

“The TWA flight centre; balancing architectural expression with functional efficiency”

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The TWA Flight Centre, located in John F. Kennedy Airport, New York, stands as a delicate example of mid-20th century Jet Age architecture, combining both artistic expression and innovative functional operations. Commissioned in 1956, Saarinen's design reflects his passion for organic form (Weston, 2015) and the iconic structure is often referred to symbolise "*a bird in flight*" (Filler, 2007, p. 106).

The structure, a unique concrete shell supported by catenary cables, was groundbreaking within modernist architecture, and considered a revolutionary, post war, engineering innovation (Weston, 2015). This is evident throughout the project and expresses the "*drama of flight and the excitement of travel*" (Boyd, 1965, p. 124.).

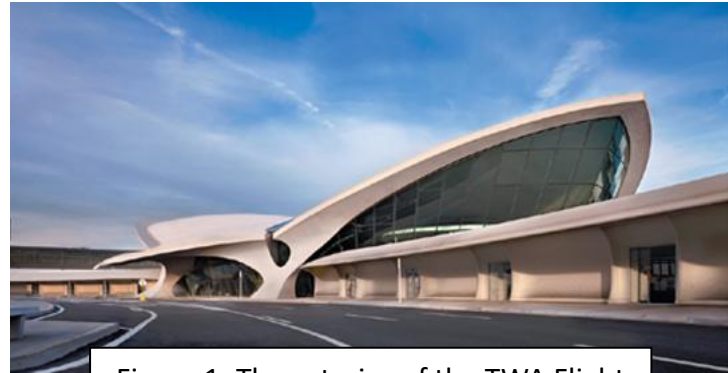


Figure 1: The exterior of the TWA Flight Centre. (Filler, 2007, p. 122)

Comparatively, Saarinen implies a connection between expressing a delicate design that was both functional and memorable for an airport terminal (Filler, 2007). However, Pearman (2004) states that the finite composition reduces opportunity of expansion due to its limitation of flexibility and capacity; unable to adapt to an everchanging aviation industry. This essay will consider contemporary design following the expansion of the aviation industry after the second world war, reflect on the architectural expression and functional efficiency of the TWA Flight Centre, consider the successes and constraints that surround this infamous architectural structure, comment on how the building has been reintegrated into modern society before drawing upon conclusions. Such factors are fundamental for aspiring architects designing, constructing and considering the future use stages.

The rapid expansion of aviation travel during the 1950's marked a period of global innovation, referred to as the Jet Age, which saw a shift from strict regulations of travel so air travel was made accessible to the global market (Bednarek, 2016). The introduction of the jet engine dramatically reduced travel time and changed the public's perception of aviation, making "*international travel faster, more efficient and more desirable*" (Bednarek, 2016, p. 18.).

The Trans World Airlines (TWA), evoked this transition, acknowledging the high demand of passengers wanting an optimistic experience of flying following on from the second World War. TWA recognised the new generation of travel within the US, developing their corporate image so that they could attract a wider customer base and boost ticket sales (Ringli, 2015).

Preceding the Jet Age period, airports were perceived merely as structures for transportation however they evolved into symbols of national identity (Pearman, 2004). Aviation corporations acknowledged the importance of experience for the passengers, with airports serving as "*gateways to continents and countries*" (Edwards, 2005, p. 9).

Furthermore, the passenger experience was dramatically enhanced via the architecture through innovative characteristics; embodying the spirit of optimism post second World War. Early modernist constructions helped to inspire Saarinen's choice of materiality, resulting in him objecting strict functionalism in favour of expressive form (Filler, 2007).

Filler (2007) also depicts that the shift within architectural composition is what the Jet Age aesthetic embodies, evident through Saarinen's use of sweeping forms, emphasis on the importance of motion within a space and the arrangement of curves. Along with the influence of advancements in aerospace engineering, the airport terminal reflects the concepts of motion, speed and flight whilst also encapsulating glamour; providing the aviation industry with sense of prestigiousness. The TWA Flight Centre communicates these theories emphatically, establishing Saarinen as a pioneer of Jet Age architecture within the mid-20th century; by creating "*spaces that conveyed the drama and anticipation of departure*" (Pelkonen and Albrecht, 2006, p. 300.)

