

UNA ESCALERA SUSPENDIDA

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FIG 1

Escalera helicoidal del vestíbulo de acceso de la General Motors Technical Center. Warren, Michigan, 1956. Arquitecto / Architect: Eero Saarinen. *Spiral staircase of the entrance lobby of the General Motors Technical Center. Warren, Michigan, 1956.* http://www.pdparchitects.com/projects/images/www_gmtech_r&d-stair.jpg

FIG 2

Escalera helicoidal del Pabellón de Canadá en la Expo de Bruselas de 1958. Arquitecto Charles Greenberg. *Spiral staircase of the Canadian Pavilion in the Brussels Expo of 1958. Architect Charles Greenberg.* Fuente / Source: PRACHT, Klaus. *Escaleras interiores y exteriores.* Barcelona, Gustavo Gili, 1991, p. 37. Gentileza de American Iron and Steel Institute, Nueva York. / Courtesy of the American Iron and Steel Institute, New York.

FIG 3

Escalera de cristal de la Tienda Joseph de la arquitecta Eva Jiricna en 1989, Londres. Fuente / Source: Eva Jiricna Architects, Londres. *Crystal staircase of the Joseph store by architect Eva Jiricna in 1989, London.*



FIG 1



FIG 2



FIG 3

LA ESCALERA HELICOIDAL DEL HOTEL ROYAL SAS, ARNE JACOBSEN

Las primeras escaleras colgadas se remontan a principios del siglo pasado. Arquitectos punteros como Rudolf Schindler o Richard Neutra empezaron a colocar escaleras suspendidas lineales en viviendas unifamiliares: los primeros ensayos consistían en suspender por un extremo cada uno de los peldaños y engastarlos por el otro lado. Las escaleras suspendidas empezaron a despuntar en 1935, cuando el arquitecto Frank Lloyd Wright diseñó una escalera lineal colgada en la Casa de la Cascada (Mc Carter, 1994 y Zabalbeascoa, 1998). El sistema constructivo de esta escalera era parcialmente similar al sistema planteado por Schindler y Neutra, ya que consistía en colgar íntegramente cada uno de los peldaños de tal manera que una barra atravesara dos peldaños para contrarrestar las vibraciones y el momento de torsión.

Tras la Segunda Guerra Mundial –y con la influencia de las soluciones tecnológicas y constructivas norteamericanas difundidas en publicaciones como *Progressive Architecture*– el sistema constructivo en acero se sofisticó y ello permitió aplicar nuevas fórmulas estructurales en el diseño de escaleras. Arne Jacobsen fue uno de los primeros arquitectos que

conceptos constructivos diseñados en acero presentadas en la Exposición Universal de Bruselas de 1958.

Tanto los diseños ejecutados por Arne Jacobsen y aquellos presentados en la Exposición Universal confirman la repercusión técnica y voluntad de innovación en el diseño de escaleras colgadas. Otro ejemplo claro es la escalera helicoidal diseñada por los arquitectos Friedrich Wilhelm, Günter Pfenning y Ernst Sieverts para el vestíbulo del Edificio de Administración de la ciudad de Brunswick, en 1959. En la actualidad, son muchos los ejemplos de escaleras suspendidas que tras un progreso constructivo han llegado a alcanzar esa voluntad de querer ocultar, en la medida de lo posible, cualquier tipo de detalle constructivo con el fin de hacer levitar este elemento de comunicación (Slessor, 2001 y Sánchez, 1990). Un caso representativo de este tipo de diseños es la escalera de la tienda *Joseph* (fig. 3) de la arquitecta Eva Jiricna, construida en 1989 en Londres (Jiricna, 1990 y 2001).

Por estos motivos, la escalera del Hotel Royal SAS merece un estudio personalizado. Pretendemos definirla mediante los espacios y los elementos del edificio que están proyectados en torno a ella, tratando de describir la intención de cada uno de los gestos de esta escalera hasta descubrir todas las capas que conforman el detalle constructivo.

Nuestro objetivo principal es revelar cada detalle y material. Pretendemos hacer una reconstrucción bidimensional y tridimensional tratando de aclarar documentación gráfica histórica que no describe con claridad este elemento. Y con todo, explicaremos la razón formal de diseñar una escalera suspendida en el vestíbulo principal del Hotel Royal SAS.

MATERIAL Y MÉTODO

Para abarcar la investigación, la principal fuente de información han sido las revistas de época *Edilizia Moderna* y *Techniques et Architecture*. Con la información general que hemos encontrado en estos registros hemos podido generar los documentos gráficos que relacionan la escalera con la arquitectura y diseño del edificio. Existe una gran variedad de monografías de Arne Jacobsen. Sin embargo, pocas son del nivel necesario para poder ser consideradas como punto de referencia en la presente investigación. La que más información ofrece, y en la cual se pueden apreciar los detalles más técnicos, es la monografía de *Clásicos del Diseño* de Arne Jacobsen (Solaguren, 1991).

