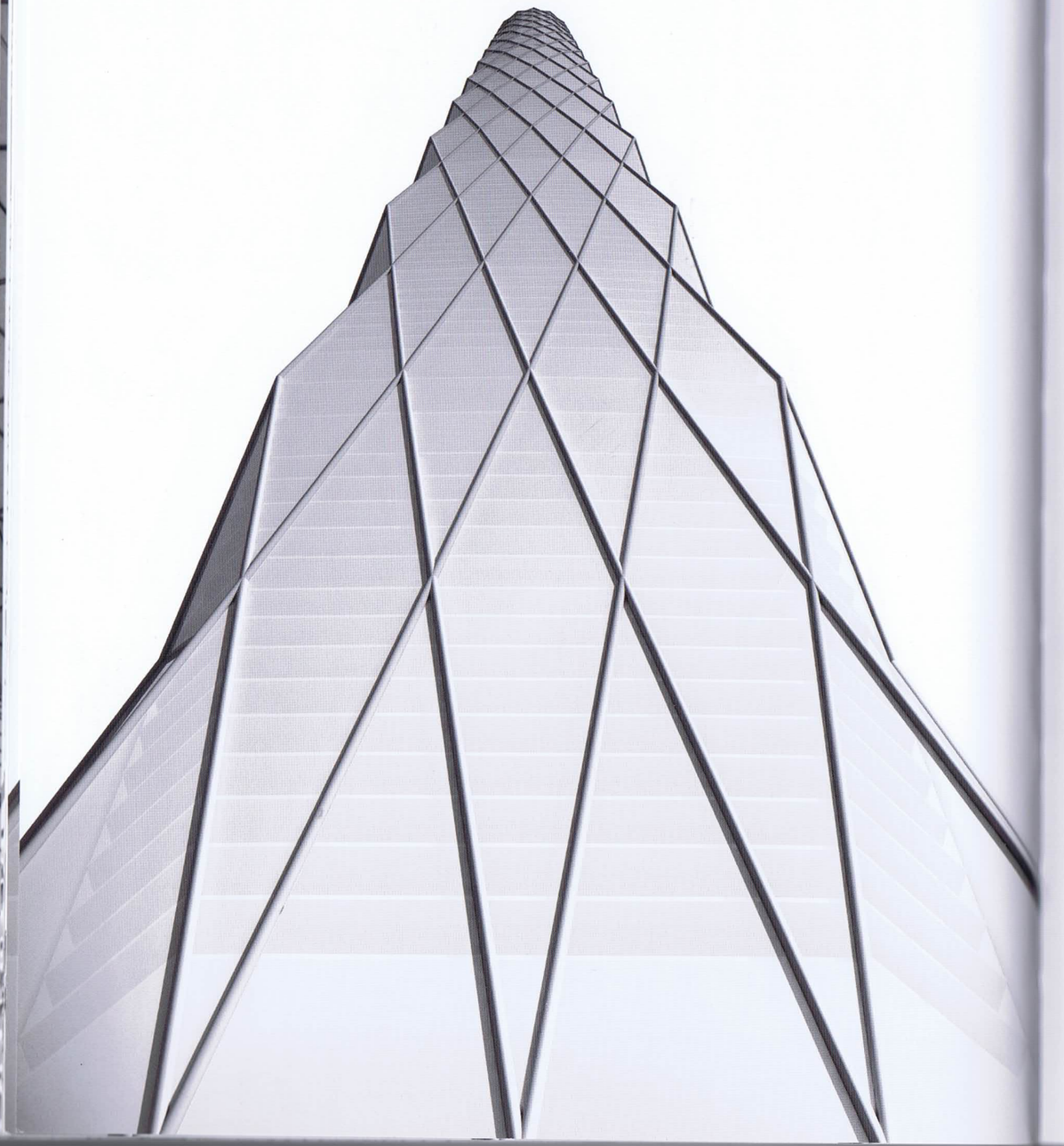
The diagrid is terminated at different edge points allowing the perimeter to accommodate the plan profile change from square to 8-point star.

The inherent flexibility of the diagrid allows for plan variations across the height of the tower.



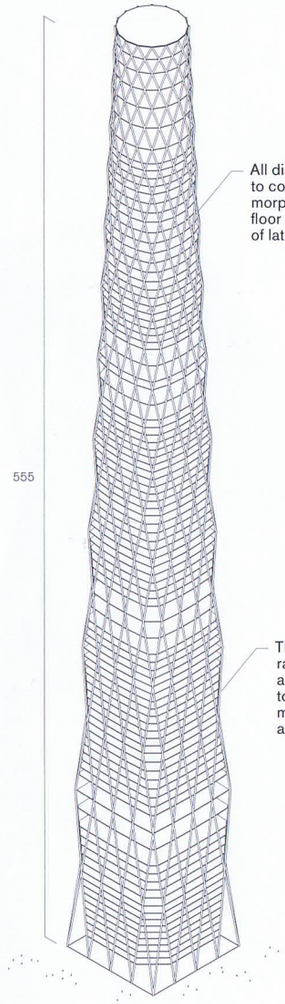
This irregular vertical form is produced by the tessellation of a diagrid base unit. The base unit is composed of a number of sections that include the floor slabs and the central elevator core as well as the exterior envelope. The floor plan of each base unit gradually changes, from a square-shape at the base of the building to a sixteen-sided star-shape at the top. Each of the base units decreases in height, including fewer floors as the building rises and also decreasing the scale of the diagrid. This also gradually changes the profile of the overall volume where the diamond grid meets the edges of the building. This diagrid frame assembly transmits an optical affect of stellatedness, crystallinity, latticing and variegation.

