Models for Thinking about Architecture by Alberto Campo Baeza

Carlos L. Marcos, Andrés Martínez-Medina, Vincenzo Bagnolo

Abstract

The use of models in the design process has been a common practice throughout history that still endures. Despite the development of new technologies and their sophisticated ability to represent and anticipate the appearance of architectural designs, physical models continue to captivate us today. Their materiality, combined with their three-dimensionality and the ability to miniaturize architecture as a physical object, still make them an eloquent and irreplaceable communication vehicle. It is difficult to imagine a significant competition where architects reject to present models or photos of them. Here, we analyse the use of models in the design process of Alberto Campo Baeza, their importance in this process, and even the possible influence they exert on his own work. It is necessary to add that models are used in his studio for many different purposes. A detailed analysis of the types of models used by Campo Baeza and their various communicative, expressive, conceptual, and contextualizing purposes is presented here. Also their use as a vehicle for the creative process, testing lighting effects, or as an eloquent tool to be manipulated in order to synthesise and anticipate various aspects of architecture. Throughout this research, a taxonomy of the types and uses of models by this Spanish architect is proposed, delving into the details of their capabilities as project tools.

Keywords: models, Alberto Campo Baeza, uses, taxonomy, design process.

Introduction

The making of scale models has been a common practice in the civilized world; evidence of their existence dates back millennia [Franco Taboada 2017]. They have been used to reproduce reality; for worship, offering, and representation purposes; as souvenirs or for study [Gercke et al. 1986], or simply anticipating reality and serving as a model for construction. We are interested in the latter because their materiality and three-dimensionality contrast with drawings as a means of architectural representation, without the inherent limitation of their projective reduction. Understanding spatial complexity makes of them extraordinary ideation tools, anticipating the visualization of architecture as a tangible object. Additionally, their physicality allows adding layers of material significance in architectural representation that are notably useful in the case of conceptual models, adding expressive and informative richness to them. Their interest is such that they have been studied for decades [Vragnaz 1987]. Here, we reflect on the quality of models as a tool of architectural thought in its design dimension.

Our case study focuses on the models from the studio of Alberto Campo Baeza –an architect distinguished by the Accademia Adrianea with the Piranesi Award in 2018 and with the Gold Medal of Architecture in 2019 in Spain– with which he works himself; often, reducing their dimensions to miniature. As he writes, "an idea fits in the palm of a hand" [Campo Baeza 2013, p. 10]. This miniaturization, which effectively synthesizes the design idea [Scolari 1988], allows them to be directly manipulated with hands, which are also a tool

Fig. 1. Monographic exhibition by Alberto Campo Baeza at the Patio Herreriano Museum (Valladolid), 2017.

of our thought [Pallasmaa 2012], serving as an intellectual vehicle equivalent to conceptual drawing, but adding cognitive aspects closed to the latter due to its two-dimensional nature. Thanks to their haptic condition, they ease a spatial understanding impossible to achieve through graphic representation. Moreover, unlike virtual models, physical models are malleable and hand-crafted, a true laboratory of experimentation [Carazo Lefort 2018]. This interactive relationship between the model and hands as tools linked to our spatial invention and as an extension of cognition is characteristic of *homo faber*, of our ability to imagine and build [Llopis Verdú 2013, p. 73]. In a way, it constitutes a place of articulation between architectural theory and practice [Allen, Agrest 2003]. However, reducing the use of models to these aspects does not exhaust the possibilities their professional use entails. Furthermore, Campo Baeza uses them in parallel with drawing as vehicles of architectural thought and ideation during the design process [Marcos, Allepuz 2018].

Methodology and objectives

To address this research, we have thoroughly explored the website of Alberto Campo Baeza's studio to delve into his projects and identify most of the models he uses, both during the design process and those made for more communicative or representational purposes, mainly intended for architecture competitions or to serve as an instrument to convey the project's idea to the client. Additionally, we had the opportunity to visit various exhibitions of the architect, where we could see some of the models as physical objects, specifically in the monographic exhibitions on his work at the Museo Patio Herreriano in Valladolid (2023) and the University of Alicante Museum (2018). We also consulted updated literature on architectural models. Through this detailed research, we established a taxonomy of the different models used in his studio, as well as the diverse purposes for which they are built, serving as an exploratory and anticipatory medium of architecture itself.

Types and uses of models in Alberto Campo Baeza's studio

Far from losing relevance in the professional field, physical models seem to have resurged in recent years due to, among other reasons, the prominence they have gained

