

# El dibujo. Primera construcción de la arquitectura de Paul Rudolph

## *Drawing. The first construction of Paul Rudolph's architecture*

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**Resumen:** El arquitecto americano Paul Rudolph (1918-1997) concede al dibujo un papel central en su proceso creativo, que responde a una concepción altamente emocional de la arquitectura. Durante su formación y sus primeros años de trabajo, adquiere un tipo de representación que le permite transmitir una visión personal del proyecto. Su constante inquietud por la superación del estilo internacional, parte de seis factores determinantes: emplazamiento, condiciones naturales, materiales, función, psicología del espacio y espíritu de la época, que le guían en la búsqueda de respuestas y marcan su obra hasta finales de los años sesenta, cuando alcanza su madurez creativa. Tomando el dibujo como eje de la investigación, se analiza cómo intervienen estos factores en sus proyectos residenciales en Florida, cuya tectónica concibe desde la unidad espacial; en sus proyectos de vivienda colectiva, cuya componente social orienta en agrupaciones modulares urbanas; y en sus proyectos de escala monumental, cuya materialidad imagina y define con precisión. En todos ellos, las decisiones espaciales y constructivas están tan íntimamente relacionadas con su método de representación, que establecen un paralelismo constante entre dibujar y construir.

**Palabras clave:** Rudolph; arquitectura; dibujo; perspectiva; construcción.

**Abstract:** *The American architect Paul Rudolph (1918-1997) conceded drawing a fundamental role in his creative process, which corresponded to a highly emotional conception of architecture. During his training and first years of work, he acquired a type of representation that allowed him to convey his personal vision of each project. His relentless will to overcome the International Style was based on six determinants: environment, natural conditions, materials, function, psychological demands of the space and spirit of times, which guided him in the search for answers and marked his work until the end of the sixties, when he achieved his creative maturity. Taking the drawing as the axis of the investigation, we analyse how these factors intervene in his residential projects in Florida, whose tectonics he conceived based on the spatial unit; in his collective housing projects, whose social facet he channelled towards urban modular groups; and in his projects of a monumental scale, whose materiality he imagined and defined accurately. In all of them spatial and constructive decisions relate intimately to his method of representation, establishing a continuous parallelism between drawing and building.*

**Keywords:** Rudolph; architecture; drawing; perspective; building.

## EL PROCESO CREATIVO

A lo largo de su extensa trayectoria profesional, el arquitecto americano Paul Rudolph (1918-1997) concede al dibujo un papel central en su proceso creativo, que refleja los paradigmas de su arquitectura. En sus inicios, el optimismo y el impulso del panorama socioeconómico de Estados Unidos tras la Segunda Guerra Mundial, favorecen un nuevo ambiente intelectual que propicia la exploración con nuevos materiales técnicos y espaciales. En su obra compendia el organicismo de Frank Lloyd Wright, al que hace alusión de manera constante en sus escritos, con el funcionalismo moderno heredado de los CIAM, que adopta de Walter Gropius y Josep Lluís Sert en la Graduate School of Design de Harvard, durante su formación en 1941 y su estancia como profesor visitante en 1954.<sup>1</sup> Esta fe en el progreso, respaldada por los discípulos de Louis Sullivan y por arquitectos emigrados del continente europeo, encuentra su contrapunto en la monumentalidad simbólica de Louis Kahn que, en mayor o menor medida, Rudolph atiende en el desarrollo de su obra.

Su carrera emerge en el sur rural, en Sarasota, con la construcción de viviendas unifamiliares de gran reconocimiento y difusión en publicaciones internacionales. Esta temprana visibilidad propicia la llegada de encargos de mayor envergadura, vinculados a programas docentes, que se refuerzan con su nombramiento como director del Departamento de Arquitectura de Yale en 1957. La prolífica actividad de esos años alcanza gran presencia en los medios estadounidenses,<sup>2</sup> que se hacen eco de su obra y de sus ideas, hasta el comienzo de los años setenta, cuando culmina su periodo de madurez creativa y mayor repercusión. Su inquietud por la superación del estilo internacional, parte de una forma de entender la arquitectura que sintetiza en 1956,<sup>3</sup> en la revista *Architectural Record*, en seis

## THE CREATIVE PROCESS

*Throughout his long professional career, the American architect Paul Rudolph (1918-1997) conceded drawing a fundamental role in his creative process, which reflects the paradigms of his architecture. When his career started, the optimism and the momentum of the socioeconomic situation of the United States after the Second World War, favoured a new intellectual environment that encouraged experimenting with new technical and spatial materials. In his work, he synthesized the organicism of Frank Lloyd Wright, which he constantly alluded to in his writings, with the modern functionalism inherited from the CIAM, which he took from Walter Gropius and Josep Lluís Sert at the Harvard Graduate School of Design during his academic training in 1941 and his stay as visiting professor in 1954.<sup>1</sup> This faith in progress, supported by the disciples of Louis Sullivan and architects emigrated from the European continent, meets its counterpoint in the symbolic monumentality of Louis Kahn, which Rudolph, to a greater or lesser extent, attended to throughout his career.*

*His career emerged in the southern countryside, in Sarasota, with the construction of single-family houses greatly recognized and published in international journals. This early visibility fostered the commission of larger projects, linked to academic institutions, reinforced by his appointment as director of the Yale Department of Architecture in 1957. The prolific activity of those years gained a large presence in the US media,<sup>2</sup> which discussed his work and ideas, up to the beginning of the seventies, when his period of creative maturity and greater impact culminated. He based his will to overcome the International Style on a way of understanding architecture synthesized in 1956,<sup>3</sup> in the *Architectural Record* journal, in six determinants: environment, natural conditions, materials,*

factores determinantes: emplazamiento, condiciones naturales, materiales, función, psicología del espacio y espíritu de la época. Con ellos busca respuestas personales a las nuevas demandas ambientales, espaciales y sociales, construyendo a través del dibujo proyectos residenciales, cuya tectónica concibe desde la unidad espacial; proyectos de vivienda colectiva, cuya componente social orienta en agrupaciones modulares urbanas; y proyectos de escala monumental, cuya materialidad imagina y define con precisión bajo la luz cambiante de los días y las estaciones.

Para Rudolph la calidad y la excelencia de la arquitectura son consustanciales al acto creativo del arquitecto, al "estimulante e impresionante momento en que toma el lápiz en la mano."<sup>4</sup> La reducción deliberada de la práctica del dibujo por parte de Gropius en la Graduate School of Design de Harvard, en favor de métodos de análisis más científicos, le lleva a desarrollar en sus primeros proyectos una forma propia de representación altamente gráfica, que le permite formalizar sus ideas y tiene un impacto en su arquitectura. En su trabajo, la representación es la línea más directa entre la imaginación y lo tangible, el "medio para evaluar lo que viene directamente del cerebro a la mano."<sup>5</sup>

En una primera fase del proceso de proyecto, Rudolph realiza cientos de bocetos, con los que piensa y concibe tridimensionalmente. Según Laurence Scarpa, uno de sus colaboradores durante los años ochenta, esta fase comienza con una exploración libre, en la que trabaja con múltiples ideas simultáneamente, de tal manera que el resultado rara vez responde a sus intenciones iniciales.<sup>6</sup> En sus primeros bocetos, la valoración de los condicionantes de proyecto confluye con sus propios intereses y con la memoria de obras visitadas anteriormente que, aunque nunca registra de forma gráfica, visualiza e

*function, psychological demands of the space and spirit of times. With them, he looked for personal answers to the new environmental, spatial and social demands, building residential projects through drawing, whose tectonics he conceived based on the spatial unit. Collective housing projects, whose social facet he channelled towards urban modular groups, and projects of a monumental scale, whose materiality he imagined and defined accurately under the ever changing light of days and seasons.*

*To Rudolph, the quality and excellence of architecture were inseparable from the architect's creative act, from the "exhilarating, awesome moment when he takes pencil in hand."<sup>4</sup> The deliberate reduction of the drawing practice by Gropius at the Harvard Graduate School of Design, in favour of more scientific methods of analysis, led him to develop in his first projects his own way of highly graphic representation, which allowed him to formalise his ideas and had an impact on his architecture. In his work, representation is the most direct connection between imagination and reality, the "means of assessing what comes directly from the brain to the hand."<sup>5</sup>*

*In the first phase of the project design, Rudolph made hundreds of sketches, with which he thought and conceived three-dimensionally. According to Laurence Scarpa, one of his collaborators during the eighties, this phase began with a free exploration in which he worked simultaneously with multiple ideas, in such a way that the result rarely matched his initial intentions.<sup>6</sup> In his first sketches, the assessment of the project's determining factors converged with his own interests and with the recollection of previously visited works that, although he never registered graphically, he visualized and embraced until they*



**Figura 1.** Paul Rudolph en su estudio.

*Figure 1.* Paul Rudolph in his office.

interioriza hasta hacer suyas, como describe en la revista *Perspecta* en 1986.<sup>7</sup> Estos croquis, realizados de manera obsesiva,<sup>8</sup> evolucionan hacia diagramas de grafito y lápices de colores en papel vitela, en versiones progresivamente más depuradas, que le permiten codificar y aclarar problemas formales y funcionales. Su traducción en planos y detalladas perspectivas sobre las que, independientemente del tamaño que alcanza su estudio, mantiene un gran control, se convierten por su audacia y claridad en sello distintivo de sus logros arquitectónicos.

La característica fundamental de la forma de representación con la que Paul Rudolph transmite su obra es la atención a la línea. Con un control preciso de la pluma, recupera técnicas afines al grabado y el esgrafiado, propias de la publicidad, que consulta en tratados técnicos como el manual de finales de los años cuarenta titulado *Scratchboard Drawing*, presente según Timothy M. Rohan en su biblioteca.<sup>9</sup> Utilizando diferentes grosores de pluma, trabaja las

*became his own, as he described in Perspecta journal in 1986.<sup>7</sup> These sketches, executed obsessively,<sup>8</sup> evolved towards graphite and coloured pencils diagrams on vellum paper, in progressively more refined versions, which allowed him to encode and clear up formal and functional problems. Their transformation into blueprints and detailed perspectives, on which independently of the scope of his study he maintained a great control, became the unique signature of his architectural achievements due to its audacity and clarity.*

*The main characteristic of the form of representation with which Paul Rudolph transmitted his work is the consideration of the line. With a precise control of the pen, he recovered techniques related to engraving and sgraffito, typical of advertising, which he looked up in technical treatises such as the late forties manual titled Scratchboard Drawing, present in his library according to Timothy M. Rohan.<sup>9</sup> Using different pen thicknesses, he worked*

superficies con claroscuros mediante tramas cruzadas de líneas paralelas que evocan la sensación de los distintos materiales y aportan calidad atmosférica y profundidad espacial. Con este método no solo anticipa la pluma técnica moderna, que facilita su ejecución a partir de los años siguientes, sino que también permite su reproducción y cambio de escala fotomecánicos con una pérdida de detalle mínima, lo que posibilita su difusión.

