

MAREK POZĄTKO

ORCID: 0000-0002-8907-289X

Cracow University of Technology, Poland

ON THE PERFECTION OF (HIDDEN) TECHNOLOGY IN THE ARCHITECTURE OF FRAN SILVESTRE

O PERFEKCJI (UKRYTEJ) TECHNIKI W ARCHITEKTURZE FRAN SILVESTRE

Abstract

Through years of practice, Fran Silvestre has developed some distinctive elements of architecture in which his individual design technique brings to light the precision of building formation. An analysis of a selection of buildings shows how this can become a way of architecture – a technique and method of design that gives a response to climate and place, context and natural landscape, while also being part of the form created. In addition, attention is drawn to an invisible technology that enables reduction in a minimalist structure.

Keywords: design, technology, reduction

Streszczenie

Architekt Fran Silvestre przez lata praktyki wykształcił charakterystyczne elementy architektury, w której indywidualna technika projektowania uwidacznia precyzję kształtowania budynków. Na podstawie analizy wybranych obiektów pokazano, jak może stać się to sposobem na architekturę – techniką i metodą projektowania, dającą odpowiedź na klimat i miejsce, kontekst i krajobraz naturalny, jednocześnie będąc elementem tworzonej formy. Dodatkowo zwraca się uwagę na niewidzialną technikę, która umożliwia redukcję w minimalistycznej strukturze.

Słowa kluczowe: projektowanie, technika, redukcja

1. INTRODUCTION

Architecture is closely related to technology, which can be understood in many ways. A number of aspects, which can have a physical reference, related to building, statics, structure, but also intangible aspects, such as aesthetics or methodology, form this obvious link.

The analysed case of Fran Silvestre's architecture, characterised by a focus on reduction and technical perfection, exemplifies contemporary possibilities and aesthetic paradigms. The theme of minimalist architecture, particularly concentrated in the area of single-family residential buildings here, appears to be well recognised and documented. The extensive literature provides an insight into the current state of research, especially during a period of widespread adoption of minimalist trends in architecture. It is proposed to approach this through the lens of design technique and construction technique – the process of erecting buildings. One can (partially or entirely) agree with the assumption that technology

determines architecture. In Fran Silvestre's architecture, it has a special significance. Not only does it provide technical possibilities for reducing, hiding, freeing form from physical and functional elements, but it also becomes a method of creation.

2. TECHNOLOGY AND THE PRESENT

The technical paradigm in architecture is reflected in its physical form. The development of building technology influenced the shape of buildings; its availability shaped creative thinking and design. Vitruvius considered it an essential part of architecture. Arguably, in the past, it determined style to a great extent, or at the very least, its development was driven by architects' constant quest for new architectural forms.

Looking at old hand-drawn architecture, which required the recipient's imagination and intuition to see the final work in their mind, makes one realise the changes in the technique of architectural presentation. Modern visualizations eliminate guesswork, sometimes distorting the true shapes of buildings. These images can occasionally appear better than the actual construction. This evokes a nostalgic memory of a time when a modest drawing did not describe the entire building and lacked detail, yet, it still served the architecture being built exceptionally well. We can feel this when looking at the sketches of the Church of Saint-Pierre in Firminy, which was Le Corbusier's last project – they do not fully convey the grandeur of the structure. However, the building, completed many years after the creator's death, revived the ideas he had left behind. And technology had an important part to play in this.

Today's architecture mainly uses the language of form. The building technique manifests itself in the new detail that accompanies it. It is not an end in itself. It is usually reduced and no longer defines the historical manner of stylization or the craftsmanship of ornamentation. Today, technology is a technologically resolved aesthetic of precision. Therefore, even a fragment of polished metal sheeting on a façade is a detail whose presence stems from the technology of the building, and its precise execution allows one to speak of something exceptional.

The modernist reduction of physical elements deliberately added to the composition of architecture provided the foundations for minimalism and simplification. "The return to the architecture of simplicity can be seen to some extent as a kind of revised modernism. A revised version of this movement would bring a new formal sobriety, making conscious use of the possibilities offered by new materials and new technology."¹ This tendency still persists today, taking on further developments of the idea. The work of Fran Silvestre Arquitectos is considered in this category.