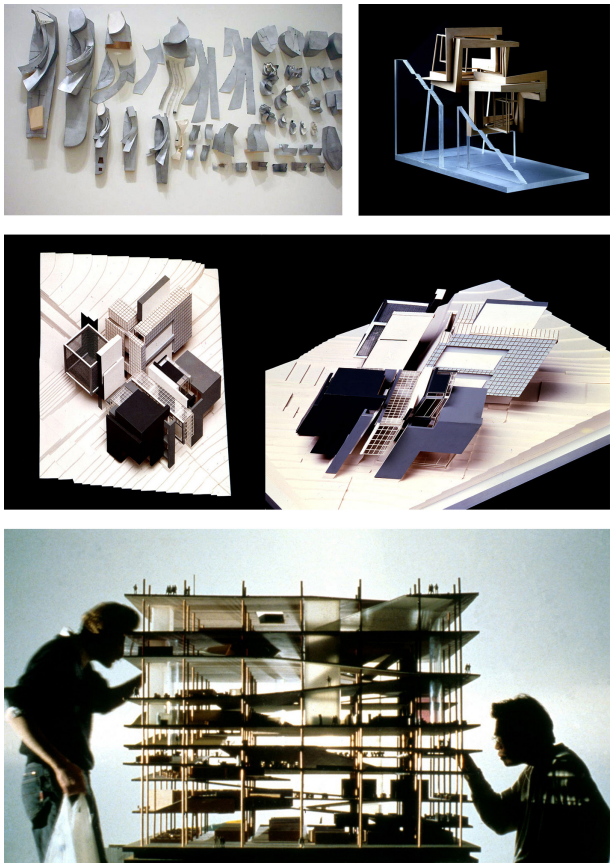

Fig. 2. a. Frank Gehry, 1996, Models from the Guggenheim Museum Bilbao; b. Peter Eisenman, 1988, Casa Guardiola model, c. and d. 1978, Axonometric model, House 2e. OMA, 1991, Jussieu Library.

Fig. 3. a. Alberto Campo Baeza, 2015, Raumplan House; b. Alberto Campo Baeza, 2002, Mercedes Benz Museum Project; c. Alberto Campo Baeza, 2014, Diagrammatic model of the House of Infinity (© https://www.campobaeza.com).

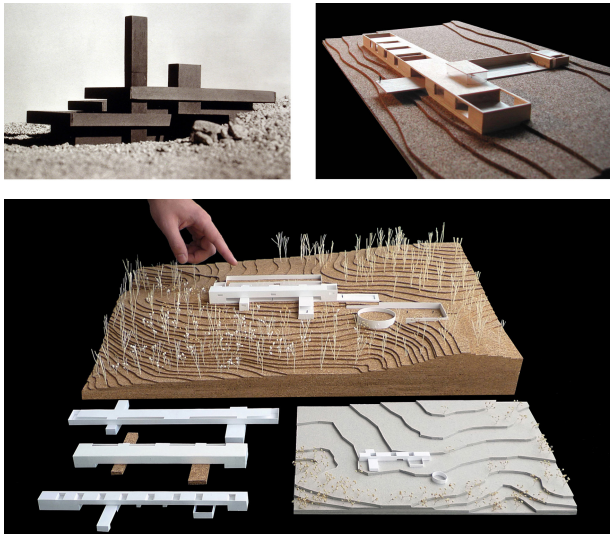

Fig. 4. a. Alberto Campo Baeza, 1974, García del Valle House; b. Alberto Campo Baeza, 2005, Chapoutot House; c. Alberto Campo Baeza, 2015, Hacienda el Baquillo (© https://www.campobaeza.com).

in the design process of some of the most well-known practices [Carazo Lefort 2018]. Perhaps the case of Frank Gehry is one of the best-known and most studied, but it is by no means the only one. His intense exploration of architectural form made the model a highly useful vehicle for ideation and communication in his professional practice. Peter Eisenman has also employed them. Several of the models of his early houses are well known, as in the case of his House II from 1969-1970, which the architect himself describes in these terms: "The house looks like a model and is built as such" [Eisenman Architects], and also in his Guardiola House from 1988 (fig. 2b). Eisenman assigns a crucial role to drawing and modelling in the design process, as he believes that true architecture resides in the project itself. His axonometric models especially challenge the boundaries between representation, object, and architecture (figs. 2c, 2d). He refers to them as "a three-dimensional object, an axonometric projection, and a plan" [Eisenman 1980, p. 18], and they undoubtedly constitute a milestone in the history of models [Bernal López-Sanvicente 2018]. However, OMA is perhaps one of the studios where the use of models has been given the greatest relevance since its foundation. Their models serve as reflection, testing, anticipated materialization, and are an unequivocal part of the ideation and configuration process of architectural form (fig. 2e).

A virtual tour through Campo Baeza's website highlights the fundamental role he assigns to models throughout his career. Few projects lack one or more models; in the more challenging, he uses them profusely. He has always promoted their use during his years of teaching at the School of Architecture in Madrid, insisting on the importance of creating both drawings and models because there are aspects that go beyond drawing. The projective limitations of drawings are overcome by models in all matters concerning three-dimensional, spatial, and sometimes even material aspects. Drawings and images can only represent visual qualities. Although the advent of virtual space, and with it the three-dimensional representation of architecture apart from physical models, has overcome some of the limitations of conventional graphic representation, achieving unmatched realistic effects, it has not contributed to the disappearance of models. Instead, it has renewed interest in these miniature