Conicality, Latticing, Variegation



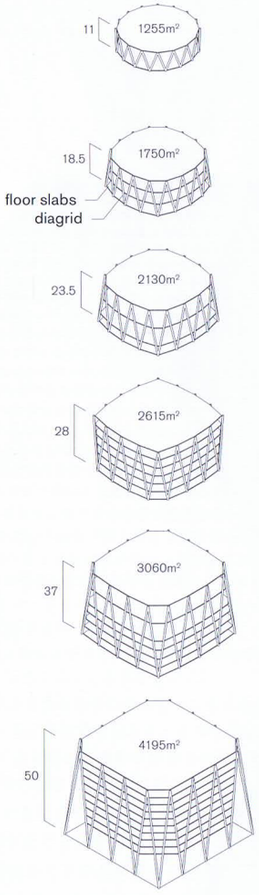
Vertical / Diagrid

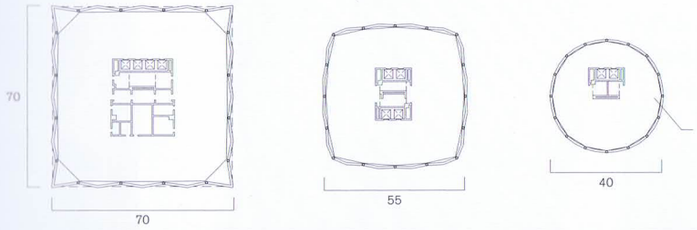
LOTTE SUPER TOWER HOTEL | SKIDMORE, OWINGS & MERRILL | SEOUL, SOUTH KOREA | 2011



All diagrid members are angled to connect between the gradually morphing square and circular floor plans, transmitting affects of latticing and variegation.

The diagrid's height-to-width ratio is varied in the elevation, allowing the diagrid structure to counter vertical loading more efficiently at the bottom and lateral loading at the top.

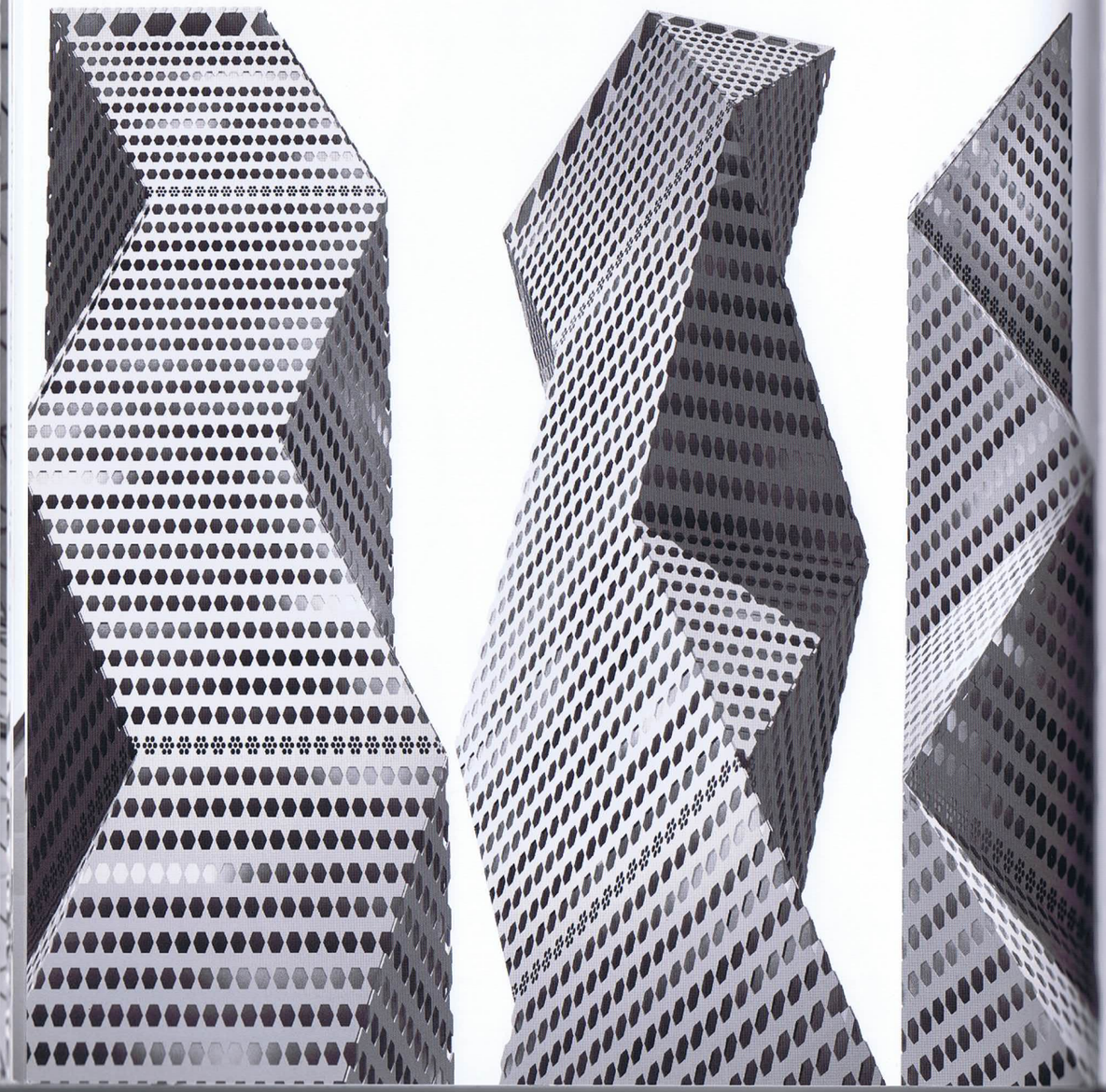




Plan shape and scale variations create unique envelope-to-core distances and unique internal occupation possibilities