3. ARCHITECTURE, TECHNOLOGY, REDUCTION – THE CASE OF FRAN SILVESTRE ARQUITECTOS

Together with his team, architect Fran Silvestre create buildings with different functions, but predominantly single-family homes. Through the years of practice, he has developed his characteristic architectural elements, which can be seen in the simple, poetic forms of his

¹ A. Mielnik, *Współczesne tendencje minimalistyczne w architekturze domów jednorodzinnych. Część pierwsza*, "Przestrzeń i Forma" 2011, no. 15, p. 246.

projects. It can be said that this represents an individual and specific technique of both designing and constructing architecture, particularly suited to this specific region of the world. Undeniably, the landscape context – the natural conditions of the location and the deliberate human intervention in its shape – plays an important role in Silvestre’s architecture. These qualities are analysed, processed and emphasised in the projects he creates. The way they are utilised can be considered a permanent interference. However, respect in the management of space and the natural landscape should be noted. The user and the buildings are oriented towards emphasizing and appreciating the existing natural values of the landscape – both existential and aesthetic.

The framing of views involves the perception of the landscape from a specific location, as well as with bringing its fragments-frames into the interior of the house, garden, park, street, or square... as a synthesis of natural and cultural elements, the landscape, draws attention to the timeless issue of the home within the space of nature.²

Arguably, the designed buildings respond to climate and place, context and natural landscape.

Technology allows for bold and technically challenging solutions in the form of buildings. However, it also enables the decisive reduction and limitation of the formal and functional elements of architecture. Concealing technology, functions, and equipment brings the work closer to an extremely reduced ideal. This is further supported by a very clear layout of floor plans, subordinated to simple geometry. The geometry achieved in Fran Silvestre’s buildings can be compared to Japanese architecture of minimalist white houses, where the form is reduced to minimal spatial division, with a symbolic separation of rooms and zoning that is conventional rather than clearly demarcated by walls. This method is a technique of creating buildings, a technique of reduction, somewhat different from that of Tadao Ando’s, for whom concrete is the primary means of expression. However, the play with flat elements juxtaposed with void and glazing that define space is a form of expression used by both architects. It seems apt to draw comparisons with the architecture of Alberto Campo Baeza’s houses – white volumes surrounded by natural landscapes, where the climate similarly influences the architecture. Buildings where the space of void and light is an important idea of this architecture.

Today, examples can be found in those structures where the essential part of creating architecture lies in the ideas of celebrating the properties of mass (*gravidad*) and void (*vacío*), of light and dark structures. As Baeza believes, it is mass and void that give strength to the existence of any space, because creating a dialogue in an architectural context seems to be the act of forming a metaphorical connection between matter-content and form – *the content with the vessel*.³

Silvestre engages daylight in the construction of architecture while simultaneously emphasizing the importance of night-time illumination. This lighting highlights the formal play with the restrained articulation of the structure, accentuating key elements of the building and its placement on the site. The minimalist reduction is also evident in the use of glazing – traditional window openings are replaced by planar glass structures, which often do not

² M. Gała-Walczowska, *Architektura domu jednorodzinnego w krajobrazie*, PhD thesis, Wydział Architektury, Politechnika Krakowska, Kraków 2014, p. 21.

³ M. Charciarek, *Współczesny dom – próby monumentalizacji przestrzeni* [in:] T. Kozłowski, (ed.), *Architektura mieszkaniowa dziś*, Wydawnictwo PK, Kraków 2016, p. 30.

serve as compositional elements of the façades. Instead, they act as a physical separation between the interior and exterior spaces. As in Baeza's work, in "fragments of the building we see the legacy of the 20th century – the principle of *less is more* is translated by Albert Campo Baeza into an inversion: *more with less*."⁴

Technology determines architecture, but it can also become a way of architecture – a technique for designing architecture. This technique developed in modernism in different ways. The exploration of Raumplan in the houses of Adolf Loos represents a different path of architectural creation, where the internal structure of the building is meant to speak, while the external form remains silent.

The Müller Villa in Prague, built in 1928, was situated on a hillside, allowing for exposure and views over the entire city. However, there are no large windows providing wide glimpses of the surrounding landscape. The complex, narrative layout of rooms in Loos' design contrasts sharply with the openness and fluidity of space seen in Silvestre's architecture. Loos' design features distinct, individual rooms, often hidden, with varying heights and different positions relative to the main floors of the building, which stand in stark contrast to the open, spacious interiors with blurred boundaries between rooms and functions typical of Silvestre's houses.