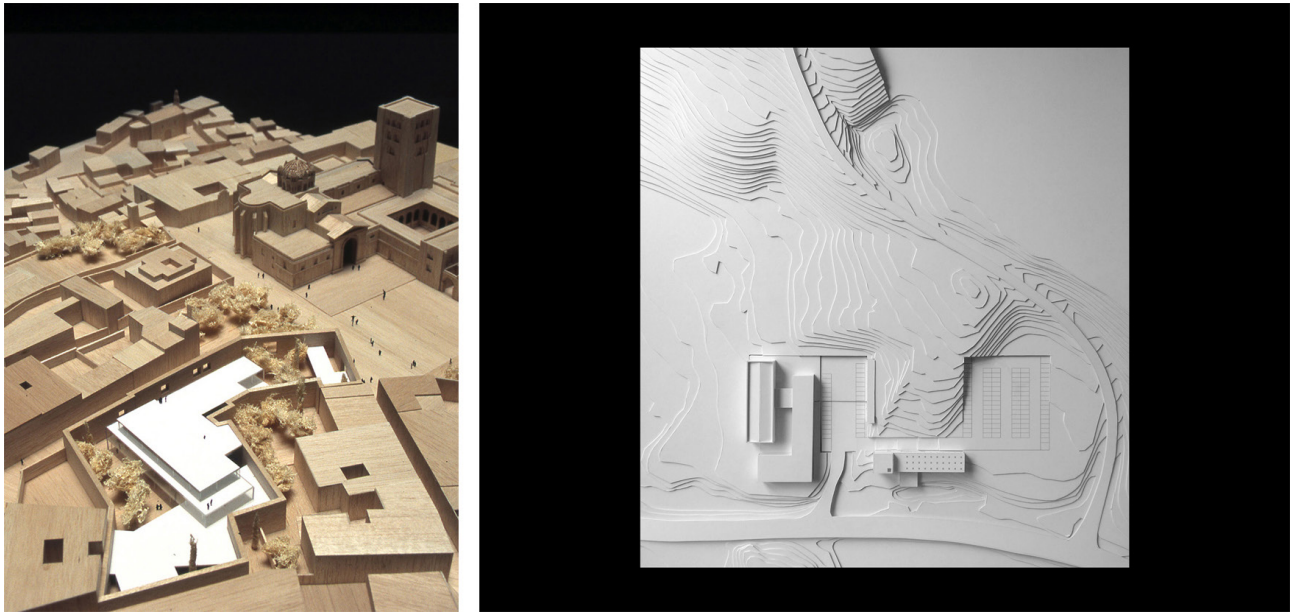

Fig. 5. a. Alberto Campo Baeza, 2012, Consejo Consultivo di Castilla-León a Zamora; b. Alberto Campo Baeza, 2023, Robert Olnick Pavilion (expansion of the Museo Magazzino) (© https://www.campobaeza.com).

architectures [Carazo Lefort 2011]. Observing the persistent use of models in architectural competitions from the past to the present day, their enduring relevance over time is undeniable. Their materiality is unsurpassed even by digital models, which, although they share three-dimensionality with physical models, are always perceived as views on a computer screen or rendered images –that is, projections– since they inhabit a virtual space. Models, on the other hand, can be seen, touched, and observed dynamically in real space, representing the project's geometry holistically, as a whole, and allowing the comprehension of the architectural object and space as a whole with the only limitation of their dimensional reduction. This aspect is sometimes an advantage, as it allows the project's idea to be synthesized very eloquently.
Models allow a complete control of architectural form, visualizing and apprehending its three-dimensionality. Additionally, although their materiality does not necessarily mimic the architecture they prefigure, their physicality does incorporate material values that enable other expressive registers. This research establishes a taxonomy of the different types of models that Campo Baeza uses in his professional practice, serving as a pretext to reflect on various relevant aspects and considerations in the field of architectural representation or ideation that should be incorporated into the academic debate. This article analyses the different ways in which Campo Baeza explores their use, considering up to nine distinct types: diagrammatic, ideation, contextualization, to ponder natural lighting, sectioned or fragments of construction details, conceptual and presentation, for photographic representation or for the creation of photomontages.

Diagrammatic models

A first approach to the use of models, aimed at understanding and exploring spatial relationships in three dimensions, reveals a significant aspect of their use in the early stages of the project. For example, we observe how

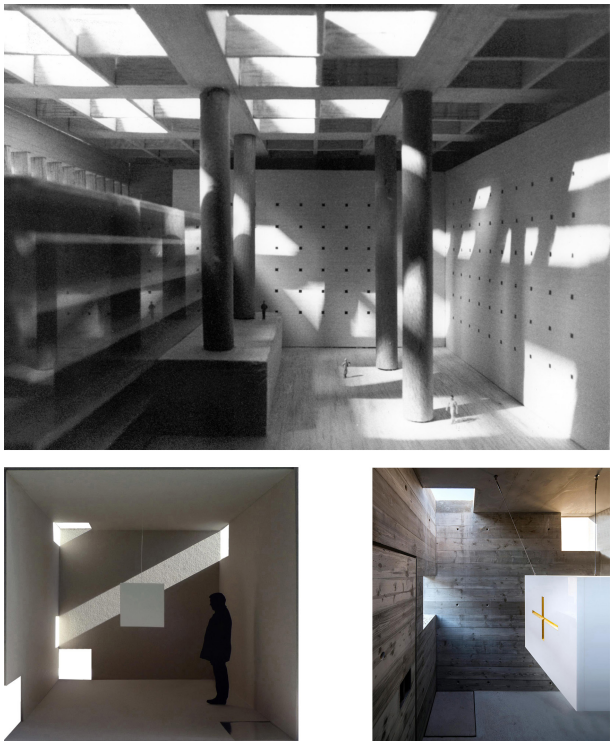

Fig. 6. a. Alberto Campo Baeza, 2001, Granada Savings Bank; b. Alberto Campo Baeza, 2019, Iheaven on earth, model; c. photograph of the work (© https://www.campobaeza.com).