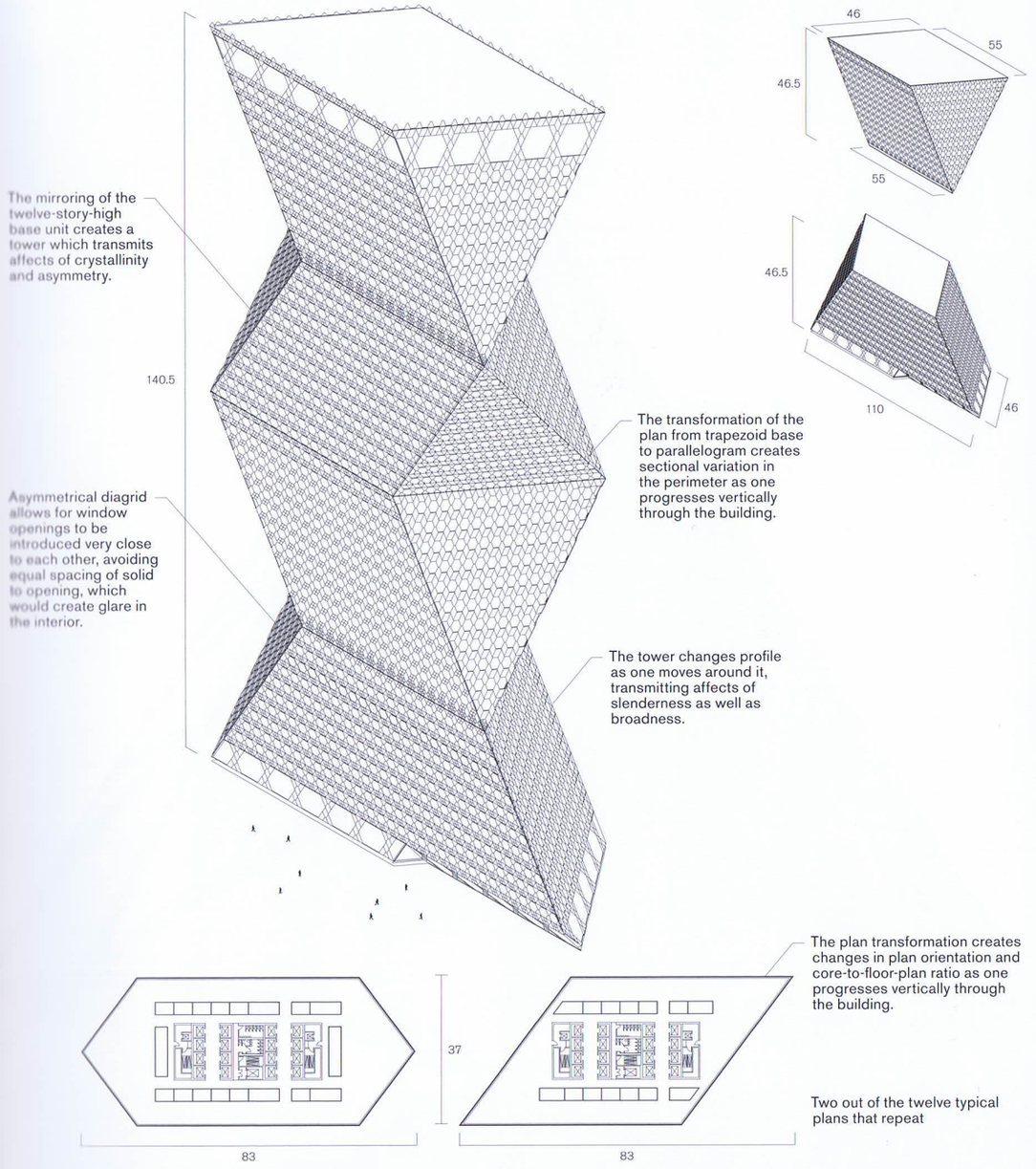
The Lotte Super Tower Hotel is produced by the vertical tessellation of a diagrid base unit to create an irregular vertical form. The base unit is composed of a number of sections that include the floor slabs and the central elevator core as well as the exterior envelope. The floor plan of each base unit gradually changes, from a square plan at the base of the building to a sixteen-sided polygon at the top. Each of the base units decreases in height, including fewer floors as the building rises and reducing the scale of the diagrid. This also gradually changes the profile of the overall volume where the diamond grid meets the edges of the building. This diagrid frame assembly transmits an optical affect of conicality, latticing and variegation.