The shared modernist heritage of their architecture significantly differentiates these buildings and their creators. Loos designs a closed white structure with small vertical windows, directing both the viewer and the user inward. In contrast, Silvestre blurs the boundaries between interior and exterior, opening the form to its surroundings.



Ill. 1,2. Adolf Loos – Villa Müller, photos by M. Początko.

One can introduce a more intermediate case between these two distinct examples of architects – the Cinema House in Porto designed by Eduardo Souto de Moura. Here, the openness

⁴ *Ibidem*.

to the external environment is partial; through precise framing of views, the architect directs the user toward the empty spaces between the surrounding dense urban fabric, while also attempting to capture the most interesting panoramic vistas. This house on a hillside was designed as a three-story structure – a grey cubic form on the upper level with windows, set atop a nearly completely enclosed, metal ground floor. The underground section, embedded into the slope, contains a hidden part of the building. Two distinctive bay windows protruding from the main volume resemble the barrels of binoculars. It is this precise framing and guiding of the viewer’s gaze to specific points within the house, garden, and surroundings that characterizes the architecture Fran Silvestre emphasizes in his projects.



III. 3. Eduardo Souto de Moura – Cinema House, Porto, 2003, photo by M. Początko.

The search for simple and clear solutions in function and form engages technology to achieve these goals. The approach to designing and thinking about space is not new, but the variety of solutions allows for comparison and recognition of this body of work as a field of exploration and response to the contemporary context and its demands. The engagement of technology in this process brings to mind the work of Mies van der Rohe, who adopted the transparency and honesty of architectural structure, as well as the “idea of pure construction as one of the foundations we should embrace”⁵ from Berlage. The variability and experimentation in his early work gradually gave way to the repetition of forms and details over time. This shift resulted from a firm belief in the truth expressed through this architecture and the refinement of an established set of solutions. “*Discipline* – that is the motto of Mies’ life and work. Discipline, order, purity, truth.”⁶ Similarly, in the work by Fran Silvestre, a strict order,

⁵ C. Zimmerman, *Mies van der Rohe. The Structure of Space*, Taschen, Köln 2016, p. 9.

⁶ P. Blake, *Mies van der Rohe*, WAiF, Warszawa 1991, p. 12.

spatial logic, and structural clarity are important attributes of architecture, as illustrated by the selected examples below.

One of the most recognizable buildings designed by Fran Silvestre Arquitectos is the Hoffman House. This building, with its simple yet intriguing form, showcases the technical possibilities of contemporary architecture. The two-story structure prominently emphasizes the upper level, designed as a transparent space covered by a white plane formed by two white walls. The large cantilevered extensions of the elements captivate the viewer, demonstrating the technical capabilities of the architects and builders behind the house.



Ill. 4. Fran Silvestre Architects – Hofman House, Valencia, 2018, photo by Fernando Guerra, source: Hofmann House [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/hofmann-house/> (access: 26.08.2024).

The first level, made of concrete, is partially embedded into the terrain of the site, while also serving as a space for a terrace and an outdoor pool.

The central part of the first floor houses the bedrooms, bathrooms, and kitchen, and also serves as the only support for the roof structure. The rest of the floor, enclosed by windows, discreetly separates the space of the living room and study.

The spatial structure of the building resembles a cross-section of a lying “T” letter – the horizontal plane of the ceiling provides support for the vertical wall that hangs at the edge, enclosing the form. Technical drawings reveal the engineering challenges of this design. Steel beams were encased and finished with smooth plaster. The visually light structural elements conceal a modern engineering technology. This solution could be seen as a technically unnecessary element; however, it was created for the sake of composition and formal play. From a functional perspective, it also opens up the space to the surrounding landscape, while

the vertical element shields the interior from the view of outsiders and the intense southern sun. The building is particularly photogenic – its design almost compels certain angles that emphasize the cantilevered roof structure. Aware of the architectural language they employ, the architects explain: “This geometry lets us feel the sea, protecting from prying eyes, having the sense of living without neighbours. It helps control the southern sun during summer and lets it pass in winter.”⁷



Ill. 5. Fran Silvestre Architects – House on Cliffside, Calpe, Alicante, 2012, photo by Diego Opazo, source: House on the cliff [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/house-on-the-cliff-eng/> (access: 26.08.2024).