a diagrammatic model for the Raumplan House is built using a simple cardboard and some basic folds (fig. 3a). The model allows for considering spatial interactions, the succession of diagonally articulated spaces after an ascendant spiral referencing Loos's architecture, and the stepped conception of spaces designed inside-out. The reduction to a diagrammatic definition of form in space represents the maximum synthesis of its spatial configuration. Its eloquence could never have been understood as effectively through diagrams. The dimensional reduction to the limit of the material –virtually negligible thicknesses– achieves a very precise condensation of the essential configuration. Another example can be found in the diagrammatic model for the Mercedes Benz Museum (fig. 3b), which explores the geometry of the spirals that intertwine and synthesize the project's original idea.
Similarly, the reduction of the model to a miniature that fits in a hand has also an added value. It represents the compression of the miniature, which is an inherent characteristic of every model in relation to the architecture it represents, bringing it closer to an axonometric view and to a considerable degree of abstraction in contrast to its small size. In this double process of reduction, the object exceptionally synthesizes the idea that gives birth to the project [Carazo, Galván 2014, p. 66].
It is important to note the role that the materiality of the model plays here. A simple cardboard, a piece of pressed board, or even a paper bag (fig. 3c) serves as a pretext to explore the project's geometry at a basic level. These models are made more for thinking about architecture in its preliminary stages than for describing it. Their physicality reveals their exploratory nature and evanescence, but their diagrammatic simplicity makes them extraordinarily effective in conceptualizing the idea, and they do not always correspond to the commencement of the design process. Their proverbial capacity for synthesis makes them an ideal vehicle for communicating the project's idea.

Ideation models

A similar phenomenon occurs with ideation models, which are commonly created as initial explorations of the project's geometry, testing the overall aspects of the project's volumetry, or as the first formalization of what the work will be like. They are usually made alongside the first sketches and contribute greatly to final decisions on how the parts will be articulated into the whole. This is a common practice that Campo Baeza has developed throughout his professional career, as illustrated by the García del Valle House (1974), the Chapoutot House (2005), or the Hacienda el Baquillo (2015) (figs. 4a, 4b, 4c).
In these ideation models, the project appears sketched out more or less definitively and serves both to advance the three-dimensional form for the architect and as an object that can be shown to the client during phases where there is still room to explore relationships between the different spaces that make up the program. We can see various initial explorations and project configurations that

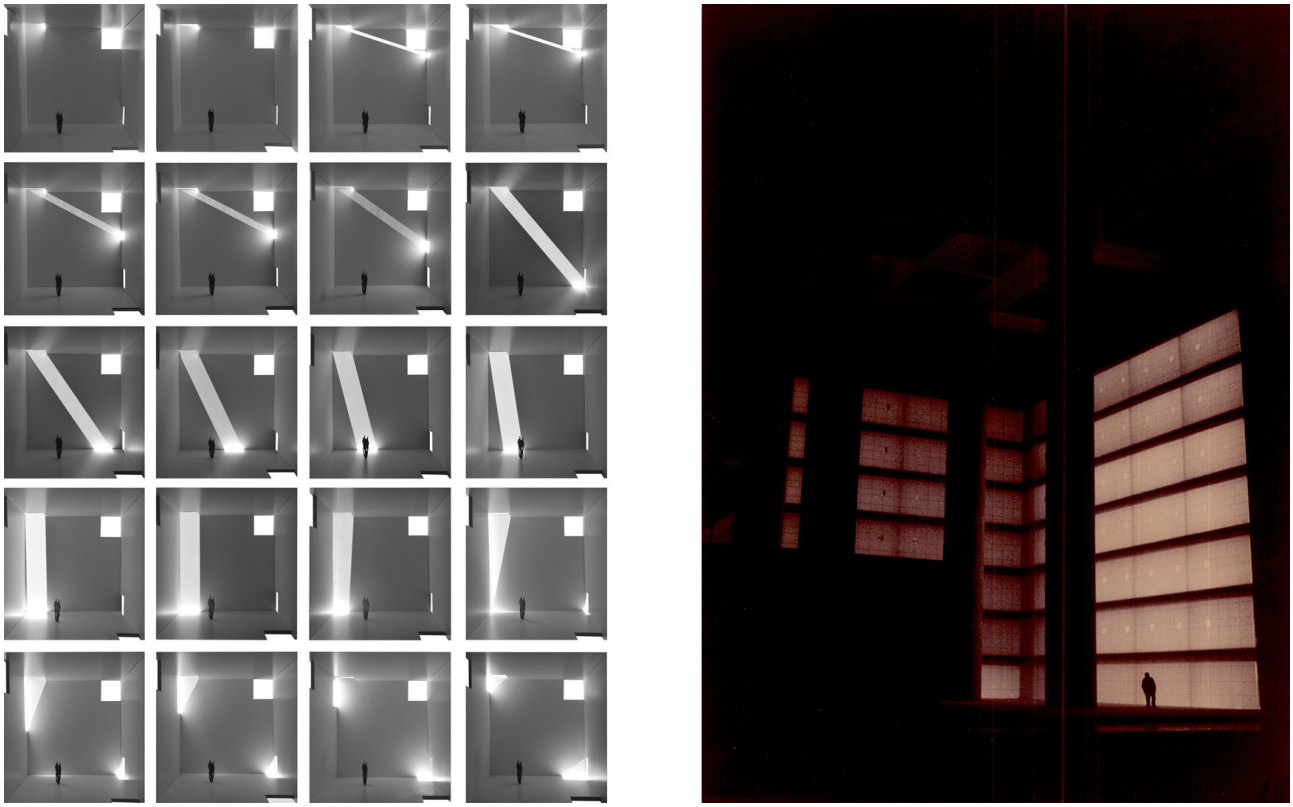

Fig. 7. a. Alberto Campo Baeza, 2023. Padiglione Robert Olnick. Serie fotografica di illuminazione all'interno basata sul percorso solare. b. Alberto Campo Baeza, 2001, Cassa di Risparmio di Granada (vista interna del modello della soluzione finale del progetto Saagio di luce 2) [U.d.s. 006; Archivio storico digitale della Biblioteca UPM].