Más allá de su función transmisora, el dibujo expresivo y a menudo dramático de Rudolph constituye a lo largo del proceso de proyecto una versión idealizada de sus expectativas.<sup>10</sup> El trazo asume una autoridad especial como recordatorio de la intención inicial e investigación hacia la definición formal de los sistemas y espacios. Scarpa explica cómo mientras trabajaba en su escritorio, Rudolph movía su mano sobre el papel de tal manera que “pudiera entender mejor la escala real, como si pudiera ocupar el dibujo, como si fuera un edificio real (Figura 1).”<sup>11</sup> Convertida en la primera construcción de la arquitectura, la representación muestra una visión espacial y una inquietud intelectual, que dotan de continuidad a su obra. El reflejo de sus ideas en el dibujo de su arquitectura se analiza en este artículo desde la referencia de Juan Antonio Cortés y Rafael Moneo en 1976, “como realidad propia y concreta, cuya lectura puede hacerse con una cierta autonomía; autonomía que todavía está más patente cuando el arquitecto ve el dibujo como realidad propia y acabada.”<sup>12</sup>

## LA UNIDAD ESPACIAL

Las viviendas unifamiliares de su primera etapa en Sarasota, Florida (1948-1957), en la que trabaja junto a Ralph Twitchell, proporcionan a Rudolph la posibilidad de poner en práctica los conocimientos que ha adquirido en Harvard (1941 y 1946), su

*the surfaces with chiaroscuro by means of a cross-hatching that evokes the sensation of the different materials and provide with an atmospheric quality and spatial depth. This method not only anticipated the modern technical pen, which made its execution easier from then on, but also allows for its photomechanical reproduction and change of scale with minimal loss of detail, which enables its dissemination.*

*Beyond its transmitting function, Rudolph's expressive and often dramatic drawing constitutes an idealized version of his expectations throughout the projecting process.<sup>10</sup> The line assumes a special authority as a reminder of the initial intentions and research towards the formal definition of systems and spaces. Scarpa explains that while working at his desk, Rudolph moved his hand over the paper in such a way that “he could better understand the actual scale and what it might be like to occupy the drawing, as if it were an actual building (Figure 1).”<sup>11</sup> Turned into the first construction of architecture, the representation shows spatial vision and intellectual inquisitiveness, which provide his work with continuity. This article analyses the reflection of his ideas on his architectural drawings based on the reference of Juan Antonio Cortés and Rafael Moneo in 1976, “as a specific and concrete reality, whose reading can be done with a certain autonomy; autonomy that is still more patent when the architect perceives the drawing as a complete reality on its own.”<sup>12</sup>*

## THE SPATIAL UNITY

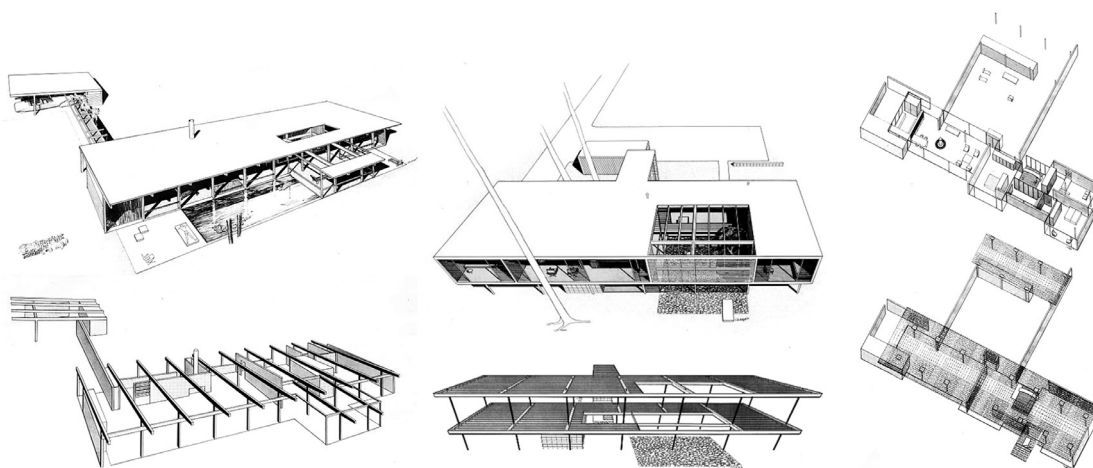
*The single-family houses of his early phase in Sarasota, Florida (1948-1957), in which he worked with Ralph Twitchell, provided Rudolph with the possibility of putting into practice the knowledge he had acquired at Harvard (1941 and 1946), su*

experiencia como oficial durante la guerra en la Brooklyn Navy Yard (1942-1946) y el impacto de su posterior viaje a Europa (1948-1949). Su particular adaptación de los principios del estilo internacional le lleva a desarrollar un "regionalismo crítico,"<sup>13</sup> con el que incorpora como determinantes de proyecto el uso de materiales locales, la complejidad espacial adaptada al espíritu de la época y la atención a los condicionantes naturales del entorno.<sup>14</sup>

La apertura a nuevos y experimentales sistemas de construcción, con los que explora las posibilidades estructurales y estéticas de los materiales, le conduce a composiciones basadas en un fuerte orden geométrico y una modulación estructural clara y visible. Las estructuras iniciales de pórticos de madera, con esquemas expansivos que se apropian de la horizontalidad, evolucionan incorporando materiales como el hormigón y el acero para elevarse del terreno. Las cubiertas adoptan distintas configuraciones, desde cubiertas planas o inclinadas con amplios voladizos a cubiertas articuladas o con bóvedas de cañón que las dotan de una mayor expresividad.<sup>15</sup> La gran influencia de Gropius en esta época se refleja en dibujos didácticos, derivados de su enseñanza de análisis racional, que fueron admirados en el entorno académico por su claridad.<sup>16</sup> La importancia de la estructura en la configuración del proyecto se muestra en perspectivas fugadas donde elimina la envolvente, como en la Residencia Siegrist (Venice, Florida, 1948), cuyo sistema de pórticos de madera paralelos dialoga con la configuración de la vivienda, o la Residencia Leavengood (St. Petersburg, Florida, 1950-1951), donde el entramado metálico permite entender las conexiones verticales mediante dobles alturas interiores o patios. Asimismo, esquemas axonómicos como los elaborados para la residencia Burnette (Sarasota, Florida, 1949-1950), ilustran las relaciones de carácter constructivo y espacial entre la estructura, formada por una losa rígida volada

*his experience as an officer during the war in the Brooklyn Navy Yard (1942-1946) and the impact of his later trip to Europe (1948-1949). His particular adaptation of the principles of International Style lead him to develop a "critical regionalism,"<sup>13</sup> with which he incorporated, as determinants of the project, the use of local materials, the spatial complexity adapted to the spirit of the times and the attention to the natural conditions of the environment.<sup>14</sup>*

*The use of new and experimental construction systems, with which he explored the structural and aesthetic possibilities of the materials, led him to develop compositions based on a strong geometric order and a clear and visible structural modulation. The initial wooden framed structures, with expansive frameworks that took over the horizontal planes, evolved and rose from the ground by the incorporation of materials such as concrete and steel. The roofs adopt different shapings, such as flat or sloped roofs with wide cantilevers, jointed roofs or barrel vaults that provide them with a greater expressivity.<sup>15</sup> His educational drawings show the great influence of Gropius at this time, derived from his teaching of rational analysis, and drew the admiration of the academic environment for their clarity.<sup>16</sup> A series of perspectives in which he removed the building envelope show the importance of the structure in the configuration of the project. For example, the Siegrist Residence (Venice, Florida, 1948), whose system of parallel wooden porticos dialogues with the configuration of the dwelling, or the Leavengood (St. Petersburg, Florida, 1950-1951), in which the metallic framework allows to understand the vertical connections through the internal two-storey spaces or patios. Additionally, axonometric diagrams such as those developed for the Burnette Residence (Sarasota, Florida, 1949-1950) illustrate the constructive and spatial relations between the structure, made up of*



**Figura 2.** Perspectivas fugadas sintéticas de las residencias Siegrist (Venice, Florida, 1948) y Leavengood (St. Petersburg, Florida, 1950-1951) y esquemas axonómicos de la residencia Burnette (Sarasota, Florida, 1949-50).

**Figure 2.** Synthetic vanishing perspectives of the Siegrist (Venice, Florida, 1948) and Leavengood residences (St. Petersburg, Florida, 1950-1951) and axonometric diagrams of the Burnette Residence (Sarasota, Florida, 1949-50).

apoyada sobre pilares tubulares de acero, y el programa doméstico (Figura 2).

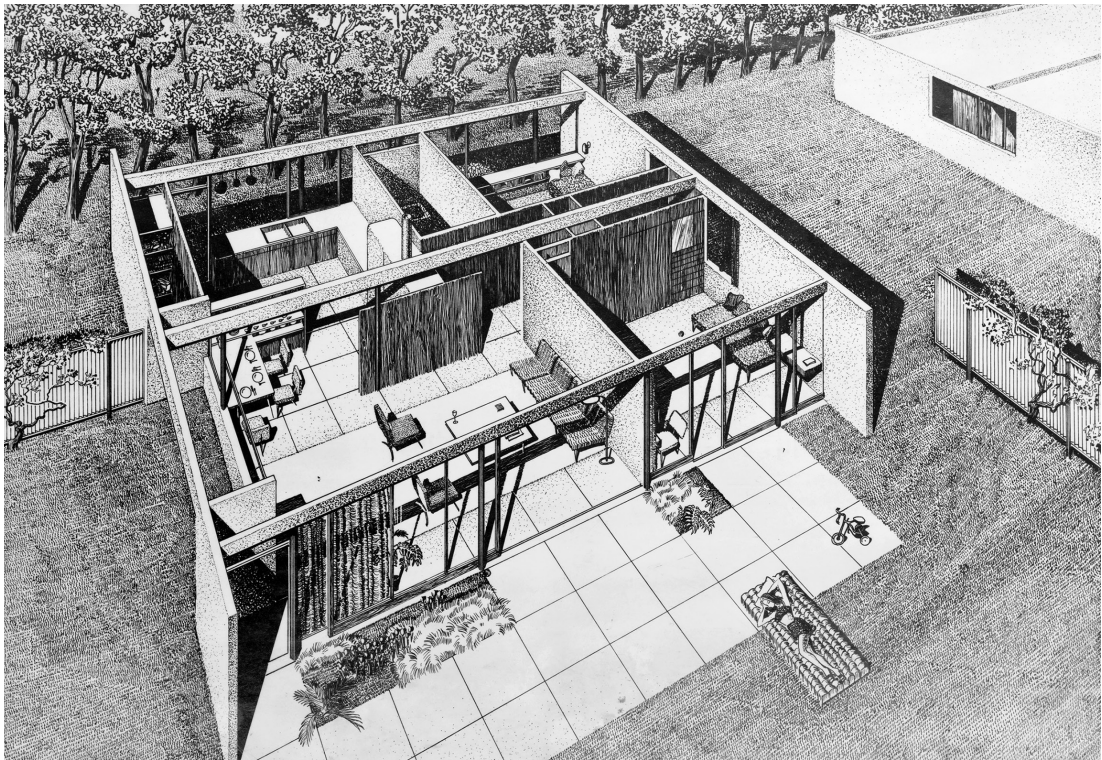
a cantilevered slab supported by tubular steel pilars, and the domestic program (Figure 2).

Estas perspectivas sintéticas que enfatizan la dimensión tectónica de la construcción, se complementan con otras más descriptivas como la de las casas Lamolithic en Lambie Beach (Siesta Key, Florida, 1948) en las que la supresión de la cubierta, permite reconocer las posibilidades espaciales y funcionales que ofrece el sistema constructivo de pórticos de hormigón en los espacios interiores y su conexión con el exterior (Figura 3).

These synthetic perspectives emphasize the tectonic dimension of the construction and complement others, of a more descriptive character, such as the Lamolithic houses in Lambie Beach (Siesta Key, Florida, 1948). In these, the suppression of the roof allows to recognize the spatial and functional possibilities offered by a constructive system of concrete frames in the interior spaces and their connection with the exterior (Figure 3).

Como Rudolph relata en la revista *Perspecta* en 1952, Gropius le había aclarado el "nuevo concepto de espacio," en alusión al libro *Space, Time and Architecture* de Sigfried Giedion de 1941, el que considera "el libro más influyente en su vida profesional,"<sup>17</sup> por abrirle nuevas vías de exploración en términos de estructura y espacio (Figura 4).

As Rudolph related in *Perspecta* journal in 1952, Gropius had explained the "new concept of space," in reference to a book titled *Space, Time and Architecture* written by Sigfried Giedion in 1941, which he considered "the most influential book in his professional life,"<sup>17</sup> for expanding his horizons in terms of structure and space (Figure 4). His



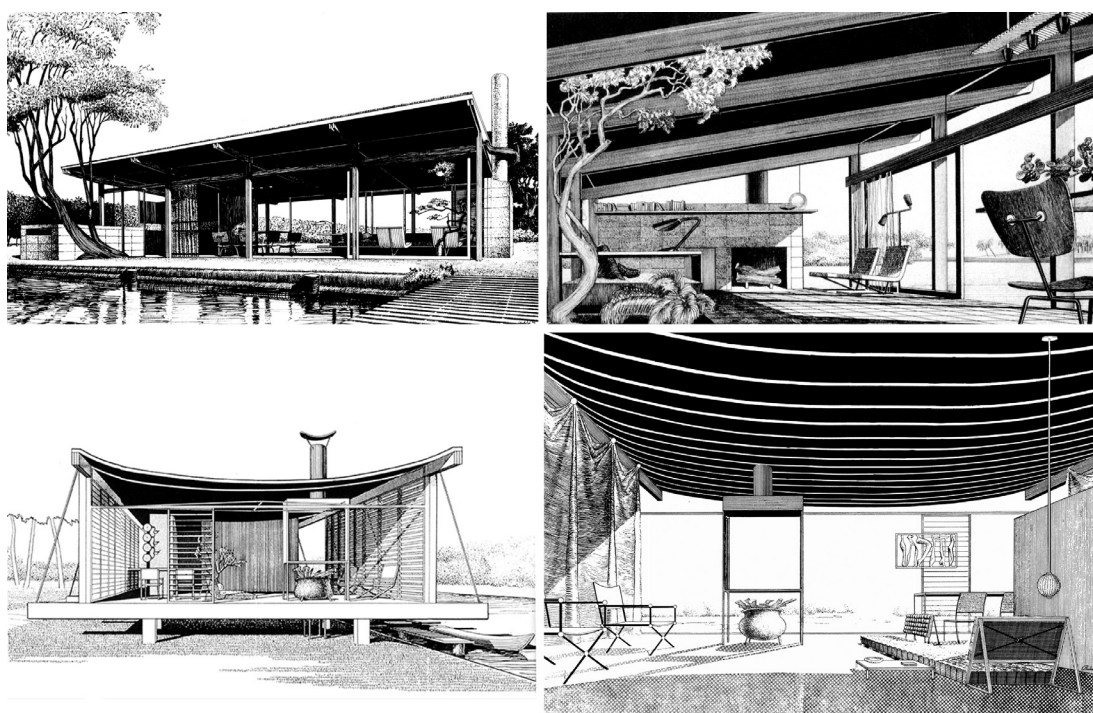
**Figura 3.** Perspectiva fugada descriptiva de casa Lamolithic en Lambie Beach (Siesta Key, Florida, 1948).