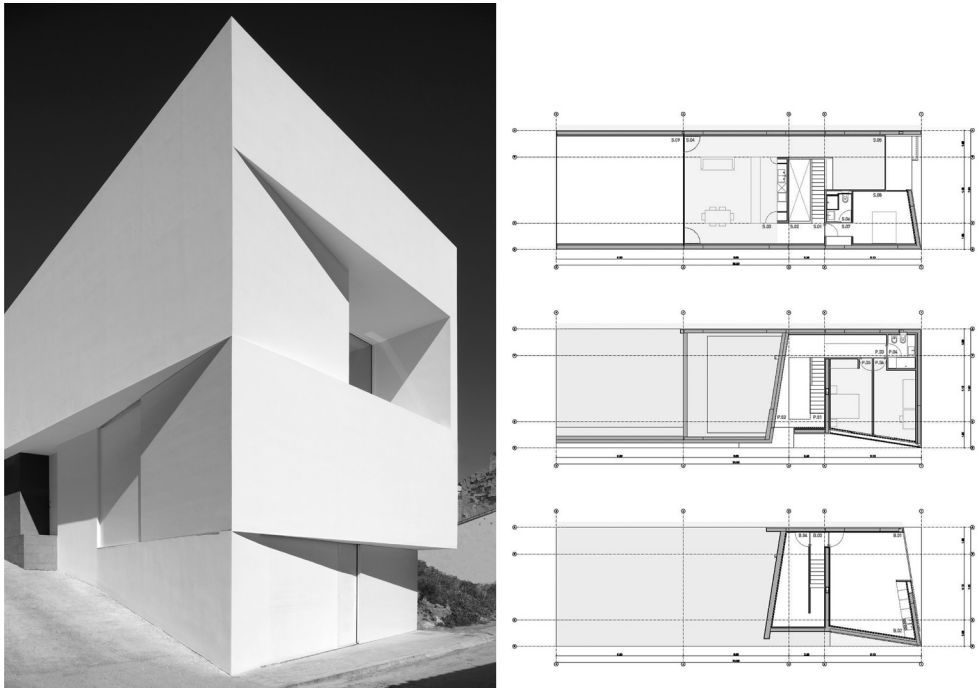
Fran Silvestre’s architecture is characterised by clarity and simplicity of form. The play of architecture narrowed down to the shapes of openings, solids, walls and shadows reduces the composition to a pure spatial geometry. It is reinforced by the use of a uniform material and its white colour on the façades.

An intriguing composition unfolds in the realization of the Cliff House in Calpe, Alicante, completed in 2012, where two distinct faces of the architecture emerge depending on the vantage point. The structure, composed of several rectangular prisms, cuts into a steep natural slope, with the panorama of the sea serving as its most significant element. A vertical, three-story central wall divides the composition, acting on one side as a support for

⁷ Hofmann House [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/hofmann-house/> (access: 27.08.2024).

the elongated prism of the residential area suspended above the slope, while also separating the pool and garage areas. This wall also has a technical function – it serves as a reinforced concrete core for the structural framework, ensuring its stability on the cliff⁸.

The large concrete cantilevered element of the structure requires modern construction and design techniques to showcase the architectural possibilities this material offers to architects. Bold yet disciplined composition of geometric forms is possible even in challenging terrain conditions. This is further demonstrated on a slightly smaller scale in the project described below.



III. 6. Fran Silvestre Architects – House on Mountainside, Ayora, 2010, photo by Fernando Alda, source: House on mountainside overlooked by castle [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/house-on-mountainside-overlooked-by-castle/> (access: 26.08.2024).

The building named House on Mountainside was constructed along a street in the town of Ayora, Valencia, on a small plot adjacent to the rocky edge of a castle hill. The dense and low-rise residential buildings in the area provide a context with clearly defined boundaries. Therefore, the architects designed the building as a rectangular prism with light cut-outs and bevelled wall sections across different floors, creating a classic division into stories. The significant slope of the terrain necessitates careful shaping of the form, façades, and floor plans of the house. The landscape of the site calls for a search for connections between the house, the terrain, and the surrounding scenery, as well as for carefully designed view frames toward the open space while limiting visibility from the road and neighbouring buildings. This objective is achieved through the use of niches, small loggias, and sections of sliding

⁸ P. Jodidio, *Contemporary concrete buildings*, Taschen, Köln 2022, p. 468.

window screens on the building's façade. These features allow one to close the building off completely from the surrounding environment when needed.

