A celebration of modesty. Instituto Tajamar in Vallecas (1959–1966)

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For a few years, between 1955 and 1966, César Ortiz-Echagüe and Rafael Echaide ran one of the most innovative and promising studios in Spain at that time. The success of professional associations of architects—more so if they are partners—lies in their complementary nature. In this case, and without underestimating Echaide's role[1], Ortiz-Echagüe was the epitome of brilliance and clarity. Four years younger than his colleague, he finished his studies at the Madrid School of Architecture in 1952 and won the *Premio de la Academia de Bellas Artes de San Fernando* (San Fernando Fine Arts Academy Award); Echaide in turn, completed his studies in Barcelona in 1955. At that point, Ortiz-Echagüe had already built, along with Rafael de la Joya[2] and Manuel Barbero, the famous aluminum-framed SEAT dining halls in Barcelona, which earned them the Reynolds Memorial Award. He offered a stable professional association to Rafael Echaide, whom he had met during his first years as a student of architecture in Madrid[3].

The resounding success of the SEAT dining hall provided undeniable proof of Ortiz-Echagüe's professional worth and brought more commissions from the same company—managed and run by the architect's father[4]—which at that time was seeking to consolidate its business activity after having launched the SEAT 600 in June 1957[5].

The commissions from SEAT, and possibly other extraprofessional circumstances[6], attracted new clients and commissions, such as the project for Banco Popular Español—which Luis Valls Taberner had joined as executive vice president in 1957—or the industrial complex for Hauser y Menet, a graphic arts company. Shortly afterwards, the two architects received a new commission, this time related to the educational sphere.

The foundation. An institute in the mud

In 1957, faced with the urgent need for school places in the districts that were absorbing and rehousing migrants from rural environments, the *Ministerio de Educación Nacional* (Ministry of National Education)—at that time run by the Falangist Jesús Rubio García-Mina, who had replaced Joaquín Ruiz Jiménez after his dismissal—published the ministerial order that led to the creation of the "*Secciones Filiales de Instituto*" (private secondary schools subsidized by the Spanish government)[7]. This provided the opportunity to found *Instituto Tajamar*[8], which opened its doors in February 1958 in the Puente de Vallecas district and was attached to the well-known secondary school Ramiro de Maeztu, located on Colina de los Chopos.

Understanding the atmosphere that led to this initiative involves remembering that the Vallecas district—which had been a separate municipality until 22 December 1950—was possibly the poorest area of Madrid. Although the following description refers to Pozo del Tío Raimundo, it mirrors the situation in Cerro del Tío Pío, the location where the future institute was to be built: [Fig. 01]

"The people who live in El Pozo are from Extremadura, Toledo and, above all, from Andalusia: there are people from Martos, Baena, Linares, forced to leave their hometowns by poverty and machines. Andalusians from Jaén, day laborers, most probably haughty, who have come to Madrid, following in the footsteps of a relative or neighbor, who have worked in construction, built a shack, brought their wife and kids, and are surviving as best they can"[9].

In that decade, Spain was making the transition from the autarchic economy that has characterized the postwar period to the genesis of a modest but constant economic growth—particularly visible in social developments, industry and public works. The slow but massive process of emigration from rural areas to cities was leading to the emergence of shantytowns and substandard housing on the urban peripheries. Several measures were implemented, most of them confessional in nature—at that time official measures were also confessional—to help the population in the new emerging districts. The Society of Jesus excelled in this policy, with initiatives such as launching the *Constructora Benéfica Santa María del Hogar* (a charitable construction company), better known as the *Hogar del Empleado* (the Worker's Home)—founded in 1951 by Father Morales, in an attempt to alleviate the serious housing problem in Madrid—or the more symbolic and committed action taken by Father Llanos, who moved to the *Pozo del Tío Raimundo* district touched by the pastoral problem of marginalization in the slums[10].