En cuanto a la abundancia de información que ofrecen las fuentes de Internet, es preciso aclarar

adoptó las posibilidades que permitía el acero: un ejemplo de esta actitud es el diseño íntegramente suspendido de la escalera helicoidal, del vestíbulo del Hotel Royal SAS en Copenhague, cuyo proyecto fue desarrollado entre 1956 y 1961. Otra escalera helicoidal con rasgos técnicos y constructivos muy parecidos a aquella diseñada por Jacobsen –y contemporánea a ella– fue la que el arquitecto Eero Saarinen construyó en el vestíbulo de acceso de la General Motors Technical Center¹, (fig. 1) (Long y Peatross, 2008; Pelkonen y Albrecht, 2011). Un tercer caso que encarnó estos nuevos desarrollos fue la escalera helicoidal del Pabellón de Canadá² (fig. 2) (Hoffmann y Griese, 1970) una de las tantas muestras de nuevos

1 El edificio se construyó en la ciudad de Warren, Michigan, entre 1949 y 1955 y fue inaugurado con la presencia del presidente de EE.UU. Dwight D. Eisenhower en 1956.

2 El pabellón fue diseñado por los arquitectos canadienses Harold Semmens y Douglas Simpson, y una vez finalizada la exposición fue vendido y reinstalado en la ciudad belga de Genk, donde sirve hasta la actualidad como la sede de una escuela primaria.

THE SPIRAL STAIRCASE OF THE HOTEL ROYAL SAS, ARNE JACOBSEN

The first hanging stairs appeared at the beginnings of the last century. Leading architects like Rudolf Schindler or Richard Neutra began to design suspended linear stairs in single-family dwellings: the first attempts consisted in suspending each step on one end and cantilever the other side. Hanging stairs began to emerge in 1935 when the architect Frank Lloyd Wright designed a linear hanging stair in Falling Water (Mc Carter, 1994 and Zabalbeascoa, 1998). The constructive system of this stair was partially similar to Schindler and Neutra's system in that it consisted of hanging each step in such a way that one rod traverses two steps so as to counteract vibrations and torque.

After the Second World War –and with the influence of North American technological and constructive systems disseminated in publications such as *Progressive Architecture*– the steel construction system was improved and permitted the application of new structural formulas in stair design. Arne Jacobsen was one of the first architects to adopt the possibilities that steel permitted: an example of this attitude is the integrally suspended design of the spiral staircase in the vestibule of the Hotel Royal SAS in Copenhagen, whose project was developed between 1956 and 1961. Another spiral staircase with very similar technical and constructive features to the one designed by Jacobsen (and a contemporary) was that which architect Eero Saarinen built in the lobby of the General Motors Technical Center¹ (fig. 1) (Long and Peatross, 2008; Pelkonen and Albrecht, 2011). A third example that embodied these new developments was the spiral staircase in the Canadian Pavilion² (fig. 2) (Hoffmann and Griese, 1970) one of the many displays of new building concepts designed for steel presented at the Universal Exposition of Brussels in 1958.

Both the designs executed by Arne Jacobsen and those presented in the Universal Exhibition confirm the technical impact and will for innovation in the design of hanging stairs. Another clear example is the spiral staircase designed by the architects Friedrich Wilhelm, Günter Pfenning and Ernst Sieverts for the lobby of the Administration Building of the city of Brunswick in 1959. Nowadays, there are many examples of hanging stairs that due to progress in construction have been able to hide, as much as possible, any kind of building detail with the goal of making this element of communication levitate (Slessor, 2001 y Sánchez, 1990). A representative

example of this kind of design is the stair in the *Joseph store* (fig. 3) by the architect, Eva Jiricna, built in 1989 in London (Jiricna, 1990 and 2001).

For these reasons, the staircase at the Hotel Royal SAS deserves a personalized study. We intend to define it through the spaces and elements of the building that are designed around it, attempting to discover the intention of each of the gestures of this staircase until we discover all the layers that make up the construction detail.

Our main objective is to reveal each detail and material. We intend to stage a two-dimensional and three-dimensional reconstruction to clarify historical graphic documentation that does not clearly describe this element. And with this information, we will explain the formal reasoning behind the design of the staircase suspended in the main lobby of the Hotel Royal SAS.

MATERIAL Y METHOD

In undertaking the investigation, the main source of information has been periodicals from that time, such as *Edilizia Moderna* and *Techniques et Architecture*. With the general information that we have found in these registries we have been able to generate the graphic documents that relate the stair with the architecture and design of the building. A great many monographs exist on Arne Jacobsen. However, few are of the level necessary to be considered as a point of reference in the current investigation. The one that offers the most information and in which more technical details can be seen is the monograph *Classics of Design* of Arne Jacobsen (Solaguren, 1991).