This building demonstrates a more complex architectural composition adapted to the terrain conditions, in contrast to most projects by Fran Silvestre Arquitectos, which were developed on larger plots and within a natural landscape. Such settings allowed for the design of even more disciplined, rigorous, and hermetic forms.



III. 7. Fran Silvestre Architects – House on Mountainside, Ayora, 2010, photo by Fernando Alda, source: House on mountainside overlooked by castle [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/house-on-mountainside-overlooked-by-castle/> (access: 26.08.2024).

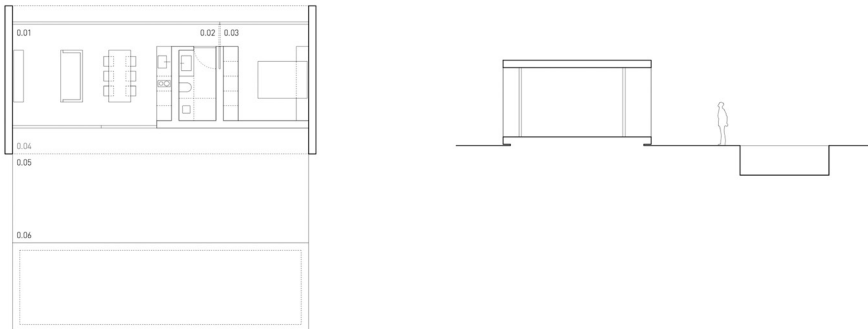
The House of Sand, with an area of 313 m², was built in 2020 near a beach on a plot overlooking the Mediterranean Sea. The location is no coincidence, as the architects have frequently designed buildings in similar landscape contexts. In this case, they addressed the setting by creating a structure composed of two rectangular prisms stacked perpendicularly, with the upper volume cantilevered. As the architects explain: “Ultimately, two volumes adapted to enjoy the surrounding conditions, the views, the shade... nothing more, nothing less.”⁹ To allow for a view of the panorama, the traditional functional layout of the house was reversed – the upper level was designed as the living area, while the ground floor, containing the private section with bedrooms, opens up to the garden.

Here we find the ability to combine elements of context and site-specific conditions with the general and pure language of minimalist architecture. “Silvestre masters the art of using

⁹ House of Sand [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/house-of-sand/> (access: 27.08.2024).

a strictly minimal architectural vocabulary and essentially rectilinear forms to create houses that are full of light and life.”¹⁰

The architectural technique of Fran Silvestre is evident in the series of prefabricated houses known as the NIU series. Several of these have been designed and built in different locations. This has been achieved by observing the evolution and modification of the standard, which through repetition, transformation, and refinement has become a significant tool for implementing contemporary residential architecture.



Ill. 8. Fran Silvestre Architects – NIU N70, Valencia, 2021, photo by Fernando Guerra, source: NIU N70 [in:] *Arquitectos Valencia*, <https://fransilvestrearquitectos.com/en/portfolio/niu-n70-2/> (access: 26.08.2024).

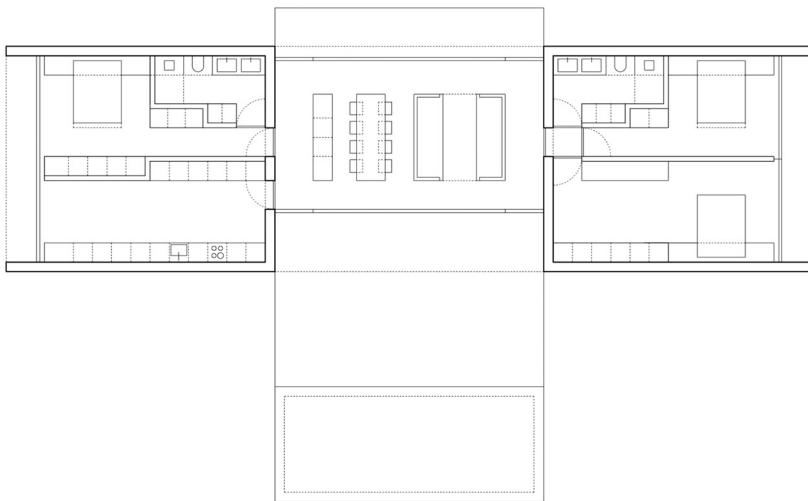
The smallest house in the series, NIU N70, was built in Valencia in 2021 as a modification of a typical prefabricated house design that the architects had previously developed. The building’s structure is a white solid frame that encloses the living space, forming a rectangular prism that is open along its longer sides.

