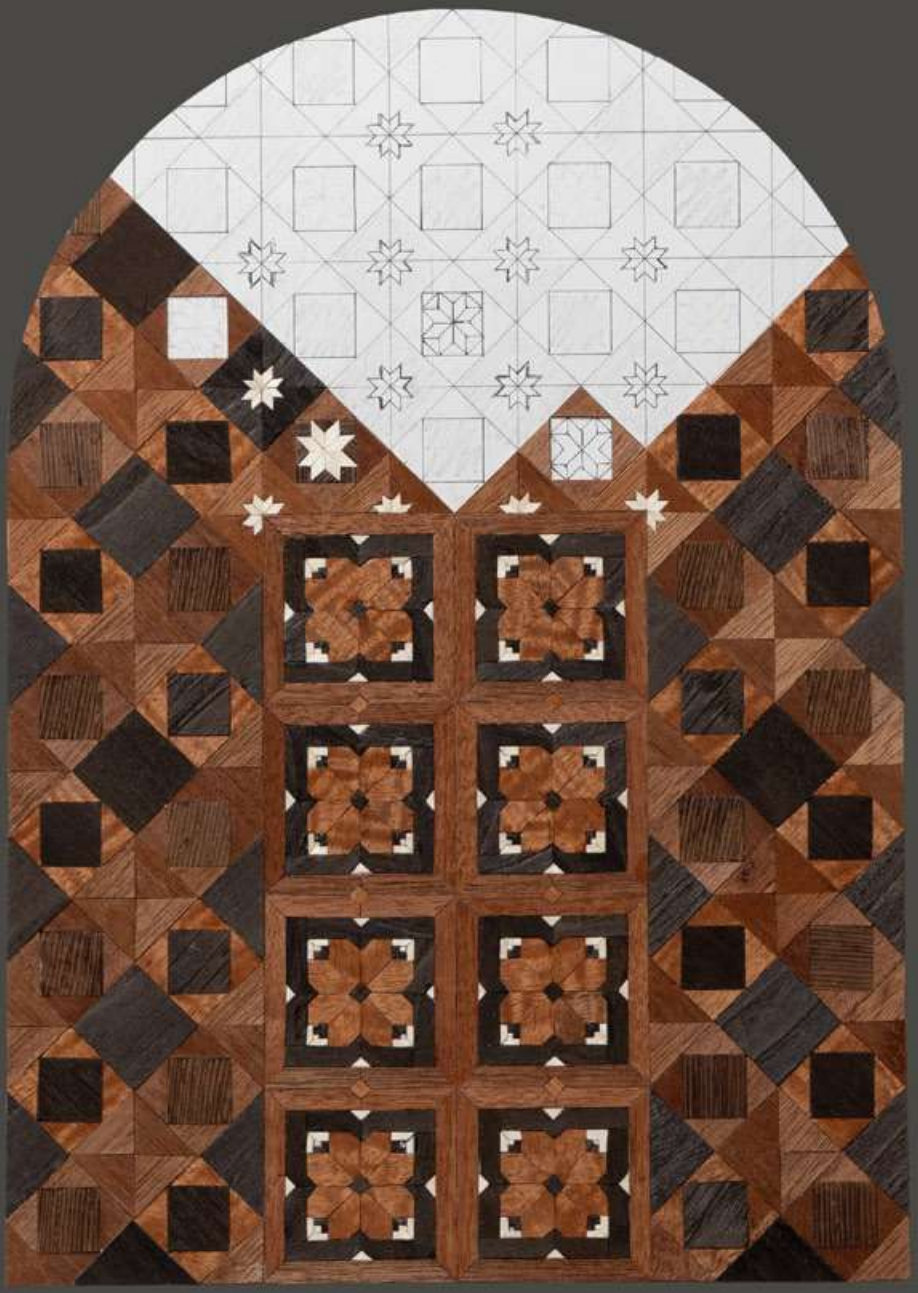
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The Traditional Building Cultures Foundation works to promote the continuity of traditional knowledge of building, architecture and urban planning in contemporary practice.

Since 2012, the Foundation's team has pursued this mission through a wide range of initiatives, including this journal. Together, these initiatives help keep traditional building crafts alive, foster the transmission of knowledge in these fields, and promote architecture and urban planning that learn from local traditions and carry forward the cultural heritage of diverse regions around the world.

In 2026, these activities have included conferences, meetings and congresses, specialised publications, digital platforms dedicated to documenting and promoting traditional building crafts, awards recognising architects, developers and master builders, training programmes and summer schools, grants to other organisations, and training scholarships for apprentices.

All this has been made possible thanks to the institutions and individuals who have supported us.

Help us continue this work.

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La Fundación Culturas Constructivas Tradicionales trabaja para promover la continuidad del conocimiento de la construcción, la arquitectura y el urbanismo tradicionales en la práctica contemporánea.

El equipo de la Fundación ha desarrollado esta labor desde 2012 a través de un amplio conjunto de iniciativas, entre las que se encuentra esta revista. En conjunto, contribuyen a mantener vivos los oficios de construcción, fomentar la transmisión del conocimiento en estos campos y promover una arquitectura y un urbanismo que aprendan de las tradiciones locales y den continuidad al legado cultural de las diversas regiones del mundo.

En 2026, estas actividades han incluido conferencias, encuentros y congresos, publicaciones especializadas, plataformas digitales dirigidas al conocimiento y la promoción de los oficios de construcción, premios y reconocimientos a arquitectos, promotores y a maestros de obras, programas formativos y escuelas de verano, ayudas a otras entidades y becas de formación de aprendices.

Todo ello ha sido posible gracias a las instituciones y las personas que nos han apoyado.

Apóyanos para continuar con este trabajo.

Hazte amigo de la Fundación.

Visita nuestra web:

A Fundação Culturas Construtivas Tradicionais trabalha para promover a continuidade dos conhecimentos tradicionais de construção, arquitetura e urbanismo na prática contemporânea.

Desde 2012, a equipa da Fundação tem desenvolvido este trabalho através de um vasto conjunto de iniciativas, entre as quais se encontra esta revista. No seu conjunto, estas iniciativas contribuem para manter vivos os ofícios tradicionais da construção, fomentar a transmissão de conhecimentos nestas áreas e promover uma arquitetura e um urbanismo que aprendam com as tradições locais e deem continuidade ao legado cultural das diversas regiões do mundo.

Em 2026, estas atividades incluíram conferências, encontros e congressos, publicações especializadas, plataformas digitais dedicadas à documentação e promoção dos ofícios tradicionais da construção, prémios e distinções atribuídos a arquitetos, promotores e mestres de obras, programas de formação e escolas de verão, apoios a outras entidades e bolsas de formação para aprendizes.

Tudo isto foi possível graças às instituições e às pessoas que nos apoiaram.

Ajude-nos a dar continuidade a este trabalho.

Torne-se Amigo da Fundação.

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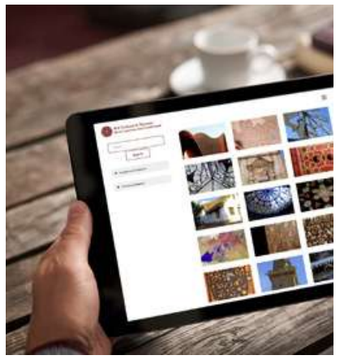



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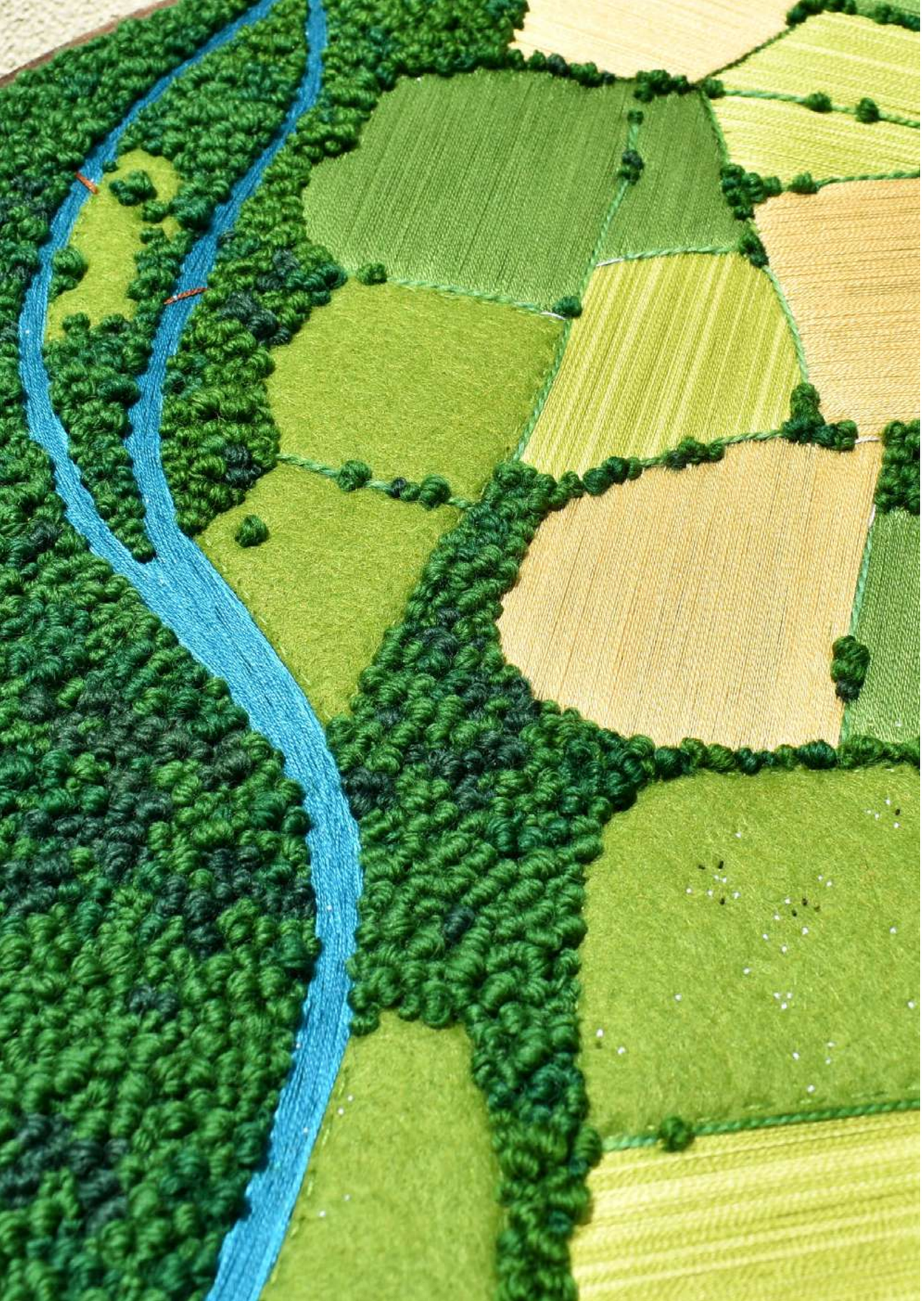












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Extension and Renovation of the Château de Beaucastel Winery: Architecture and Terroir

Ampliación y renovación de la bodega Château de Beaucastel: Arquitectura y terroir

Ampliação e renovação da adega do Château de Beaucastel: Arquitetura e terroir

Louis-Antoine Grégo

Domaine de Beaucastel is in the Côtes du Rhône wine-growing region of southern France, on the Quaternary fluvial terrace of Châteauneuf-du-Pape. This environment, with its stony soils, strong winds, and hot summers, is well known for exceptional wines. For over five generations, the Perrin family has cultivated the land with biodynamic practices, developing a deep connection with the terroir and its rhythms. They wished not only to expand the existing winery but also to create an ensemble capable of enduring for future generations.

Domaine de Beaucastel se encuentra en la región vitivinícola de Côtes du Rhône, en el sur de Francia, sobre la terraza fluvial cuaternaria de Châteauneuf-du-Pape. Este entorno, caracterizado por sus suelos pedregosos, sus fuertes vientos y sus veranos calurosos, es conocido por la excepcional calidad de sus vinos. Desde hace más de cinco generaciones, la familia Perrin cultiva estas tierras mediante prácticas biodinámicas y ha desarrollado una profunda relación con el *terroir* y sus ritmos. Su propósito no era solo ampliar la bodega existente, sino también crear un conjunto capaz de perdurar para las generaciones futuras.

O Domaine de Beaucastel situa-se na região vinícola de Côtes du Rhône, no sul de França, num terraço fluvial do Quaternário de Châteauneuf-du-Pape. Este ambiente, com os seus solos pedregosos, ventos fortes e verões quentes, é bem conhecido pelos seus vinhos excecionais. Há mais de cinco gerações que a família Perrin cultiva a terra com práticas biodinâmicas, desenvolvendo uma ligação profunda com o *terroir* e os seus ritmos. O seu desejo era não só expandir a adega existente, mas também criar um conjunto capaz de perdurar para as gerações futuras.

< Domaine de Beaucastel and its vineyards in Châteauneuf-du-Pape | Domaine de Beaucastel y sus viñedos en Châteauneuf-du-Pape | Domaine de Beaucastel e as suas vinhas em Châteauneuf-du-Pape (Iwan Baan)



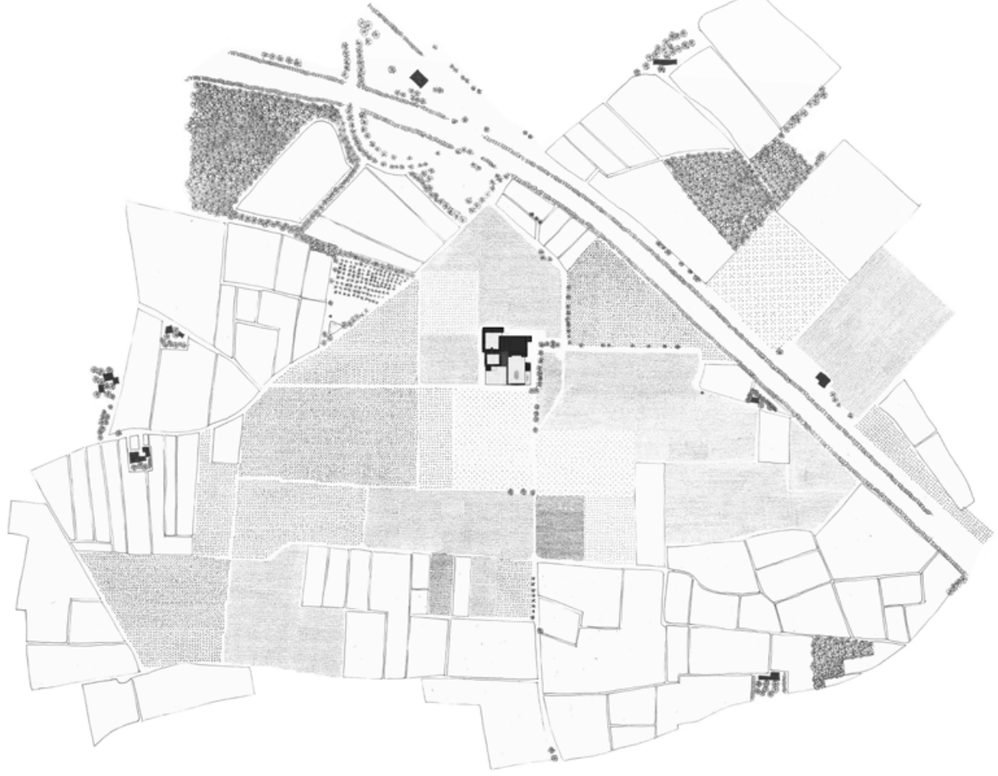
> Aerial view of Domaine de Beaucastel after its extension and renovation | Vista aérea del Domaine de Beaucastel tras su ampliación y renovación | Vista aérea do Domaine de Beaucastel após a sua ampliação e renovação (Iwan Baan)

The project was rooted in the concept of "terroir," understood not just as soil conditions but as a whole system of climate, materials, practices, and inherited knowledge. Aligned with the lunar cycles that guide biodynamic viticulture, the architecture is intended to emerge from its site. Rather than importing materials or imposing abstract forms, the project used earth dug in situ, compressed and relocated in a meticulous cut-and-fill process generating the volume of the cellars and integrating a large underground cistern, all embedded physically and conceptually into the landscape.

El proyecto se fundamentó en el concepto de *terroir*, entendido no solo como las condiciones del suelo, sino como un sistema integral que comprende el clima, los materiales, las prácticas y los conocimientos heredados. En consonancia con los ciclos lunares que rigen la viticultura biodinámica, la arquitectura se concibe como algo que surge del emplazamiento. En lugar de importar materiales o imponer formas abstractas, el proyecto empleó la tierra excavada *in situ*, que se compactó y redistribuyó mediante un meticuloso proceso de desmonte y relleno para generar el volumen de las bodegas e integrar una gran cisterna subterránea, todo ello incorporado física y conceptualmente al paisaje.