**Figure 3.** Descriptive vanishing perspective of Lamolithic House in Lambie Beach (Siesta Key, Florida, 1948).

Su preocupación por la componente psicológica de estos ámbitos, creados conforme al espíritu de la época, para dar soporte a la vida lúdica y la interacción social del nuevo habitante americano, se percibe en las perspectivas interiores.<sup>18</sup> Son representaciones subjetivas de gran profundidad y espacialidad, al optar por un punto de vista más bajo del habitual, en las que se enfatiza el juego de luces y sombras propio de la soleada Florida para añadir dramatismo, como se muestra en el interior de la residencia Shute (Siesta Key, Florida, 1947) (Figura 4). Este dibujo, aún en desarrollo pero ya

*interest for the psychological component of these areas, created according to the spirit of the times, to give support to the festive aspects and social interaction of the new American denizen, can be perceived in the interior perspectives.<sup>18</sup> These are subjective representations of great depth and spatiality, by opting for a lower than usual point of view, which emphasizes the typical play of light and shadow of sunny Florida to add drama, as shown in the interior of the Shute Residence (Siesta Key, Florida, 1947) (Figure 4). This drawing, still in development but already distinctive of his work,*





**Figura 4.** Perspectivas exteriores e interiores de las residencias Shute (Siesta Key, Florida, 1947) y Cocoon o Healy Guest House (Siesta Key, Florida, 1950).

**Figure 4.** Exterior and interior perspectives of the Shute Residence (Siesta Key, Florida, 1947) and Cocoon or Healy Guest House (Siesta Key, Florida, 1950).

distintivo de su trabajo, hace uso, junto a la tinta en rayados regulares a los elementos constructivos y punteados más libres a los elementos naturales, de nuevos materiales plásticos como tramas zip-a-tone con texturas estampadas, presente por ejemplo en el suelo de la casa Cocoon (Siesta Key, Florida, 1950) (Figura 4).

*makes use, together with the ink of regular traces for the constructive elements and free dotted ones for the natural elements, of new plastic materials like zip-a-tone with patterned textures, present on the floor of the Cocoon House (Siesta Key, Florida, 1950) (Figure 4).*

Frente a la dificultad de representar la profundidad en el alzado, Rudolph adopta el dibujo en perspectiva para subrayar la continuidad espacial y la transparencia del proyecto doméstico. Elige encuadres frontales o ligeramente girados, en los

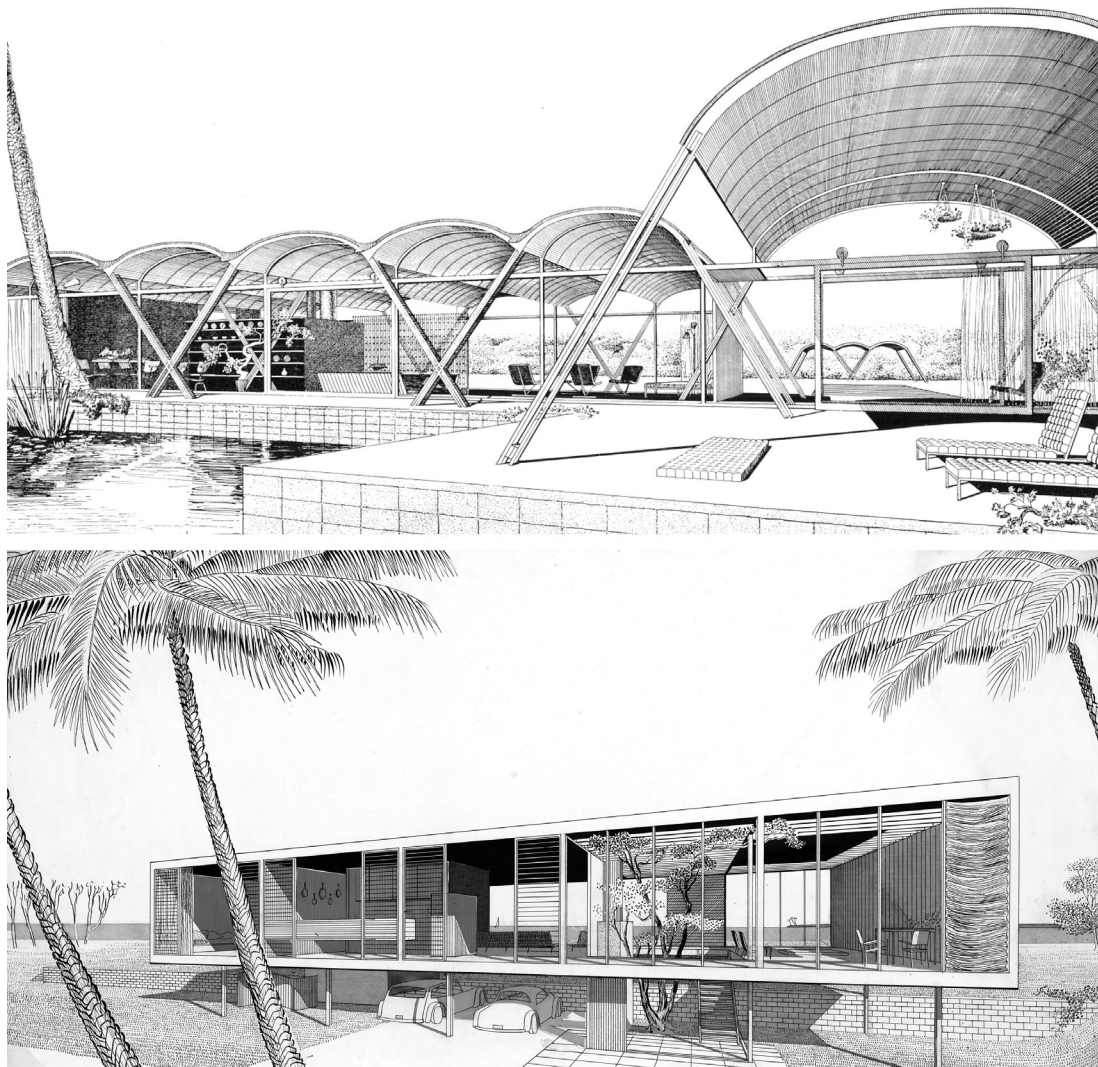
*Faced with the difficulty of representing depth in the elevations, Rudolph adopted the perspectives in order to underline the spatial continuity and transparency of the domestic projects. He chose frontal or off-centre framings, in which the viewpoint, located*

que el punto de vista a la altura del usuario convierte al observador en partícipe de la escena, como sucede en la perspectiva de la residencia Knott (Yankeetown, Florida, 1951), o elevado a una altura irreal, le permite acceder al interior, como en la residencia Walker (Sanibel Island, Florida, 1951) (Figura 5). El espacio arquitectónico tridimensional se enfatiza mediante la repetición de elementos estructurales lineales paralelos, como sucede en las perspectivas de las residencias Shute y Cocoon o Healy Guest House (Figura 4), o mediante el tratamiento de la volumetría con una técnica de trama cruzada, como se aprecia en la residencia Knott (Figura 5). En ambos casos se busca atraer al espectador, al potenciar la sensación de profundidad superponiendo haces de líneas orientados hacia el punto de fuga de la perspectiva con otros en dirección perpendicular. Así, la gradación de las diversas mallas lineales define la dirección de los planos, la incidencia de la luz con sus sombras y reflejos y la escala del despiece de los materiales. El resultado son escenas idealizadas de los proyectos que se publican de manera previa a su construcción, anticipando la percepción que posteriormente reflejará la fotografía.

La apertura del proyecto doméstico al entorno inmediato se refleja en estas perspectivas que tratan de conjugar la necesaria intimidad de la vivienda con la transparencia y expansión modernas. Su comportamiento como "refugios panorámicos,"<sup>19</sup> según la denominación de Christopher Domin en 2002, se ilustra en vistas aéreas que sugieren su perfecta armonía con el paisaje. La capacidad de responder a los condicionantes del sitio les lleva a participar de manera activa en su definición y formar parte de su esencia, aspecto que Rudolph admira de la arquitectura de Wright. Con él comparte aquellos planteamientos que considera fundamentales para que un edificio se relacione con el terreno y el cielo, publicados en el *Journal of Architectural*

*at the height of the observer, literally turned him into a participant of the scene, as in the perspective of the Knott Residence (Yankeetown, Florida, 1951). In other examples, he elevated the viewpoint to an unreal height, allowing for the access to the interior, as in the Walker Residence (Sanibel Island, Florida, 1951) (Figure 5). The repetition of parallel linear structural elements emphasizes the three-dimensional architectural space, as in the perspectives of the Shute and Cocoon residences or Healy Guest House (Figure 4), or by using a crosshatched technique on the volumes, as we can see in the Knott Residence (Figure 5). In both cases, the aim is to attract the viewer by enhancing the depth perception by superimposing beams of lines oriented towards the vanishing point with others in a perpendicular direction. Thus, the progression of the different linear meshes defines the direction of the planes, the effects of light with its shadows and reflections and the detailed scale of the materials. The result is a number of idealized scenes of the projects published prior to their construction, anticipating the perception that would later reflect the photography.*

*These perspectives showed the opening of the domestic project to the immediate environment and tried to combine the necessary intimacy of a house with modern transparency and expansion. Their behaviour as "panoramic shelters,"<sup>19</sup> according to the name given by Christopher Domin in 2002, was illustrated by aerial views that suggest their perfect harmony with the landscape. The ability to meet the environment factors led them to participate actively in its definition and become part of its essence, an aspect that Rudolph admired in Wright's architecture. He shared with him the approach that he considered fundamental for a building to relate to the terrain and the sky, published in the *Journal of Architectural Education* in 1958.<sup>20</sup> The*

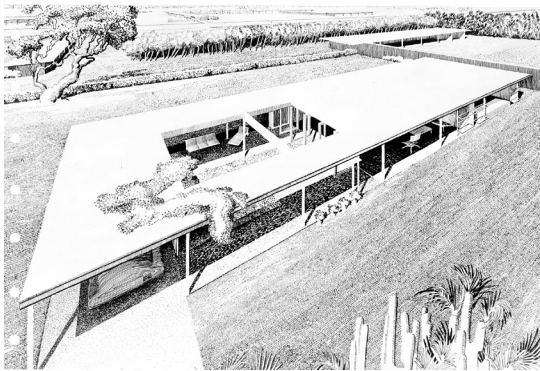


**Figura 5.** Perspectivas exteriores de las residencias Knott (Yankeetown, Florida, 1951) y Walker (Sanibel Island, Florida, 1951).

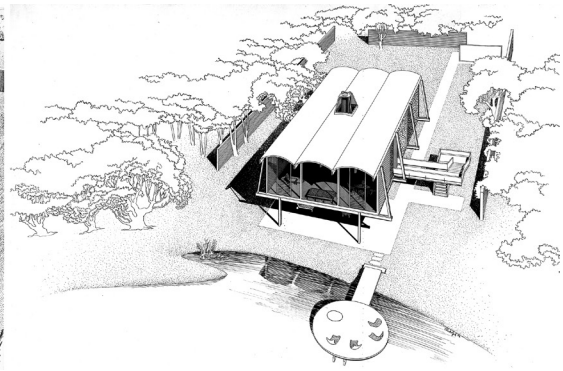
**Figure 5.** Exterior perspectives of the Knott (Yankeetown, Florida, 1951) and Walker residences (Sanibel Island, Florida, 1951).