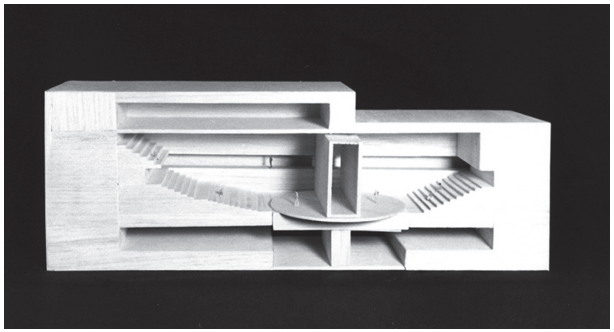

Fig. 8. Alberto Campo Baeza, 1993, Concert hall and chamber (detail of the project for the Copenhagen Philharmonic (© https://www.campobaeza.com).

constitute genuine variations on the same idea in these initial stages, moments that capture the project's creative process and lead to the final version, as observed in his project for Hacienda el Baquillo (fig. 4c).

Contextualization models

Models tend to have a certain quality of being isolated objects, artifacts, autonomous realities that serve to be viewed, touched, and perceived from different viewpoints in an exploration between hapticity and visuality. However, architecture is not a design object that can be placed anywhere. Unlike industrial design objects, architecture is designed for a specific place and is anchored to that context, making it meaningless to consider it in isolation [Holl 1989].
Models can also be very useful for exploring the way in which the architecture is inserted into a given context, anticipating the relationships of scale, tension, anchoring, and rooting of the project. Architecture belongs to the place, as once built, it becomes part of it and transforms it [Aires Mateus, 2006]. It is important to understand to what extent Campo Baeza considers the importance of these contextual models. Whenever he intervenes in a historic centre, he needs to gauge how his architecture affects the urban fabric, what the scalar relationships with it are, and the dialogue established with the adjacent architectural heritage. This can be seen in his project for the building for the Consejo Consultivo de Castilla-León (fig. 5a) or in his intervention for the elevated plaza in the Entrecatedrales project in Cádiz.
However, it is not necessary for the site to be a consolidated context with significant heritage value for the use of contextual models to be convenient and useful. For instance, scale, an eminently architectural condition, depends on a three-dimensional evaluation. This type of model allows for a scale control that cannot be matched by drawings or images, which are always deceptive when assessing scale issues. The scale control of the piece being designed within a context, its relationship with pre-existing structures or the landscape, recommends the use of this type of model, as observed in the case of the Robert Olnick Pavilion for the Magazzino Museum extension in Cold Spring, where the designed piece is introduced into a given context dialoguing with the larger existing building designed by Miguel Quismondo (fig. 5b). Also, in more landscape-focused interventions, these models are very eloquent regarding the accommodation established between architecture, context, and nature, as seen in the early version of the large platform project for a Landscape Interpretation Center in Lanzarote between 2009 and 2012 (fig. 11), which serves as a prelude to his domestic icon in Cádiz known as Casa del Infinito.

To evaluate and calibrate natural lighting

One of the essential elements in Campo Baeza's work is undoubtedly light. It is not just a functional concern about how to light the interior space or incorporate views from the outside into the work itself. Campo Baeza considers it the "basic, indispensable material of architecture", with the "magical capacity to create tension in space for humans". As deduced from his words: "Isn't light the only medium capable of making the unbearable gravity of matter weightless?" [Campo Baeza 1996a, p. 40], light holds a phenomenological significance. Most of his spaces engage in a dialogue with light, revealing how the sun traces its path across the sky.
This is not the place to address the various ways in which the architecture of this architect born in Valladolid operates with light as a project material, as he has extensively discussed [Campo Baeza 1996b], but it is appropriate to analyse how models can be used to study, observe, and even calibrate many of its effects. It is logical to think that an architect, so concerned with the effects produced by

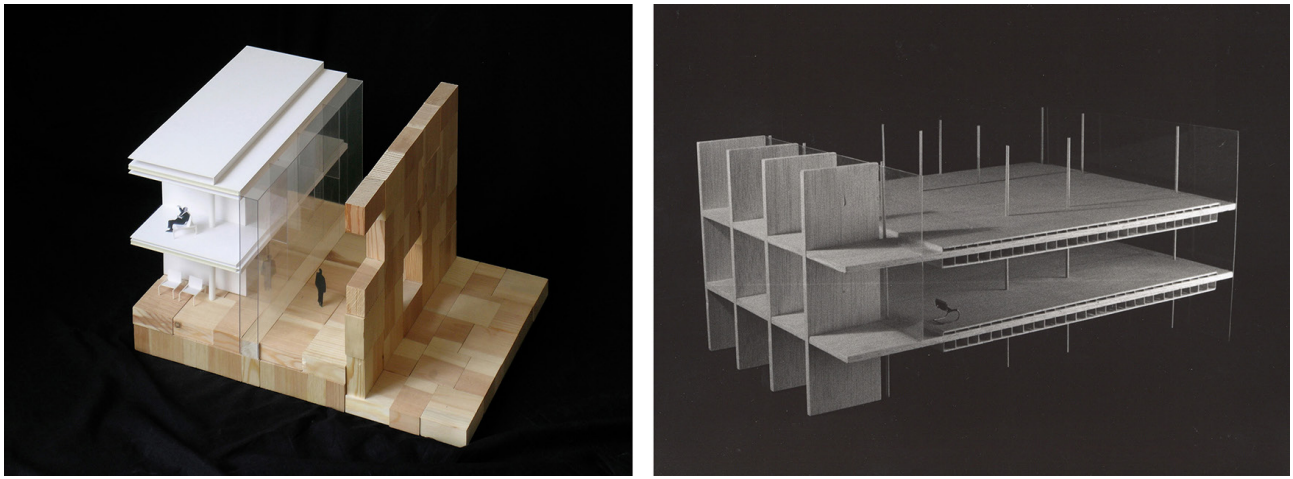

Fig. 9. a. Alberto Campo Baeza, 2012, Advisory Council of Castilla-León in Zamora; b. Particular model of the Granada Savings Bank (© https://www.campobaeza.com).