O projeto baseou-se no conceito de *terroir*, entendido não apenas como as condições do solo, mas como um sistema integral que engloba o clima, os materiais, as práticas e o conhecimento transmitido de geração em geração. Em sintonia com os ciclos lunares que orientam a viticultura biodinâmica, a arquitetura pretende emergir do próprio local. Em vez de importar materiais ou impor formas abstratas, o projeto utilizou terra escavada no local, compactada e reposicionada através de um processo meticuloso de escavação e aterro, que deu origem ao volume das caves e permitiu integrar uma grande cisterna subterrânea, tudo isso incorporado física e conceptualmente na paisagem.

Site plan of Domaine de Beaucastel within the surrounding vineyards of Châteauneuf-du-Pape | Plano de situación del Domaine de Beaucastel entre los viñedos de Châteauneuf-du-Pape | Planta de localização do Domaine de Beaucastel entre as vinhas de Châteauneuf-du-Pape





1



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1. Earth excavated on site was reused in the construction of the new winery 2. Excavation works for the new underground spaces | 1. La tierra excavada en el propio emplazamiento se reutilizó en la construcción de la nueva bodega 2. Trabajos de excavación de los nuevos espacios subterráneos | 1. A terra escavada no próprio local foi reutilizada na construção da nova adega 2. Trabalhos de escavação dos novos espaços subterrâneos (Studio Méditerranée)

The cistern is central to the project's environmental strategy. Collecting rainwater from roofs and surfaces, it is both a resource for winemaking and irrigation and a passive climatic device. The underground water, naturally stable at about 14°C, is used to cool the air intake and regulate humidity. The system helps maintain optimal conditions for wine-aging and avoids reliance on conventional mechanical cooling.

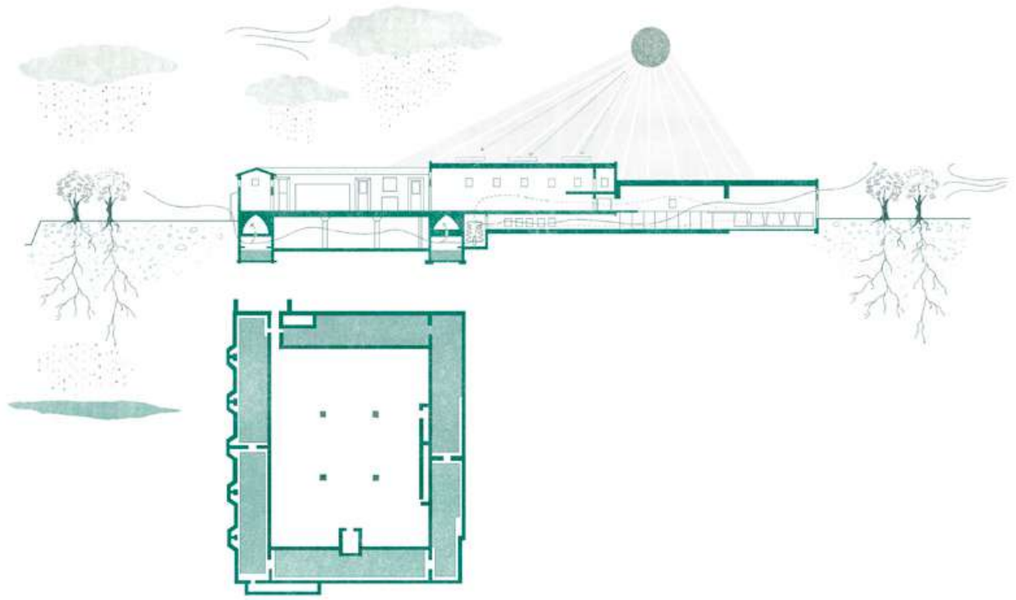
Natural cooling is enhanced by the prevailing climatic force: the mistral wind, blowing from the northwest roughly one day in three. This is harnessed by a series of towers inspired by Persian *badgirs*, which capture the wind and direct it into the building through a system of motorized slats regulated by humidity and temperature sensors. Once inside, the air travels through underground conduits, losing about 5°C before passing over the cistern, where a misting system increases the exchange surface and promotes adiabatic cooling. Even during heatwaves, air enters the building at around 15°C, ensuring a stable interior climate by passive means.

La cisterna desempeña un papel fundamental en la estrategia ambiental del proyecto. Recoge el agua de lluvia de las cubiertas y otras superficies, que se utiliza tanto para la elaboración del vino y el riego como para el acondicionamiento climático pasivo. El agua almacenada bajo tierra, cuya temperatura se mantiene de forma natural en torno a los 14 °C, permite enfriar el aire de entrada y regular la humedad. Este sistema contribuye a mantener unas condiciones óptimas para la crianza del vino y evita recurrir a sistemas convencionales de refrigeración mecánica.

La refrigeración natural se ve reforzada por el principal condicionante climático de la zona: el mistral, que sopla desde el noroeste aproximadamente uno de cada tres días. Una serie de torres inspiradas en los *badgirs* persas aprovecha este viento y lo conduce hacia el interior del edificio mediante un sistema de lamas motorizadas, reguladas por sensores de humedad y temperatura. Una vez en el interior, el aire circula por conductos subterráneos y reduce su temperatura unos 5 °C antes de pasar sobre la cisterna, donde un sistema

A cisterna é um elemento central da estratégia ambiental do projeto. Ao recolher água da chuva dos telhados e de outras superfícies, constitui simultaneamente um recurso para a produção de vinho e para a irrigação, bem como um dispositivo climático passivo. A água armazenada no subsolo, naturalmente estável a cerca de 14 °C, é utilizada para arrefecer o ar admitido e regular a humidade. O sistema ajuda a manter as condições ideais para o envelhecimento do vinho e evita a dependência do arrefecimento mecânico convencional.

O arrefecimento natural é potenciado pela força climática predominante: o vento mistral, que sopra do noroeste aproximadamente um dia em cada três. Este vento é captado por uma série de torres inspiradas nos *badgirs* persas, que o conduzem para o interior do edifício através de um sistema de lamelas motorizadas que são reguladas por sensores de humidade e temperatura. Uma vez no interior, o ar percorre condutas subterrâneas, perdendo cerca de 5°C antes de passar sobre a cisterna, onde um sistema de nebulização aumenta a superfície de



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1. Section and plan showing the passive cooling strategy and the underground cistern 2,3. Rammed-earth vaults during construction | 1. Sección y planta del sistema de refrigeración pasiva y de la cisterna subterránea 2,3. Bóvedas de tapial durante su construcción | 1. Corte e planta do sistema de arrefecimento passivo e da cisterna subterrânea 2,3. Abóbadas de taipa durante a construção (Studio Méditerranée)

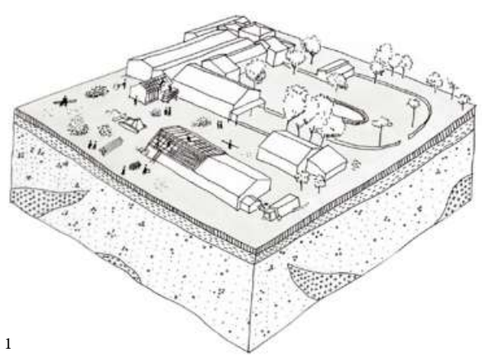


Rammed-earth vaults after completion | Bóvedas de tapial una vez terminadas | Abóbadas de taipa após a conclusão (Michael Falgren)

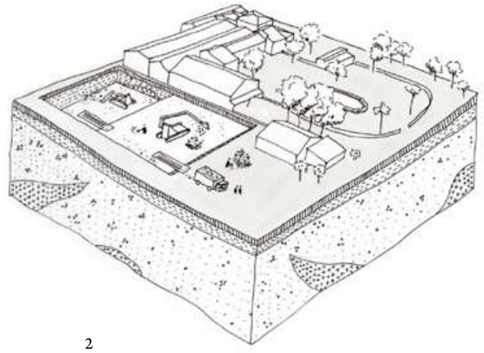
The construction approach was restrained, relying on a palette of materials drawn almost entirely from the site, chiefly rammed earth (*pisé*) and site-sourced concrete. The rammed earth was produced directly from the orange clay soil excavated during construction, layered and compacted without additives. The concrete is composed of pebbles and sand from Miocene alluvial deposits, also extracted on-site, mixed with crushed concrete from demolished buildings and bound with lime or white cement, depending on structural requirements. The project thus reused even Anthropocene resources, reducing waste through a continuous material narrative.

El planteamiento constructivo fue deliberadamente contenido y se basó en una paleta de materiales procedentes casi en su totalidad del propio emplazamiento, principalmente tapial (*pisé*) y hormigón elaborado con materiales extraídos *in situ*. El tapial se ejecutó directamente con la tierra arcillosa anaranjada extraída durante las obras, dispuesta en tongadas y compactada sin aditivos. El hormigón se compone de cantos rodados y arena procedentes de depósitos aluviales del Mioceno, también extraídos en el emplazamiento, mezclados con hormigón triturado procedente de las construcciones demolidas y aglomerados con cal o cemento blanco, según las exigencias estructurales. De este modo, el proyecto reutilizó incluso recursos propios del Antropoceno y redujo los residuos a través de una lógica de continuidad material.

A abordagem construtiva foi sóbria, baseando-se numa paleta de materiais provenientes quase inteiramente do próprio local, principalmente taipa (*pisé*) e betão produzido com materiais extraídos no local. A taipa foi produzida diretamente a partir do solo argiloso alaranjado que foi escavado durante a construção, disposto em camadas e compactado sem recurso a aditivos. O betão é composto por seixos e areia provenientes de depósitos aluviais do Mioceno, também extraídos no local, misturados com betão triturado proveniente de edifícios demolidos e aglutinados com cal ou cimento branco, dependendo dos requisitos estruturais. O projeto reutilizou, assim, até mesmo recursos do Antropoceno, reduzindo o desperdício através de uma narrativa material contínua.



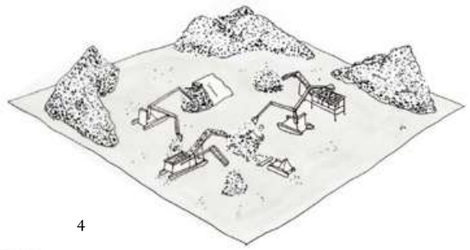
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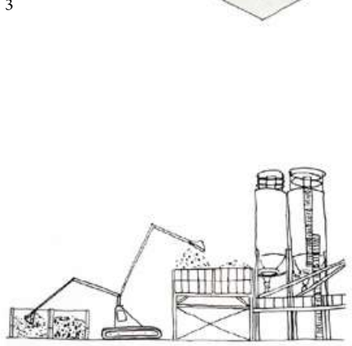
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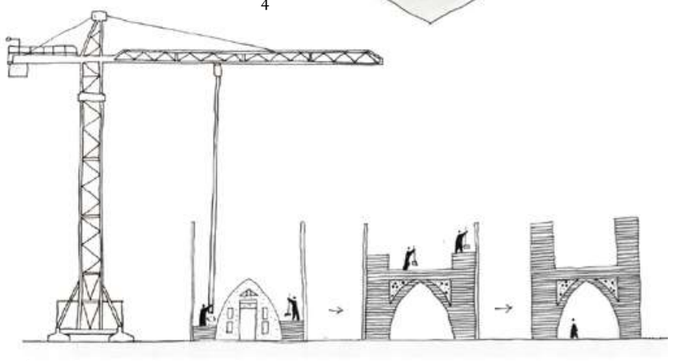
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Construction sequence: (1) dismantling (2) excavation (3) sorting and storage (4) sieving of natural materials (5) on-site concrete batching plant (6) manual construction | Secuencia constructiva: (1) desmontaje (2) excavación (3) clasificación y almacenamiento (4) cribado de materiales naturales (5) central de hormigón en obra (6) ejecución manual | Sequência construtiva: (1) desmontagem (2) escavação (3) triagem e armazenamento (4) peneiração de materiais naturais (5) central de betão em obra (6) execução manual

Time-honored materials such as stone, brick, lime, clay, and earth were employed using techniques allowing for durability, reparability, and improvement in the long term. Stone was sourced from a quarry within 30 km, and terracotta tiles and paving were reclaimed from nearby villages. The resulting architecture is neither nostalgic nor demonstrative; it is quietly aligned with the logic of the land. As the client said, it is "terroir in upright form."

Materiales de larga tradición, como la piedra, el ladrillo, la cal, la arcilla y la tierra, se emplearon mediante técnicas que garantizan su durabilidad y permiten su reparación y mejora a largo plazo. La piedra procede de una cantera situada a menos de 30 km, mientras que las tejas y los pavimentos de terracota se recuperaron de localidades cercanas. La arquitectura resultante no es nostálgica ni pretende hacer alarde de estos principios, sino que responde discretamente a la lógica del territorio. Como señaló el cliente, es "el *terroir* hecho arquitectura".

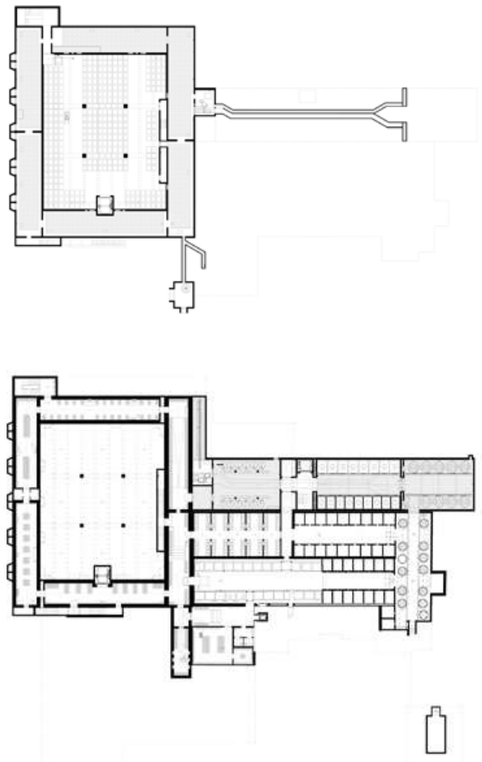
Foram utilizados materiais tradicionais, como pedra, tijolo, cal, argila e terra, recorrendo a técnicas que garantem durabilidade, reparabilidade e possíveis melhorias a longo prazo. A pedra foi extraída de uma pedreira situada a menos de 30 km, e as telhas e pavimentos de terracota foram recuperados de aldeias vizinhas. A arquitetura resultante não é nem nostálgica nem ostensiva; está discretamente alinhada com a lógica do terreno. Como disse o cliente, é "o *terroir* erguido".

Construction of the rammed-earth walls and timber roof structure | Construcción de los muros de tapial y la estructura de madera de la cubierta | Construção das paredes de taipa e da estrutura de madeira da cobertura (Studio Méditerranée)









Plans of the complex | Plantas del conjunto | Plantas do conjunto



Domaine de Beaucastel and its vineyards at Châteauneuf-du-Pape | Domaine de Beaucastel y sus viñedos en Châteauneuf-du-Pape | Domaine de Beaucastel e as suas vinhas em Châteauneuf-du-Pape (Michael Falgren)

This relationship between architecture and landscape is fundamental. Working with the landscape designer Tom Stuart-Smith, a sequence of courtyards was set out to structure circulation, give shelter from the wind, and generate varied microclimates. The spaces are not decorative but productive, climatic, and social. The main courtyard has plants supplied by the botanist and nurseryman Olivier Filippi, specialized in species adapted to harsh Mediterranean

Esta relación entre arquitectura y paisaje resulta fundamental. En colaboración con el paisajista Tom Stuart-Smith, se dispuso una secuencia de patios que estructura la circulación, ofrece protección frente al viento y genera distintos microclimas. Estos espacios no tienen una función meramente ornamental, sino también productiva, climática y social. El patio principal cuenta con plantas suministradas por el botánico y viverista Olivier Filippi, especializado en especies adaptadas a las

Esta relação entre a arquitetura e a paisagem é fundamental. Em colaboração com o paisagista Tom Stuart-Smith, foi concebida uma série de pátios para estruturar a circulação, proporcionar abrigo contra o vento e criar microclimas variados. Os espaços não são decorativos, mas sim produtivos, climáticos e sociais. O pátio principal conta com plantas fornecidas pelo botânico e viveirista Olivier Filippi, especializado em espécies adaptadas às condições adversas do Mediterrâneo. Os



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1. Main courtyard and water garden 2. Olive grove organized around a fountain built with reclaimed stone 3. View of the olive grove from the cloister-like gallery | 1. Patio principal y jardín de agua 2. Olivar articulado en torno a una fuente construida con piedra recuperada 3. Vista del olivar desde la galería a modo de claustro | 1. Pátio principal e jardim de água 2. Olival organizado em torno de uma fonte construída com pedra recuperada 3. Vista do olival a partir da galeria semelhante a um claustro (1. Iwan Baan 2, 3. Michael Falgren)

conditions. His “dry garden” principles guided the planting strategy: local species, watering only in the first year, and good drainage through reused on-site pebbles.