Education en 1958:<sup>20</sup> el podio, que da una posición privilegiada al edificio al separarlo físicamente del suelo; la reflexión o reflejo en el agua, mediante

podium, which provides the building with a an exceptional position by physically separating it from the ground; the reflection in the water by means



**Figura 6.** Perspectivas aéreas de Revere Quality House (Siesta Key, Florida, 1948) y Hook Guest House (Siesta Key, Florida, 1952-1953).



**Figure 6.** Aerial perspectives of the Revere Quality House (Siesta Key, Florida, 1948) and Hook Guest House (Siesta Key, Florida, 1952-1953).

manipulaciones de la superficie que se drena en unas zonas y se inunda en otras para que se pose sobre ella; y la naturaleza, que tiene una presencia constante, con masas de árboles dispuestas de forma estratégica para aportar unas condiciones óptimas (Figuras 4, 5 y 6).<sup>21</sup> Estos principios están presentes en sus panorámicas desde el aire, en las que Rudolph manipula la fuga para acentuar el dramatismo y la poética de la construcción, y aporta un efecto atmosférico por el que parece que la arquitectura “flota” en el paisaje, como puede observarse en los dibujos de la Revere Quality House (Siesta Key, Florida, 1948) y la Hook Guest House (Siesta Key, Florida, 1952-1953) (Figura 6). La condición inmaterial que envuelve el entorno, herencia de la representación de Wright, inspirada en xilografías Ukiyo-e o “imágenes del mundo flotante” según su traducción literal,<sup>22</sup> se intensifica en proyectos posteriores como las residencias Millam (Jacksonville, Florida, 1965) y Callahan (Birmingham, Alabama, 1965).

*of manipulations of the surface, drained in some zones and flooded in others so that it settles on it; and nature, which has a continuous presence, with groups of trees arranged strategically to deliver optimal conditions (Figures 4, 5 and 6).<sup>21</sup> These principles are present in his aerial panoramic views, in which Rudolph manipulated the vanishing lines to emphasise the drama and poetics of construction. Using these means, he provided an atmospheric effect by which it seems that architecture “floats” in the landscape, as observed in the drawings of the Revere Quality House (Siesta Key, Florida, 1948) and the Hook Guest House (Siesta Key, Florida, 1952-1953) (Figure 6). The immaterial nature that shrouds the environment, inheritance of Wright’s representation, inspired by Ukiyo-e woodcuts or “images of the floating world” according to its literal translation,<sup>22</sup> was intensified in later projects such as the Millam (Jacksonville, Florida, 1965) and Callahan residences (Birmingham, Alabama, 1965).*

## LA AGRUPACIÓN SOCIAL

En el ámbito residencial colectivo, Paul Rudolph traslada la experiencia de la vivienda unifamiliar a la dimensión urbana, partiendo de estructuras modulares que, al combinar en conjuntos complejos, aportan espacios en los que, junto a la componente funcional, toman especial relevancia otras de tipo social y psicológico.

Se trata de innovadores desarrollos urbanos en los que Rudolph trabaja con agrupaciones de unidades modulares macladas en configuraciones flexibles, que integran espacios de vivienda con terrazas, calles y escaleras para la comunicación pública y privada en distintos niveles.<sup>23</sup> El primer proyecto para el complejo Married Students Housing en la Universidad de Yale (New Haven, Connecticut, 1960-1961) supone una continuación de sus adaptaciones regionales desde estos nuevos patrones de asociación e interconexión.<sup>24</sup> Se trata de una densa macla modular de ladrillo y hormigón prefabricado, formalmente alineada con el brutalismo inglés, que representa en planta y en perspectiva caballera. Los distintos usos se codifican mediante un sistema de tramas y las cotas de los volúmenes construidos y los espacios intermedios se identifican en planta con densas sombras arrojadas que producen un efecto de relieve, y en perspectiva con el tratamiento rayado de los planos verticales en función de su textura y composición de huecos (Figura 7). Para la definición del módulo y su relación con los ámbitos intermedios que lo envuelven, utiliza una perspectiva cenital fugada que aúna una dimensión técnica, al mostrar su planta a una escala en la que se aprecia su composición constructiva, y una dimensión espacial, al aportar la sensación y forma de uso de las distintas estancias (Figura 8).

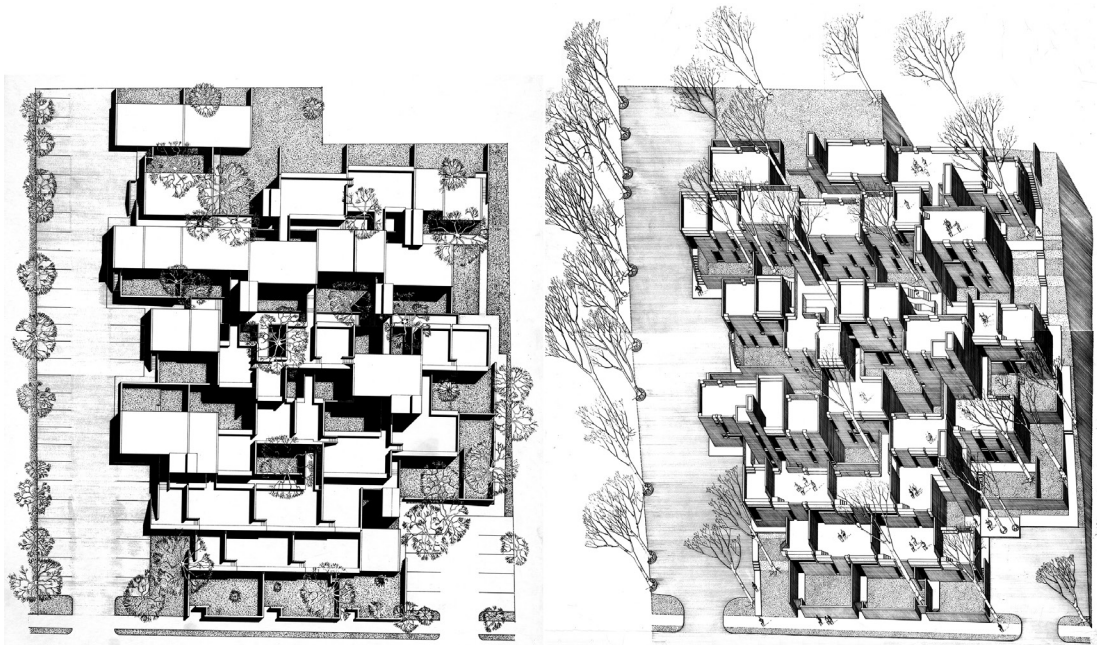
Su interés por la prefabricación le lleva a desarrollar estos módulos, incrementando su

## THE SOCIAL GROUPING

*In the collective housing area, Paul Rudolph transferred the experience of the single-family housing to the urban dimension, starting with modular structures that, when combined in complex sets, provided with spaces in which, along with the functional component, others of a particular social and psychological nature took on special relevance.*

*These are innovative urban developments in which Rudolph worked with groups of modular units linked in flexible configurations, which integrate housing spaces with terraces, streets and stairs for public and private communication at different levels.<sup>23</sup> The first project for the Married Students Housing complex at Yale University (New Haven, Connecticut, 1960-1961) is a continuation of his regional adaptations from these new patterns of association and interconnection.<sup>24</sup> It is a dense modular structure of brick and precast concrete, formally aligned with the English brutalism, of which he represented a floor plan and a cavalier perspective. The different functions are encoded by a system of patterns, and the dimensions of the built volumes and the intermediate spaces are defined by dense shadows that generate an effect of relief. The vertical planes are represented with a vertical pattern according to their texture and openings in the perspective (Figure 7). For the characterisation of the module and its relationship with the intermediate areas that surround it, he used a zenithal perspective that combines a technical dimension, as it showed its floor plan in a scale in which we can see its constructive composition, and a spatial dimension, by providing the sensation and way to use of the different rooms (Figure 8).*

*His interest in prefabrication led him to develop these modules, increasing their quality and*

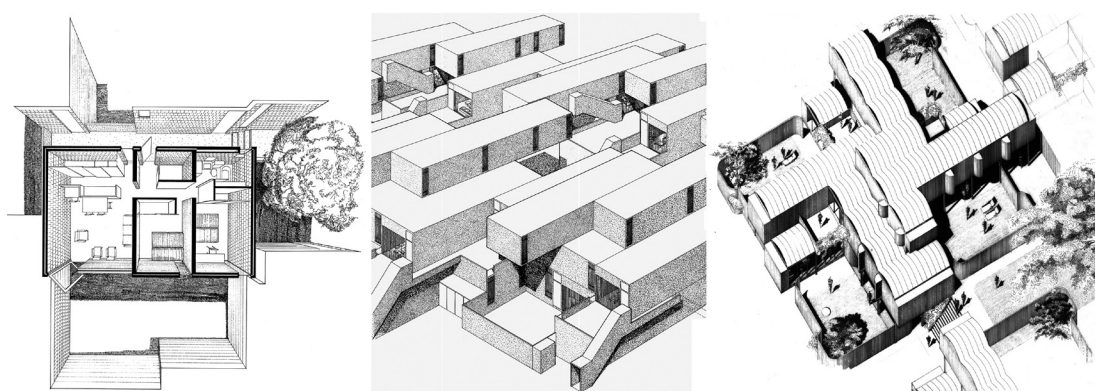


**Figura 7.** Planta y perspectiva caballera del complejo Married Students Housing, Yale University (New Haven, Connecticut, 1960-1961).

**Figure 7.** Floor plan and a cavalier perspective of the Married Students Housing complex, Yale University (New Haven, Connecticut, 1960-1961).

calidad y reduciendo costes de producción. El resultado son unidades formales y funcionales que denomina “twentieth-century bricks,” con las que pretende revolucionar los sistemas de construcción residencial,<sup>25</sup> hasta resolver problemas de pobreza, segregación e infravivienda, frecuentes en la ciudad americana de finales de los años sesenta. Toma como referente las unidades modulares del proyecto Habitat de Moshe Safdie para la Expo’67 de Montreal, para proyectar desarrollos en altura como el Graphic Arts Center (New York, 1967), una mega-estructura con unidades suspendidas cada diez plantas, y desarrollos en superficie, como los apartamentos Fort Lincoln (Washington, 1968) y el complejo que finalmente construye,

reducing production costs. The results are formal and functional units that he called “twentieth-century bricks,” with which he aimed to revolutionise residential construction systems, in order to solve problems of poverty, segregation and substandard housing,<sup>25</sup> frequent in the American cities of the late sixties. He took the modular units of the Habitat project of Moshe Safdie for the Expo’67 of Montreal as a reference to design high-rise developments as the Graphic Arts Center (New York, 1967), a mega-structure with suspended units every ten floors. Likewise, he designed low-rise developments such as the Fort Lincoln apartments (Washington, 1968) and the complex he finally achieved to build, Oriental Masonic Gardens on Wilmot Road



**Figura 8.** Esquemas de agrupación del complejo Married Students Housing, Yale University (New Haven, Connecticut, 1960-1961), los apartamentos Fort Lincoln (Washington, 1968) y el complejo Oriental Masonic Gardens (New Haven, Connecticut, 1968-1971).