In that context, some Opus Dei members also wanted to respond to this emergency situation[11]. Their proposal in Madrid was the founding of Tajamar, a new educational center in one of the most deprived districts in the Madrid of the 1950s:

"The project was madness. A group of people from Opus Dei had introduced social work in the district of Puente de Vallecas two years earlier, in 1956, but their activity was limited to sports: a football team with children from the neighborhood that competed at regional level, and a gymnastics team, but under different names. Social work in Puente de Vallecas, which was the objective for Opus Dei, was not much more than the good will in the imagination of a handful of people"[12].

Aware of the intentions and spirit behind that foundation, the architects wrote a text in 1963 for the publication of the project, explaining the social and material context of the setting.

"Virtually all the students at *Instituto Tajamar* are poor. Few, if any, know the comfort of having a well-built home, without any leaks, draughts or noise, and with good central heating. But the greatest loss arising from poverty is not comfort. It is the loss of human values. People are deprived of the joy of having a garden, of living in clean streets and they are forced to live in a cubicle in an ugly, anonymous block, just like fifty others.

These values that the students at *Instituto Tajamar* do not find at home, or in their neighborhood, or anywhere in Puente de Vallecas, this is what we aimed to provide for them in the architecture of the institute: we wish for them to grow up knowing life in a balanced, harmonious environment, an environment of peace among the earth, the sky, the trees and the home. A world in which a tree grows higher than a house—and why not?—in which a hill (the institute is on a hill) is still a hill and has not been senselessly levelled.

This explains why we have opted for an extensive, single-story building. The trees have already been planted, the slope of the hill is now part of the architecture and that is where the small playgrounds are, sunny and welcoming"[13]. [Fig. 02]

Architecture and nature. The land as an ally

The explanation above reveals the importance given to topography and the pre-existing conditions and the initial criteria adopted in establishing the school, possibly acquired during the study trip to Switzerland at the end of 1953 to find models for *Colegio Gaztelueta in Bilbao*; Ortiz-Echagüe, still a student, collaborated with Eugenio Aguinaga on the first site for this school[14]. Conscious of the innovative educational approach to this center[15], the team formed by Ortiz-Echagüe and Echaide created an architectural translation of the cutting-edge pedagogical methods in Europe at that time; Ortiz-Echagüe explained these methods in detail in a conference held at the School of Architecture of the University of Navarra in 1970[16].

Cerro del Tío Pío worked in favor of this idea with its extension—the property covered several hectares of land—but not so with its geological structure, as it was a dustbowl in summer and a huge mud pit in winter. The project required several stages of construction that the architects undertook from an organic approach to face the different construction stages without affecting the areas that could start to function. [Fig. 03]

This premise of low density matched the architects' proposals, maybe stemming from Richard Neutra's first visit to Spain when Ortiz-Echagüe had met and accompanied him[17]. These principles could be summarized as humanization of spaces through their connection to nature and the setting of limits of views to the outside using horizontal and vertical planes, all connected with the appreciation of the textures of the materials or the powerful relationship between indoor and outdoor spaces.

These principles had already been put to the test by the Miguel Fisac at *Instituto de Enseñanza Media de Málaga* (Málaga Secondary School, 1953) or the recently opened *Centro de Formación del Profesorado de la Ciudad Universitaria* (Teacher Training Center at the college campus) (1954-1957), which Ortiz-Echagüe had discovered at the Manchegan architect's studio[18]. All these ideas also lie beneath the traditional conception of architecture with Hispano-Arabic origins. [Fig. 04]

The project for *Instituto Tajamar* had a first act, almost foundational: rolling out a *carpet*, or perhaps a tapestry, on the ground to join the different levels of a rather varied topography in which granite and soil determine the shape of pavilions, playgrounds and the garden, play or living areas. The terrain thus becomes a place that the children can seize, as a landscape to master through the wide, panoramic views of the neighboring district of Moratalaz, with Madrid in the background, in a gentle slope down to the road below, the *Carretera de Valencia*[19].