The Trans World Airlines commission to Saarinen depicted two coherent themes, the architecture needed to be easily interpreted and symbol of flying; the advertisement of the company would be coherent through the structure (Ringli, 2015). Tasked with designing a landmark for the aviation company, Saarinen integrated the concept of branding alongside creating a physical experience for the user that would evoke emotion. The personal statement by the architect depicts this, suggesting "*the architecture itself would express the excitement of travel... departure would be experienced as a dramatic and uplifting event*" (Pelkonen and Albrecht, 2006, p. 300.)

To communicate this experience to the passenger, the architect juxtaposed early modernist constructions that focused on functionality and rationalism, creating a structure that was symbolic, theatrical and resonant for the passenger's experiencing aviation with TWA. At the forefront of the architecture is the magnificent concrete exterior (Ringli, 2015), where four sweeping concrete curves align at the pinnacle of the structure, depicting a dramatic exoskeleton resembling a bird in motion (Filler, 2007).



Figure 2: Concrete shell creation. (Ringli, 2015, p. 102)

This metaphor suggests the physical action of flying, depicting the experience of air travel as exciting, fluid, and a revolutionary concept within the mid-20th century. Additionally, the use of the concrete shell, supported by vertical cables (Weston, 2015), helps to physically represent the concept of movement. Utilising four Y shaped concrete columns that erect the exterior of the construction, the interior views are not hindered and alludes to the "*roof seeming to float above the space*" (Ringli, 2015, p. 57.).

Internally, the space is organised centrally so that the passengers congregate together in one joint experience, immediately confronting them with a dramatic and modernist atmosphere that is curated through light, curvature and volume (Ringli, 2015). This central sector divides into smaller, distinct segments (Ringli, 2015) suggesting that the passengers are invited to explore the terminal's niche areas, such as the bespoke seating areas. The curved walkways depict intersecting spaces with no abrupt sharp corners, guiding the passenger to walk along the red carpet, appreciating the journey between levels until arrival at the boarding gate. Saarinen's design encourages the sense of discovery and excitement within the circulation throughout the building, carefully depicted from *"the unfolding sequence of travel... as passengers moved from car to foot to plane"* (Ringli, 2015, p. 57.).

Saarinen's appreciation for fluidity, from the terminal's exterior, is carried faithfully through to its interior (Ringli, 2015). The manner of how visitor arrives and departs from his structure is crucial to the project and represents how their journey is enhanced, alike a cinematic experience (another rapidly developing sector within the Jet Age period of the mid-20th century).

In addition to the exterior and interior design, the materiality of the TWA Flight Centre resonates with the visitor and helps communicate emotion emphatically. The contrasting colour palette utilised displays the expressive qualities within the early modernist architecture but in a controlled and minimalist manner, typical of post war [architecture] (Ringli, 2015)

The smooth white concrete shell conveys a futuristic resemblance, whilst the vibrant red carpet and furnishings within the internal space provide stark contrast dramatically. This was intentional by Saarinen who adopted a 'total design' (Pelkonen and Albrecht, 2006) philosophy, in which all the curvatures, all the spaces, and all the elements would have one consistent character (Ringli, 2015). The concept of designing every single element within the construction is what sets Saarinen's architecture apart from other modernist architects within the Jet Age era. His background within furniture design (Pelkonen and Albrecht) evidently shaped his architectural approach, creating an immersive quality of space, ensuring that passengers encounter a carefully curated environment before departure. Filler (2007), suggests that Saarinen's designs were exaggerated, overstated and repeated in every part of its interior so that the building sings with the same message.