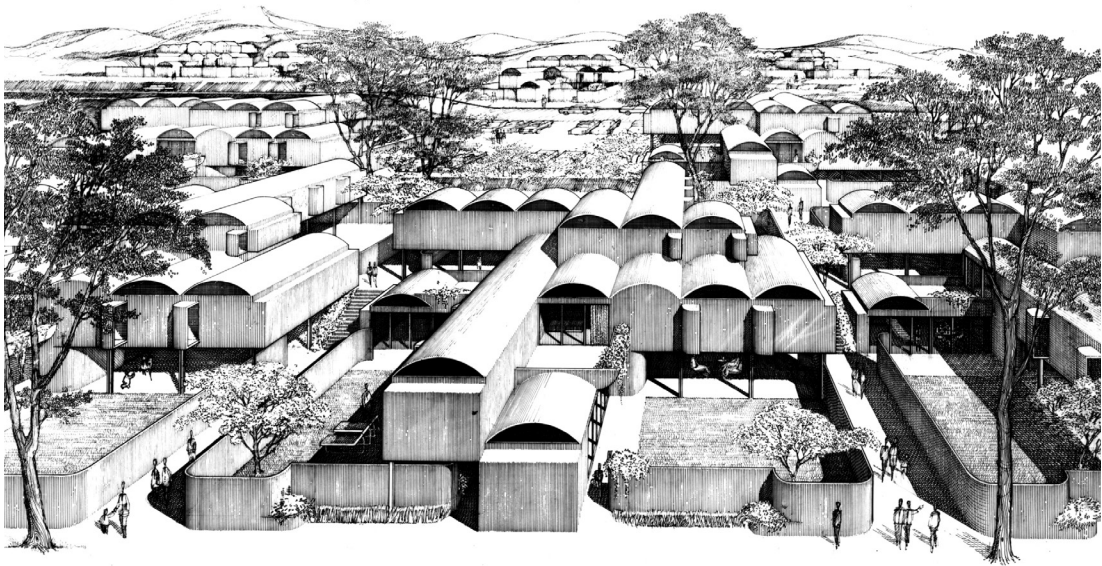
**Figure 8.** Diagrams of the grouping systems of the Married Students Housing complex, Yale University (New Haven, Connecticut, 1960-1961), Fort Lincoln apartments (Washington, 1968) and Oriental Masonic Gardens complex (New Haven, Connecticut, 1968-1971).

Oriental Masonic Gardens en Wilmot Road (New Haven, Connecticut, 1968-1971). La definición de módulos mediante sistemas experimentados con anterioridad en las casas de Florida, se analiza en perspectivas aéreas, fugadas o isométricas, en las que con el tratamiento de texturas y sombras estudia la materialidad de sus componentes, el sistema de agrupación y la proporción de los espacios exteriores generados (Figura 8).

(New Haven, Connecticut, 1968-1971). The characterisation of the modules by means of previously experienced systems in his Florida houses was analysed in aerial perspectives or isometric views, in which he studied the materiality of the components, the grouping system and the proportion of the generated exterior spaces using different textures and shadows (Figure 8).

El compromiso social que demuestran estos proyectos enlaza con una visión de la arquitectura como disciplina capaz de mejorar la vida del hombre.<sup>26</sup> Rudolph busca superar la modernidad desde su humanización, con un ambiente de calidad en entornos urbanos, que define en la revista *Perspecta* de 1957 como dinámicos y capaces de vincularse al hombre.<sup>27</sup> La representación del complejo Oriental Masonic Gardens muestra una preocupación por la percepción visual del edificio y sus espacios intermedios desde su dimensión humana (Figura 9).<sup>28</sup> Para su representación elige una perspectiva

The social commitment shown by these projects is linked with a vision of architecture as a discipline capable of improving the life of men.<sup>26</sup> Rudolph seeks to overcome modernity from its humanisation, with a high quality ambient in urban environments, which he defined in *Perspecta* journal in 1957 as dynamic and capable of binding together with men.<sup>27</sup> The representation of the Oriental Masonic Gardens complex shows an interest for the visual perception of the building and its intermediate spaces from its human dimension (Figure 9).<sup>28</sup> For its representation, he chose an aerial perspective in which the



**Figura 9.** Perspectiva del complejo Oriental Masonic Gardens (New Haven, Connecticut, 1968-1971).

**Figure 9.** Perspective of the Oriental Masonic Gardens complex (New Haven, Connecticut, 1968-1971).

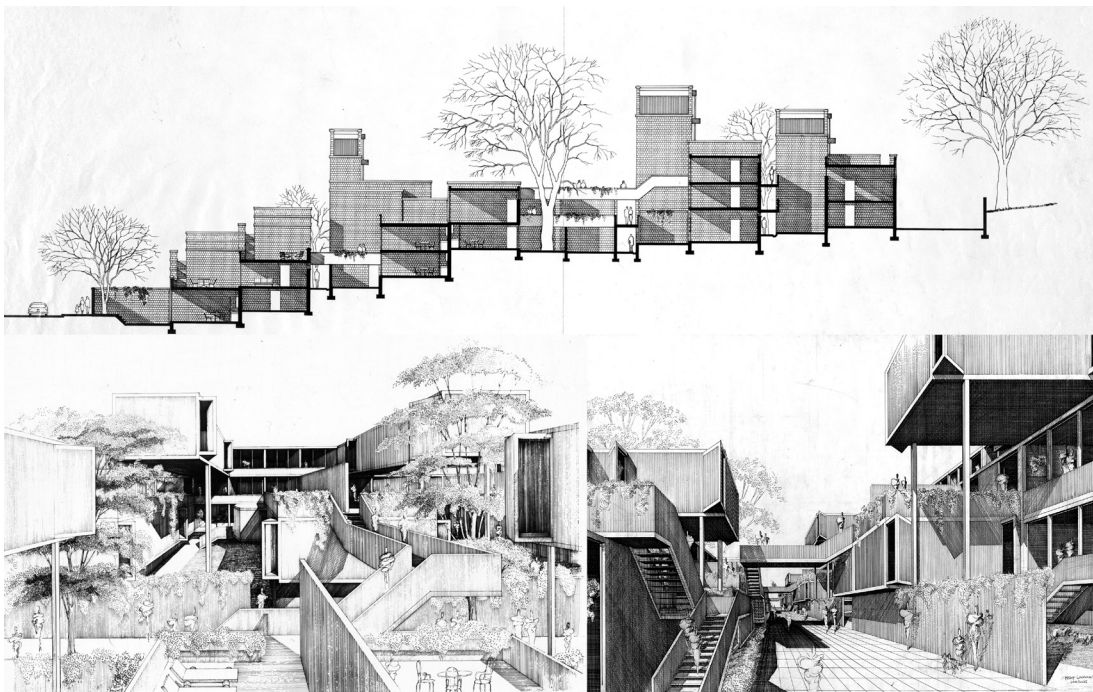
aérea con una fuga, en la que los planos verticales, paralelos al plano del cuadro, al mantener sus proporciones reales, ayudan a entender la volumetría, y los planos horizontales, con dirección perpendicular, enfatizan la profundidad. El tratamiento de estos planos con una pérdida progresiva de detalle y una gradación de las escalas tonales en las tramas hasta prácticamente desaparecer, simula el efecto de la distancia aportando una sensación atmosférica. La materialidad de los paramentos y pavimentos, la sutileza de la vegetación y el efecto de las sombras, evocan las percepciones en los espacios de tránsito y convivencia, de unos usuarios que están presentes en la imagen, significando su condición y forma de uso.

*vertical planes, parallel to the picture plane, help to understand the volumes and the horizontal planes by way of keeping their real proportions, and the perpendicular ones emphasise the depth. The treatment of these planes, with a progressive loss of detail and a gradation of the tonal scales in the patterns until their practical disappearance, simulates the effect of the distance contributing to create an atmospheric sensation. The materiality of the walls and pavements, the delicacy of the vegetation and the effect of the shadows evoke the perceptions, in the transit or communal spaces, of the users present in the image, indicating their nature and way of use.*

Esta concepción psicológica y simbólica de la arquitectura atiende a la posición de Geoffrey Scott de

*This psychological and symbolic conception of architecture deals with the stand of Geoffrey Scott*





**Figura 10.** Sección del complejo Married Students Housing (New Haven, Connecticut, 1960-1961) y perspectivas del espacio público de Fort Lincoln (Washington, 1968).

**Figure 10.** Cross-section of the Married Students Housing complex (New Haven, Connecticut, 1960-1961) and perspectives of the public space of Fort Lincoln (Washington, 1968).

estimular respuestas físicas y emocionales desde la estética,<sup>29</sup> y se acerca nuevamente a los aspectos espaciales de Wright, ligados a las necesidades del ser humano desde un punto de vista sensitivo.<sup>30</sup> La inclusión de la figura humana es recurrente en el dibujo de Rudolph, y por tanto no puede faltar en la representación de estos espacios, pensados para fomentar el contacto social.<sup>31</sup> Así ocurre en la sección de la primera propuesta para el complejo Married Students Housing, en la que las texturas y las sombras permiten entender la relación entre los distintos espacios (Figura 10). También está presente en las perspectivas parciales de los espacios intermedios de Fort Lincoln, que tomando

to stimulate physical and emotional responses from aesthetics,<sup>29</sup> and comes closer again to the spatial facets of Wright, linked to the needs of the human being from a sensitive point of view.<sup>30</sup> The inclusion of the human figure is recurrent in Rudolph's drawings, and therefore it cannot be lacking in the representation of these spaces, designed to encourage social contact.<sup>31</sup> This is the case in the cross-section of the first draft for the Married Students Housing complex, in which textures and shadows make it possible to understand the relationship between the different spaces (Figure 10). It is also present in the partial perspectives of the intermediate spaces of Fort Lincoln that taking a

el punto de vista humano, evocan la sensación del espacio desde las distintas cotas, con un delicado tratamiento y un alto grado de detalle (Figura 10).

## LA MATERIALIDAD MONUMENTAL

Las relaciones entre estructura, espacio y materia son también exploradas por Paul Rudolph en los proyectos públicos de gran escala que desarrolla desde su etapa en Yale, a comienzos de los años sesenta, con los que se aproxima a una nueva monumentalidad,<sup>32</sup> en la que adquieren un papel determinante el emplazamiento del edificio y su materialidad.

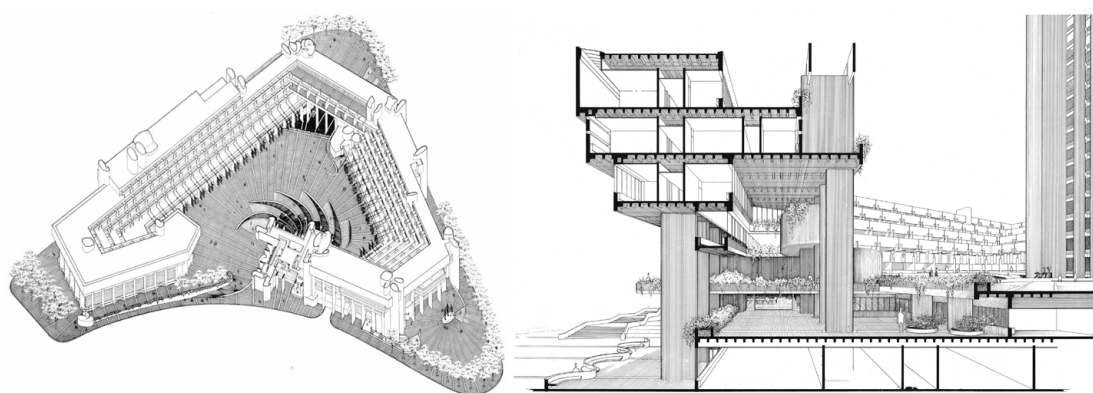
La presencia de estos edificios, de carácter inmutable en la ciudad cambiante, probablemente debe algo a su percepción como puntos de referencia o imágenes en la memoria del usuario, en alusión a *The Image of the City* de Kevin Lynch, de 1960. Su integración y significación en el contexto urbano incorpora con el Boston Government Service Center (Boston, Massachusetts, 1963-1971) el concepto de "arquitectura topográfica," por esculpir con ella el espacio público. Rudolph plantea, en vez de los tres edificios que se proponían, un cuerpo continuo y masivo que define una plaza peatonal y se remata con una singular torre, no construida, que anuncia el conjunto de forma legible y expresiva.<sup>33</sup> El perímetro exterior intensifica su escala hacia el tráfico y el interior se escalona hacia la plaza, creando un espacio cóncavo de mayor apertura.<sup>34</sup> El carácter esencialmente urbano de este proyecto se ilustra en una perspectiva axonométrica (Figura 11), en la que talla la torre para ver de forma continua el espacio público, que trama con el despiece del pavimento y el tratamiento de la vegetación, para acentuar su importancia y facilitar la lectura del conjunto. Verifica además su carácter público al poner en relación los espacios interiores y exteriores

*human point of view evoke the sensation of space from different levels, with a delicate treatment and a high degree of detail (Figure 10).*

## THE MONUMENTAL MATERIALITY

*Paul Rudolph also explored the relations between structure, space and matter in the large-scale public projects he developed from his time at Yale on, in the early sixties, with which he approached a new monumentality,<sup>32</sup> in which the location of the building and its materiality acquired a determining role.*

*The appearance of these buildings, of an immutable nature in a changing city, probably stems from their perception as landmarks or images in the user's memory, alluding to Kevin Lynch's *The Image of the City*, from 1960. Its integration and significance in the urban context incorporates the concept of "topographic architecture" with the Boston Government Service Center (Boston, Massachusetts, 1963-1971), by sculpting the public space with it. Rudolph put forward, instead of the three proposed buildings, a continuous and massive body that defined a pedestrian plaza that he closed with a singular tower, unbuilt, which announces the whole in an understandable and expressive way.<sup>33</sup> The outer perimeter intensified its scale towards traffic and the interior is terraced towards the plaza, creating a concave space with greater openness.<sup>34</sup> An axonometric perspective (Figure 11), in which he cut the tower to see the full public space, illustrates the essentially urban character of this project. He used the pavement and the vegetation to accentuate its importance and make it easy to understand the whole. He also verified its public character by relating the interior and exterior spaces with a perspective cross-section (Figure 11),*



**Figura 11.** Perspectiva axonométrica y sección fugada del Boston Government Service Center (Boston, Massachusetts, 1963-1971).