Crystallinity, Latticing, Asymmetry, Slenderness, Broadness



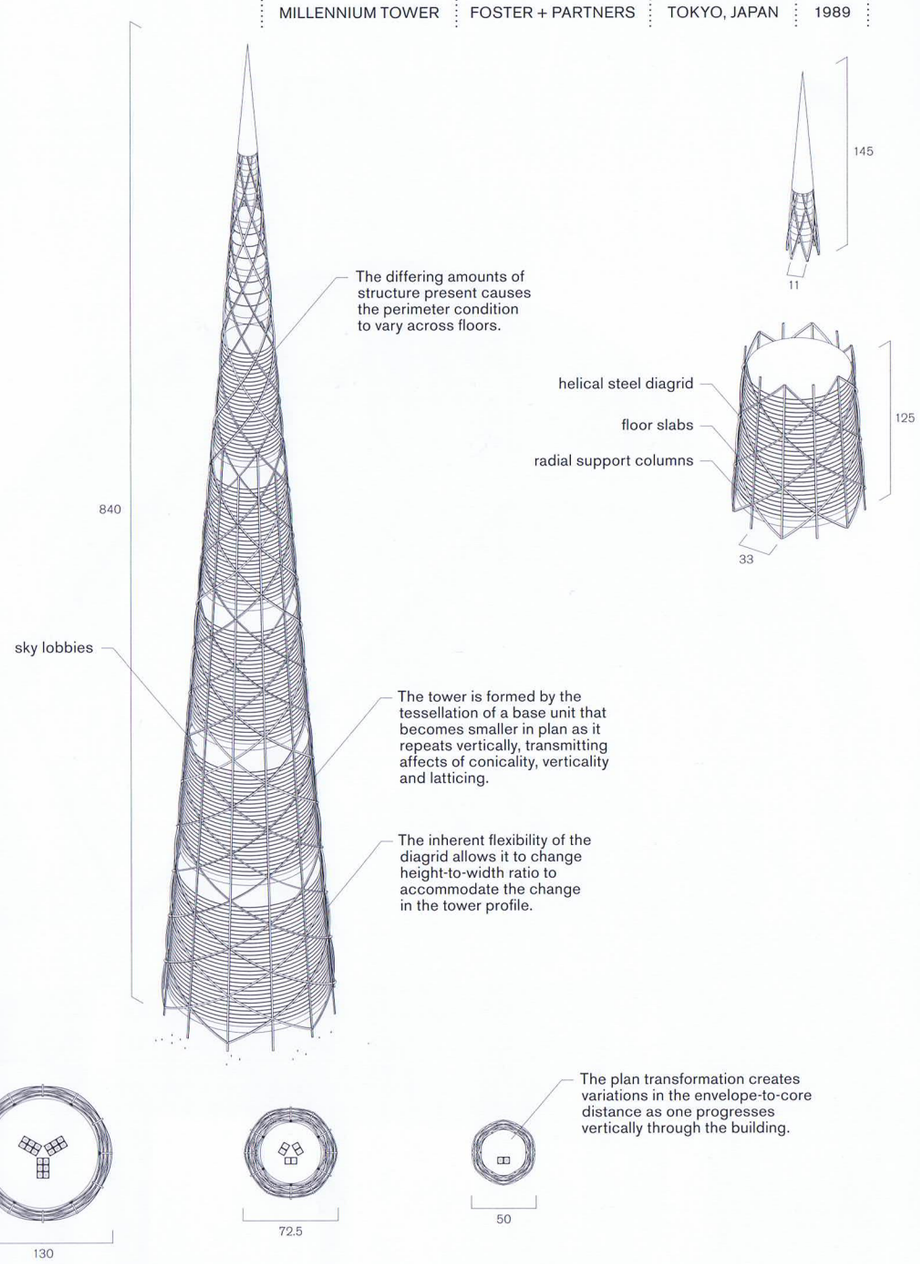
Vertical / Diagrid

ELISABETH HOUSE | FOREIGN OFFICE ARCHITECTS | LONDON, UK | 2006



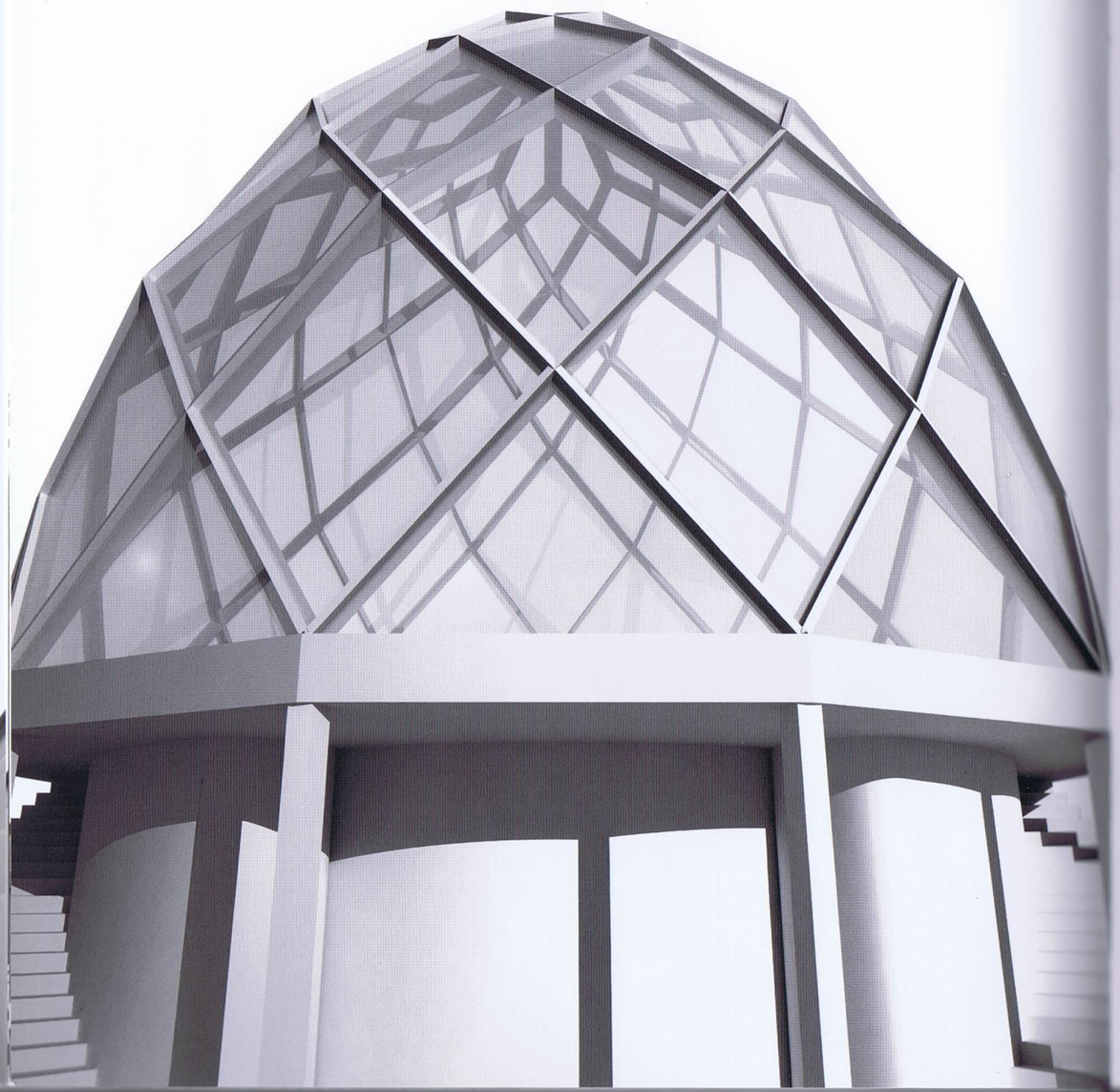
The P&O Elisabeth Tower is produced by the vertical tessellation of a diagrid base unit to create a twisting vertical form. The base unit comprises twelve floor slabs, ranging from a diamond to a hexagonal shape, wrapped by an asymmetrical diagrid along the