Other courtyards have distinct roles. One is devoted to a vegetable garden that supplies the estate’s kitchen. Another contains a meditative olive garden, structured around a fountain made of stone salvaged from a dismantled house and edged with a cloister-like gallery with reclaimed roof tiles and terracotta paving. A further garden, planted with mulberry trees, provides shade for the visitor carpark. Each courtyard introduces shading, water, and vegetation into a previously arid environment, improving comfort while supporting agricultural and social activities.

duras condiciones del clima mediterráneo. Sus principios para el “jardín seco” orientaron la estrategia de plantación: especies locales, riego únicamente durante el primer año y un buen drenaje mediante la reutilización de cantos rodados procedentes del propio emplazamiento.

Los demás patios cumplen funciones específicas. Uno de ellos alberga un huerto que abastece la cocina de la finca. Otro acoge un jardín de olivos concebido como espacio de recogimiento, articulado en torno a una fuente construida con piedra recuperada de una casa desmontada y delimitado por una galería a modo de claustro, con tejas reutilizadas y pavimento de terracota. Un tercer jardín, plantado con moreras, proporciona sombra al aparcamiento de visitantes. Cada uno de estos patios incorpora sombra, agua y vegetación a un entorno antes árido, lo que mejora el confort y favorece al mismo tiempo las actividades agrícolas y sociales.

seus princípios de “jardim seco” orientaram a estratégia de plantação: espécies locais, rega apenas no primeiro ano e boa drenagem através da utilização de seixos reutilizados provenientes do próprio local.

Outros pátios têm funções distintas. Um deles inclui uma horta que abastece a cozinha da propriedade. Outro contém um olival propício à meditação, organizado em torno de uma fonte feita de pedra recuperada de uma casa desmontada e ladeado por uma galeria semelhante a um claustro, com telhas recuperadas e pavimento de terracota. Um outro jardim, com amoreiras, proporciona sombra ao parque de estacionamento para visitantes. Cada pátio introduz sombra, água e vegetação num ambiente anteriormente árido, melhorando o conforto e apoiando as atividades agrícolas e sociais.



3

Beyond the project boundaries, the Perrin family has also begun planting trees within the vineyards, introducing shade and biodiversity at the cost of some productive efficiency. This reflects a broader understanding of resilience, exchanging short-term loss for longer-term stability.

Participation and immersion were essential to the design process. During the tender phase, the project team lived on-site for several weeks, observing the harvest, working with employees, and taking in the site's modus operandi. The Perrin family said this shared experience was decisive in their selection, as it indicated that the architecture would be a collective endeavor rather than an imposition. Following the award, the architect relocated to Avignon so as to be on-site almost daily, maintaining close contact with the workers and management through the seasons.

Weekly site meetings kept Perrin family members involved, facilitating smooth feedback between construction, design, and vineyard operation. This continuous presence enabled the project to respond not only to articulated needs but also to the unspoken practices that define everyday work. Architecture became an

Más allá de los límites del proyecto, la familia Perrin también ha comenzado a plantar árboles entre los viñedos, con el fin de aportar sombra y favorecer la biodiversidad, aunque ello suponga cierta pérdida de eficiencia productiva. Esta decisión responde a una concepción más amplia de la resiliencia, que asume pérdidas a corto plazo en favor de una mayor estabilidad a largo plazo.

La participación y la inmersión resultaron esenciales para el proceso de diseño. Durante la fase de licitación, el equipo del proyecto residió varias semanas en la finca, donde pudo observar la vendimia, trabajar con los empleados y conocer de primera mano su funcionamiento cotidiano. Según la familia Perrin, esta experiencia compartida fue decisiva para su elección, pues demostraba que la arquitectura sería fruto de un trabajo colectivo y no de una imposición. Tras la adjudicación, el arquitecto se trasladó a Aviñón para poder acudir a la obra casi a diario y mantener un contacto estrecho con los trabajadores y la dirección a lo largo de las distintas estaciones.

Las reuniones semanales de obra mantuvieron implicados a los miembros de la familia Perrin y facilitaron un intercambio continuo entre la construcción, el diseño y el funcionamiento de la explotación

Para além dos limites do projeto, a família Perrin também começou a plantar árvores nas vinhas, proporcionando sombra e biodiversidade, mesmo que isso implique uma certa perda de eficiência produtiva. Isto reflete uma compreensão mais ampla do conceito de resiliência, em que se aceitam perdas a curto prazo em prol de uma estabilidade a longo prazo.

A participação e o envolvimento local foram essenciais para a conceção do projeto. Durante a fase de concurso, a equipa do projeto viveu no local durante várias semanas, observando a colheita, trabalhando com os funcionários e assimilando o modo de funcionamento do local. A família Perrin afirmou que esta experiência partilhada foi decisiva na sua escolha, uma vez que indicava que a arquitetura seria um esforço coletivo e não uma imposição. Após a adjudicação do projeto, o arquiteto mudou-se para Avignon para poder estar no local quase diariamente, mantendo uma ligação próxima com os trabalhadores e a equipa de gestão ao longo das estações do ano.

As reuniões semanais no local asseguraram o envolvimento dos membros da família Perrin, facilitando uma comunicação fluida entre as equipas de construção, de projeto e de exploração da vinha. Esta presença contínua permitiu que o projeto

Samples and tests for the rammed-earth walls during construction | Muestras y ensayos para los muros de tapial durante la obra | Amostras e ensaios para as paredes de taipa durante a obra (Studio Méditerranée)



1. Painted plinth 2. Interior finish | 1. Zócalo pintado 2. Acabado interior | 1. Soco pintado 2. Acabamento interior (Studio Méditerranée)







Rammed-earth wall and reclaimed terracotta roof tiles overlooking the vineyards | Muro de tapial y tejas de barro cocido recuperadas, con vistas a los viñedos | Parede de taipa e telhas de barro cozido recuperadas, com vista para as vinhas (Iwan Baan)



Terrace overlooking the vineyards | Terraza con vistas a los viñedos | Terraço com vista para as vinhas (Iwan Baan)

extension of use rather than an abstract framework.

The project's local impact extended well beyond the winery. Several existing buildings, roughly built over the last thirty years, were not demolished but carefully "unbuilt." Materials were systematically recovered and redistributed: timber beams given to local horse breeders, reusable sanitary fittings donated to the nearby town of Courthézon, and metal parts sold to local workshops. This approach reduced waste, supported local stakeholders, and further embedded the project in the community.

Financial feasibility was also addressed with rigor. From the outset, the Perrin family set a strict budget in keeping with rural practice despite the winery's eminence. Through constant on-site involvement, the project was performed at a cost of less than USD 2,100 per square meter. Passive cooling, photovoltaic panels, and the underground cistern have allowed the estate to achieve approximately 80% energy independence, significantly reducing operational costs while improving thermal performance. The predominance of earth, stone, metal, and wood ensures that the building will remain adaptable and reusable over time.

vitivinícola. Esta presencia constante permitió que el proyecto respondiera no solo a las necesidades expresadas de forma explícita, sino también a aquellas prácticas no formuladas que definen el trabajo cotidiano. La arquitectura se convirtió así en una prolongación del uso, en lugar de constituir un marco abstracto.

El impacto local del proyecto se extendió mucho más allá de la propia bodega. Varios edificios existentes, construidos de forma rudimentaria a lo largo de los últimos treinta años, no se demolieron, sino que se "desconstruyeron" cuidadosamente. Los materiales se recuperaron y se redistribuyeron de forma sistemática: las vigas de madera se entregaron a criadores de caballos de la zona, los aparatos sanitarios reutilizables se donaron al cercano municipio de Courthézon y los elementos metálicos se vendieron a talleres locales. Este planteamiento redujo los residuos, favoreció a los agentes locales y reforzó aún más la vinculación del proyecto con la comunidad.

La viabilidad económica también se abordó con rigor. Desde el principio, la familia Perrin estableció un presupuesto estricto, acorde con el carácter rural de la explotación pese al prestigio de la bodega. Gracias a una presencia constante en la obra, el proyecto se ejecutó con un coste inferior a 2.100 dólares por metro cuadrado. Los sistemas pasivos de refrigeración, los paneles fotovoltaicos y la cisterna subterránea han permitido alcanzar una autonomía energética de aproximadamente el 80 %, con una reducción significativa de los costes de funcionamiento y una mejora del comportamiento térmico. El predominio de la tierra, la piedra, el metal y la madera garantiza que el edificio pueda adaptarse y reutilizarse a lo largo del tiempo.

respondesse não só às necessidades explícitas, mas também às práticas tácitas que definem o trabalho quotidiano. A arquitetura tornou-se uma extensão do uso, em vez de uma estrutura abstrata.

O impacto local do projeto estendeu-se muito para além da adega. Vários edifícios existentes, construídos de forma rudimentar ao longo dos últimos trinta anos, não foram demolidos, mas sim cuidadosamente "desmontados". Os materiais foram sistematicamente recuperados e redistribuídos: vigas de madeira oferecidas a criadores de cavalos locais, equipamento sanitário reutilizável doado à vila vizinha de Courthézon e peças metálicas vendidas a oficinas locais. Esta abordagem reduziu o desperdício, apoiou os intervenientes locais e integrou ainda mais o projeto na comunidade.

A viabilidade financeira foi também abordada com rigor. Desde o início, a família Perrin estabeleceu um orçamento rigoroso, em consonância com as práticas rurais, apesar do prestígio da adega. Graças à presença contínua da equipa no local, o projeto foi executado a um custo inferior a 2 100 dólares por metro quadrado. O arrefecimento passivo, os painéis fotovoltaicos e a cisterna subterrânea permitiram à propriedade alcançar cerca de 80% de autonomia energética, reduzindo significativamente os custos operacionais e melhorando simultaneamente o desempenho térmico. A predominância de terra, pedra, metal e madeira garante que o edifício permaneça adaptável e reutilizável ao longo do tempo.

The Domaine de Beaucastel project sought ultimately to create an uplifting place rooted in use, climate, and memory. Its aesthetic emerged from necessity and restraint rather than exhibition. By aligning architecture with terroir—materially, climatically, and culturally—the project fashioned a resilient ensemble that serves winemaking while embodying the values, customs, and continuity of this land.

El proyecto del Domaine de Beaucastel aspiraba, en última instancia, a crear un lugar estimulante, arraigado en el uso, el clima y la memoria. Su apariencia surgió de la necesidad y la contención, y no de una voluntad de exhibición. Al vincular la arquitectura con el *terroir* –desde el punto de vista material, climático y cultural–, el proyecto dio forma a un conjunto resiliente al servicio de la producción vinícola, que encarna al mismo tiempo los valores, las costumbres y la continuidad de este territorio.

O projeto do Domaine de Beaucastel teve como objetivo final criar um local inspirador, assente no uso, no clima e na memória. A sua estética surgiu da necessidade e da contenção, em vez da ostentação. Ao alinhar a arquitetura com o *terroir* — a nível material, climático e cultural —, o projeto deu origem a um conjunto resiliente que serve a produção de vinho, ao mesmo tempo que encarna os valores e os costumes desta terra, assegurando a sua continuidade.



Courtyard of the new winery | Patio de la nueva bodega | Pátio da nova adega (Iwan Baan)

1. Interior passage beneath the timber roof structure 2. Interior space combining earth, timber and stone | 1. Paso interior bajo la estructura de madera de la cubierta 2. Espacio interior que combina tierra, madera y piedra | 1. Passagem interior sob a estrutura de madeira da cobertura 2. Espaço interior que combina terra, madeira e pedra (Michael Falgren)



1



2

Biographies | Biografías | Biografias

Louis-Antoine Grégo

Louis-Antoine Grégo (1978, Paris) is an architect based in Avignon, France. He graduated from the École Spéciale d'Architecture in Paris in 2003 and worked for eight years at SANAA, where he managed the Louvre-Lens Museum project from design through completion (2006–2013). After joining Studio Mumbai in 2014, he founded Studio Méditerranée in 2016.

Louis-Antoine Grégo (París, 1978) es un arquitecto establecido en Aviñón, Francia. Se graduó en la École Spéciale d'Architecture de París en 2003 y trabajó durante ocho años en SANAA, donde estuvo a cargo del proyecto del Museo Louvre-Lens desde su diseño hasta la finalización de las obras (2006–2013). Tras incorporarse a Studio Mumbai en 2014, fundó Studio Méditerranée en 2016.

Louis-Antoine Grégo (Paris, 1978) é um arquiteto que exerce a sua atividade em Avignon, França. Formou-se na École Spéciale d'Architecture, em Paris, em 2003, e trabalhou durante oito anos na SANAA, onde coordenou o projeto do Museu do Louvre-Lens, desde a fase de conceção até à conclusão (2006–2013). Depois de se juntar ao Studio Mumbai em 2014, fundou o Studio Méditerranée em 2016.

Studio Méditerranée

Studio Méditerranée develops thoughtful and responsible architecture that bridges modernity and tradition. The practice seeks continuity between architecture and landscape through collaborative on-site design and construction. Its work emphasizes site-specific materials, natural resources, and energy, with a focus on renovation, material reuse, and experimental, participatory building practices rooted in the Mediterranean context.

Studio Méditerranée desarrolla una arquitectura reflexiva y responsable que establece un vínculo entre modernidad y tradición. El estudio busca dar continuidad a la relación entre arquitectura y paisaje mediante procesos colaborativos de diseño y construcción en obra. Su trabajo presta especial atención a los materiales propios de cada lugar, los recursos naturales y la energía, con especial interés por la rehabilitación, la reutilización de materiales y las prácticas constructivas experimentales y participativas arraigadas en el contexto mediterráneo.

O Studio Méditerranée desenvolve uma arquitetura ponderada e responsável que faz a ponte entre a modernidade e a tradição. O gabinete procura a continuidade entre a arquitetura e a paisagem através de um processo colaborativo de conceção e construção no local. O seu trabalho dá ênfase aos materiais específicos do local, aos recursos naturais e à energia, com foco na renovação, na reutilização de materiais e em práticas de construção experimentais e participativas, enraizadas no contexto mediterrânico.

Post-Earthquake Neo-Vernacular Architecture: Timenkar School, High Atlas

Nueva arquitectura vernácula post-sismo: Escuela Timenkar, Alto Atlas

Nova arquitetura vernácula pós-sismo: Escola Timenkar, Alto Atlas

Salima Naji

Introduction

The school is located on the Timenkar plateau at an altitude of 2,300 meters in the village of Aourir, in Morocco's High Atlas. Commissioned by the Tizi N'Oucheg development association, the facility of some 1,000 m² forms part of a larger complex serving the mountain communities.

Introducción

La escuela se encuentra en la meseta de Timenkar, a 2.300 metros de altitud, en la localidad de Aourir, en el Alto Atlas marroquí. Proyectada por encargo de la asociación para el desarrollo de Tizi N'Oucheg, cuenta con una superficie aproximada de 1.000 m² y forma parte de un complejo más amplio destinado a prestar servicio a las poblaciones de montaña.

Introdução

A escola está localizada no planalto de Timenkar, a uma altitude de 2.300 metros, na aldeia de Aourir, no Alto Atlas marroquino. Encomendadas pela associação de desenvolvimento Tizi N'Oucheg, as instalações de cerca de 1.000 m² fazem parte de um complexo maior que serve as comunidades da região montanhosa.

< View of Timenkar School in Aourir village in the High Atlas | Vista de la escuela Timenkar en el pueblo de Aourir en el Alto Atlas | Vista da aldeia de Aourir no Alto Atlas (Julie Gilbert)

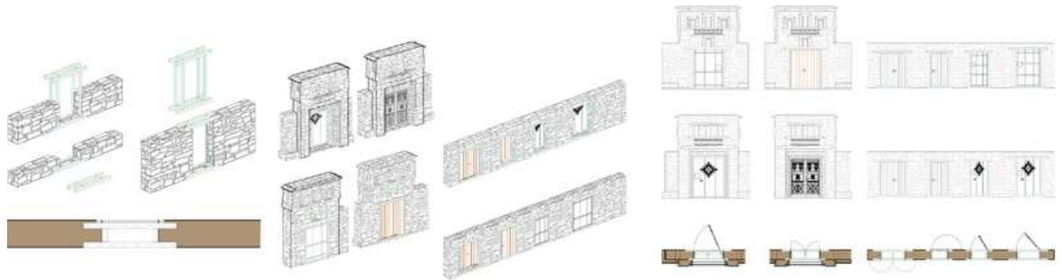
> Location of Timenkar School in the High Atlas | Localización de la escuela de Timenkar en el Alto Atlas | Localização da Escola de Timenkar no Alto Atlas (Google Earth)



This project embodies the belief that it is possible to create the conditions for social dignity in the wake of a disaster. The 2023 earthquake destroyed many high-mountain villages; the Atlas region was hard hit, and with it exceptional and ordinary buildings alike. Initially, vernacular architecture was blamed, with the usual litany of charges: that it is unable to withstand a strong tremor, unlike reinforced concrete structures… Nothing could be further from the truth. Successive field surveys have revealed a different reality: under extreme stress, neither so-called conventional reinforced concrete architecture nor architecture built of local materials can endure. And yet, when so-called vernacular architecture is examined more closely, it becomes apparent that, where well built, it is more resistant. This is particularly true when, on detailed analysis, one observes structural features where timber has a role: wooden beams, running both lengthways and crossways, suitably installed where structurally needed. These are clearly earthquake-resistant features, incorporated by our ancestors to ensure the longevity of architecture, to enable it to withstand not only earthquakes but also the passage of many years.