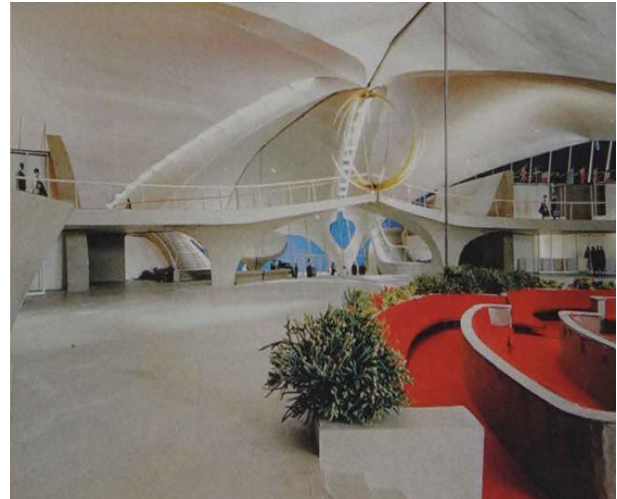


Figure 3: Interior perspective. (Ringli, 2015, p. 74)



Figure 4: Furniture design. Ringli, 2015, p. 77)

By opposing strict functionalism, Saarinen's design proposed an indifferent perspective to early modernist architecture. Bednarek (2016) suggests that other designs during the Jet Age were remarked as having remarkable continuity. However, the TWA Flight Centre depicts an appreciation for individuality, symbolism and evocative experiences for the user. In this sense, the building could be critiqued for its engagement with emotion rather than its functionalism, however it could also be seen that the brief provided by Trans World Airlines was sufficiently met by the architect. The structure conveys a delicate sense of symbolism, memorability and user experience, depicting an *"attraction to the masses thanks to its unique form and extensive marketability"* (Ringli, 2015, p. 25).

Whilst the TWA Flight Centre is widely renowned for its sculptural form, the success of an airport terminal depends on how effectively it can manage passengers, their movement and organisation of aviation logistics. Designed by Saarinen independently, the TWA Flight Centre demonstrates both, initial, innovative approaches to aviation which had limitations within the future usage of the airport terminal (Ringli, 2015).

Specifically, the functional strategy designed by Saarinen is within the intuitive circulation of the building, with the architect envisioning an effortless transition from arrival, to the boarding gate and finally to their destination (Ringli, 2015). To achieve this, the journey through the building is enhanced using level changes, smooth curved walls which seem like they lead to a new destination, visual cues and contrasting materiality. One of the most distinct features of this method of circulation is within the enclosed tubes that connect the terminal to the departure gates, where passengers pass through curving, tunnel-like tubes that dramatised the transition from terminal to aircraft (Ringli, 2015). The dramatic nature of the passenger's experience alludes to a theatrical performance but also juxtaposes the rigid design strategies utilised in earlier modernist terminal constructions; considering how the passenger moves rather than the most effective way to organise a collection of people. Additionally, the utilisation of these tubes helped to generate innovation in passenger safety, separating pedestrian movement from aircraft operations. This revolutionary concept is still depicted within modern terminal design, a philosophy *"Saarinen himself emphasised as the importance of his buildings maintaining enduring validity"* (Ringli, 2015, p. 26.).

As noted, prior, the unique corporate design utilises a thin concrete shell and large glazed curtain walls alluding to the delicate facades of the TWA Flight Centre (Ringli, 2015). Paired with the Y columns, the internal hall creates a space for passengers to gather and overlook the terminal, enhancing visibility and providing a large volume of open space. This flexible open space improved wayfinding, allowing passengers to orientate easily around the bespoke seating arrangements and into the boarding gate tunnels (Ringli, 2015). The flexibility was initially introduced to accommodate future generations of jet aircrafts, making the Flight Centre appear like a forward-looking model for Jet Age architecture and aviation design (Bednarek, 2016).

However, these design innovations dramatically affected the efficiency of the TWA Flight Centre, proving difficult to adapt to the rapidly changing demands of airport operations (Ringli, 2015). The sweeping concrete shell and the internal curved walls limit interior flexibility, making it extremely difficult for the construction to expand or reconfigure internal spaces. With the demand of aviation dramatically rising within the late 20th century, the TWA's sculptural form limited flexible accommodation and made the building less efficient for modern airport requirements; the housing for a larger capacity of passengers (Bednarek, 2016). Circulation routes that were initially designed to feel spacious became vastly congested, resulting in the eventual abandonment of Saarinen's carefully curated circulation plan (Bednarek, 2016).