perimeter and partially structured by the central elevator core. This stack of twelve stories which make up the base unit tessellates vertically, mirroring on plan as it tessellates, to produce a vertical profile that is non-extruded and appears differently from different orientations. The P&O Elisabeth Tower transmits an optical affect of crystallinity, latticing, and asymmetry.

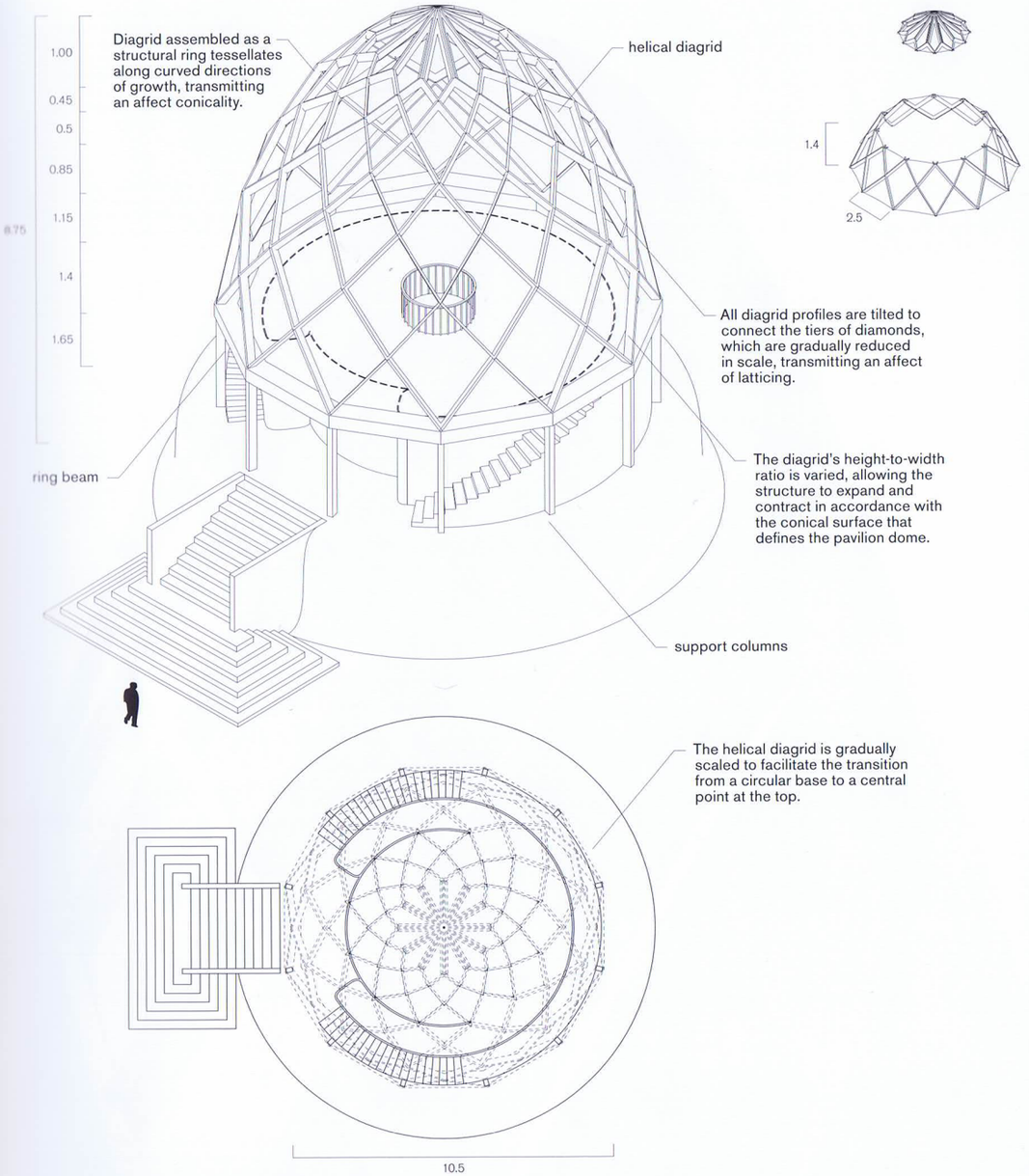
MILLENNIUM TOWER | FOSTER + PARTNERS | TOKYO, JAPAN | 1989