Este proyecto parte de la convicción de que es posible crear las condiciones necesarias para recuperar la dignidad social tras una catástrofe. El terremoto de 2023 destruyó numerosos pueblos de alta montaña; la región del Atlas sufrió graves daños, tanto en sus edificios singulares como en los más modestos. En un primer momento, se culpó a la arquitectura vernácula, con los argumentos habituales: que es incapaz de resistir un terremoto de gran intensidad, a diferencia de las estructuras de hormigón armado… Nada más lejos de la realidad. Las sucesivas inspecciones sobre el terreno han revelado una realidad distinta: ante un terremoto de gran intensidad, ni la denominada arquitectura convencional de hormigón armado ni la construida con materiales locales son capaces de resistir. Sin embargo, un examen más detenido de la llamada arquitectura vernácula permite comprobar que, cuando está bien ejecutada, presenta una mayor resistencia. Esto resulta especialmente evidente al analizar en detalle aquellos elementos estructurales en los que interviene la madera: vigas dispuestas tanto longitudinal como transversalmente, situadas en los puntos donde resultan necesarias desde el punto de vista estructural. Se trata de soluciones claramente sismorresistentes, incorporadas por nuestros antepasados para garantizar la longevidad de los edificios y permitirles resistir no sólo los terremotos, sino también el paso de los años.

Este projeto dá vida à crença de que é possível criar condições para a dignidade social após um desastre. O terramoto de 2023 destruiu muitas aldeias de montanha; a região do Atlas foi fortemente atingida, tendo sido afetadas tanto construções excecionais como comuns. Inicialmente, a culpa foi atribuída à arquitetura vernácula, com a habitual ladainha de acusações: que é incapaz de resistir a um tremor de terra forte, contrariamente às estruturas de betão armado… Nada poderia estar mais longe da verdade. Sucessivas pesquisas de campo revelaram uma realidade diferente: sob um esforço extremo, nem a chamada arquitetura convencional de betão armado, nem a arquitetura construída com materiais locais conseguem resistir. No entanto, quando a chamada arquitetura vernácula é examinada mais de perto, torna-se evidente que, quando bem construída, é mais resistente. Isto é particularmente verdade quando, numa análise detalhada, se consideram elementos estruturais em que a madeira desempenha um papel importante: vigas de madeira, dispostas longitudinal e transversalmente, instaladas adequadamente onde é estruturalmente necessário. Estas características são claramente sismorresistentes, incorporadas pelos nossos antepassados para garantir a longevidade das construções, permitindo-lhes resistir não só aos sismos, mas também à passagem dos anos.



Traditional settlement in the High Atlas mountains | Asentamiento tradicional en las montañas del Alto Atlas | Povoamento tradicional nas montanhas do Alto Atlas (David Goeury)



Drawings and photographs documenting the construction of the earthquake-resistant timber-frame system employed | Dibujos e imágenes durante la construcción de la solución sismorresistente de entramado de madera empleada | Desenhos e fotografias da construção da solução antissísmica em estrutura de madeira utilizada (Photograph: Ayoub El Bardii)







1



2

1: Overview of the construction site 2: Stone masonry work on site | 1: Vista general de la obra 2: Trabajos de albañilería de piedra en la obra | 1: Vista geral da obra 2: Trabalhos de alvenaria de pedra na obra (1. Mohamed Rouay 2 Ayoub El Bardii)

These buildings were designed to last also because of the cost of labor, and neither materials nor time were to be wasted. The object of building was to provide durable shelter for life and the living. This is also what the *maalmines* (master masons) tell me every time we restore a community granary: these buildings were intended to last.

Estos edificios se concebían para perdurar, también por el coste de la mano de obra, pues no se podían desperdiciar ni materiales ni tiempo. El objetivo de la construcción era proporcionar un refugio duradero para la vida y quienes lo habitaban. Esto es también lo que me recuerdan los *maalmines* (maestros albañiles) cada vez que restauramos un granero comunitario: estos edificios estaban concebidos para perdurar.

Estes edifícios foram concebidos para durar também devido ao custo da mão-de-obra, e nem os materiais nem o tempo deveriam ser desperdiçados. O objetivo da construção era proporcionar um abrigo duradouro para a vida e para aqueles que nele habitavam. É também isto que os maalmines (mestres pedreiros) me dizem sempre que restauramos um celeiro comunitário: estes edifícios foram feitos para durar.

Repairable Architectures

Another important point is that in the High Atlas, after the earthquake, the buildings that did not collapse were largely repairable. “Reinforced” concrete structures are disposable; the shear force causes them to disintegrate. Not so with vernacular dwellings. Corners can easily be patched up and earth and stone can be reused without waste or people having to leave. For me, this offers hope, though I am in a minority. Few support vernacular architecture in Morocco.

Following the earthquake in September 2023, I was contacted by a rural association which had long been working in the poor Setti Fatma area of the High Atlas to establish a school complex for children and teenagers from the villages (with 4,000 inhabitants) which were then hit by the earthquake, and especially for 160 non-enrolled children. This high plateau is still peopled by farmers, despite its proximity to Mar-

Arquitecturas reparables

Otro aspecto importante es que, tras el terremoto, gran parte de los edificios del Alto Atlas que no se derrumbaron podían repararse. Las estructuras de hormigón “armado” son desechables, pues los esfuerzos cortantes provocan su desintegración. No ocurre lo mismo con las viviendas vernáculas. Las esquinas dañadas pueden repararse fácilmente y la tierra y la piedra pueden reutilizarse sin generar residuos ni obligar a sus habitantes a abandonar sus hogares. Para mí, esto representa una esperanza, aunque mi opinión es minoritaria. Pocos defienden la arquitectura vernácula en Marruecos.

Tras el terremoto de septiembre de 2023, una asociación rural que llevaba años trabajando en la empobrecida zona de Setti Fatma, en el Alto Atlas, se puso en contacto conmigo. Su objetivo era construir un complejo escolar para los niños y adolescentes de los pueblos de la zona, que sumaban unos 4.000 habitantes y que

Arquiteturas reparáveis

Outro ponto importante é que, no Alto Atlas, após o terramoto, os edifícios que não ruíram eram, em grande parte, reparáveis. As estruturas de betão armado são descartáveis; o esforço transverso fá-las desintegrar. O mesmo não acontece com as habitações vernáculas. Os cantos podem ser facilmente reparados e a terra e a pedra podem ser reutilizadas sem desperdício ou necessidade de as pessoas abandonarem as suas casas. Para mim, isto dá esperança, embora eu faça parte de uma minoria. Poucas pessoas apoiam a arquitetura vernácula em Marrocos.

Após o terramoto de setembro de 2023, fui contactada por uma associação rural que trabalhava há muito tempo na região carenciada de Setti Fatma, no Alto Atlas, com o objetivo de construir um complexo escolar para as crianças e adolescentes das aldeias (com 4.000 habitantes) afetadas pelo terramoto, especialmente para 160 crianças que não estavam matriculadas.

Use of stone and earth sourced from the site to build the walls | Uso de la propia piedra y la tierra del terreno para la construcción de los muros | Utilização da pedra e da terra do próprio terreno na construção dos muros (Right: Ayoub El Bardii)





rakesh. Isolated in the winter months, the villages are linked by tribal ties to the largest settlement, Aourir, where a boarding school and also a canteen, unusual in Morocco, were to be set up. Local challenges include a lack of basic infrastructure, a scarcity of drinking water, an absence of medical care, and insufficient schooling. The idea, at a time of unprecedented rural crisis, was to connect and support these hamlets which perpetuate such practices as migratory herding to upland summer pastures.

también se habían visto afectados por el terremoto, con especial atención a 160 menores sin escolarizar. A pesar de su proximidad a Marrakech, esta meseta de alta montaña sigue habitada por agricultores. Los pueblos, que quedan aislados durante los meses de invierno, mantienen vínculos tribales con el núcleo de población más importante, Aourir, donde estaba prevista la construcción de un internado y un comedor escolar, algo poco habitual en Marruecos. Entre los problemas de la zona destacan la falta de infraestructuras básicas, la escasez de agua potable, la ausencia de atención médica y las deficiencias en la escolarización. En un momento de crisis rural sin precedentes, la idea era conectar y apoyar a estas pequeñas aldeas, que mantienen prácticas tradicionales como la trashumancia hacia los pastos de alta montaña durante el verano.

Este planalto é ainda habitado por agricultores, apesar da sua proximidade com Marraquexe. Isoladas durante os meses de inverno, as aldeias estão ligadas por laços tribais à povoação maior, Aourir, onde seriam criados um internato e também um refeitório, algo pouco comum em Marrocos. Os desafios locais incluem a falta de infraestruturas básicas, a escassez de água potável, a ausência de assistência médica e a escolarização insuficiente. A ideia, numa época de crise rural sem precedentes, era ligar e apoiar estas pequenas aldeias que perpetuam práticas como a deslocação dos rebanhos para as pastagens de altitude durante o verão.



Aerial view of the school complex | Vista aérea del conjunto escolar | Vista aérea do conjunto escolar (Mohamed Rouay)

Use of stone in the foundations and interior walls | Uso de la piedra en cimentación y en los muros interiores | Utilização da pedra nas fundações e nas paredes interiores (Right: Ayoub El Bardii)





Architectural Conditions for Social Dignity

The September 2023 earthquake enabled this school complex, intended to serve all of this isolated area, to get off the ground more quickly. In response to a request from parents in the Tizi n'Oucheg association, I proposed building using only local materials, employing traditional local techniques and earthquake-resistant features as found in older houses.

Our practice had previously built in Agadir using earthquake-resistant systems inspired by structures in the High Atlas and in particular the valley of Bou Guemmez. For the large-scale Agadir project (Regeneration of Agadir Oufella, 2022) it was the seismic legislation of Himalayan countries such as India and Nepal that convinced the authorities to give approval.

Condiciones arquitectónicas para la dignidad social

El terremoto de septiembre de 2023 permitió acelerar la puesta en marcha de este complejo escolar, concebido para dar servicio a toda esta zona aislada. En respuesta a una petición de los padres de la asociación Tizi n'Oucheg, propuse construir exclusivamente con materiales locales, mediante técnicas constructivas tradicionales de la región y soluciones sismorresistentes presentes en las viviendas más antiguas.

Nuestro estudio ya había construido anteriormente en Agadir con sistemas sismorresistentes inspirados en las estructuras del Alto Atlas y, en particular, del valle de Bou Guemmez. En el caso del proyecto de gran envergadura desarrollado en Agadir (Regeneración de Agadir Oufella, 2022), fue la normativa sísmica de países del Himalaya, como India y Nepal, la que convenció a las autoridades para que autorizaran su ejecución.

Condições arquitetónicas para a dignidade social

O terramoto de setembro de 2023 permitiu que este complexo escolar, concebido para servir toda esta área isolada, avançasse mais rapidamente. Em resposta a um pedido dos pais da associação Tizi n'Oucheg, propus construir utilizando apenas materiais locais, empregando técnicas tradicionais da região e incorporando características sismorresistentes, como as que se encontram nas casas antigas.

O nosso gabinete já tinha construído em Agadir utilizando sistemas sismorresistentes, inspirados em estruturas do Alto Atlas e, em particular, do vale de Bou Guemmez. Para o projeto de grande escala em Agadir (Regeneração de Agadir Oufella, 2022), foi a legislação sísmica de países da região dos Himalaias, como a Índia e o Nepal, que convenceu as autoridades a conceder a aprovação.

Learning from Local Custom

This time, on observing the surrounding villages, I saw that we could build like our forebears. I studied the timber-frame structures of the village below and in the neighboring Tizi n'Oucheg valley, along with the entrances and tie beams. I examined the ruins of the *kasbahs* and granaries which have been a school for me for over twenty years. This time I naturally examined the parts that had endured and those that had collapsed, comparing and probing into this building science which remains logical and simple, affordable and communicable, embodying common sense. The vernacular models here have features distinct from those used in Agadir: the richness of vernacular architecture is boundless, everywhere with peculiarities worth retracing. Rather than transposing a model from elsewhere, since the High Atlas has an earthquake-resistant architecture that has developed over centuries, we may as well build upon that. So with the support of a design consultancy and an exceptional inspection body, the planning application was approved.

The various partners knew this was not my first project and that I know what I'm doing, which I appreciate. My aim here was to construct a framework for the recognition of vernacular earthquake-resistant principles, to make it viable and to propose it for all of the High Atlas—to assist the development of building standards for Morocco's highlands and pre-Saharan valleys involving stone and earth.

Aprender de las tradiciones locales

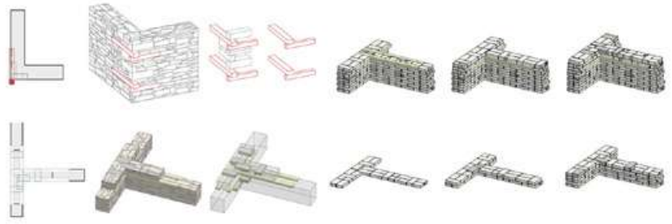
Esta vez, al observar los pueblos del entorno, comprendí que podíamos construir como nuestros antepasados. Estudié las estructuras de entramado de madera de las viviendas del pueblo situado más abajo y del vecino valle de Tizi n'Oucheg, así como sus accesos y vigas de atado. Examiné las ruinas de las *kasbahs* y los graneros, que han sido para mí una escuela durante más de veinte años. En esta ocasión, me detuve especialmente en las partes que habían resistido y en las que se habían derrumbado, y las comparé para profundizar en el conocimiento de esta ciencia constructiva, que sigue siendo lógica y sencilla, asequible y fácil de transmitir, y que responde al sentido común. Los modelos vernáculos de esta región presentan características distintas de los utilizados en Agadir: la riqueza de la arquitectura vernácula es inagotable y en todas partes existen particularidades que merece la pena recuperar. En lugar de trasladar un modelo de otro lugar, parecía más razonable aprovechar la arquitectura sismorresistente que se ha desarrollado durante siglos en el Alto Atlas. Así, con el apoyo de una consultora de ingeniería y un organismo excepcional de inspección técnica, se obtuvo la autorización para construir.

Los distintos colaboradores sabían que no era mi primer proyecto y confiaban en mi experiencia, algo que agradezco. Mi objetivo era establecer un marco para el reconocimiento de los principios sismorresistentes de la arquitectura vernácula, demostrar su viabilidad y proponer su aplicación en todo el Alto Atlas, con el fin de contribuir al desarrollo de una normativa de construcción en piedra y tierra para las zonas de alta montaña y los valles presaharianos de Marruecos.

Aprender com os costumes locais

Desta vez, ao observar as aldeias vizinhas, concluí que podíamos construir como os nossos antepassados. Estudei as estruturas de entramado de madeira da aldeia situada abaixo e do vale vizinho de Tizi n'Oucheg, juntamente com as entradas e as vigas de amarração. Examinei as ruínas das *casbás* e dos celeiros, que têm sido uma escola para mim há mais de vinte anos. Desta vez, examinei naturalmente as partes que resistiram e as que ruíram, comparando e investigando esta ciência da construção que permanece lógica e simples, acessível e comunicável, incorporando o senso comum. Os modelos vernáculos que se encontram aqui têm características distintas dos utilizados em Agadir: a riqueza da arquitetura vernácula é inesgotável, encontrando-se por toda a parte particularidades que vale a pena redescobrir. Em vez de importar um modelo de outro lugar, e dado que o Alto Atlas possui uma arquitetura sismorresistente que se desenvolveu ao longo dos séculos, podemos muito bem partir daí. Assim, com o apoio de um gabinete de consultoria técnica e de um organismo de inspeção de excelência, o pedido de licenciamento foi aprovado.