light and so convinced of the usefulness of models as a project tool, would explore the possibilities they offer. There are countless examples where the use of models aims to assess and calibrate the effects that light will produce inside once his architecture is built, achieving the desired effects of apparent weightlessness of matter.
For instance, the concern about the effect of light in the immense cubic atrium of the Granada Savings Bank Headquarters during the project process led to the creation of a large, sectioned model (fig. 6a) to observe the effects of overhead light within the space and the variation of brightness depending on light intensity and the sun's path. As Campo Baeza acknowledges, the central theme of the building is light –"a light *impluvium*"– and thus, besides the generous skylights that modulate Granada's brilliant light, there are also deep brise-soleils to the southeast and southwest, and alabaster pieces that temper the overhead light. This diffuse light effect was also tested using a translucent material model, as shown in a suggestive archive photo (fig. 7b). All this demonstrates the utility of models and their ability to anticipate various luminous effects capable of creating atmospheres analogous to those observed in built architecture.
The use of models also allows for the analysis and anticipation of light effects, their directionality, and their modulation based on the arrangement of openings in walls and roofs, the depth of walls and consequently their openings, their proximity to corners, or their isolated placement. We can see the extraordinarily eloquent effect that light produces in the sectioned model of the family pantheon, Il cielo in terra, compared to the real construction (figs. 6b, 6c). Or the detailed study of light entering and sweeping through the space in correspondence with the solar trajectory in the photographic series of the interior of the Robert Olnick Pavilion (fig. 7a).

Sectioned and fragment models

Beyond the need to section models to observe the effects of light within them, there is a whole genre of models that are sectioned to allow for viewing and discovering the interior space. These are especially useful for projects where the interior space is the main theme. This method enables us to see the interior in a manner analogous to being inside, allowing us to understand its configuration or aspects that would otherwise be hidden. An eloquent example of such sectioned models is the stereotomic podium housing the main program of the proposal for the Copenhagen Philharmonic

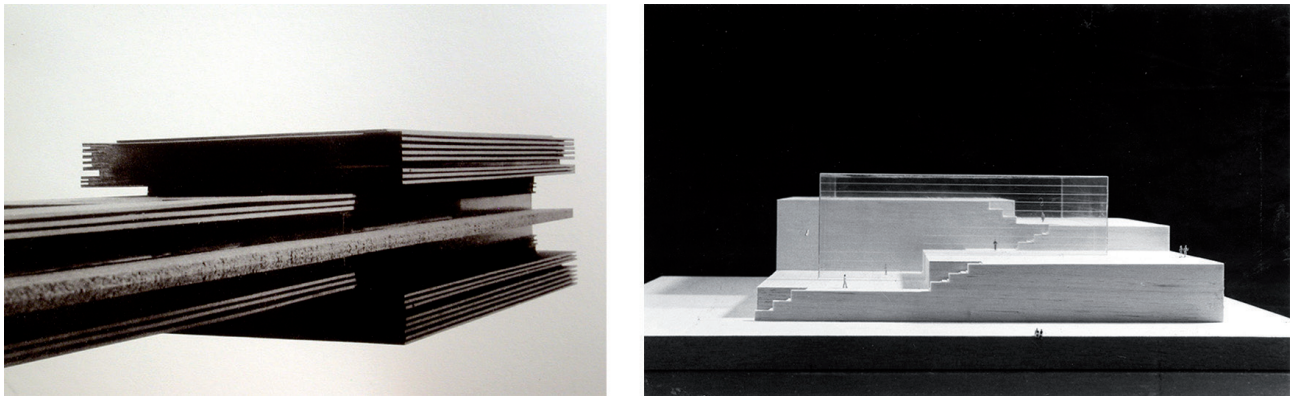

Fig. 10. a. Alberto Campo Baeza, 1971, Conceptual model of the Santander Festival Palace Competition; b. ACB, 1993, Conceptual Competition Model for the Copenhagen Philharmonic (© https://www.campobaeza.com).

competition, with the concert hall and the chamber music hall (fig. 8).
This possibility of dissecting part of the projected architecture also allows us to reference the construction and materiality of the architecture itself. It is not necessary for the materials used to be identical to those of the architecture they represent. The fact that the model has a physical component not found in graphic expression allows for the introduction of aspects related to the materiality of its components (fig. 9b). This can be useful for evoking contrasts between materials that the architecture possesses. This can be observed in the detail model of a fragment of the project for the Castilla y León Consultive Council in Zamora (fig. 9a); it shows the contrast between the robust stone wall surrounding the site and the white architectural piece with a light, almost immaterial glazing within that enclosure. A contrast of opposing thicknesses and materials is well understood in the detail or fragment model.