These are the foundations for the different pavilions, which receive sunlight from the northeast and the southeast. The main material is brick—well-bred brick, if you like, but still brick—simply combined with the necessary glazed openings. In contrast, the roofs are made of fiber cement and abstractly mimic the slightly artificial topography on which they have been built. Despite the architects' efforts, the still precarious industrialization of Spanish construction stopped them—against their wishes—from using prefabrication[20]. [Fig. 05]

The pavilions sit lightly on their platforms. The lowest row of bricks is set back to create a shadow line that belies their weight and separates them from the platform, as if trying to make the pavilions even lighter, heightening the difference between the ground and the air enclosed by the built structure, emphasizing the idea that the ground belongs there and that humans try to act as little as strictly necessary in order to absorb its qualities.

However, all the above should be qualified, since the urbanization of the district influenced some project decisions that, over the years, have proved to be highly effective:

"I think it is amazing that buildings constructed almost sixty years ago that have been used by two thousand students are as good as new! And, of course, what are the reasons for this success? Well, we used very hard-wearing materials, such as brick, and all the gardens were paved with granite from the start. And this was fantastic because, not only is everything well cared for and clean, the kids have a lot of paved areas where they can play and they leave the gardens alone. The green spaces are impeccable and the vegetation has grown incredibly.

And there was another reason to use granite for paving. We also did it because there was absolutely no urbanization there at all; Cerro del Tío Pío, as the area is called, was a giant quagmire, and we thought that at least the students would walk on granite before arriving at the classrooms, so they would leave some of the mud behind on the way; otherwise, there would be no way of cleaning it off. And, in effect, it helped a great deal. Now the whole area has been urbanized and this is hardly a problem anymore"[21].

The idea of designing the pavilions on a single floor, adding pieces in extension, proved to have enormous pedagogical significance: the architects wanted to dignify the lives of the humble students—many living in neglect—using an architecture that was closely connected to nature. [Fig. 06 and 07]

These pavilions are interconnected by subtle thresholds; in-between spaces, enclosed and open at once, not only areas to pass through, but also to play in. An extension of architecture but also a way of "letting in" the outside. These spaces open onto the playgrounds between the pavilions, which become real rooms open to the sky and overflowing with vegetation to appreciate the trees and hills, full of nature: the crystallization of one of the definitions of the Nasrid palace complex contained in the Alhambra Manifesto—*"the house is a garden and the garden is a house"*—a statement that had a great influence on their esteemed Neutra[22] and takes us full circle back to Ortiz-Echagüe's first work, the SEAT dining hall—architecture involving small pavilions that prioritize humanization of the environments using the small scale, landscaped playgrounds and traditional materials such as brick. After the large operations for the industry (mainly for SEAT) and the banking sectors (Banco Popular)—where the scale of the vehicle or the institution was a better fit for the Miesian criteria associated with serial and prefabricated construction—there was a return to Neutra's "organic rationalism." Large-span structures yield to the presence of walls and, within them, openings; instead of repeated solutions, details are introduced in the human proportion, including the relationship with nature. This way of understanding and approaching architecture is linked to other contemporary examples in Spain, such as the children's summer residential center in Miraflores de la Sierra, which apparently shares the same program, scale and sensitivity:

"If Organic Architecture means *entity as integral* and, by extension, it also connects the land (site) and the construction, then *Residencia de Miraflores* (Miraflores Residential Center) is organic."[23]

The architecture of the institute could also have links with the Italian *povera* movement in architecture. This statement confirms the search for moderation and economy of means at Tajamar, where thresholds replace corridors and passageways, thereby eliminating interior circulations:

"We have saved money on all the corridors, by replacing them with open galleries made of corrugated asbestos-cement sheets over laminated iron profiles. The children leave the warm classroom to go outside, where it may be freezing. They do not have, at least for the moment, indoor spaces to play. Sports keep them warm."[24]

And beyond an economy of means, it is an approach to architecture that evokes, that traces a new horizon and owns the surrounding space by defining and building a new landscape. The interior space loses its physical boundaries, expanding outwards to merge with the garden.