Os diversos parceiros sabiam que este não era o meu primeiro projeto e que sei o que estou a fazer, algo que aprecio. O meu objetivo aqui foi estabelecer um quadro de referência para o reconhecimento de princípios vernáculos sismorresistentes, tornar a sua aplicação viável e propor a sua aplicação por todo o Alto Atlas –para contribuir para o desenvolvimento de normas de construção para as terras altas e vales pré-saarianos de Marrocos recorrendo à pedra e à terra como materiais de construção.



1

1. Seismic-resistant construction system used at wall junctions and corners 2, 3. Interior of one of the classrooms during and after construction | 1. Sistema constructivo sismorresistente utilizado en los encuentros y esquinas de los muros 2, 3. Interior de una de las aulas durante y después de la construcción | 1. Sistema construtivo antissísmico utilizado nas ligações e nos cantos das paredes 2, 3. Interior de uma das salas de aula durante e após a construção (3: David Goeury)



2



3

Interior views | Vistas interiores | Vistas interiores (1: David Goeury 2: Ayoub El Bardii)



1



2

Composition of the Complex

The architecture emerged from the place itself, from the contours of the landscape, the hill on which the complex stands, and the natural paths taken by rainwater. Rather than reproducing vernacular forms, I sought to reinterpret the local architectural dialect,

Composición del conjunto

La arquitectura surgió del propio lugar, de las formas del paisaje, de la colina sobre la que se asienta el conjunto y de los cauces naturales de escorrentía del agua de lluvia. En lugar de reproducir las formas vernáculas, busqué reinterpretar el lenguaje arquitectónico local, en parti-

Composição do complexo

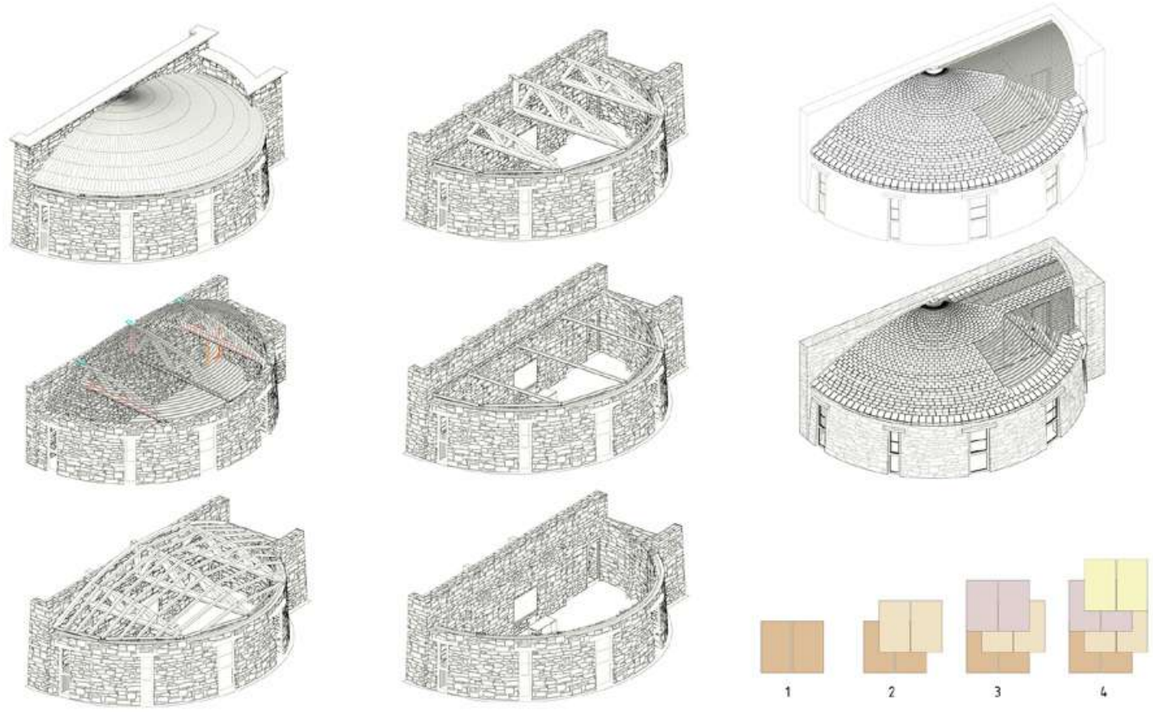
A arquitetura emergiu do próprio lugar, dos contornos da paisagem, da colina onde se ergue o complexo e dos caminhos naturais percorridos pela água da chuva. Em vez de reproduzir formas vernáculas, procurei reinterpretar o dialeto arquitetónico local, particularmente as







Room with a curved exterior wall during and after construction (exterior and interior views) | Estancia con muro exterior curvo durante y después de la construcción (vista exterior e interior) | Compartimento com parede exterior curva durante e após a construção (vistas exterior e interior)



1



2



1. Roof construction system of the room with a curved exterior wall 2. Room with a curved exterior wall during and after construction (exterior and interior views) | 1. Sistema constructivo de la cubierta de la estancia con muro exterior curvo 2. Estancia con muro exterior curvo durante y después de la construcción (vista exterior e interior) | 1. Sistema construtivo da cobertura do compartimento com parede exterior curva 2. Compartimento com parede exterior curva durante e após a construção (vistas exterior e interior)





Interior passage with traditional ceiling | Pasaje interior con forjados tradicionales | Passagem interior com teitos tradicionais



1



2



3

Walk-through of the interior spaces | Recorrido por espacios interiores | Percurso pelos espaços interiores
(1, 2: Julie Gilbert)

particularly the rounded walls and the relationship between buildings and topography. The project forms part of a larger complex planned in consultation with the villagers and the organizations involved. The approved masterplan comprises six buildings: a multipurpose educational facility of approximately 1,000 m² (already built), a refectory and communal kitchen, a boarding facility, a maternity and healthcare center, a nursery, and boarding accommodation (currently under construction). The remaining buildings are planned for future phases.

The school was styled with ample curves like those to be seen in the neighboring villages. During the approval process the Ministry of Education requested the addition of a library, which was incorporated into the site's rounded form and connected to the school by a corridor. This addition completed the composition while preserving a distinction between the two functions.

cular los muros curvos y la relación entre los edificios y la topografía. El proyecto forma parte de un conjunto más amplio, planificado en colaboración con los habitantes de los pueblos y las organizaciones implicadas. El plan general aprobado comprende seis edificios: un centro educativo polivalente de aproximadamente 1.000 m² (ya construido), un comedor y una cocina comunitaria, un internado, un centro de maternidad y atención sanitaria, una guardería y un edificio de alojamiento (actualmente en construcción). Los edificios restantes están previstos para futuras fases.

La escuela se proyectó con abundantes formas curvas, similares a las que se encuentran en los pueblos vecinos. Durante el proceso de aprobación, el Ministerio de Educación solicitó la incorporación de una biblioteca, que se integró en la configuración curva del conjunto y se conectó con la escuela mediante un pasillo. Esta ampliación completó la composición arquitectónica y mantuvo, al mismo tiempo, la diferenciación entre ambas funciones.

paredes arredondadas e a relação entre os edifícios e a topografia. O projeto faz parte de um complexo maior, planeado em conjunto com os residentes e as organizações envolvidas. O plano diretor aprovado é composto por seis edifícios: um centro educativo multifuncional de aproximadamente 1.000 m² (já construído), um refeitório e cozinha comunitária, um internato, um centro de maternidade e saúde, uma creche e uma residência de estudantes (atualmente em construção). Os restantes edifícios estão previstos para fases futuras.

A escola foi concebida com curvas amplas, semelhantes às que se encontram nas aldeias vizinhas. Durante o processo de aprovação, o Ministério da Educação solicitou a inclusão de uma biblioteca, que foi incorporada na forma arredondada do local e ligada à escola por um corredor. Esta adição completou o conjunto, preservando ao mesmo tempo a distinção entre as duas funções.

Materials and Bioclimatic Strategies

Stone is the predominant material, with dry-looking joints on the exterior and fuller mortar joints inside. In rooms requiring more damp protection, such as kitchens and bathrooms, earthen or plaster renders are used. Timber features in ceilings, openings, and elsewhere. The openings are carefully proportioned and protected from direct sunlight by projections of stone, wood, and terracotta. The window depth also helps prevent excessive solar heat gain.

The building relies on passive strategies to attenuate the wide temperature variations of the High Atlas. Cross-ventilated interiors, generous ceiling heights, interior wooden shutters, deep window openings, projecting cornices, an atrium, and roof lights provide natural ventilation, daylight, and thermal comfort with no need for air conditioning. Wall-integrated gutters channel rainwater to traditional cisterns known as nutfias.

Materiales y estrategias bioclimáticas

La piedra es el material predominante, con juntas de apariencia seca en el exterior y juntas de mortero en el interior. En los espacios que requieren una mayor protección frente a la humedad, como las cocinas y los baños, se utilizan revestimientos de tierra o yeso. La madera está presente en los techos, los huecos y otros elementos constructivos. Los huecos están cuidadosamente proporcionados y protegidos de la radiación solar directa mediante elementos salientes de piedra, madera y terracota. La profundidad de los huecos también contribuye a evitar una ganancia excesiva de calor por radiación solar.

El edificio recurre a estrategias pasivas para atenuar las grandes oscilaciones térmicas del Alto Atlas. Los espacios interiores con ventilación cruzada, la considerable altura de los techos, las contraventanas interiores de madera, los huecos profundos, las cornisas salientes, un atrio y los lucernarios proporcionan ventilación e iluminación naturales y confort térmico sin necesidad de climatización artificial. Los canalones integrados en los muros conducen el agua de lluvia hasta las cisternas tradicionales conocidas como *nutfias*.

Materiais e estratégias bioclimáticas

A pedra é o material predominante, com juntas de aspeto seco no exterior e mais preenchidas com argamassa no interior. Nas divisões que requerem maior proteção contra a humidade, como cozinhas e casas de banho, são utilizados rebocos à base de terra ou gesso. A madeira está presente nos tetos, vãos e outros elementos. Os vãos são cuidadosamente dimensionados e protegidos da luz solar direta por elementos salientes de pedra, madeira e terracota. A profundidade dos vãos também contribui para evitar ganhos solares excessivos.

O edifício utiliza estratégias passivas para atenuar as grandes variações de temperatura do Alto Atlas. Interiores com ventilação cruzada, pés-direitos generosos, portadas interiores de madeira, vãos profundos, cornijas salientes, um átrio e claraboias proporcionam ventilação natural, iluminação natural e conforto térmico sem necessidade de ar condicionado. Caleiras integradas nas paredes canalizam a água da chuva para cisternas tradicionais conhecidas como *nutfias*.

Responding to Climate and Seismic Risk

In addition to the risk of earthquakes there is harsh weather, as these parts are cold in winter, down to several degrees below zero, and can be hot in summer. And whilst in the High Atlas there is an earthquake every 30 to 50 years—or longer, given that the inhabitants in 2023 could not recall any previous quake—climate risk is constant. A final risk is that these villages, which also depend on tourism, might be omitted from tourist routes because they have been spoiled by concrete, inappropriate and ugly. And surely the relatively poor inhabitants themselves have the right to live in beautiful spaces.

We are therefore laying the ground for developing a local industry based on local stone and timber. Needless to say, reinforced concrete is ruled out. Construction using only local materials is guided and then certified by the associated consultants in accordance with the legal framework. The building is all done by the parents of the children who are to attend the school. We must restore confidence in vernacular techniques, and first seek to convince the local authorities.

Respuesta al clima y al riesgo sísmico

Al riesgo de terremotos se suman unas condiciones climáticas extremas, pues en estas zonas las temperaturas invernales pueden descender varios grados por debajo de cero, mientras que los veranos pueden ser calurosos. Y mientras que en el Alto Atlas se produce un terremoto cada 30 o 50 años, o incluso con menor frecuencia, dado que en 2023 los habitantes no recordaban ninguno anterior, el riesgo es constante. Un último riesgo es que estos pueblos, que también dependen del turismo, queden excluidos de las rutas turísticas si su arquitectura se ve deteriorada por construcciones de hormigón inadecuadas y poco estéticas. Y, desde luego, sus habitantes, de recursos relativamente modestos, también tienen derecho a vivir en espacios bellos.

Por tanto, estamos sentando las bases para el desarrollo de una industria local basada en el aprovechamiento de la piedra y la madera de la región. Por supuesto, el uso del hormigón armado queda descartado. La construcción, realizada exclusivamente con materiales locales, cuenta con el asesoramiento y la posterior certificación de los técnicos colaboradores, de acuerdo con el marco normativo vigente. Toda la obra la llevan a cabo los padres de los niños que asistirán a la escuela. Debemos recuperar la confianza en las técnicas constructivas vernáculas y, para ello, el primer paso es convencer a las autoridades locales.

Uma resposta aos riscos climáticos e sísmicos

Além do risco de sismos, existem também as condições meteorológicas adversas, uma vez que estas regiões são frias no inverno, com temperaturas a atingir vários graus abaixo de zero, e podem ser quentes no verão. E embora no Alto Atlas ocorra um sismo a cada 30 a 50 anos –ou menos frequentemente, dado que os habitantes em 2023 não se recordavam de nenhum sismo anterior–, o risco climático é constante. Um último risco é que estas aldeias, que também dependem do turismo, sejam excluídas das rotas turísticas por terem sido descaracterizadas pelo uso de betão, inadequado e esteticamente desagradável. E certamente que os próprios habitantes, relativamente pobres, têm o direito de viver em espaços belos.

Estamos, por isso, a lançar as bases para o desenvolvimento de uma indústria local baseada na utilização da pedra e da madeira locais. Escusado será dizer que o betão armado está fora de questão. A construção com recurso apenas a materiais locais é orientada e posteriormente certificada pelos consultores associados em conformidade com o enquadramento legal. A construção é inteiramente realizada pelos pais das crianças que irão frequentar a escola. Devemos restaurar a confiança nas técnicas vernáculas e, em primeiro lugar, tentar convencer as autoridades locais.



1



2



3

Classroom interior | Interior del aula | Interior da sala de aula (2, 3: Ayoub El Bardii)



1



2

Details of the classroom roof structure | Detalles de la estructura del techo de las aulas | Pormenores da estrutura da cobertura das salas de aula (1: Ayoub El Bardii)



Main façade | Fachada principal | Fachada principal



1

1. Rear façade 2. Workshops with the village children | 1. Fachada trasera 2. Workshops con los niños de la aldea | 1. Fachada posterior 2. Oficinas com as crianças da aldeia

Building Through Shared Knowledge

Construir a partir del conocimiento compartido

Construir através do conhecimento partilhado

Translating these architectural intentions into a built reality required continuous dialogue with the local masons. At the start, the site foreman, Abelhakim Mendili, and his team visited the Agadir Oufella restoration project, where they were able to see another approach to earthquake-resistant construction and examine the details of ceilings and openings. We also visited the old village below Aourir, with its characteristic rounded walls, and the neighboring village of Tizi n'Oucheg. All this provided opportunities to survey traditional buildings together, and to understand how their structural principles could be adapted to the new school.

The trust established with the site foreman and a particularly receptive master masons (*maalmines*), notably Mohamed Ait El Haj and Rachid Lhanch, was essential. My regular visits allowed us to refine details, resolve difficulties, and ensure that the execution remained faithful to the design.

Para llevar estas intenciones arquitectónicas a la práctica fue necesario mantener un diálogo constante con los albañiles locales. Al inicio de las obras, el encargado, Abelhakim Mendili, y su equipo visitaron el proyecto de restauración de Agadir Oufella, donde pudieron conocer otro enfoque de la construcción sismorresistente y examinar los detalles constructivos de los techos y los huecos. También visitamos el antiguo pueblo situado por debajo de Aourir, con sus característicos muros curvos, y el pueblo vecino de Tizi n'Oucheg. Estas visitas nos permitieron estudiar juntos los edificios tradicionales y comprender cómo podían adaptarse sus principios estructurales a la nueva escuela.

La confianza establecida con el encargado de obra y con un maestro albañil (*maalmines*) especialmente receptivos, Mohamed Ait El Haj y Rachid Lhanch respectivamente, fue fundamental. Mis visitas periódicas nos permitieron perfeccionar los detalles constructivos, resolver las dificultades y garantizar que la ejecución se mantuviera fiel al proyecto.

Traduzir estas intenções arquitetónicas numa realidade construída exigiu um diálogo contínuo com os pedreiros locais. Inicialmente, o encarregado de obra, Abelhakim Mendili, e a sua equipa visitaram o projeto de restauro de Agadir Oufella, onde puderam observar outra abordagem à construção sismorresistente e examinar os detalhes dos tetos e dos vãos. Visitámos também a antiga aldeia situada abaixo de Aourir, com as suas paredes arredondadas características, e a aldeia vizinha de Tizi n'Oucheg. Criaram-se assim oportunidades para estudarmos em conjunto as construções tradicionais e compreendermos como os seus princípios estruturais poderiam ser adaptados à nova escola.