The Millennium Tower is produced by the vertical tessellation of a diagrid base unit to create a conical vertical form. The base unit is composed of a number of sections that include the floor slabs and the central elevator cores as well as the exterior envelope. As the building rises, the diameter of the circular floor plan gradually decreases. The diagrid pattern varies along the building height, being subdivided into triangles in the first three quarters, and diamonds in the upper quarter. This diagrid frame assembly transmits an optical affect of conicality, latticing and verticality.

GLASS PAVILION | B. TAUT | COLOGNE, GERMANY | 1914





The Glass Pavilion is produced by the curved tessellation of a diagrid base unit to create a curved form. The base unit is a diagrid, the pattern of which gradually decreases in scale as it curves. The Glass Pavilion transmits an optical affect of conicality and latticing.

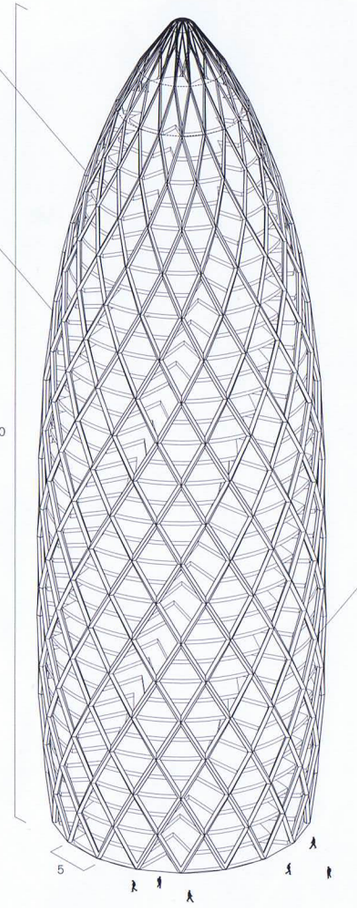
Conicality, Latticing, Twisting

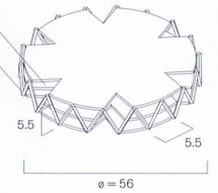
Vertical / Diagrid

30 ST MARY AXE | FOSTER + PARTNERS; ARUP; SANDY BROWN ASSOCIATES | LONDON, UK | 1997–2004

The scale and rotational transformation of the base unit creates a tapering tower profile and diagonal atriums that transmit affects of conicality, latticing and diagonality.

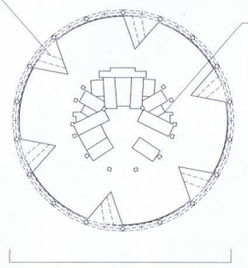
The Swiss Re tower can be considered as a variation of Bruno Taut's Glass Pavilion of 1914.

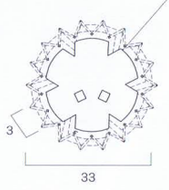




The diagrid height-to-width ratio is varied along the height of the tower to accommodate the tapering of the form.

The gradual rotation of the plan along the height of the tower creates a diagonal atrium and triggers a sensation of twisting.