Neutra provides a clear explanation of this relationship with the horizon and how architecture captures it when he talks about the design of one of his houses:

"As the living room is only separated from nature by extremely tall thin-framed sliding glass doors, the living space moves outwards and stretches away until it reaches the mountain. In fact, the mountain is the back wall of this magnificent living room."[25]

Here, Ortiz-Echagüe and Echaide allowed the underlying elements of the site to remain, actually, to penetrate, to be a central part of their work, which, in turn, allowed to be transformed. Neutra developed this idea in his work and Alejandro de la Sota summarized it very well when referring to the former's visit to Spain.

"I was talking to Richard Neutra recently in Madrid about how the landscape extends from the horizon to where we are, making us part of it: the landscape is the air that we breathe. In Neutra's houses, the landscape, as it follows its course, spreads through them. How could it stop? (...): we have to see the landscape, we have to let it in. Loving the landscape as Neutra loves it, how could he design his houses in any other way? They are just the result of this love."[26]

The playgrounds are the spaces where the students interact with each other and with nature: with light, air and moisture, sounds and smells, with the power of all the senses. These spaces beckon, waiting to be discovered through movement, through children's curiosity, eschewing clear-cut perspectives. These playgrounds are not residual spaces among the different pavilions, quite the opposite in fact, as they represent groundbreaking architecture in the educational field, which should be examined from the outside in, enhancing the construction of the place, a place to teach in freedom. [Fig. 08]

Community strategies: *transformism* of space

The construction of the communal buildings began once the first seven classroom pavilions had been established. The social and spatial management of these spaces would require new plans [Fig. 09]. Luis Núñez Ladevece provided his approach to the definition of the complex:

"The school is not intended only for children, but rather for the whole family. It is a meeting point and a place for contact for the students and for the relatives who are

responsible for them. The idea behind this mutual co-operation between family and school is that children's education should not be fragmented—with the teacher on one side and the parents on the other—but rather supportive or shared. For this reason, the architects have planned facilities for social meetings: a large auditorium—with a movie theater—whose capacity can be transformed as required, that can change its layout according to the circumstances, using an ingenious system of access points and suspended walls. The church, modern in appearance, is part of this instrumental complex aimed not only at children but also at providing a shared meeting point for families and teachers. The visitor corroborates that the project is neither unrealistic nor theoretical when, over the years, sees the well-cared for garden landscapes, the still intact furniture and the good condition of the small buildings. The students go in and out of the classes naturally, without inhibitions, and the baton pass from student to student, who, not subjected to any type of pre-established rules, speak in class or play in the gardens."[27]

In this explanation, Núñez Ladevece already revealed the original, *transformable* arrangement of the communal areas at *Instituto Tajamar* and that they, therefore, belonged the current of multifunctional spaces that was already apparent in other architectural works in Spain, such as *Instituto de Herrera de Pisuerga* (1954), by José Antonio Corrales and Ramón Vázquez Molezún, to whom Ortiz-Echagüe significantly dedicated an interesting critical reference in his book *Arquitectura española actual*[28].

Another precedent of this system was *Colegio Gaztelueta* in Bilbao—the oldest of the Opus Dei educational centers. Ortiz-Echagüe not only had participated in its initial designs—as discussed above, he had also addressed it with particular interest in the above-mentioned book[29]. This construction consisted of an old manor house with the addition of two classroom pavilions designed by Jesús Alberto Cagigal. Ortiz-Echagüe emphasized the quality of the building work as being *"the only school structure in Spain that I know that bears comparison with the standard of construction to be found beyond our borders."*[30] Regarding the typology of the work, he highlighted the solution for the central space, a covered playground, which also served as a lobby on ordinary days and as the orchestra on performance days.