**Figure 11.** Axonometric and cross-section perspectives of Boston Government Service Center (Boston, Massachusetts, 1963-1971).

en una sección fugada (Figura 11), forma de representación que Rudolph había usado a principios de los años cincuenta y convierte en habitual en los sesenta, por permitirle expresar la creciente complejidad de sus edificios, combinando la representación constructiva con la dimensión espacial. El punto de fuga a la cota del espacio público, el tramado de la superficie estructural que lo envuelve, incrementando progresivamente el grosor y la densidad de la línea con el alejamiento, y el grado de detalle de los elementos que lo componen, aportan una descripción minuciosa de este nuevo entorno urbano.

Otro ejemplo de "monumentalidad genuina," en palabras de Bruno Zevi,<sup>35</sup> es el edificio Art and Architecture, Yale University (New Haven, Connecticut, 1958-1963), cuya fuerte presencia urbana condiciona su definición y contribuye a la mejora del entorno.<sup>36</sup> Su expresividad se enmarca en un movimiento propio de la modernidad estadounidense de la década de los años cincuenta, que el arquitecto Gerhard Kallmann relaciona con

*a way of representation that Rudolph had used in the early fifties and became habitual in the sixties, as it allowed him to express the growing complexity of his buildings, combining the constructive representation with the spatial dimension. The vanishing point at the level of the public space, the pattern of the structural surface that surrounds it, progressively increasing the thickness and density of the lines with the distance, and the degree of detail of the elements that compose it, provided a thorough description of this new urban environment.*

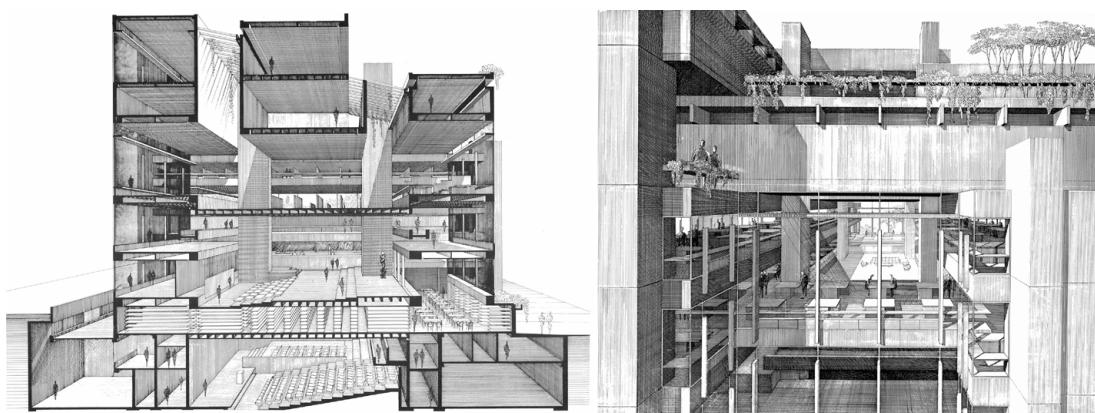
*Another example of "genuine monumentality," in the words of Bruno Zevi,<sup>35</sup> is the Art and Architecture building, Yale University (New Haven, Connecticut, 1958-1963), whose strong urban presence determined its characterisation and contributed to the improvement of its surroundings.<sup>36</sup> Its expressiveness is defined by a typical movement of the American modernity of the fifties, which the architect Gerhard Kallmann relates to American abstract expressionism and calls "Action Architecture."<sup>37</sup> The*

el expresionismo abstracto americano y llama "Action Architecture."<sup>37</sup> La experimentación con la estructura y la forma lleva a Paul Rudolph a una organización del espacio mediante planos, que comienza a trabajar en el proyecto Sarasota High School (Sarasota, Florida, 1958-1959), y desencadena una investigación sobre el manejo de la luz y la escala.<sup>38</sup> En el edificio Art and Architecture de Yale, la estructura se compone de bandejas horizontales de hormigón colocadas en esvástica o molinete entre un sistema geométrico de pantallas verticales. La concatenación espacial y fluidez moderna se conjugan en esta forma dinámica que establece conexiones históricas con el pasado y estimula reacciones emocionales.<sup>39</sup> Se representa en una imponente sección fugada de gran formato, ampliamente publicada, que iba incorporando los sucesivos cambios del proyecto en evolución (Figura 12). Junto a Rudolph, los estudiantes de arquitectura ayudaron en el laborioso dibujo de líneas estrechamente espaciadas, que sugieren el efecto de la luz en los muros estriados del edificio y, al tomar una doble dirección, reproducen las cualidades de la sombra y la profundidad. Esta sección perspectiva tomada desde un punto central, a la cota del forjado que acoge la gran sala de dibujo, es la mejor guía constructiva y espacial del edificio.<sup>40</sup> Con ella Rudolph reafirma la importancia de la sección como forma de representación que permite mostrar, como la planta no puede hacerlo, la relación entre los distintos usos y niveles, y la procedencia y efecto de la luz o, citando a Willem M. Dudok, el "serio y bello juego del espacio."<sup>41</sup>

En la perspectiva se ilustra cómo, para producir patrones complejos y cambiantes de luces y sombras, texturas y profundidades, Rudolph parte de un material único, el hormigón con superficie estriada o texturizada. Este tratamiento consiste en realizar acanaladuras verticales paralelas, abujardadas con martillo, exponiendo al exterior el agregado, que

*experimentation with the structure and form took Paul Rudolph to a spatial organisation through planes, which he began to work with on the Sarasota High School project (Sarasota, Florida, 1958-1959). This sparked an investigation about the use of light and the scale.<sup>38</sup> In the Yale Art and Architecture building, the structure is composed of horizontal concrete planes placed in forming a swastika or a twirl between a geometric system of vertical screens. The spatial concatenation and modern flow are combined in a dynamic form that establishes historical connections with the past and stimulates emotional reactions.<sup>39</sup> It was represented in an imposing large-format cross-section perspective, widely published, which incorporated the successive changes of the evolving design (Figure 12). Together with Rudolph, some students of architecture helped in the laborious drawing of closely spaced lines, which suggest the effect of light on the fluted walls of the building and, by taking a double direction, reproduce the qualities of shadow and depth. This cross-section perspective taken from a central point, at the level of the floor that houses the large drawing room, is the best constructive and spatial guide of the building.<sup>40</sup> With it Rudolph reaffirmed the importance of the cross-section as a way of representation that allows for showing, in a way the floor plan cannot, the relationship between different uses and levels, and the origin and effect of light or, quoting Willem M. Dudok, the "serious and beautiful game of space."<sup>41</sup>*

*The perspective illustrates how, to produce complex and changing patterns of lights and shadows, textures and depths, Rudolph was based on a unique material, concrete with a textured or tubed surface. This treatment consists of making parallel vertical fluting, bush-hammered, exposing to the outside the face that contains minerals and*



**Figura 12.** Sección fugada y fragmento de alzado del edificio Art and Architecture, Yale University (New Haven, Connecticut, 1958-1963).

**Figure 12.** Cross-section perspective and fragment of the elevation of the Art and Architecture building, Yale University (New Haven, Connecticut, 1958-1963).

contiene minerales y restos de conchas y corales reflectantes, con sus múltiples efectos. Se produce con ello un patrón siempre cambiante que rompe la escala de los muros, capta la luz de forma diversa y aumenta la sensación de profundidad, generando efectos ópticos y táctiles que desmaterializan las superficies o les dan una solidez adicional.<sup>42</sup> Según Timothy M. Rohan, estos efectos son la respuesta de Rudolph a la desornamentación de la arquitectura contemporánea. En su crítica de la modernidad, reexamina el ornamento y lo sublima en la materialidad de la construcción.<sup>43</sup> Más que la expresión franca de la estructura y los materiales descritos por Reyner Banham y practicados por Le Corbusier y el brutalismo, para Rudolph es una forma de relieve elevado, producto de una investigación amplia sobre métodos de dibujo y decoración, que se remonta a las discusiones sobre ornamento en torno al centenario del nacimiento de Louis Sullivan en 1956.<sup>44</sup>

La minuciosidad de la representación es una muestra de su papel en el proceso proyectual

remains of shells and reflecting corals, with their multiple effects. This produces an ever-changing pattern that breaks the scale of the walls, captures light in diverse ways and increases the sensation of depth, generating optical and tactile effects that dematerialize the surfaces or provide them with an additional solidity.<sup>42</sup> According to Timothy M. Rohan, these effects are Rudolph's response to the lack of ornamentation of contemporary architecture. In his critique of modernity, he re-examined ornamentation and sublimated it in the materiality of construction.<sup>43</sup> Rather than the frank expression of the structure and materials described by Reyner Banham and practiced by Le Corbusier and Brutalism, to Rudolph it is a shape of high relief, the product of extensive research on methods of drawing and decoration, dating back to the discussions about ornamentation around the centenary of the birth of Louis Sullivan in 1956.<sup>44</sup>

The meticulousness of the representation is a sample of its role in the design process of the Yale

del edificio Art and Architecture de Yale. En palabras de Banham, "es uno de los pocos edificios que, cuando se fotografió era exactamente como un dibujo, con todo el sombreado en el exterior saliendo como si fuera un lápiz muy suave."<sup>45</sup> La atención casi obsesiva a la línea a tinta en papel vegetal aporta a la superficie una inmediatez y calidez táctil, que acerca el espectador al material. Si se analiza un fragmento de la fachada (Figura 12), los planos del edificio que reciben luz directa se tratan con un sombreado vertical de líneas muy finas, que en zonas llegan a desaparecer, y aumentan su espesor cuando reciben sombras proyectadas. La secuencia tonal avanza hacia los planos interiores con sucesivos tratamientos de dos, tres y cuatro capas de tramas en distintas direcciones hacia el negro, o se reducen en los espacios iluminados abiertos a la fachada. La gran cantidad de detalle de estos espacios interiores, que se representan sin el filtro del vidrio, por la dificultad que Rudolph encuentra para indicar sus propiedades reflectantes, permite la ampliación del dibujo sin perder información o interés, lo que revela un nivel de definición casi obsesivo.

La relación entre la técnica de representación lineal y la selección en el proceso de proyecto como principal material de construcción el hormigón texturizado, que genera superficies con una apariencia similar, es confirmado por él mismo cuando afirma que su elección comienza de manera simultánea al concepto de representación, lo que hace que los edificios se ajusten exactamente a la imagen. Los patrones abujardados derivan por tanto de las técnicas de representación arquitectónica de Rudolph, en las que la presión del lápiz en el papel simula la presión literal en el hormigón, en una simbiosis entre construcción y dibujo (Figura 12).