Conceptual and presentation models

However, the enduring prevalence of models, beyond their consideration as useful instruments during project development, even despite the advent of digital tools and their extraordinary capacity for realistic anticipation of the appearance of built architecture, lies in their materiality. For this reason, models are irreplaceable, despite their miniaturization compared to the real architecture. They place themselves in a hyper-plane regarding the representation of architecture. Observing them allows to change perspective and perception of the object in real time, enabling one to walk around them and contextually scale them with respect to their surroundings. For these reasons, they are also irreplaceable for communicating the merits of a project and, especially, for synthesizing an architectural idea.
Conceptual models perhaps best showcase their narrative function brilliantly. This is due to two determining factors: their miniaturization requires the elimination of all anecdotal and superfluous elements, and the materiality of the object itself allows for adding semantic layers related to architecture. The eloquence of these types of models, which synthesize the architectural idea, was discovered early in Campo Baeza's master thesis project model, with which he also won the competition for the Santander Festival Palace: a project that bridged the architecture of Mies and Jacobsen (fig. 10a). The same can be said for his conceptual model for the Copenhagen Philharmonic competition (fig. 10b).
These models are also very useful in cases where the relationship between architecture and context is crucial; they make it easy to understand these types of relationships due to their ability to synthesize and convey the project idea. The combination of both aspects makes

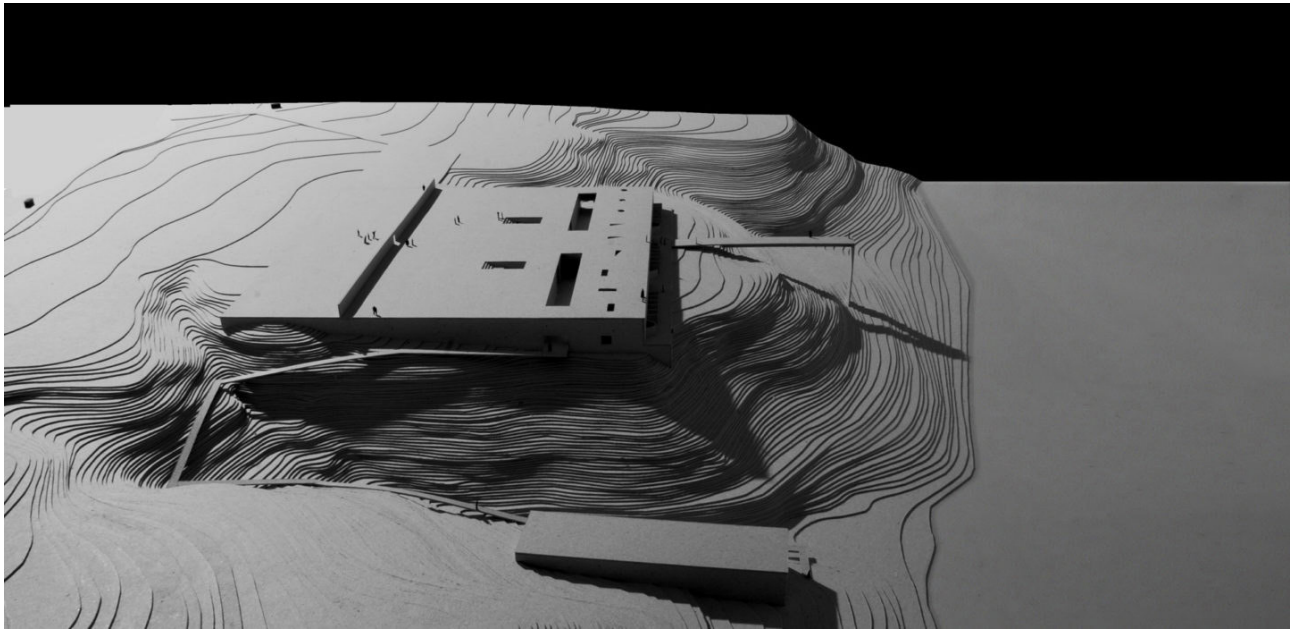

Fig. 11. Alberto Campo Baeza, 2012, Landscape Interpretation Center in Lanzarote, 2012 (© https://www.campobaeza.com).

them powerful communication tools, whose utility in competitions is undeniable (fig. 11). No prestigious office, when participating in a competition, fails to include a physical model or even more than one among their competition documents. In these latter cases, these are usually presentation models, generally of a larger scale and, therefore, with a higher level of detail and more careful elaboration.

For photographic representation and creating photomontages

Finally, models also play an important role in communicating the attributes of a given design, even taking advantage of their three-dimensional nature to be photographed and creating photomontages that anticipate how the architecture will look once built. This practice, popularized by Mies van der Rohe with the Friedrichstrasse skyscraper, although through photography and drawing, has expanded to the use of models. There are models that serve this purpose, and sometimes, from their conception, this goal is one of the fundamental objectives for their creation (fig. 12a).
These types of models intentionally photographed considering the horizon line height, the scale they are inserted into, and the distance from which they are photographed, can achieve very convincing contextualization effects (figs. 12b, 12c). It is true that with the development of rendering programs and the increasing sophistication of infographics, this use of models is gradually disappearing. Despite this, it remains a useful aspect of models, and if they are to be created for a specific project, with few resources and some skill, very expressive photomontages can be achieved with little effort.
To summarize the taxonomy presented in this research, the following synoptic chart synthesizes (tab. 1) the types, purposes, and examples of models analysed in the production of Alberto Campo Baeza's architecture. This analysis is not intended to be exhaustive over his entire production.