Another example of the school architecture promoted by the Opus Dei in those years is *Colegio Guadalaviar*, in Valencia, designed by Fernando Martínez García-Ordoñez (1957-58). Unfortunately, a shift in that sensitivity led to the disappearance of the fragile children's pavilions when the center was extended.

As many projects at that time in Spain, *Colegio Guadalaviar* was originally an example of the growing industrialization—halfway between craftsmanship and serial production—using ingenious mechanisms such as the solutions adopted to ventilate the classrooms or to control the temperature and lighting using adjustable metal slats, which, sadly, no longer exist either.

The most successful part of this project in Valencia is undoubtedly linked to the excellent relationship between the interior and exterior, introducing the gardens into the classrooms in what can be considered a demonstration of its creator's great sensitivity, which reverberates with everything that was put to the test at Tajamar. The delicate scale of the complex—which fortunately appears in the archive of contemporary architecture *Docomomo Ibérico*—is under threat from the high-rise residential towers that have been built around the land formerly belonging to the railway of Aragón[31].

As part of his extensive editorial work for the journal Werk, Ortiz-Echagüe covered this school, along with *Institución Teresiana* in Somosaguas by De la Joya and Barbero, and *Colegio Los Rosales* by Javier Carvajal, in a brief review of the new style of educational architecture in Spain[32]. In turn, Jaime Sepulcre also mentioned numerous international examples designed along the lines of individual pavilions surrounded by gardens and connected by covered galleries[33].

Conclusion

Sixty years after the opening of the first pavilions at Tajamar, their replacement by new ones only confirms the relevance and soundness of the original approach. The new architects' design[34]—based on adaptation to the current regulations and the natural wear caused by sixty generations of students[35]—acknowledges the impact of the old pavilions, their materials, configuration and orientation. Buildings can and should be restored, even replaced, especially when they were built with such austerity. Yet, although the material aspect may be renewed, the soul of the project and the feeling it created—acquired from the land itself—remain. This is the consequence of working with sensitivity for and attending to the *spirit of the place*, however poor or modest it may be. The result of staying true to the dictates is the ripe fruit of naturalness, alliance with the existing forces and familiarity with the place. [Fig. 10]

This was the last project designed by the Ortiz-Echagüe and Echaide studio[36] and could be considered a new paradigm in their architecture: from the Miesian dream that marked their proposals for SEAT to the poetic pragmatism inspired by Neutra's teachings. Or, perhaps, a return to the principles outlined in the SEAT dining hall built by Ortiz-Echagüe along with Barbero and De la Joya. As mentioned earlier, the program, the scale and the economy of means at Tajamar connects these two projects, beginning and end of Ortiz-Echagüe's career, with others such as the Miraflores children's residential center, in which the tone is set by the human scale, not the industrial scale—despite the considerable progress achieved in this field. This architecture is more human, connected to the detail and the ancient archetype of the sloping roof, to the relationship with nature based on a thoughtful dialogue between the interior and the exterior, and the use of traditional materials such as brick. On the understanding that boundaries are rarely clear-cut, these notes should serve to describe the transition from the Miesian influence—seen in the large projects for SEAT or Banco Popular—to Neutra's. And if those large projects introduced the American way into modern Spanish architecture, the attention to this sensitivity enriched it by recovering the principles stated in the Alhambra Manifesto, for instance. This could be a round trip, a new twist—similar to other places, as the Italian *povera* movement in architecture—which demonstrates the attention to the initial conditions, the strain involved in the search and the identification and promotion of the character of the site. As a conclusion, one may wonder how this partnership's production would have evolved if it had not been dissolved.

This is the lesson to be learned from a simple project, built with limited means but devised with the sensitivity and intelligence that good architecture involves.