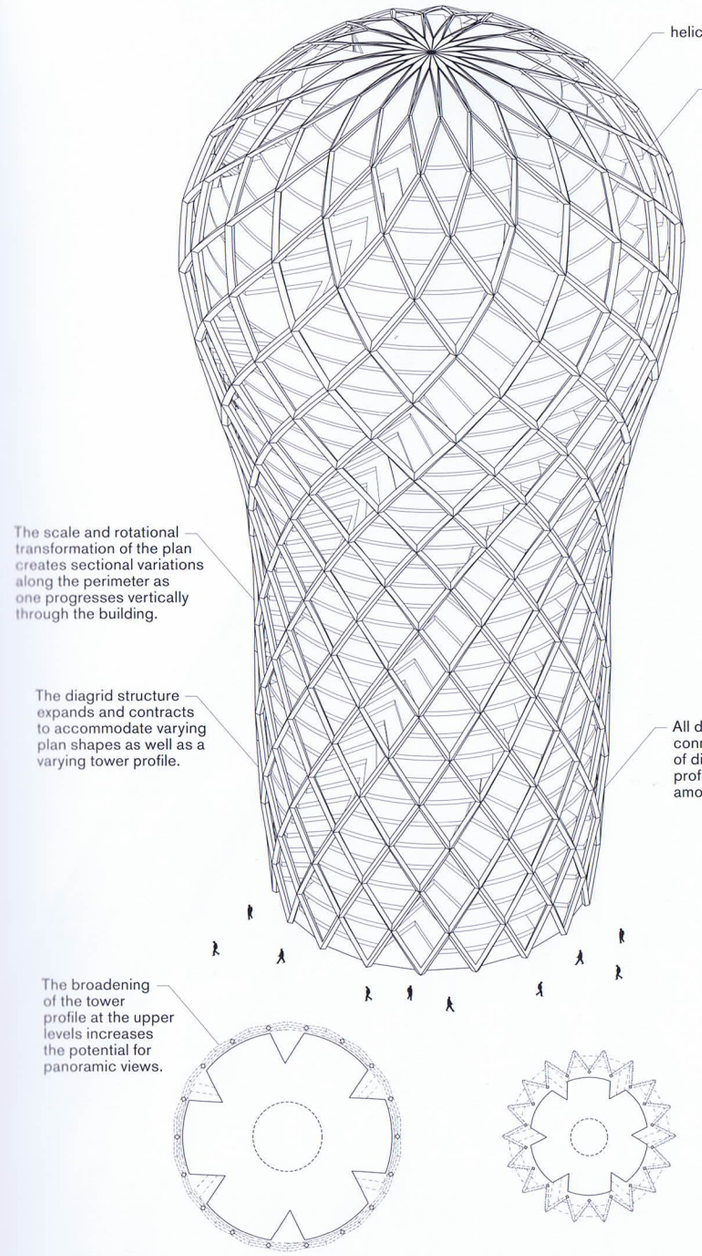


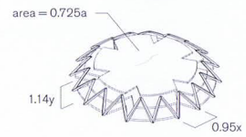
The plan transformation creates changes in the envelope-to-core plan ratio as one progresses vertically through the building.

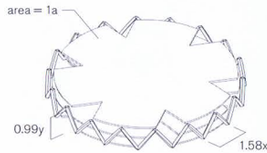
The Swiss Re tower is produced by the vertical tessellation of a diagrid base unit to create a vertical form. The base unit comprises a section of two stories, including the floor slabs and the central elevator and stair core as well as the exterior envelope and conical ventilation atriums. Two base units are stacked to create a diamond form in the exterior diagrid pattern. The floor depth is gradually adjusted to follow an overall curved profile that reaches its maximum depth on the sixteenth story, and gradually reduces in depth as it reaches the highest point, to produce its characteristic bullet shape. As the floors decrease in diameter, the width of the diagrid is adjusted accordingly. The Swiss Re tower transmits an optical affect of conicality, latticing and diagonality.