Modularity, linearity and white planes of building elements and furnishings. The space of individual rooms is visually, yet not permanently, divided – the living area is separated from the bedroom by the bathroom. Kitchen appliances are completely concealed within the walls and furniture, making the boundaries between furnishings and structural elements invisible.

¹⁰ P. Jodidio, *Homes for Our Time 2*, Taschen, Köln 2022, p. 397.

This uncompromising aesthetic demands the use of advanced techniques and technology. Hence, the prefabrication of the house allows for the workshop-based design, production, and assembly of its components, achieving a level of precision that would be difficult to attain under typical site conditions.

The NIU houses designed by Fran Silvestre are intended to provide *a comprehensive response to architectural and construction processes, centred on a system to build houses in the most efficient and effective way*. There are essentially prefabricated homes that retain the design quality of more elaborate and original houses designed by Fran Silvestre.¹¹



III. 9. Fran Silvestre Architects – NIU N160, Valencia, 2020, photo by Jesús Orrico, source: NIU N160 [in:] *Arquitectos Valencia*, <https://fransilvestrearquitectos.com/en/portfolio/niu-n160-2/> (access: 26.08.2024).

¹¹ P. Jodidio, *Homes for Our Time. Small Houses*, Taschen, Kolonia 2023, p. 347.

As Philip Jodidio affirms, “Less is Still More”¹² remains relevant and continues to evolve in contemporary house architecture:

The question of just how little we need is not a new one; it drove Le Corbusier’s Cabanon design and many other efforts to truly adapt habitat to (minimum) human requirements. Elevated today to the status of a work of art, the Cabanon is also an echo of the earliest homes on earth, huts or light constructions made with whatever materials were available.¹³

Jodidio emphasizes the responsibility of architects to consider the natural environment, where the most common type of building – the single-family house – should be economical, ecological, and modest in size, area, and consumption of natural resources. Hence, he poses a question for the future: “How Small a House Do I Need?” The NIU house by Fran Silvestre is the smallest in the architects’ portfolio, a fully prefabricated and repeatable unit. It can be acknowledged that the trend of incorporating technology and digital tools into home production will continue to grow, not only due to ecological considerations but also because of human factors and the time efficiency of construction.

The mid-sized NIU 160 house, built in Valencia, follows a similar architectural approach to the previous example, characterized by modularity and clarity of form. The architects emphasize that imposing constraints and strict, minimalist design principles can enhance creative expression: “Sometimes these limits, not always self-imposed, favour creativity. With this spirit of limiting resources, a series of projects were born, the first example of which is the N160 house.”¹⁴ The form of the building results from processing and composing aluminium models, which the creators used in the initial concept phases, deliberately abandoning traditional drawing. “A way of proceeding investigated in some works by Jacobsen or Souto de Moura. The work process begins with the use of aluminium profiles to make the models, a system that generates an infinite number of combinations.”¹⁵ The building consists of three modules – one central module arranged longitudinally and two side modules positioned transversely. The central module, featuring two glazed walls and a roof, contains the living area, while the enclosed side modules house the other functions of the house. The symmetry of the internal wall layout emphasizes the compositional rigour. The monochromatic elements of this architecture highlight the importance of aesthetics – a clear and pure form, stripped to the extreme of unnecessary elements and details. White aluminium cladding was used on the façades, creating a uniform material across all surfaces.

Another house, the NIU N290, was completed in 2022 as a significantly larger prefabricated model, where the precision of construction and workshop fabrication further develops the concept adopted by the architects. They point out that although each house is essentially the same, their adaptation to specific local conditions, plot shape, and site topography makes each an individual solution. This is the case with the NIU N290 – integrating the building into a slope necessitated the addition of stairs and retaining walls. The layout of the ground floor plan centres around an atrium and opens up to the garden

¹² *Ibidem*, p. 15.