Type	Purpose	Characteristics	Examples
Diagrammatic	Understand spatial relationships	Maximum simplicity	Casa Raumplan, Mercedes Benz Museum Project, Casa del Infinito
Ideation	Initial exploration, project geometry and volumetry	Main project geometry without detail	Casa García del Valle, Casa Chapoutot, Hacienda el Baquillo
Contextualization	Scale and contextual analysis, materiality, volumetry	Volumetry in context	Consejo Consultivo de Castilla y León, Robert Olnick Pavilion, Entrecatedrales, Landscape Interpretation Center in Lanzarote
Lighting	Evaluate and calibrate natural lighting and shadows	Simple, with special attention to openings and materials	Caja de Ahorros de Granada, Il cielo in terra, Robert Olnick Pavilion
Sectioned	Understand interior space, analyse construction and perceptual aspects	Sectioned models	Concert Hall project for the Copenhagen Philharmonic
Fragmented	Analyse construction and material aspects	Fragment models of the whole to be studied in detail	Consejo Consultivo de Castilla y León, Caja de Ahorros de Granada
Conceptual	Synthesize project ideas, competitions	Simplicity, boldness, and expressive materiality	Santander Festival Palace competition, Copenhagen Philharmonic project, Landscape Interpretation Center in Lanzarote
Photomontages	Anticipate architecture in its location through context and model photography	Made to be photographed	Círculo de Lectores competition, Telefónica Tower, Alminar Tower

Tab 1. Tabella sinottica dei modelli analizzati nella produzione dell'architettura di Alberto Campo Baeza.

Conclusions

This article analyses and establishes a classification for the use of architectural models, using Alberto Campo Baeza's professional practice over more than half a century as a case study. Campo Baeza has produced some of the most iconic projects in Spanish architecture in recent decades. The simplicity of his architecture, its clarity, and the volumetric and spatial simplicity of his work may be more closely related to his prolific use of models during the project process than one might imagine. The miniaturization necessary in making models involves a search for the essence of geometry, thus freeing the project from the anecdotal or the superfluous. This progressive formal simplification is where the strength of many of his works relies on, and undoubtedly, the condensation of the project's idea in his conceptual models supports this strategy.

In any case, the selection of examples that illustrate and serve as a thread for this research shows not only a common practice in Campo Baeza's studio but also serves as a pretext to understand the varied possibilities that the use of models entails in architectural projects. His production is analysed as a case study, but it is evident that most architects who use models during the design process do so with similar purposes. The capacity to synthesize the project in conceptual models is a common practice and one of the greatest advantages of these miniature architectures. Even in those whose materialization is truly schematic, the underlying idea that organizes spatial relationships is evident. When used to insert the project into its context, they provide interpretive keys to the scalar relationships of architecture in the location, which are irreplaceable pre-

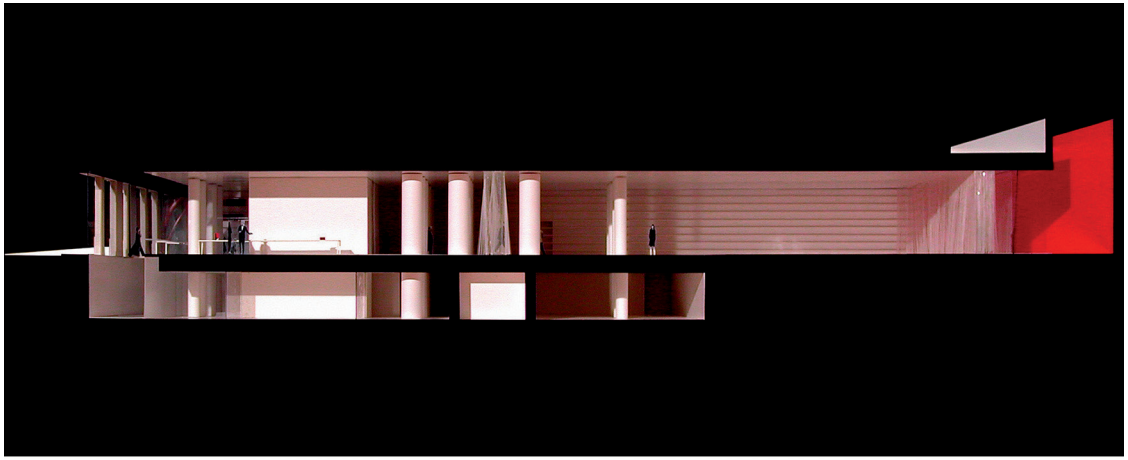

Fig. 12. a. Alberto Campo Baeza, Alberto Sixto Morell, 2005. Readers' Club competition template (Barcelona). Photomontages with models; b. Alberto Campo Baeza 2000, Telephone Tower (Madrid); c. Alberto Campo Baeza, 2013, Minaret Tower (Dubai) (© https://www.campobaeza.com).

cisely because of their true three-dimensionality. Likewise, the use of purely material aspects and the contrasts that can be introduced in this regard provide an expressive and effective means to establish contrasts between the projected architecture and pre-existing conditions. As three-dimensional objects, they can be used to study shadows and natural lighting effects that can thus be anticipated in the builtarchitecture. Even, when properly photographed, they can serve as a basis for the creation of photomontages, a practice that was decisive during the twentieth century and which new technologies have progressively replaced with digital photomontages through infographics.

The multiplicity of uses and types of models, as well as their various expressive, communicative, or synthetic purposes, are not necessarily exhausted here. At times, these models are considered as objects in themselves, almost like refined sculptures that also appeal to our aesthetic sense. Part of their success is also due to this reason, ensuring a long life for architectural models despite new technologies, without deliberately considering here the digital fabrication of models, which has proliferated in recent years.

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