Saarinen's design is also often critiqued by architects due to the inconsideration of innovation within the industry, the limited flexibility in the design alongside the increase in passenger capacity resulted in the TWA Flight Centre rapidly becoming outdated, difficult to manage and the scale of operations were becoming far too advanced in such a short period of time (Ringli, 2015).

When compared to later iterations of airport terminal constructions, the limitations of the TWA Flight Centre become more distinct, Saarinen's inconsideration for the future is often remarked as *"not a building thought through all the way but a PR package with a few calculated 'features' for everyone"* (Bednarek, 2016, p. 132.).

Modern iterations of design prioritise modularity, adjustment and consideration for expansion, allowing accommodation for the fluctuation of passenger numbers (Edwards, 2005). Whilst these designs may lack character, in comparison to Saarinen's work, they achieve a far greater efficiency which is ultimately the core principle within aviation design.

Evidently, the functional efficiency of the TWA Flight Centre displays a balance between innovation and limitation. Whilst Saarinen's design introduced forward thinking solutions to circulation and passenger experience, the inability to adapt to passenger quantities limited its effectivity as an airport terminal.

Following this, the mass scale of passengers reflected the inefficiencies of control, and the TWA Flight Centre became obsolete for airline use within a few decades (Bednarek, 2016). Saarinen's design was introduced in a period when planes held 50 passengers (Bednarek, 2016) with the introduction of new security measures and larger quantities of baggage control being required. The limitation of the flexible spaces resulted in the building being "phased out of mainstream aviation routes" (Ringli, 2015).

This concurred after Eero Saarinen's death on September 1, 1961 (Hagberg, 2022), meaning that the architect was never able to expand the design to accommodate changes in the aviation industry before his death. The closure of the TWA Flight Centre in 2001 concurred after the takeover from American Airlines (Bednarek, 2016) but did not result in demolition. Rather the building being viewed as an icon during the golden era of passenger aviation due

to its architectural significance; hence being preserved as a landmark instead of a functional airport (Bednarek, 2016).

Preservation of the construction focused on maintaining the integrity of the exterior and dramatic interior spaces (Hagberg, 2022). The conservation of the iconic architecture resulted in the adaptation of design for the Flight Centre, rebranding the structure from a striking emblem of aviation to the TWA hotel in 2019 (TWA Hotel, 2019).

The conservation of Saarinen's design depicts two new wings being erected to host visitors, depicting the building as a historic landmark for the Jet Age of architecture but also hosting a new function. Particularly, the official TWA Hotel website states that visitors can tour the museum exhibitions within the TWA construction (TWA Hotel, 2019) celebrating the culture of mid-20th century aviation in a different medium.

In conclusion, the TWA Flight Centre depicts the possibilities and limitations of early modernist, Jet Age architecture. Depicted by Eero Saarinen, the building successfully encapsulates post war optimism, innovation and dynamics through expressive and organic form (Weston, 2015). The sculptural concrete shell, 'total design' philosophy and spatial arrangement demonstrate his commitment to making delicate architecture, elevating the concept of an airport terminal beyond the mid-20th century ideology; presenting the building as more of a form of art than an infrastructure for aviation.

Comparatively, the building reveals inefficiencies with long term functions as a terminal for passengers, the demand of adaptability heavily outweighing the innovative circulation strategies. The rigid design of Saarinen's work resulted in the downfall of the TWA Flight Centre, highlighting the appreciation required for future proofing a design. Due to the inconsideration of capacity, security requirements and advancements in technology, the structure became obsolete from its original function.

Nevertheless, the legacy of the TWA Flight centre remains within its stature as an inspiration for architectural expression, displaying the need for critical reflection from the start of the design process. Its transformation into the TWA Hotel demonstrates how iconic structures can be reinterpreted as contemporary architecture, displaying new perceptions of the function of structure and how to preserve the rich history of the Jet Age. The terminal serves both as a masterpiece for expressive design and a cautionary example; the importance of balancing aesthetics and long-term functionality is required in modern architectural design.

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