¹³ *Ibidem*.

¹⁴ NIU N160 [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/niu-n160-2/> (access: 24.08.2024).

¹⁵ *Ibidem*.

as a response to the dense development of neighbouring plots. Another noteworthy feature is the aluminium cladding on the building's façades.

As in other projects, modernist and minimalist tendencies are evident – openness, the formal and functional integration of the interior and exterior spaces of the house, and a clear spatial layout. The design employs a language of simple partition elements, floor-to-ceiling glass dividers, and smooth, flat white components that are planned as compositional elements of the interior.

The titular perfection of hidden technology is also found in the design and production of outdoor furniture for the houses, characterized by slim, elongated, horizontal shapes, a lightness of form, and a white colour. The *Blau* line includes tables and side tables, chairs, loungers, armchairs, lamps, and sculptures, all featuring contemporary geometric shapes that simultaneously reference modernist simplicity of form and functionality. Here, too, one can discern the primary aesthetic values of Fran Silvestre. Beyond a focus on quality and the fusion of functionality with a defined aesthetic, the furniture elements are consistent with the architecture created by the architect, yet they also stand alone as independent works of contemporary design.

4. CONCLUSION

Spanish architect Fran Silvestre creates simple, geometric structures with a recognizable form, in which the individual technique for designing houses reveals a precision in shaping buildings.

Based on the analysis conducted, it can be concluded that technology has a clear impact on his architecture. The architect leverages the technical possibilities available in modern architectural design, employing complex structures and computational methods. He explores and pushes the boundaries of technology by using forms that are demanding from a structural perspective. The idea of minimalist reduction is used to conceal and eliminate all elements within the architecture, sometimes reaching an extreme level. Despite the essential practicality of single-family home architecture, the architects still achieve empty and clean interiors, with large, smooth, and flat surfaces on walls, floors, and ceilings, completely hiding the furnishings. This consistent design method demonstrates the architects' path and desire to achieve the perfection of concealment. The continually evolving technique of using a limited, well-defined set of elements, materials, and colours serves as a means of expression, allowing the form to be unmistakably clear and identifiable as the work of its author.

References

- [1] Blake P., *Mies van der Rohe*, WAiF, Warszawa 1991.
- [2] Charciarek M., *Współczesny dom – próby monumentalizacji przestrzeni* [in:] Kozłowski T., (ed.), *Architektura mieszkaniowa dziś*, Wydawnictwo PK, Kraków 2016.
- [3] Gała-Walczowska M. *Architektura domu jednorodzinnego w krajobrazie*, PhD thesis, Wydział Architektury, Politechnika Krakowska, Kraków 2014.
- [4] Hofmann House [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/hofmann-house/> (access: 27.08.2024).
- [5] House of Sand [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/house-of-sand/> (access: 27.08.2024).

- [6] House on mountainside overlooked by castle [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/house-on-mountainside-overlooked-by-castle/> (access: 26.08.2024).
- [7] House on the cliff [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/house-on-the-cliff-eng/> (access: 26.08.2024).
- [8] Jodidio P, *Contemporary concrete buildings*, Taschen, Köln 2022.
- [9] Jodidio P., *Homes for Our Time 2*, Taschen, Köln 2022.
- [10] Jodidio P., *Homes for Our Time. Small Houses*, Taschen, Köln 2023.
- [11] Mielnik A., *Współczesne tendencje minimalistyczne w architekturze domów jednorodzinnych. Część pierwsza*, "Przestrzeń i Forma" 2011, no. 15, pp. 235–270.
- [12] NIU N160 [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/niu-n160-2/> (access: 24.08.2024).
- [13] NIU N70 [in:] Arquitectos Valencia, <https://fransilvestrearquitectos.com/en/portfolio/niu-n70-2/> (access: 26.08.2024)
- [14] Zimmerman C., *Mies van der Rohe. The Structure of Space*, Taschen, Köln 2016.

Author's Note

Marek Początko, PhD, Arch.

Assistant professor at the Department of Architectural Design FA CUT, member of POIA (Chamber of Polish Architects) and SARP (Association of Polish Architects). His research focuses on contemporary monumental architecture and the fusion of art and architecture.

marek.poczatko@pk.edu.pl