A confiança estabelecida com o encarregado da obra e com um mestre pedreiro (*maalmines*) particularmente recetivos, Mohamed Ait El Haj e Rachid Lhanch, foi essencial. As minhas visitas frequentes permitiram-nos apurar os detalhes, resolver dificuldades e garantir que a execução se mantinha fiel ao projeto.

Workshops for Sharing a Love of Architecture

Talleres para transmitir el amor por la arquitectura

Ateliês para partilhar o amor pela arquitetura

Before handing the building over to the authorities, we organized workshops with the children, starting by getting them to draw the architecture so as to observe, understand, and analyze it. Using local materials left over from

Antes de entregar el edificio a las autoridades, organizamos talleres con los niños. Primero les propusimos dibujar la arquitectura para aprender a observarla, comprenderla y analizarla. Después, con materiales locales sobrantes de la obra,

Antes de entregarmos o edifício às autoridades, organizámos ateliês com as crianças, começando por as incentivar a desenhar a arquitetura para que a pudessem observar, compreender e analisar. Utilizando materiais locais que sobraram



2



the worksite, we then had them make models of the school, giving them a chance to be architects. The workshop was so successful that we held several more, and each time the demand and the output were considerable.

For it is not enough just to sustain and support a project, to resist pressure and see a building through without giving in. One must also ensure that the youngsters take care of the place and that the adults in charge add no ugly renders, unsuitable fixtures, concrete block walls, etc. To achieve this, we must foster a love for this architecture handed down over centuries and which deserves to outlive a conventional way of building that is adrift from its very foundations.

Engineering and site supervision by SECTOB (Thierno Aliou Bah, Yacine Dougnaou, and Abdellah Chafiki), with structural consultancy by Mourad Houmaidi (Sudinfra Agadir) and surveying by Amine Bouabdellah (GEOAXIS Sarl). As a gesture of solidarity with the victims of the 2023 earthquake, the architect and consultants waived their fees. Partner organizations include Gardiens de la mémoire, Open Village, and L'Heure Joyeuse. Funding provided by Servier Charity, with support from Servier Morocco and L'Heure Joyeuse. Since October 2025 the project has been managed on-site in partnership with the Ministry of Education.

les invitamos a construir maquetas de la escuela, para que pudieran experimentar el papel de arquitectos. El taller tuvo tanto éxito que organizamos varios más, siempre con una gran demanda y una producción considerable de trabajos.

Porque no basta con impulsar y apoyar un proyecto, resistir las presiones y llevar una obra hasta el final sin ceder. También es necesario conseguir que los jóvenes cuiden el lugar y que los adultos responsables no añadan revestimientos poco estéticos, elementos inadecuados, muros de bloques de hormigón, etc. Para lograrlo, debemos fomentar el aprecio por esta arquitectura transmitida a lo largo de los siglos, que merece perdurar frente a una forma convencional de construir que ha perdido el contacto con sus propios fundamentos.

Ingeniería y dirección de obra a cargo de SECTOB (Thierno Aliou Bah, Yacine Dougnaou y Abdellah Chafiki), con asesoramiento estructural de Mourad Houmaidi (Sudinfra Agadir) y trabajos de topografía de Amine Bouabdellah (GEOAXIS Sarl). Como gesto de solidaridad con las víctimas del terremoto de 2023, la arquitecta y los consultores renunciaron a sus honorarios. Entre las organizaciones colaboradoras figuran Gardiens de la mémoire, Open Village y L'Heure Joyeuse. Financiación a cargo de Servier Charity, con el apoyo de Servier Morocco y L'Heure Joyeuse. Desde octubre de 2025, el proyecto se gestiona sobre el terreno en colaboración con el Ministerio de Educación.

da obra, pedimos-lhes então que construíssem maquetes da escola, dando-lhes a oportunidade de serem arquitetos. O primeiro ateliê foi de tal forma bem-sucedido que realizámos vários outros, e em todos eles tanto a procura como os resultados alcançados foram consideráveis.

Pois não basta apenas sustentar e apoiar um projeto, resistir à pressão e levar uma construção até ao fim sem ceder. É também necessário garantir que os jovens cuidam do local e que os adultos responsáveis não acrescentam rebocos inestéticos, elementos inadequados, paredes de blocos de betão, etc. Para o conseguir, devemos cultivar o amor por esta arquitetura transmitida ao longo dos séculos e que merece perdurar para além da forma convencional de construir, que perdeu o contacto com as suas próprias raízes.

Engenharia e supervisão da obra por parte da SECTOB (Thierno Aliou Bah, Yacine Dougnaou e Abdellah Chafiki), com consultoria estrutural de Mourad Houmaidi (Sudinfra Agadir) e levantamento topográfico de Amine Bouabdellah (GEOAXIS Sarl). Como gesto de solidariedade para com as vítimas do terramoto de 2023, a arquiteta e os consultores renunciaram aos seus honorários. As organizações parceiras incluem a Gardiens de la mémoire, a Open Village e a L'Heure Joyeuse. Financiamento assegurado pela Servier Charity, com o apoio da Servier Marrocos e da L'Heure Joyeuse. Desde outubro de 2025 que o projeto é gerido no local em parceria com o Ministério da Educação.





Decision-making during a site visit | Toma de decisiones durante una visita de obra | Tomada de decisões durante uma visita à obra (Ayoub El Bardii)

Biography | Biografía | Biografia

Salima Naji

Salima Naji is a Moroccan architect and anthropologist, born in Rabat. She studied architecture at the École nationale supérieure d'architecture (Paris-La Villette) and holds a PhD in anthropology from EHESS, Paris. Based in southern Morocco since 2008, she combines architecture, research, and heritage preservation through projects that draw on local materials, traditional building techniques, and artisanal knowledge. She has led major public projects including the revitalization of the *Ksar* of Assa and the regeneration of the *Kasbah* of Agadir while also running numerous community-based ventures in remote rural areas. Her research explores the relationship between societies, architecture, and the environment and informs a contemporary interpretation of vernacular architecture that she calls "paleo-innovation." Her work has received international recognition including the Global Award for Sustainable Architecture (2025), the Grande Médaille d'Or of the French Academy of Architecture (2024), and the Terra Landscape Award (2026). In 2023 she was selected by RIBA among their "100 Women: Architects in Practice".

Salima Naji es una arquitecta y antropóloga marroquí nacida en Rabat. Estudió Arquitectura en la École nationale supérieure d'architecture de Paris-La Villette y es doctora en Antropología por la École des hautes études en sciences sociales (EHESS) de París. Establecida en el sur de M arruecos desde 2008, combina la arquitectura, la investigación y la conservación del patrimonio a través de proyectos que hacen uso de materiales locales, técnicas constructivas tradicionales y conocimientos artesanales. Ha dirigido importantes proyectos públicos, como la revitalización del *ksar* de Assa y la regeneración de la *kasbah* de Agadir, además de numerosas iniciativas comunitarias en zonas rurales aisladas. Su investigación explora la relación entre las sociedades, la arquitectura y el medio ambiente, y sirve de base para una interpretación contemporánea de la arquitectura vernácula que denomina "paleoinnovación". Su trabajo ha recibido numerosos reconocimientos internacionales, entre ellos el Global Award for Sustainable Architecture (2025), la Grande Médaille d'Or de la Academia de Arquitectura de Francia (2024) y el Terra Landscape Award (2026). En 2023 fue seleccionada por el Royal Institute of British Architects (RIBA) entre las "100 Women: Architects in Practice".

Salima Naji é uma arquiteta e antropóloga marroquina, nascida em Rabat. Estudou arquitetura na École nationale supérieure d'architecture (Paris-La Villette) e é doutorada em antropologia pela EHESS, em Paris. Residente no sul de Marrocos desde 2008, combina arquitetura, investigação e preservação do património através de projetos que recorrem amateriais locais, técnicas construtivas tradicionais e conhecimento artesanal. Liderou importantes projetos públicos, incluindo a revitalização do *ksar* de Assa e a regeneração da *kasbah* de Agadir, para além de coordenar vários empreendimentos comunitários em zonas rurais remotas. A sua investigação explora a relação entre as sociedades, a arquitetura e o ambiente, e fundamenta uma interpretação contemporânea da arquitetura vernácula a que chama "paleo-inovação". O seu trabalho foi alvo de reconhecimento internacional, incluindo o Prémio Global de Arquitetura Sustentável (2025), a Grande Médaille d'Or da Academia Francesa de Arquitetura (2024) e o Prémio Terra Landscape (2026). Em 2023, foi selecionada pelo RIBA entre as suas "100 Women: Architects in Practice".

Six Publicly Subsidized Rental Apartments in Santa Eugènia, Mallorca

Seis viviendas de protección pública de alquiler en Santa Eugènia, Mallorca

Seis habitações sociais para arrendamento em Santa Eugénia, Maiorca

Carles Oliver Barceló,
Xim Moyá Costa

Introduction

This social housing project is a prototype intended to enhance and demonstrate the viability of using local materials with a small carbon footprint in simple compressive structures, recovering a model in which "the quality of architecture stems from massing rather than from a transformation of the physiochemical qualities of materials" (Cuchí i Burgos 2005).

Introducción

Este proyecto de vivienda social constituye un prototipo destinado a perfeccionar y demostrar la viabilidad del uso de materiales locales de baja huella de carbono en estructuras de compresión simple, que recupera un modelo en el que "la calidad de la arquitectura proviene del apilamiento de la masa, en lugar de la transformación de las cualidades físicas y químicas de los materiales" (Cuchí i Burgos 2005).

Introdução

Este projeto de habitação social constitui um protótipo destinado a aperfeiçoar e demonstrar a viabilidade da utilização de materiais locais com baixa pegada de carbono em estruturas de compressão simples, que retoma um modelo em que "a qualidade da arquitetura provém do empilhamento da massa, em vez da transformação das qualidades físicas e químicas dos materiais" (Cuchí i Burgos 2005).

< Pedestrian passage | Pasaje peatonal | Passagem pedonal (Milena Villalba)

> Site plan | Plano de situación | Planta de localização



Urban Context

Santa Eugènia is a small picturesque municipality located twenty minutes from Palma de Mallorca. Integration into the landscape was vital to removing the stigma still attached to social housing in the Balearic Islands, though this was sought not through form but rather by an updating of vernacular building techniques and the use of the materials constituting the island and its heritage. Encouragingly, on the completion of the works, the neighbors, seeming surprised, remarked: "*I no han espenyat el poble!*" (And the village hasn't been spoiled!).

Contexto urbano

Santa Eugènia es un pequeño y pintoresco municipio situado a 20 minutos de Palma. La integración paisajística era fundamental para erradicar el estigma que aún sufre la vivienda social en Baleares, aunque no se planteó desde la forma, sino desde la actualización de las técnicas constructivas vernáculas y el empleo de los materiales que configuran el lugar y su patrimonio. Al finalizar las obras, las vecinas, sorprendidas, decían: "*I no han espenyat el poble!*" (¡Y no han estropeado el pueblo!).

Contexto urbano

Santa Eugénia é um pequeno e pitoresco município situado a 20 minutos de Palma. A integração paisagística foi fundamental para erradicar o estigma de que ainda sofre a habitação social nas Ilhas Baleares, embora não tenha sido abordada do ponto de vista da forma, mas sim através da atualização das técnicas de construção vernáculas e da utilização dos materiais que caracterizam o local e o seu património. No final das obras, as vizinhas, surpreendidas, diziam: "*I no han espenyat el poble!*" (E não estragaram a povoação!).

The housing complex in the agricultural landscape of Santa Eugènia | El conjunto de viviendas en el paisaje agrícola de Santa Eugènia | O conjunto habitacional na paisagem agrícola de Santa Eugènia (Milena Villalba)



Program and Climate

There are three flats on the ground floor and three above, with common access through a courtyard designed to be as green and refreshing as possible and to foster a sense of community. All the flats also have a small private outer yard at the ground-floor entrance.

Mallorca has a dry Mediterranean climate and its drought risk is expected to increase with climate change. The green part of the courtyard thus functions as a bioclimatic device and in summer becomes a quiet little oasis in the approach to the flats. It should be able to withstand dry conditions and high temperatures with no significant increase in the building's water demand. For this reason, two existing trees (a hackberry and a pomegranate tree) were conserved and hardy native species were selected for planting, watered with rain collected from the roofs and stored in an underground cistern.

Programa y clima

Se disponen tres viviendas en planta baja y tres en planta primera, con un acceso comunitario por el patio interior concebido para ser lo más verde y fresco posible y fomentar el sentido de colectividad. Además, todas las viviendas disponen de un pequeño patio privado exterior en la entrada de la planta baja.

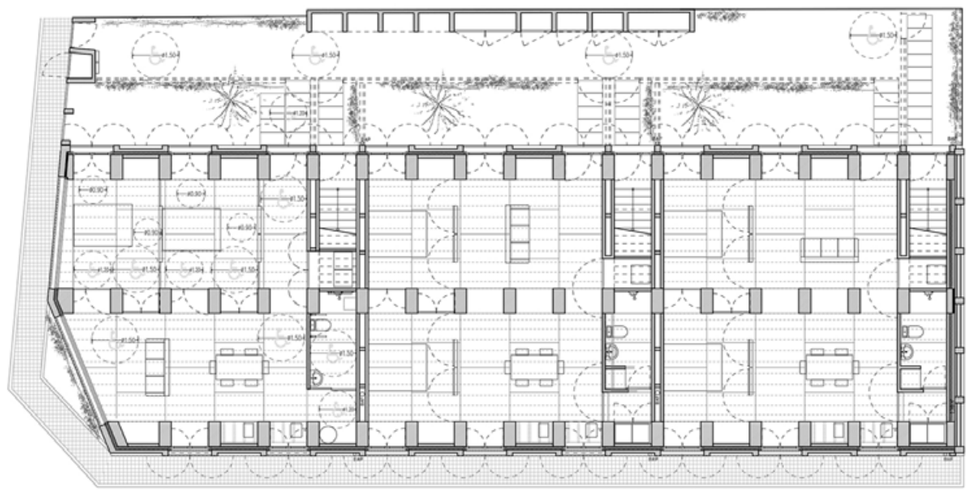
El clima de Mallorca es mediterráneo seco y se prevé que el riesgo de sequía aumente como consecuencia del cambio climático. La zona verde del patio interior funciona como dispositivo bioclimático en verano y se convierte en un pequeño oasis de silencio previo al acceso a las viviendas. Esta zona debe poder soportar condiciones de sequía y altas temperaturas sin un aumento significativo del consumo de agua del edificio. Por este motivo, se han conservado dos árboles preexistentes (un almez y un granado) y se han seleccionado especies autóctonas resistentes, que se riegan con el agua de lluvia procedente de las cubiertas, almacenada en un depósito enterrado.

Programa e clima

Estão dispostas três habitações no rés-do-chão e três no primeiro andar, com um acesso comum pelo pátio interior, concebido para ser o mais verde e fresco possível e para promover o sentido de comunidade. Além disso, todas as habitações dispõem de um pequeno pátio privado exterior à entrada do rés-do-chão.

O clima de Maiorca é mediterrânico seco e prevê-se que o risco de seca aumente em consequência das alterações climáticas. A zona verde do pátio interior funciona como um dispositivo bioclimático no verão e transforma-se num pequeno oásis de silêncio antes do acesso às habitações. Esta zona deve ser capaz de suportar condições de seca e altas temperaturas sem um aumento significativo do consumo de água do edifício. Por este motivo, foram preservadas duas árvores já existentes (um lódão e uma romãzeira) e foram selecionadas espécies autóctones resistentes, que são regadas com a água da chuva proveniente das coberturas, armazenada num depósito subterrâneo.

Ground-floor plan and communal courtyard | Planta baja y patio comunitario | Planta do rés-do-chão e pátio comunitário



New Model of Production and Replication

Annual world CO_2 emissions have risen from 5 to 37 gigatonnes (Gt) per year over the past century (Global Carbon Project 2022). Through its oceans, soils, and forests, the Earth can absorb only 19 Gt of CO_2 annually, equivalent to the available global carbon budget. Consequently, global carbon emissions are approximately twice the amount the planet can absorb.

Green Building Council España (GBCe) calculates that a carbon budget for the Spanish construction industry able to meet the European Commission's binding decarbonization targets would require a 52% emissions reduction by 2030 and a 92% reduction by 2050. Design with a carbon budget thus has a new rule book.

One way to achieve this reduction, within four years, is to recover the ability to build with local resources, seeking the utmost self-sufficiency within a paradigm of global degrowth and social justice. Moreover, there are limits to these local resources, so how much can we build and what uses should we prioritize?