Amorphousness, Latticing

Vertical / Diagrid

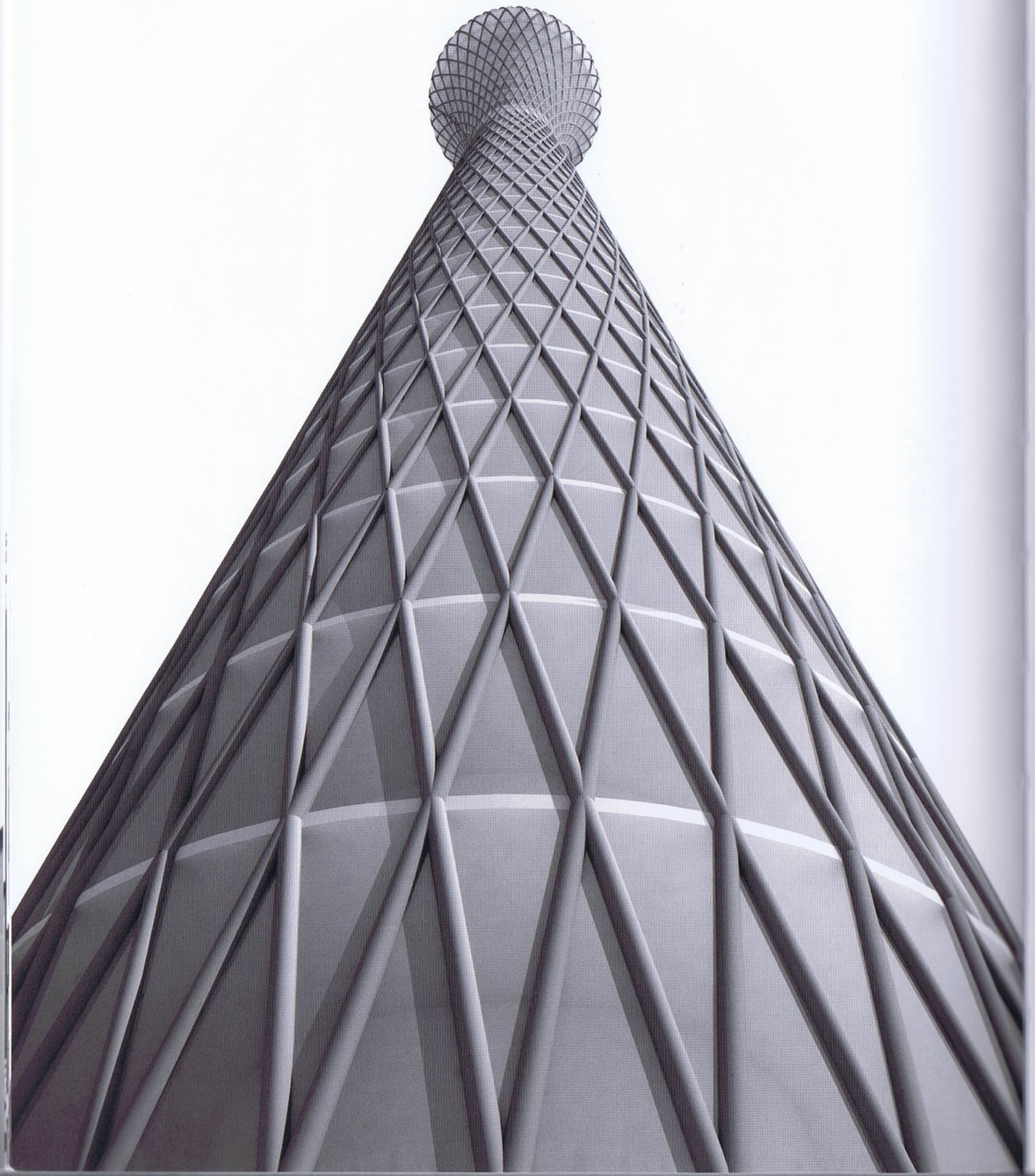






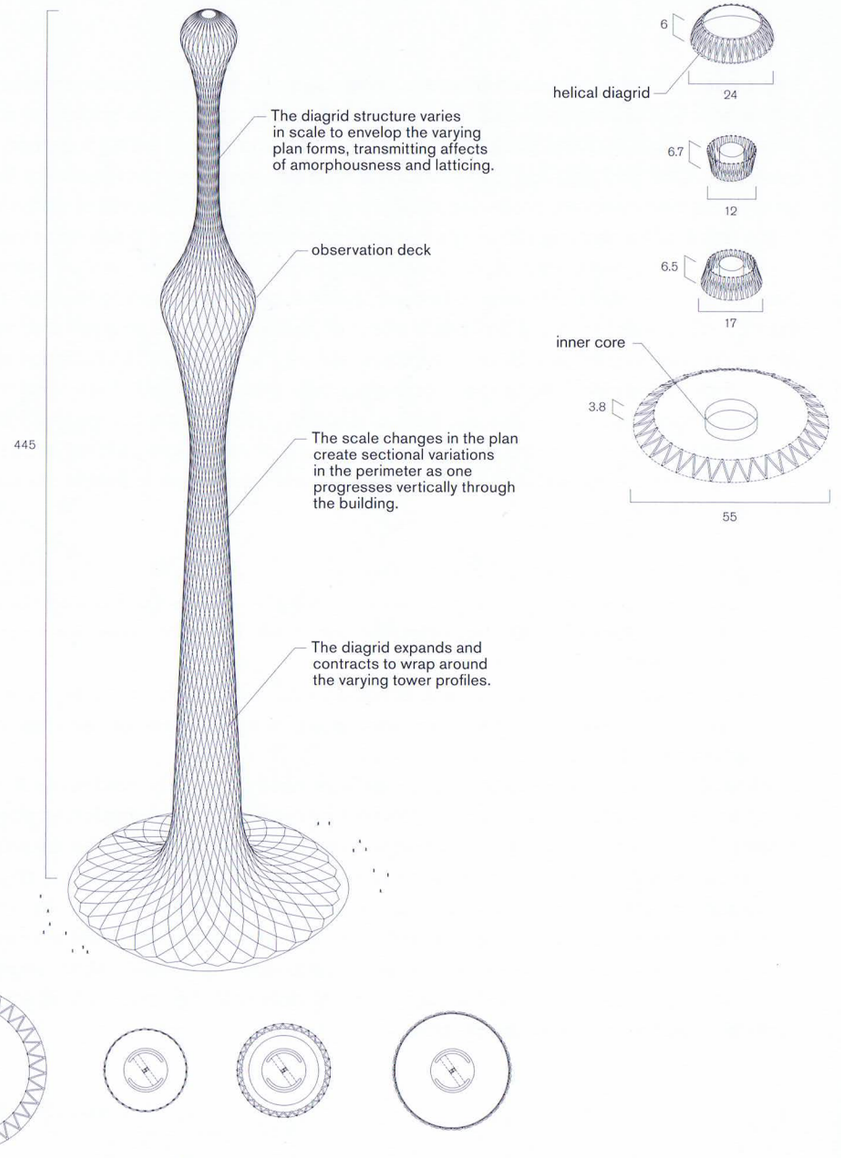
This vertical form is produced by the vertical tessellation of a diagrid base unit to create a regular vertical form. The base unit is a section comprising two stories, including the floor slabs and the central elevator and stair core as well as the exterior envelope and conical ventilation atriums. Two base units are stacked to form a diamond in the exterior diagrid pattern. The floor depth of each story is gradually increased or decreased to create the curved profile of the building. This diagrid frame assembly transmits an optical affect of amorphousness and latticing.

Amorphousness, Latticing



Vertical / Diagrid

WATER DROP TOWER | SANDERS WANG MACLEOD – SWIMCAU | CHEONGNA, SOUTH KOREA | 2008



Typical plans

The Water Drop Observation Tower is produced by the vertical tessellation of a diagrid base unit to create a regular vertical form. The base unit comprises a section of the tower that includes the floor slabs and the central elevator and stair core as well as the exterior envelope. The floor depth is gradually adjusted to follow the curve of the profile, which has two wide points. As the depth of the tower increases or decreases, the scale of the diagrid is adjusted to widen or narrow. The Water Drop Observation Tower transmits an optical affect of amorphousness and latticing.