1. "Born on 22 October 1923 in San Sebastián, one could say he was a typical Basque man: reserved and modest, abrupt and pragmatic. Possessed of a keen yet austere temperament that was allegedly inscrutable, he was outwardly restrained and concise, although intrinsically sardonic, with a gentle irony that was never hurtful: blunt with his conclusions, yet benign and easy-going, understanding even, in his attitudes and appraisals". Juan Miguel Otxotorena. "Echaide & Ortiz-Echagüe, después de la arquitectura" in *Rafael Echaide, arquitecto 1923-1994* (School of Architecture. University of Navarra. Pamplona, 1994), 9.
2. Rafael de la Joya was married to Carmen Ortiz-Echagüe, César's sister, and was two years ahead of César at university.
3. They coincided at *Colegio Mayor Moncloa* (a residence hall), an Opus Dei corporate project where they both applied for membership in this institution.
4. José Ortiz-Echagüe served in the military in the Corps of Engineers, specializing in aerostation. In 1923 he moved to the aeronautical industry, as the founder of Construcciones Aeronáuticas S.A. (CASA). In 1949 he received a commission from the President of the *Instituto Nacional de Industria* (Spanish National Industry Institute) to establish a car manufacturing company, Sociedad Española de Automóviles Turismo (SEAT), which he managed and run until 1967. On the artistic level, from childhood he excelled at photography and developed later his own methods for making copies. He instilled in his son some level of creative curiosity.
5. Apart from the dining hall (1954) and the commercial complex in Plaza Cerdà in Barcelona (1958-1965), the most relevant buildings constructed by Ortiz-Echagüe and Echaide were the Seville branch (1957-1960), the Barcelona laboratories (1958-1960) and the Paseo de la Castellana branch in Madrid (1962-1963)..
6. In September 1955, Miguel Fisac left Opus Dei. Until that date, the architect from La Mancha had been the all-purpose architect at the institution, participating in projects for residence halls, retreat centers and houses, including the Opus Dei headquarters in Rome (*Villa Tevere*), still under construction at that time.
Fisac also authored the office building for the first SEAT branch in Barcelona.
7. *Boletín Oficial de Estado* [Spanish Official State Gazette], 27 July 1957.
8. The name of the institute has its origins in a former football club, which "had begun to call itself