As for the wealth of information offered by Internet sources, clarification must be made to test and then treated to improve the focus on the concept. Specialized search engines such as *Google Academic*, the library of the Colegio Oficial de Arquitectos de Cataluña, the Catalogue Universitat Politècnica de Catalunya or the database of the Royal Institute British Architects, have been the main tools for inquiry because of the rigor in the information and their proximity.

In order to carry out the present work, which requires new perspectives, we have re-elaborated all of the original documents with the necessary rigor to create a new one altogether. We have created new three-dimensional models. The document is provided with the necessary qualities to convey the study. The reconstruction process was made from the observation of graphic documents, be they photographs or technical plans. Subsequently, a record

of the information has been made using programs such as *AutoCad*, for making the two-dimensional reconstruction, and *Google Sketchup*, for making the three-dimensional reconstruction.

The process begins by compiling the best information possible for creating an exhaustive description that would allow us to observe the totality of the project and begin analysis. We continue with a subsequent quality digitalization of all the documents, plans or photography. The new drawings are faithful to the original, but line weights were adjusted, using their values and the appropriate sections to highlight the desired circumstances. Basing the work on these new drawings, we have created three-dimensional models and have applied the modifications observed in the real photographs and on site visits. These photographs and visits require us to make the necessary modifications to adjust to the real final construction.

ESSENCE AND LOBBY SEQUENCE

The project for the SAS Company and the Hotel Royal began in 1956 when the site was decided upon. Its central location in the city was to the desire to concentrate an airport terminal, hotel and travel agency in the same complex, as the three organisms had complementary needs.

The building has 22 floors (figs. 4 and 5). In the descriptive summary Jacobsen defends this solution fundamentally for two reasons. The first is that the city demanded that the site should be exploited to its maximum capacity; however, there was no alternative but to complete the total 70 meters of height permitted by code. The second reason was due to the solution of a high-rise building was the most viable option for a hotel in such a noisy location (2G, 2005 and Solaguren, 1989-2001).

The staircase that we analyzed was located in the hotel lobby (fig. 6). This space articulates the different programs and uses of the building. It is accessed from Hammerichsgade Street, enhancing the entrance on the longest facade. In the entrance area and element was designed like an eave that comes out of the facade and protects the visitor's immediate access of the building (fig. 7). This gesture, that magnifies the urban environment invading the pedestrian zone, means the arrival occurs in parallel to the main facade and compositionally creates a direct relationship with the stair. It also shares common features with its structural design, as it is also a cable-suspended element.

Access to the hotel lobby occurs between two of the four screen-like pillars that make up the tower structure. This space that acts as a windbreak is

bounded horizontally by these pillars –4.5 meters wide– and vertically by the lower part of an eave 2.5 meters high that extends outward to the facade of the tower. This eave is set into the pillars along the whole perimeter; two cables that run up to the ceiling of the lobby suspend its central area. Half a meter above we find a second eave that extends 14 meters along the main facade and jets out a meter from it. These height changes create a gradual entrance sequence. This transition seeks to recover the spatial sensation of the exterior within the lobby.

Solar geometry and city building code provoked Arne Jacobsen to design a split-level lobby in order to accommodate the different building programs and uses. Jacobsen's challenge was to connect these two spaces, separated in height by 4.88 meters, in a natural and elegant way. The solution was to design a spiral stair suspended from the ceiling of the upper level of the lobby that attempts to connect one level with the other visually. The generously large stair becomes the focus of the entrance lobby.

The interior lobby has a surface of 398 m² and a height of 3.5 meters. This 10 meters wide space can be divided horizontally in three areas: a first entrance area and circulation that faces the communication nucleus of the tower. To the left of this, a waiting area and reception are found, and to the right a zone a covered patio of two tall plants that gives light to the central bay articulating an area of restoration around it and acting as a backdrop to the main staircase. The position of this communication element is equidistant from all zones in the entrance lobby and offers a comfortable connection with the upper lobby. The whole scene is contained along the perimeter by a commercial and technical area 3 meters thick that acoustically and visually isolates the lobby from the exterior.

The upper lobby has an area of 269 m² and a height of 3.2 meters (fig. 8). Like in the lower lobby, it has a width of 10 meters and the use of this space can be divided into two scenes; the position of the stair in the upper lobby helps to separate the program on this level. To the left of the perimeter ring we find the antechamber to the restaurant and to the right the double space of the covered patio that illuminates and organizes the rest of the uses in the perimeter. In the same way as below, different programs surround the lobby, isolating it from the exterior. Apart from the covered patio, the only visual relationship with the lower level is that of the six cables at the central part of the stair; they extend almost to the floor of the entrance lobby. This gesture insinuates that the two