*Art and Architecture building. Quoting Banham, "It is one of the very few buildings I know which, when photographed, was exactly like a drawing, with all the shading on the outside coming out as if it were a very light pencil."<sup>45</sup> The almost obsessive attention to the ink lines on tracing paper provides the surface with an immediacy and tactile quality, which brings the viewer closer to the material. If a fragment of the façade is analysed (Figure 12), the planes of the building that receive light directly are treated with a vertical shading of very thin lines, which disappear in certain areas, and increase their thickness when in the shadows. The tonal sequence advances towards the interior planes with successive treatments of two, three and four layers of patterns in different directions towards black, or they are reduced in the illuminated spaces towards the façade. The large amount of detail of these interior spaces, which are represented without the glass filter due to the difficulty that Rudolph found to indicate its reflective properties, allows for the extension of the drawing without losing any information or interest, which reveals an almost obsessive level of definition.*

*He confirmed the relationship between the technique of linear representation and the selection of texturized concrete as the main construction material in the design process, generating surfaces with a similar appearance, when he stated that his choice begins simultaneously with the concept of representation, which makes the buildings meet exactly to the image drawn. The bush-hammered patterns derive from Rudolph's architectural representation techniques, in which the pressure of the pencil on the paper simulates literally the pressure on concrete, in a symbiosis between construction and drawing (Figure 12).*

## CONCLUSIONES

Los dibujos analizados a lo largo del artículo se realizan en aproximadamente veinticinco años, pero la técnica utilizada en todos ellos es prácticamente la misma. Esta circunstancia se debe a la intensa búsqueda por parte de Rudolph durante su formación y los primeros años de trabajo, de un tipo de representación que le permitiera transmitir una visión personal del proyecto. Con el paso del tiempo, adapta los sistemas, o introduce variantes para aportar la visión que responde en mayor medida a sus intereses. Así, para mostrar la situación y la configuración general de las obras, en las casas de Florida acentúa el dramatismo y la poética de su implantación en el paisaje en perspectivas aéreas que sugieren su ligereza y lógica constructiva. Sin embargo, en los proyectos posteriores, la complejidad volumétrica y la necesidad de controlar la relación del edificio con el entorno y el espacio público, conducen a la axonometría como forma objetiva de representación. También evoluciona su manera de sugerir espacios, desde las perspectivas iniciales de las viviendas, en las que baja el punto de vista para manipular la escala haciéndolas parecer mayores, hasta los proyectos residenciales colectivos, en los que prima el punto de vista humano para transmitir su percepción y añadir una componente social, y los proyectos de escala monumental, en los que trabaja desde la sección fugada, tratando simultáneamente su espacialidad interior, estructura resistente y relación con el contexto urbano.

Desde el dibujo, Rudolph modula el proyecto con un desarrollo continuo de su representación gráfica, que busca respuestas personales a los problemas arquitectónicos y propios de la ciudad y la sociedad estadounidenses, que sintetiza en sus seis factores determinantes -emplazamiento, condiciones naturales, materiales, función, psicología del espacio y espíritu de la época- y aplica a

## CONCLUSIONS

*The drawings analysed in this article were made in a span of approximately twenty-five years, but the technique used in all of them is practically the same. This is due to an intense research by Rudolph, during his training and first years of work, about a type of representation that would allow him to convey a personal vision of the project. In time, he adapted the systems or introduced variations to provide the vision that better suited his interests. Thus, in order to show the situation and the general configuration of the works, in Florida houses he emphasised the drama and poetics of their situation in the landscape with aerial perspectives that suggest their lightness and constructive rationality. However, in subsequent projects, the volumetric complexity and the need to control the relationship of the building with its surroundings and public space, led to axonometry as the objective way of representation. His way of suggesting spaces evolved too. From the initial perspectives of the houses, in which the lower point of view manipulated the scale and made them look larger, up to the collective residential projects, in which the human point of view prevails to transmit his perception and add a social component. Likewise, the projects of monumental scale, in which he worked starting from the cross-section perspective, while simultaneously dealing with their interior spatiality, bearing structure and relationship with the urban context.*

*Based on drawings, Rudolph modulated his projects with a continuous development of their graphical representation, which seeks personal response to the architectural problems of the American cities and society. He synthesised this search in six determinants -environment, natural conditions, materials, function, psychological demands of the space and spirit of times- and applied them to a*

una amplia variedad de proyectos. El punto común a todos ellos responde a su concepción de la arquitectura como un “asunto altamente emocional,” y por tanto capaz de deleitar visualmente, como afirma en la revista *Perspecta* en 1986.<sup>46</sup> El diseño visual del espacio, como producto del acto creativo, es el principal determinante del proyecto, que con el dibujo ilustra desde distintos puntos de vista y analiza hasta descubrir sus principios invariantes.

El dibujo distintivo de Rudolph es por tanto un campo para la experimentación, pero también un fin en sí mismo, un lugar para expandir la disciplina y las capacidades de la arquitectura tanto como para resolver las demandas de un proyecto específico. Las secciones y perspectivas a gran escala e inmensamente complejas que produce hasta el final de su carrera, controlando cada línea como parte del proceso de proyecto, tienen más sentido para él que para el propio cliente. Continuamente construye y reconstruye en el dibujo la percepción y el movimiento en el edificio, incorporando cambios incluso durante la fase de construcción. Sus decisiones espaciales y constructivas están tan íntimamente relacionadas con el método de representación que establecen un paralelismo entre dibujar y construir, por el que dibujo y edificio constituyen un mismo fin.

## Notas y Referencias

- <sup>1</sup> Etapa que destaca con particular interés Eric Mumford en: Timothy M. Rohan, ed., *Reassessing Rudolph* (New Haven: Yale University Press, 2017), 31-33.
- <sup>2</sup> Kurt Forster, “Sueños de hormigón: Paul Rudolph, 1918-1997,” *Arquitectura Viva* n. 208 (octubre 2018): 51.
- <sup>3</sup> Paul Rudolph, “The six determinants of Architectural Form,” *Architectural Record* (octubre 1956): 183-190.
- <sup>4</sup> “He must understand that in the exhilarating, awesome moment when he takes pencil in hand [...], and there all that has gone before and all that will ever be.” Paul Rudolph, *Writings on Architecture* (New Haven: Yale University Press, 2009), 97.

*wide variety of projects. The point in common to all of them responds to his conception of architecture as a “highly emotional issue,” and therefore able to delight visually, as he stated in Perspecta journal in 1986.<sup>46</sup> The visual design of the space, as a product of the creative act, is the main determining factor of a project, which he illustrated with his drawings from different points of view and analysed until discovering its invariant principles.*

*The distinctive drawings of Rudolph are therefore a field for experimentation, but also a goal themselves, a place to expand the discipline and capabilities of architecture as well as to meet the requirements of a specific project. The large-scale and immensely complex cross-sections and perspectives that he produced until the end of his career, controlling each line as part of the design process, made more sense to him than to the client himself. He continuously built and reconstructed the perception and movement of the building in the drawings, incorporating changes even during the construction phase. His spatial and constructive determinations were so intimately related to the method of representation that they established a parallelism between drawing and building, for which drawing and building constitute the same goal.*

## Notes and References

- <sup>1</sup> *Eric Mumford underlines this period as especially interesting in: Timothy M. Rohan, ed., Reassessing Rudolph (New Haven: Yale University Press, 2017), 31-33.*
- <sup>2</sup> *Kurt Forster, “Sueños de hormigón: Paul Rudolph, 1918-1997,” Arquitectura Viva n. 208 (October 2018): 51.*
- <sup>3</sup> *Paul Rudolph, “The six determinants of Architectural Form,” Architectural Record (October 1956): 183-190.*
- <sup>4</sup> *“He must understand that in the exhilarating, awesome moment when he takes pencil in hand [...], and there all that has gone before and all that will ever be.” Paul Rudolph, Writings on Architecture (New Haven: Yale University Press, 2009), 97.*



- <sup>5</sup> "I have reached a point where I hate 'pretty drawings,' because it is the idea that is important. I am interested in how people think, and that is what drawing is about. It is a means of assessing what comes directly from the brain to the hand."  
Tom Porter, "Paul Rudolph," en *Architectural drawing. Master Class. Graphic techniques from the world's leading architects* (Singapore: Amazon Publishing Limited, 1993), 42.
- <sup>6</sup> Laurence Scarpa, "Paul Rudolph: Metaphors, Paradoxes, Contradictions and Abstractions," en *Symposium about the work of Paul Rudolph*, ed. Timothy M. Rohan (Cambridge: Yale University Press, 2009), 6.
- <sup>7</sup> "I do know how to sketch, but when I visit any work of architecture, I try to imagine what it is the architect is trying to do and how he imagined it. I try to envision it in terms of plan, section, and elevation, and I memorize certain things."  
Rudolph, "Excerpt from a conversation," 102.
- <sup>8</sup> "The preludes to the rendering are the, literally, hundreds of sketches which are constantly being prepared when there is a moment in an airplane, a train, a restaurant, or at home. The quality of the private visual sketch (the recording of an idea) varies according to the clarity of the thought. These rough sketches are usually the first evidence of my intention and have intense reality for me."  
Paul Rudolph, *Paul Rudolph: Dessins d'architecture, Architekturzeichnungen, Architectural Drawings* (New York: Architectural Book Publishing Company, 1981), 6.
- <sup>9</sup> Timothy M. Rohan, "Rendering the surface: Paul Rudolph's Art and Architecture Building at Yale," *Grey Room* n. 1 (otoño 2000): 89.
- <sup>10</sup> "They are rather, finally, an abstraction of an idea, an idealization, a fixed view which has little to do with the reality envisioned. The renderings show a highly idealized version of the truth, but that truth is not the only one, and it may not even be the important one."  
Rudolph, *Paul Rudolph: Dessins d'architecture*, 11.
- <sup>11</sup> Scarpa, "Paul Rudolph: Metaphors, Paradoxes, Contradictions and Abstractions", 5.
- <sup>12</sup> Juan Antonio Cortés y Rafael Moneo, *Comentarios sobre dibujos de 20 arquitectos actuales* (Barcelona: ETSAB, 1976), 2.
- <sup>13</sup> Concepto asociado más frecuentemente con Kenneth Frampton, las reflexiones de Rudolph en torno a él están ampliamente difundidas en *Perspecta, Architectural Forum*, etc. De especial interés:  
Noah Chasin, "Selected drawings by Paul Rudolph," *Journal of the Society of Architectural Historians* Vol. 57, n. 3 (septiembre 1998): 316-318.
- <sup>14</sup> Paul Rudolph, "Three new directions," *Perspecta MIT Press* Vol. 1 (1952): 22.
- <sup>15</sup> Débora Domingo-Calabuig, "La modernidad sureña: Paul Rudolph en Florida," en *Casa por casa: reflexiones sobre el habitar*, coord. Jorge Torres Cueco (Valencia: General de Ediciones de Arquitectura, 2009), 95-99.
- <sup>16</sup> Christopher Domin, *Paul Rudolph: The Florida houses* (New York: Princeton, 2002), 89.
- <sup>17</sup> "I suppose the single most influential book in my professional life was Giedion's *Space, Time and Architecture*, [...] Then there is Le Corbusier, especially *When the Cathedrals were White*, and *The Architecture of Humanism*, by Scott. Of course, the most convincing books were not the ones you could pick up and put down. I mean the most convincing were things like the Wright house, which said it all."  
William Marlin, "Paul Rudolph, Drawings," *Architectural Forum* n. 138 (Junio 1973): 50.
- <sup>18</sup> Anna Dempsey, Ben Youtz, y Kelly Haigh, "Re-viewing and Reimagining Paul Rudolph's Brutalist Architecture in the USA and Southeast Asia," *Studies in History and Theory of Architecture* Vol. 2 (2014): 141-142.
- <sup>19</sup> Domin, *Paul Rudolph: the Florida houses*, 15.
- <sup>20</sup> Paul Rudolph, "To enrich our Architecture," *Journal of Architectural Education* Vol. 13, n. 1 (primavera 1958): 1-14.
- <sup>21</sup> Noelia Galván Desvoux, Antonio Álvaro-Tordesillas, y Marina Jiménez Jiménez, "Paul Rudolph: arquitecturas dibujadas en el paisaje de Florida," *ZARCH Journal of interdisciplinary studies in Architecture and Urbanism* n. 10 (junio 2018): 107.
- <sup>5</sup> "I have reached a point where I hate 'pretty drawings,' because it is the idea that is important. I am interested in how people think, and that is what drawing is about. It is a means of assessing what comes directly from the brain to the hand."  
Tom Porter, "Paul Rudolph," en *Architectural drawing. Master Class. Graphic techniques from the world's leading architects* (Singapore: Amazon Publishing Limited, 1993), 42.
- <sup>6</sup> Laurence Scarpa, "Paul Rudolph: Metaphors, Paradoxes, Contradictions and Abstractions," en *Symposium about the work of Paul Rudolph*, ed. Timothy M. Rohan (Cambridge: Yale University Press, 2009), 6.
- <sup>7</sup> "I do know how to sketch, but when I visit any work of architecture, I try to imagine what it is the architect is trying to do and how he imagined it. I try to envision it in terms of plan, section, and elevation, and I memorize certain things."  
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- <sup>8</sup> "The preludes to the rendering are the, literally, hundreds of sketches which are constantly being prepared when there is a moment in an airplane, a train, a restaurant, or at home. The quality of the private visual sketch (the recording of an idea) varies according to the clarity of the thought. These rough sketches are usually the first evidence of my intention and have intense reality for me."  
Paul Rudolph, *Paul Rudolph: Dessins d'architecture, Architekturzeichnungen, Architectural Drawings* (New York: Architectural Book Publishing Company, 1981), 6.
- <sup>9</sup> Timothy M. Rohan, "Rendering the surface: Paul Rudolph's Art and Architecture Building at Yale," *Grey Room* n. 1 (Autumn 2000): 89.
- <sup>10</sup> "They are rather, finally, an abstraction of an idea, an idealization, a fixed view which has little to do with the reality envisioned. The renderings show a highly idealized version of the truth, but that truth is not the only one, and it may not even be the important one."  
Rudolph, *Paul Rudolph: Dessins d'architecture*, 11.
- <sup>11</sup> Scarpa, "Paul Rudolph: Metaphors, Paradoxes, Contradictions and Abstractions", 5.
- <sup>12</sup> Juan Antonio Cortés and Rafael Moneo, *Comentarios sobre dibujos de 20 arquitectos actuales* (Barcelona: ETSAB, 1976), 2.
- <sup>13</sup> The concept is associated frequently to Kenneth Frampton; the thoughts of Rudolph about it are widely disseminated in *Perspecta, Architectural Forum*, etc. Especially interesting:  
Noah Chasin, "Selected drawings by Paul Rudolph," *Journal of the Society of Architectural Historians* Vol. 57, n. 3 (September 1998): 316-318.
- <sup>14</sup> Paul Rudolph, "Three new directions," *Perspecta MIT Press* Vol. 1 (1952): 22.
- <sup>15</sup> Débora Domingo-Calabuig, "La modernidad sureña: Paul Rudolph en Florida," en *Casa por casa: reflexiones sobre el habitar*, ed. Jorge Torres Cueco (Valencia: General de Ediciones de Arquitectura, 2009), 95-99.
- <sup>16</sup> Christopher Domin, *Paul Rudolph: The Florida houses* (New York: Princeton, 2002), 89.
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William Marlin, "Paul Rudolph, Drawings," *Architectural Forum* n. 138 (June 1973): 50.
- <sup>18</sup> Anna Dempsey, Ben Youtz and Kelly Haigh, "Re-viewing and Reimagining Paul Rudolph's Brutalist Architecture in the USA and Southeast Asia," *Studies in History and Theory of Architecture* Vol. 2 (2014): 141-142.
- <sup>19</sup> Domin, *Paul Rudolph: the Florida houses*, 15.
- <sup>20</sup> Paul Rudolph, "To enrich our Architecture," *Journal of Architectural Education* Vol. 13, n. 1 (Spring 1958): 1-14.
- <sup>21</sup> Noelia Galván Desvoux, Antonio Álvaro-Tordesillas, and Marina Jiménez Jiménez, "Paul Rudolph: arquitecturas dibujadas en el paisaje de Florida," *ZARCH Journal of interdisciplinary studies in Architecture and Urbanism* n. 10 (June 2018): 107.