Tajamar some months earlier at the suggestion of Pedro Zarandona, a veteran Navy official". Jesús Carnicero. *Entre chabolas. Inicios del colegio Tajamar en Vallecas* (Madrid: Ediciones Rialp, 2011), 33.
9. Luis Fernández Galiano, Justo Isasi and Antonio Lopera, *La quimera moderna. Los poblados dirigidos de Madrid en la arquitectura de los 50* (Madrid: Hermann Blume, 1989), 11.
10. Llanos, who had refused to live in a residence for the clergy of his order in the district of La Ventilla, first tried the district of Zofío but the "*luxury shack*" designed by Fisac—who created the rest of the *Poblado de Absorción* (Absorption Settlement)—dissuaded the Jesuit. The situation of need in El Pozo was key in his decision to move to a house, just another shack that no longer exists, although this one was designed by the architect Luis Laorga on a plot provided by the parish priest of Vallecas, in Calle Najarra.
11. "By 1957, San Josemaría [Escrivá de Balaguer], who had done great work for the poor and ill in the Vallecas district in the 1930s, launched an initiative from Rome to encourage some Opus Dei members to go and live in this district, possibly the most impoverished of all Madrid, to begin the work of teaching young people. The first to arrive began with a gymnasium and several sporting activities under the name of Tajamar". César Ortiz-Echagüe. "Mirando hacia atrás" in José Manuel Pozo. *Mirando hacia atrás. César Ortiz-Echagüe, arquitecto* (Pamplona: T6 Ediciones, 2018), 27.
12. Jesús Carnicero, op. cit. supra, note 32.
13. Rafael Echaide, Unpublished text, 1963. Source: Jaime Sepulcre Bernad. *Ortiz-Echagüe y Echaide (1955-1966): Tecnificación y humanización del funcionalismo* (Doctoral dissertation. University of Navarra, Department of Theory, Projects and Urbanism, 2004).
14. Isabel Durá Gurpide, "César Ortiz-Echagüe en Suiza y Alemania. Ida y vuelta de la arquitectura escolar" in VVAA. *Viajes en la transición de la arquitectura española hacia la modernidad: actas preliminares* (Pamplona, 6-7 May 2010, School of Architecture, University of Navarra. 2010), 143-152.
15. Termed "personalized education" by Víctor García Hoz. Víctor García Hoz. *Educación personalizada* (Madrid: Ediciones Rialp, 1970). See also Álvaro Linares López. Doctoral dissertation: *Los edificios escolares para la educación personalizada*. (University of Navarra, Department of Theory, Projects and Urbanism, 1988). This dissertation was supervised by Rafael Echaide.
16. César Ortiz-Echagüe, "Orientaciones actuales en edificios de enseñanzas". Conference at the ETSAUN, Pamplona, 1970. Unpublished text included in the Doctoral dissertation by Jaime Sepulcre Bernad. On this occasion, the architect indicated the criteria he had learned from the school buildings he had studied from the United States, England, Germany, Switzerland and France: *'1. Human dimensions of buildings; 2. Ideal conditions for the classroom unit in terms of lighting, ventilation, acoustics, proportions and orientation. And 3. Contact of students with nature'*. Through this approach, Ortiz-Echagüe and Echaide brought the international debate on school typology to our country and became true pioneers in modern educational architecture in Spain.
17. Richard Neutra visited Spain in 1954. Miguel Fisac, who hosted the visit, asked César Ortiz-Echagüe—who had worked at Fisac's studio and whose second language was German—to accompany them around the country on a series of excursions. Afterwards, he would write: "*Neutra builds for people, with all their circumstances and transcendence, they are the focus of his attention*". César Ortiz-Echagüe. "Con Neutra por tierras de Castilla", *Boletín de Información de la Dirección General de Arquitectura*. (Madrid: General Directorate for Architecture, 4th trimester, 1954, no. 8), 22.
18. From 1949 to 1952, when he was still a student, Ortiz-Echagüe worked at the studio of Miguel Fisac, who already had 10-year-long career and was then beginning to develop the principles of organic architecture in Spain as a consequence of his travels around Europe in 1949.
19. Now the highway to Valencia, the "*Autovía del Este*" or "*Radial A-3*".