The Santa Eugènia project is the version 2.0 of an eight-flat project built in Calle Salvador Espriu 39 in Palma de Mallorca (2018-2021). It pursues research into a new model of production and consumption based on applying the resource-mapping strategy begun with *Reusing Posidonia*, a project which included the building of 14 subsidized flats on the island of Formentera using local materials and traditional building techniques to limit environmental impact. The monitoring of those flats showed the need to incorporate mass for thermal inertia in summer along with the unnecessariness of active heating systems in well-insulated buildings within a Mediterranean climate. This is a continuous process of learning and improvement through replication with the aim, step by step, of developing a low-carbon building system that becomes ever more refined, simple, and efficient.

Nuevo modelo productivo y de repetición

Las emisiones mundiales de CO_2 han aumentado de 5 gigatoneladas (Gt) a 37 Gt anuales en el último siglo (Global Carbon Project 2022). La Tierra, a través de los océanos, los suelos y los bosques, sólo puede absorber 19 Gt de CO_2 al año, lo que equivale al presupuesto mundial de carbono disponible. En consecuencia, a escala global se emite aproximadamente el doble del carbono que el planeta puede absorber.

El Green Building Council España (GBCe) ha calculado el presupuesto de carbono correspondiente al sector de la edificación en España. Para cumplir los objetivos de descarbonización vinculantes de la Comisión Europea será necesario reducir las emisiones un 52 % para 2030 y un 92 % para 2050. Así, diseñar con un presupuesto de carbono cambia por completo las reglas del juego.

Una de las vías para alcanzar esta reducción –en un plazo de cuatro años– consiste en recuperar la capacidad de construir con los recursos del propio territorio, buscando la mayor autosuficiencia posible bajo el paradigma del decrecimiento y la justicia social global. Además, estos recursos locales imponen límites: ¿cuánto podemos construir y qué usos deberíamos priorizar?

El proyecto de Santa Eugènia es la versión 2.0 del proyecto de las ocho viviendas de la calle Salvador Espriu 39, en Palma (2018-2021), y desarrolla la investigación sobre un nuevo modelo de producción y consumo basado en la aplicación de la estrategia del "mapa de recursos", iniciada con *Reusing Posidonia* (2012-2020), un proyecto que incluyó la construcción de 14 viviendas de protección pública en Formentera mediante el uso de materiales locales y técnicas constructivas tradicionales para reducir su impacto ambiental. El proceso de monitorización de aquellas viviendas puso de manifiesto tanto la necesidad de incorporar masa para proporcionar inercia térmica en verano como la innecesariedad de sistemas activos de calefacción en edificios bien aislados en clima mediterráneo. Se trata de un proceso continuo de aprendizaje y mejora a través de la repetición, cuyo objetivo es desarrollar, paso a paso, un sistema constructivo de bajas emisiones de carbono cada vez más refinado, sencillo y rápido.

Novo modelo produtivo e de repetição

As emissões mundiais de CO_2 aumentaram de 5 gigatoneladas (Gt) para 37 Gt por ano no último século (Global Carbon Project 2022). A Terra, através dos oceanos, dos solos e das florestas, só consegue absorver 19 Gt de CO_2 por ano, o que equivale ao orçamento global de carbono disponível. Consequentemente, à escala global, é emitido aproximadamente o dobro do carbono que o planeta consegue absorver.

O Green Building Council España (GBCe) calculou o orçamento de carbono correspondente ao setor da edificação em Espanha. Para cumprir as metas vinculativas de descarbonização da Comissão Europeia, será necessário reduzir as emissões em 52% até 2030 e em 92% até 2050. Assim, projetar tendo por base um orçamento de carbono muda completamente as regras do jogo.

Uma das formas de alcançar esta redução –num prazo de quatro anos– consiste em recuperar a capacidade de construir com os recursos do próprio território, procurando a maior autossuficiência possível no âmbito do paradigma do decrescimento e da justiça social global. Além disso, estes recursos locais impõem limites: quanto podemos construir e a que utilizações devemos dar prioridade?

O projeto de Santa Eugénia é a versão 2.0 do projeto das oito habitações da Rua Salvador Espriu, n.º 39, em Palma (2018-2021), e dá curso à investigação sobre um novo modelo de produção e consumo que é baseado na aplicação da estratégia do "mapa de recursos", iniciada com o *Reusing Posidonia* (2012-2020), um projeto que incluiu a construção de 14 habitações sociais em Formentera, mediante a utilização de materiais locais e técnicas construtivas tradicionais para reduzir o seu impacto ambiental. O processo de monitorização dessas habitações revelou tanto a necessidade de incorporar massa que proporcione inércia térmica no verão, como a dispensabilidade de sistemas ativos de aquecimento em edifícios bem isolados num clima mediterrânico. Trata-se de um processo contínuo de aprendizagem e melhoria através da repetição, cujo objetivo é desenvolver, passo a passo, um sistema construtivo de baixas emissões de carbono cada vez mais refinado, simples e rápido.



Quarrying of *marès* stone blocks at Cas Vilafranquer quarry | Extracción de bloques de piedra de marès en la cantera Cas Vilafranquer | Extração de blocos de pedra de *marès* na pedreira de Cas Vilafranquer (Milena Villalba)

The two main improvements over previous projects are a reduction in energy demand for both cooling and heating through wholly bioclimatic systems, and standardization and replication of building elements so as to minimize in the short term the financial investment involved in the use of local, low-carbon materials: *marès* sandstone in the structure and envelope, FSC timber in trusses and beams, reused wood for all interior woodwork, *Posidonia oceanica* seagrass as roof insulation, etc. The spans between pillars are all of the same size (160 cm), so as to facilitate construc-

Las dos principales mejoras respecto a los proyectos anteriores son una mayor reducción de la demanda energética –tanto de refrigeración como de calefacción– mediante sistemas exclusivamente bioclimáticos, y la estandarización y repetición de los elementos constructivos para reducir al máximo, a corto plazo, la inversión económica necesaria para el empleo de materiales locales de bajo carbono: piedra de marès en la estructura y

As duas principais melhorias em relação aos projetos anteriores consistem numa maior redução da demanda energética –tanto de refrigeração como de aquecimento– através de sistemas exclusivamente bioclimáticos, e na padronização e repetição dos elementos construtivos para reduzir ao máximo, a curto prazo, o investimento económico necessário para a utilização de materiais locais com baixa pegada de carbono: pedra de marès na estrutura e nos elementos de vedação,

tion. The window openings are likewise simplified, placed on the same vertical axes to facilitate the erection of walls and lintels.

los cerramientos, cerchas y carpinterías de madera con certificación FSC, carpinterías interiores realizadas íntegramente con madera reutilizada, el uso de *Posidonia oceanica* como aislamiento de cubierta, etc. Los vanos entre pilastras tienen la misma dimensión (160 cm) para facilitar la ejecución del edificio. Lo mesmo ocurre con los huecos de las ventanas, que se han dispuesto sobre los mismos ejes verticales para simplificar la construcción de los muros y los dinteles.

asnas e caixilharia de madeira com certificação FSC, caixilharia interior realizada inteiramente com madeira reutilizada, a utilização de *Posidonia oceanica* como isolamento da cobertura, etc. Os vãos entre as pilastras têm a mesma dimensão (160 cm) para facilitar a execução do edifício. O mesmo se aplica às aberturas das janelas, que foram dispostas nos mesmos eixos verticais para simplificar a construção das paredes e dos lintéis.

< Clay and almond shells | Arcilla y cáscaras de almendra | Argila e cascas de amêndoa (Milena Villalba)

> 1. *Marès* stone quarry at Sa Sínia Nova 2. *Posidonia oceanica* washed ashore on the coast of Mallorca | 1. Cantera de piedra de *marès* en Sa Sínia Nova 2. *Posidonia oceanica* acumulada en la costa de Mallorca | 1. Pedreira de pedra de *marès* em Sa Sínia Nova 2. *Posidonia oceanica* acumulada na costa de Maiorca (Milena Villalba)





Resource Mapping and Comfort

Our resource-mapping strategy includes social factors (building types, knowledge, and traditions, craft know-how, social needs in each context, available labor, etc.), climatic factors (temperature, humidity, sunshine, rainfall, wind, etc.), and the use of materials with low socioenvironmental impact, preferably of local origin.

The materials were selected according to their ability to help achieve the project's main aim—providing the utmost habitability, comfort, and wellbeing with the smallest possible volume of resources and the lowest possible external impacts over its lifespan, as regards either people or landscape and ecosystems.

Mapa de recursos y confort

La estrategia del "mapa de recursos" integra factores sociales (tipologías, conocimientos y tradiciones constructivas, conocimiento artesanal, necesidades sociales de cada contexto, mano de obra disponible, etc.), factores atmosféricos (temperatura, humedad, radiación solar, lluvia, viento, etc.) y materiales de bajo impacto ambiental y social, preferentemente de origen local.

La selección de los materiales ha tenido en cuenta su capacidad para contribuir a la consecución del objetivo prioritario de este proyecto, que es proporcionar la máxima habitabilidad, confort y bienestar posibles, con la menor cantidad de recursos y el menor impacto externo a lo largo de todo su ciclo de vida, tanto sobre las personas como sobre los territorios y ecosistemas.

Mapa de recursos e conforto

A estratégia do "mapa de recursos" integra fatores sociais (tipologias, conhecimentos e tradições construtivas, o saber artesanal, as necessidades sociais de cada contexto, mão de obra disponível, etc.), fatores atmosféricos (temperatura, humidade, radiação solar, chuva, vento, etc.) e materiais de baixo impacto ambiental e social, de preferência de origem local.

A seleção dos materiais teve em conta a sua capacidade de contribuir para a concretização do objetivo prioritário deste projeto, que consiste em proporcionar a máxima habitabilidade, conforto e bem-estar possíveis, com o mínimo de recursos e o menor impacto externo ao longo de todo o seu ciclo de vida, tanto nas pessoas como nos territórios e ecossistemas.







Traditional ceramic kiln at Alfarería Soler workshop | Horno tradicional de cerámica en el taller de Alfarería Soler | Forno tradicional de cerâmica na oficina da Alfarería Soler (Milena Villalba)







Manual installation and compaction of *Posidonia oceanica* roof insulation | Colocación y compactación manual del aislamiento de *Posidonia oceanica* en la cubierta | Colocação e compactação manual do isolamento de *Posidonia oceanica* na cobertura

To achieve this aim, it is necessary to:

a) Minimize total energy demand for cooling and heating so as to reduce external energy dependence by means of passive bioclimatic solutions.

b) Reduce embedded emissions and impacts on workers and the environment during the phases of extracting and processing building materials.

c) Prioritize products sourced as locally as possible so as to support the local economy and ensure that labor and environmental conditions in production processes are appropriate.

In this case, the total energy demand for heating and cooling is calculated to be 4.80 kWh/m². Even in the scenario of a 2°C temperature rise in the period 2041-2070, the combined heating and cooling demand is anticipated to be no more than 6.4 kWh/m². For hot water there are air-source heat pumps, and the building has photovoltaic solar panels. Yet its energy efficiency stems chiefly from its architectural design:

Para conseguir este objetivo hay que:

a) Minimizar la demanda total de energía para la refrigeración y la climatización de los espacios, con el fin de reducir la dependencia de energía externa mediante soluciones bioclimáticas pasivas.

b) Reducir las emisiones incorporadas y los impactos sobre los trabajadores y los territorios durante las fases de extracción y transformación de los materiales de construcción empleados.

c) Priorizar productos de origen lo más local posible para favorecer la economía local y garantizar unas adecuadas condiciones laborales y ambientales en los procesos de producción.

En este caso, la demanda total de energía para calefacción y refrigeración es, según los cálculos, de 4,80 kWh/m². Incluso en un escenario de aumento de la temperatura de +2 °C para el período 2041-2070, se prevé una demanda conjunta de calefacción y refrigeración de tan solo 6,4 kWh/m². Para la producción de agua caliente sanitaria (ACS) se utilizan

Para atingir este objetivo, é necessário:

a) Minimizar a demanda total de energia para a refrigeração e climatização dos espaços, com o objetivo de reduzir a dependência de energia externa através de soluções bioclimáticas passivas.

b) Reduzir as emissões incorporadas e os impactos sobre os trabalhadores e os territórios durante as fases de extração e transformação dos materiais de construção utilizados.

c) Dar prioridade a produtos de origem o mais local possível, de modo a favorecer a economia local e garantir condições laborais e ambientais adequadas nos processos de produção.

Neste caso, a demanda total de energia para aquecimento e refrigeração é, segundo os cálculos, de 4,80 kWh/m². Mesmo num cenário de aumento da temperatura de +2 °C no período entre 2041 e 2070, prevê-se uma demanda conjunta de aquecimento e refrigeração de apenas 6,4 kWh/m². Para a produção de água quente sanitária (ACS) são utilizadas bombas de

- For summertime, the passive strategies are to take advantage of the thermal inertia and comfortable humidity afforded by local stone—both vital to coping with severe heat waves—along with cross ventilation oriented toward the prevailing sea breeze (*Embat*), assisted by ceiling fans, shading from traditional wooden shutters, and thermal insulation of 10 cm in walls and 24 cm in the roof.

- For wintertime, the passive strategies include thick thermal insulation and as much solar gain as can be achieved. Air is renewed through a Trombe convection wall (with a 50 W fan), facing south toward the adjoining plot, which is not for building according to current planning regulations.

bombas de calor por aerotermia y el edificio dispone de paneles fotovoltaicos. Sin embargo, la eficiencia energética proviene principalmente de las propias decisiones arquitectónicas:

- En verano, las estrategias pasivas utilizadas son el aprovechamiento de la inercia térmica y el confort higrométrico que aporta la piedra local –ambos fundamentales para hacer frente a las olas de calor extremas–, la ventilación cruzada orientada hacia la brisa marina predominante (*Embat*), con el apoyo de ventiladores de techo, la protección solar mediante persianas tradicionales de madera y un aislamiento térmico de 10 cm en los muros y de 24 cm en la cubierta.

- En invierno, las estrategias pasivas utilizadas incluyen la utilización de un aislamiento térmico muy amplio y la máxima captación solar posible. La renovación del aire se realiza mediante un muro Trombe de convección (que funciona con un ventilador de 50 W), orientado

calor por aerotermia e o edifício dispõe de painéis fotovoltaicos. No entanto, a eficiência energética resulta principalmente das próprias decisões arquitetónicas:

- No verão, as estratégias passivas utilizadas consistem no aproveitamento da inércia térmica e do conforto higrotérmico proporcionado pela pedra local –ambos fundamentais para fazer face às ondas de calor extremas–, a ventilação cruzada orientada para a brisa marítima predominante (*Embat*), com o apoio de ventiladores de teto, a proteção solar através de persianas tradicionais de madeira e um isolamento térmico de 10 cm nas paredes e de 24 cm na cobertura.

- No inverno, as estratégias passivas utilizadas incluem o recurso a um isolamento térmico de grande espessura e a máxima captação solar possível. A renovação do ar é assegurada por uma parede Trombe de convecção (que funciona com um ventilador de 50 W), orientada para sul, na direção do terreno vizinho,

Indoor comfort is being monitored in collaboration with the Balearic Islands University (UIB) so as to gauge and optimize the system's efficiency with a view to future projects and to provide reference values for future standards.

As benchmarked to resource mapping, the waste generated during the works was reduced by 50% and embedded CO_2 by 59.4% thanks to the selection of materials and the reuse of elements from a pre-existing shed on the site, fully incorporated into the building: shutters, doors, roof tiles, and *marès* sandstone, repurposed in the plinth with its cutting marks exposed as in the *Can Jordi i n'Àfrica* project by TEd'A Arquitectes. The solid wood boards forming the sloping roof were reclaimed from an old factory and carry a 25 cm insulation layer of *Posidonia oceanica*. Such insulation, with thermal conductivity of λ = 0.044 W/m·K, seems to embody the saying "We don't live in a house, we live in an ecosystem."

Using the leaves of this seagrass, endemic to the Mediterranean and whose beds are regarded by the EU as a priority habitat, requires consent from the competent authority. It can be gathered only by authorized harvesters in March and April, as the dead leaves that accumulate on beaches protect the dune ecosystem from the winter storms. Once on-site, the seagrass was dried in the sun without further processing and compacted manually in bulk on the roof. Given its chemical composition, it is not fed upon by any terrestrial species, as it contains phenolic, sulfur, and sulfite compounds with phytotoxic properties. *Marès* sandstone, as well as having a small carbon footprint and affording thermal inertia in summer, provides durability and needs little maintenance, helping extend the building's lifespan. It is also 100% reusable.

al sur, hacia la parcela vecina, inedificable según la normativa urbanística vigente.

El confort del edificio se está monitorizando en colaboración con la Universidad de las Islas Baleares (UIB), tanto para comprobar y optimizar la eficiencia del sistema de cara a futuros proyectos como para proporcionar valores de referencia para futuras normativas.