- <sup>22</sup> Es bien conocida la atracción de Wright por el arte y la arquitectura japonesa. Su relación con la obra de Hiroshige (1867-1959), autor de las xilografías a las que se hace referencia en el texto, comienza en 1905 cuando Wright viaja a Japón y recorre el país durante tres meses, volviendo con varios cientos de grabados suyos que exhibiría en marzo de 1906 en el *Art Institute of Chicago*.
- Miguel Sancho Mir, Beatriz Martín Domínguez, y Antonio Gómez Gil, "Frank Lloyd Wright & Hiroshige; de los grabados japoneses al portafolio Wasmuth," *EGA Expresión Gráfica Arquitectónica* n. 22 (2013): 204-213.
- <sup>23</sup> Paul Rudolph y Sibyl Moholy-Nagy, *La arquitectura de Paul Rudolph* (Barcelona: Gustavo Gili, 1971), 17.
- <sup>24</sup> Paul Rudolph, "Paul Rudolph's elaborated spaces: Six new projects," *Architectural Record* (junio 1966): 135-150.
- <sup>25</sup> "Now, the concept of prefabrication can take many different forms. But, in my opinion, the important thing is that it be large-scale three-dimensional elements which have heating, plumbing, ventilating, electricity, all in one package."
- John W. Cook y Heinrich Klotz, *Conversations with architects* (New York: Prague Publishers, 1973), 115.
- <sup>26</sup> Philippe Barrière, "Que devenez-vous, Paul Rudolph?," *L'Architecture d'Aujourd'hui* n. 265 (octubre 1989): 29-30.
- <sup>27</sup> "I fear that we have forgotten many of the basic principles of architecture such as scale, proportion, the relationship between parts, and most important of all, how to create living, breathing dynamic spaces of varying character, capable of helping man forget something of his troubles."
- Paul Rudolph, "Regionalism in Architecture," *Perspecta MIT Press* Vol. 4 (1957): 13.
- <sup>28</sup> "An architect should be concerned with how a building looks in the rain, or on a summer day; its profile on a misty day, the different treatment required for that which is close at hand as opposed to that which is 20 stories removed, with angles of vision, symbolism and content."
- Paul Rudolph, "The Architectural Education in USA," *Zodiac* n. 8 (1961): 164.
- <sup>29</sup> Timothy M. Rohan, *The Architecture of Paul Rudolph* (Cambridge: Yale University Press, 2014), 57.
- <sup>30</sup> "Wright, instinctively from the very beginning—and it seems to me that's the most unique thing about his architecture is his spatial aspects—is absolutely wedded to the needs of the human being from an emotional point of view."
- Robert Bruegmann, "Interview with Paul Rudolph," *Chicago Architects Oral History Project*, Ernest R. Graham Study Center for Architectural Drawings and Art Institute of Chicago, 1986, <http://digital-libraries.saic.edu/cdm/ref/collection/caohip/id/9861>, consultado 11 noviembre 2018, 22.
- <sup>31</sup> "We need desperately to relearn the art of disposing our buildings to create different kinds of space [...] We need sequences of space which arouse one's curiosity, give a sense of anticipation, which beckon and impel us to rush forward to find that releasing space which dominates which acts as a climax and magnet and gives direction. Most important of all, we need those outer spaces which encourage social contact."
- Rudolph, "The Architectural Education in USA," 164.
- <sup>32</sup> "We must learn a new meaning of monumentality [...] Monumentality, symbolism, decoration, and so on—age old human needs—are among the architectural challenges that modern theory has brushed aside."
- Rudolph, "The six determinants of Architectural Form," 186.
- <sup>33</sup> Esquema que repite en otros proyectos con configuraciones muy diferentes, como el Southeastern Massachusetts Technological Institute (North Dartmouth, Massachusetts, 1963-1991).
- Déborra Domingo-Calabuig, "A single strategy: Southeastern Massachusetts Technological Institute by Paul Rudolph," *ZARCH Journal of interdisciplinary studies in Architecture and Urbanism* n. 10 (junio 2018): 114-125.
- <sup>34</sup> Jeanne M. Davern, "Conversations with Paul Rudolph," *Architectural Record* (marzo 1982): 93-94.
- <sup>22</sup> *Wright's attraction for Japanese art and architecture is well known. His relation with Hiroshige's work (1867-1959), author of the woodworks referenced in this text, began in 1905 when Wright travelled to Japan and visited the country for three months, returning with hundreds of his engravings that he would exhibit in March 1906 at the Art Institute of Chicago.*
- Miguel Sancho Mir, Beatriz Martín Domínguez, and Antonio Gómez Gil, "Frank Lloyd Wright & Hiroshige; de los grabados japoneses al portafolio Wasmuth," *EGA Expresión Gráfica Arquitectónica* n. 22 (2013): 204-213.
- <sup>23</sup> *Paul Rudolph and Sibyl Moholy-Nagy, La arquitectura de Paul Rudolph (Barcelona: Gustavo Gili, 1971), 17.*
- <sup>24</sup> *Paul Rudolph, "Paul Rudolph's elaborated spaces: Six new projects," Architectural Record (June 1966): 135-150.*
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- <sup>26</sup> *Philippe Barrière, "Que devenez-vous, Paul Rudolph?," L'Architecture d'Aujourd'hui n. 265 (October 1989): 29-30.*
- <sup>27</sup> *"I fear that we have forgotten many of the basic principles of architecture such as scale, proportion, the relationship between parts, and most important of all, how to create living, breathing dynamic spaces of varying character, capable of helping man forget something of his troubles."*
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- <sup>31</sup> *"We need desperately to relearn the art of disposing our buildings to create different kinds of space [...] We need sequences of space which arouse one's curiosity, give a sense of anticipation, which beckon and impel us to rush forward to find that releasing space which dominates which acts as a climax and magnet and gives direction. Most important of all, we need those outer spaces which encourage social contact."*
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- Rudolph, "The six determinants of Architectural Form," 186.*
- <sup>33</sup> *He used this diagram in other projects with different configurations, as Southeastern Massachusetts Technological Institute (North Dartmouth, Massachusetts, 1963-1991).*
- Déborra Domingo-Calabuig, "A single strategy: Southeastern Massachusetts Technological Institute by Paul Rudolph," ZARCH Journal of interdisciplinary studies in Architecture and Urbanism n. 10 (June 2018): 114-125.*
- <sup>34</sup> *Jeanne M. Davern, "Conversations with Paul Rudolph," Architectural Record (March 1982): 93-94.*

- <sup>35</sup> Antón Capitel, "La Tercera Generación, o algunos de los cantos de cisne del Movimiento Moderno," *ZARCH Journal of interdisciplinary studies in Architecture and Urbanism* n. 10 (junio 2018): 36.
- <sup>36</sup> Rupert Spade, *Paul Rudolph* (London: Thames and Hudson, 1971), 17.
- <sup>37</sup> Robert Bruegmann "The architect as urbanist," en *Paul Rudolph. The Late Work*, Roberto de Alba (New York: Princeton Architectural Press, 2003), 22.
- <sup>38</sup> Tony Monk, *The Art and Architecture of Paul Rudolph* (Chichester, West Sussex: Wiley-Academy, 1999), 10-11.
- <sup>39</sup> "The arrangement of buildings in the swastika form has a long history, especially with European modernism, and has to do with the flow of space." Bruegmann, "Interview with Paul Rudolph," 6-7.
- <sup>40</sup> Sobre la importancia de la sección fugada en la obra de Rudolph, es destacable: Rohan, *Reassessing Rudolph*, 121-135.
- <sup>41</sup> Rudolph, *Writings on Architecture*, 14.
- <sup>42</sup> "The corrugated surface broke down the scale of walls and caught the light in many different ways because of its heavy texture. Light was fractured in a thousand ways and the sense of depth was increased. As the light changed the walls seemingly quivered, dematerialized, [and] took on additional solidity." Paul Rudolph, "Paul Rudolph: 100 works 1946-74," *A+U Architecture and Urbanism* (1977): 318.
- <sup>43</sup> Rudolph, "To enrich our Architecture," 11.
- <sup>44</sup> Cristina Mehrtens, "Brutal identity: Paul Rudolph, the city and the renewal of the modern," *Arquitextos*, 2007, <http://www.vitruvius.com.br/revistas/read/arquitextos/08.090/189/en>, consultado 11 noviembre 2018.
- <sup>45</sup> Rohan, "Rendering the Surface," 91.
- <sup>46</sup> Rudolph, "Excerpt from a conversation," 106.
- <sup>35</sup> Antón Capitel, "La Tercera Generación, o algunos de los cantos de cisne del Movimiento Moderno," *ZARCH Journal of interdisciplinary studies in Architecture and Urbanism* n. 10 (June 2018): 36.
- <sup>36</sup> Rupert Spade, *Paul Rudolph* (London: Thames and Hudson, 1971), 17.
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- <sup>39</sup> "The arrangement of buildings in the swastika form has a long history, especially with European modernism, and has to do with the flow of space." Bruegmann, "Interview with Paul Rudolph," 6-7.
- <sup>40</sup> About the importance of the cross-section perspective in Rudolph's work, it is noteworthy: Rohan, *Reassessing Rudolph*, 121-135.
- <sup>41</sup> Rudolph, *Writings on Architecture*, 14.
- <sup>42</sup> "The corrugated surface broke down the scale of walls and caught the light in many different ways because of its heavy texture. Light was fractured in a thousand ways and the sense of depth was increased. As the light changed the walls seemingly quivered, dematerialized, [and] took on additional solidity." Paul Rudolph, "Paul Rudolph: 100 works 1946-74," *A+U Architecture and Urbanism* (1977): 318.
- <sup>43</sup> Rudolph, "To enrich our Architecture," 11.
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- <sup>45</sup> Rohan, "Rendering the Surface," 91.
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