20. In the 1960s, Ortiz-Echagüe was already beginning to voice his doubts about the execution of the project: "(...) *I think it was our responsibility to do it but I can't help having regrets and precisely these regrets have led me, as part of the research program run by Javier Lahuerta at the School of Architecture of the University of Navarra, to insist again and again on placing prefabrication at the forefront*". Luis Núñez Ladavece. *César Ortiz-Echagüe y Rafael Echaide. Colección Artistas Españoles Contemporáneos.* (Madrid: Publishing Service of the Ministry of Education and Science, 1973), 50-51. More recently, he also mentioned something in connection with a possible paradigm shift in construction, from prefabrication to self-construction: "At Tajamar, we tried to do everything as simply and cheaply as possible. The development group told us: 'we need you to produce something very cheap'. And what was really beautiful was that the students' parents, almost all of whom worked in the construction industry as bricklayers and laborers, when they heard that the school was really going to be built—because until then they had been using temporary buildings, a disused dairy—said: 'Tell the architects to make something simple, because we are prepared to put in a few hours to help after we finish work every day' (...) Fortunately, the Board also told us: 'Look, make it simple but long-lasting. In other words, try to use materials and anything you think you can use to cheapen maintenance, because even if it costs us a lot, we are going to do it'". César Ortiz-Echagüe. *Unpublished conversations with the authors*. Madrid, 18 November 2017.
21. César Ortiz-Echagüe, *Unpublished conversations with the authors*. Madrid, 18 November 2017. Ortiz-Echagüe himself mentioned a third decision regarding the project that proved to be a wise one in the long term: "*And then, the third thing was that, as it seemed that the plan was to do everything in the project—whatever we ourselves did but probably what would come afterwards too—in extension, we said: let's include a thermal power station for the whole complex and let's join everything up with underground galleries*". César Ortiz-Echagüe. *Unpublished conversations with the authors*. Madrid, 18 November 2017.
22. VVAA, *Manifiesto de la Alhambra*. (Madrid: General Directorate for Architecture, 1953), 47.
23. José Antonio Corrales, Ramón Vázquez Molezún and Alejandro de la Sota, "Residencia infantil de verano en Miraflores de la Sierra". *Arquitectura* (Madrid: Professional Association of Architects in Madrid, July 1959, no. 7), 9.
24. Rafael Echaide, op. cit. supra, note 13.
25. Richard Neutra and Julius Shulman, *On Building. Mystery and Realities of the Site* (New York: Morgan & Morgan, 1951).
26. Alejandro de la Sota, "Algo sobre paisajes y jardines" in Moisés Puente, ed. *Alejandro de la Sota: escritos, conversaciones, conferencias*. (Barcelona: Gustavo Gili, 2011).
27. Luis Núñez Ladevece, *César Ortiz-Echagüe y Rafael Echaide. Colección Artistas Españoles Contemporáneos*. (Madrid: Publishing Service of the Ministry of Education and Science, 1973), 49-50.
28. César Ortiz-Echagüe, *La arquitectura española actual* (Madrid: Ediciones Rialp, 1965).
29. Ibid. pp. 91-96.
30. Ibid. p. 93.
31. https://docomomoiberico.com/edificios/colegio.guadalaviar/ (Accessed on 24 February 2023).
32. César Ortiz-Echagüe, "Moderne Schulgebäude in Spanien" in *Werk*. (Zurich: Verlag Werk AG, 1963, no. 50), 52.
33. Specifically, Sepulcre notes "*the renowned Munkegaard School in Gentofte (1956, Arne Jacobsen), the School and Community Centre Buddinge in Gladsaxe (1956, Eva and Nils Koppel), the Primarschule Wasgenring in Basel (1955, Bruno and Fritz Haller), the Ecole primaire in Longchamp in Casablanca (1955, E. Azagury and L. Levy), the Primarschule am Gänsberg in Stuttgart (1954, Günther Wilhelm), the Hill School of St. Jorgen in Roskilde (1959, Max Brüel), the Hanssted School in Copenhagen (1958, Hans Christian Hansen) (...) or even with previous less known works such as Rose Elementary School in Tucson (Arizona, 1948, Arthur Brown), the school with which Tajamar bears a striking resemblance to*". Jaime Sepulcre Bernad. *Ortiz-Echagüe y Echaide (1955-1966): Tecnificación y humanización del funcionalismo* (University of Navarra. Department of Theory, Projects and Urbanism, 2004), 177.
34. The Vassallo-Berlinches studio, run by the architects Fernando Vassallo Magro and Diego Gutiérrez Berlinches.
35. In a personal conversation, Ortiz-Echagüe attributed the longevity of the complex to the underground galleries that connected the pavilions and that, in practice, prevented the need for grooves and construction works and facilitated the incorporation of subsequent technologies for teaching.
36. Strictly speaking, the studio's final project was *Colegio Retamar*, whose first stage, built between 1965 and 1967, coincided with *Instituto Tajamar*. In fact, the contrasts between these two projects is quite interesting: the poverty of the Pozo del Tío Pío district compared to the exclusive Somosaguas urbanization; the first consisted of single-story pavilions for classrooms and the second was a concentrated model, a compact unit with several stories; one responded to the vision of "the individual" and the other of "the community".

Cerro del Tío Pío
César Ortiz-Echagüe
Rafael Echaide
Richard Neutra