Proyectando desde el mapa de recursos, se han reducido un 50 % los residuos generados durante la fase de obra y un 59,4 % las emisiones embebidas de CO_2 de los materiales, gracias a la selección de los mismos y a la reutilización de un pequeño cobertizo preexistente en el solar, cuyos elementos constructivos se han reincorporado íntegramente a la nueva obra: persianas, puertas, tejas y piedra de marès –reutilizada en el zócalo del edificio, con las marcas de los cortes expuestas, como en el proyecto Can Jordi i n'Àfrica, de TEd'A Arquitectes–. Todas las puertas y particiones interiores son de madera procedente de demoliciones. Los tableros reutilizados de madera maciza de la estructura de la cubierta inclinada proceden de una antigua fábrica y soportan el aislamiento de 25 cm de *Posidonia oceanica*. Este aislamiento, con una conductividad térmica de λ = 0,044 W/m·K, visibiliza que "no vivimos en una casa, vivimos en un ecosistema".

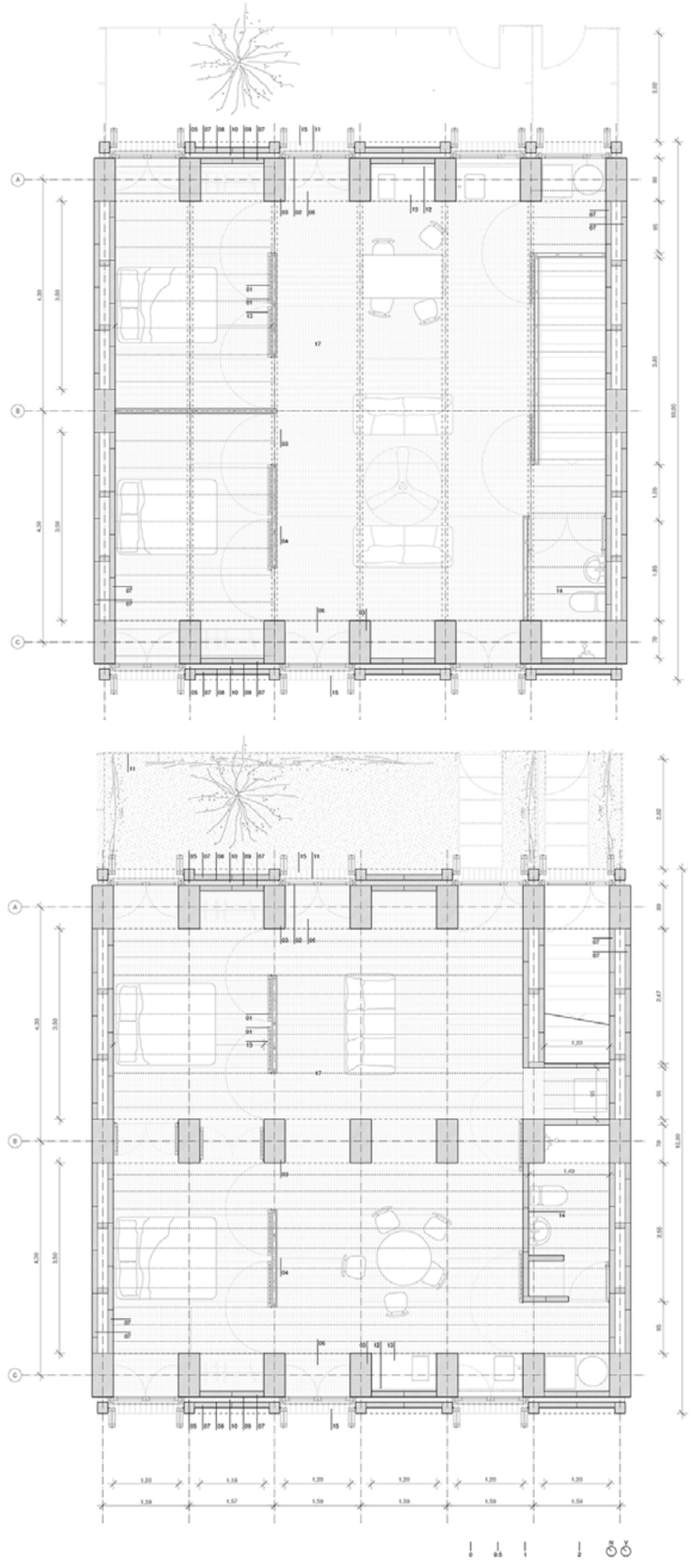
El uso de las hojas de esta planta marina, endémica del Mediterráneo y considerada hábitat prioritario por la Unión Europea, requiere la autorización de la administración competente. Además, solo pueden ser recolectadas por gestores autorizados durante los meses de marzo y abril, ya que las hojas muertas depositadas en las playas protegen el ecosistema dunar frente a las tormentas de invierno. Una vez en obra, las hojas se secan al sol sin ningún tratamiento adicional y se compactan manualmente, a granel, en la cubierta

onde não é permitida a construção ao abrigo da regulamentação urbanística em vigor.

O conforto do edifício está a ser monitorizado em colaboração com a Universidade das Ilhas Baleares (UIB), tanto para verificar e otimizar a eficiência do sistema com vista a futuros projetos, como para fornecer valores de referência para futuras normas.

Com base no mapa de recursos, foi possível reduzir em 50% os resíduos gerados durante a fase de construção e em 59,4% as emissões incorporadas de CO_2 dos materiais, graças à sua seleção e à reutilização de um pequeno telheiro já existente no terreno, cujos elementos construtivos foram integralmente reincorporados na nova obra: persianas, portas, telhas e pedra de marès –reutilizada no embasamento do edifício, com as marcas dos cortes à vista, como no projeto Can Jordi i n'Àfrica, da TEd'A Arquitectes–. Todas as portas e divisórias interiores são de madeira proveniente de demolições. As tábuas reutilizadas de madeira maciça da estrutura do telhado inclinado provêm de uma antiga fábrica e suportam o isolamento de 25 cm de *Posidonia oceanica*. Este isolamento, com uma condutividade térmica de λ = 0,044 W/m·K, evidencia que "não vivemos numa casa, vivemos num ecossistema".

A utilização das folhas desta planta marinha, endémica do Mediterrâneo e considerada um habitat prioritário pela União Europeia, requer a autorização da administração competente. Além disso, só podem ser colhidas por gestores autorizados durante os meses de março e abril, uma vez que as folhas mortas depositadas nas praias protegem o ecossistema das dunas contra as tempestades de inverno. Uma vez no local da obra, as folhas são secas ao sol sem qualquer tratamento adicional e compactadas manualmente, a granel, na cobertura do edifício. Devido



> Ground- and first-floor plans | Plantas baja y primera | Plantas do rés-do-chão e do primeiro piso



1



2

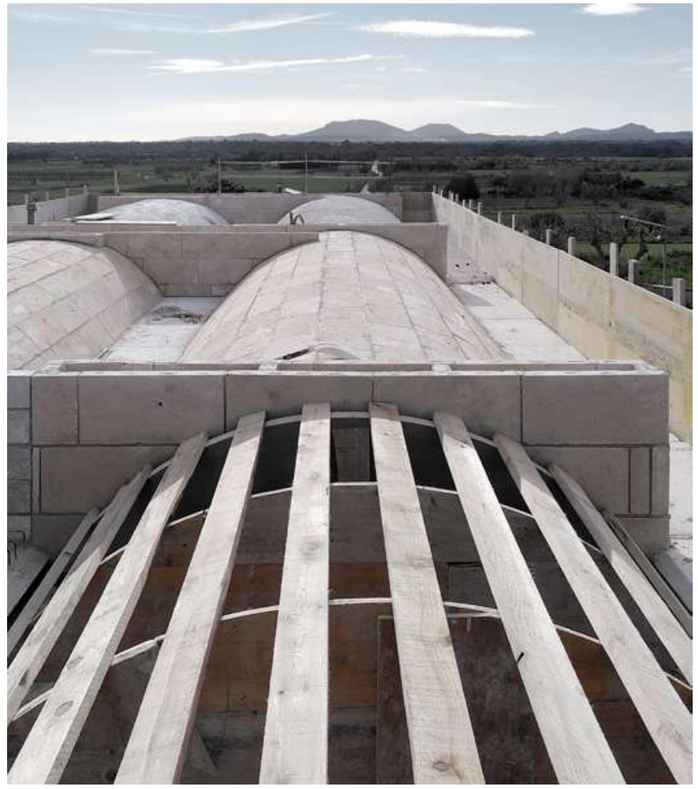


3

Construction of the *marès* stone walls and pilasters | Construcción de los muros y pilastras de piedra de marès | Construção das paredes e pilastras de pedra de *marès* (1,3. José Hevia)

del edificio. Debido a su composición química, no existe ningún depredador terrestre que las afecte, ya que contienen compuestos fenólicos, sulfuros y sulfitos con propiedades fitotóxicas. La piedra de marès, además de presentar una baja huella de carbono y aportar inercia térmica en verano, proporciona durabilidad y un reducido mantenimiento, lo que contribuye a prolongar la vida útil del edificio. Además, es 100 % reutilizable.

à sua composição química, não existe nenhum predador terrestre que as afete, uma vez que contêm compostos fenólicos, sulfuretos e sulfitos com propriedades fitotóxicas. A pedra de marès, além de apresentar uma baixa pegada de carbono e proporcionar inércia térmica no verão, oferece durabilidade e uma manutenção reduzida, o que contribui para prolongar a vida útil do edifício. Além disso, é 100 % reutilizável.





Construction of the barrel vaults and timber roof structure | Construcción de las bóvedas de cañón y de la estructura de madera de la cubierta | Construção das abóbadas de berço e da estrutura de madeira da cobertura

The three ground-floor flats are organized by two parallel barrel vaults, each with a span of 3.5 meters, resting on three rows of pillars with a 40 × 80 cm cross-section. The rooms are delimited by wooden sliding doors of the size of the facing walls.

The facades are made of two parallel self-supporting stone walls, each 10 cm thick, with thermal filling of recycled cotton also 10 cm thick confined between two waterproof, breathable membranes, the inner one of Intello type, with a variable SD value (indicating the resistance a material offers to vapor diffusion). The inner wall braces the vault pillars while the outer one shields the insulation package. To minimize the number of ties between the two walls, the outer stone layer has pilasters protruding by 10 cm for greater rigidity and stability. There are just two stainless

Las tres viviendas de la planta baja se organizan mediante dos bóvedas de cañón paralelas de 3,5 metros de luz, apoyadas sobre tres ejes de pilastras de 40 × 80 cm de sección. Las habitaciones se delimitan mediante puertas correderas de madera del tamaño de los paramentos.

Las fachadas se resuelven mediante dos muros paralelos autoportantes de piedra, de 10 cm de espesor cada uno, con un aislamiento térmico intermedio de 10 cm de algodón reciclado, confinado entre dos láminas impermeables y transpirables, de las cuales la interior es del tipo *Intello*, con valor Sd variable (valor que indica cuánta resistencia ofrece un material al paso del vapor de agua). El muro interior arriostra las pilastras de las bóvedas, mientras que el exterior protege el paquete de aislamiento. Para reducir el número de anclajes entre ambos muros, la hoja exterior de piedra dispone de pilastras que sobresalen 10

As três habitações do rés-do-chão estão organizadas através de duas abóbadas de berço paralelas com um vão de 3,5 metros, assentes em três eixos de pilastras com secção de 40 × 80 cm. Os quartos são delimitados por portas de correr em madeira com as mesmas dimensões dos paramentos.

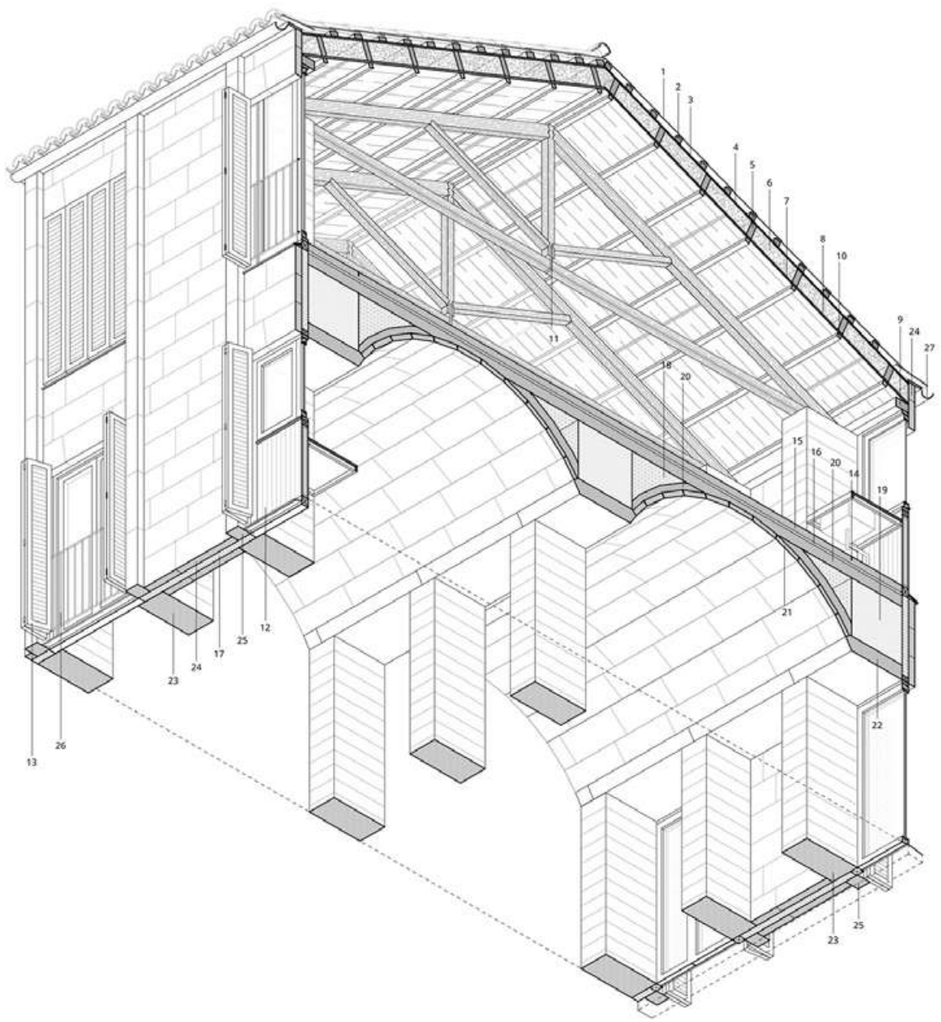
As fachadas são constituídas por duas paredes paralelas autoportantes de pedra, com 10 cm de espessura cada, e uma camada intermédia de isolamento térmico em algodão reciclado, com 10 cm de espessura, confinada entre duas membranas impermeáveis e permeáveis ao vapor de água, sendo que a interior é do tipo *Intello*, com valor Sd variável (valor que indica a resistência que um material oferece à passagem do vapor de água). A parede interior contraventa as pilastras das abóbadas, enquanto a exterior protege o pacote de isolamento. Para reduzir

steel anchors per pilaster, situated level with the lintel supports on each floor so as to facilitate construction supervision. The building process is thus expressed in the structure.

cm y aumentan su rigidez y estabilidad. Solo se disponen dos anclajes de acero inoxidable por pilastra, situados en la cota de arranque de los dinteles de cada planta para facilitar la supervisión de la ejecución en obra. La construcción define la expresión del edificio.

o número de ancoragens entre ambas as paredes, a parede exterior de pedra possui pilastras com 10 cm de saliência, aumentando a sua rigidez e estabilidade. São utilizadas apenas duas ancoragens em aço inoxidável por pilastra, situadas à cota de arranque dos lintéis de cada piso, para facilitar a supervisão da execução durante a obra. A construção define a expressão do edifício.

Construction axonometric drawing | Axonometría constructiva | Axonometria construtiva



The three upper-floor flats, accessed by independent stairs, are configured in a single open space under a gable roof supported by Spanish-type trusses with a span of 9.4 meters, and with sound-insulated wooden partitions delimiting two bedrooms, each with two doors.

One of the project's main innovations for expediting construction was the use of masonry joints with an improved mortar formulated to allow several block courses to be laid by crane in a day, with no need for wedges thanks to its resistance to crushing by overlying blocks. To facilitate the erection of the vault, monolithic stone lintels were used between the pillars, from another quarry that supplies more resistant stone. Each one weighs some 840 kg.

Las tres viviendas de la planta superior, con escaleras de acceso independientes, se organizan en un único espacio abierto bajo una cubierta a dos aguas soportada por cerchas de madera de tipo "española", de 9,4 metros de luz, con tabiques de madera, dotados de aislamiento acústico, que definen dos dormitorios, provistos cada uno de dos puertas.

Una de las principales innovaciones del proyecto para acelerar la construcción es la actualización del mortero utilizado en las juntas, cuya formulación se ha estudiado para permitir el apilado de varios bloques de piedra en un mismo día mediante una grúa, sin necesidad de cuñas y evitando que el mortero se aplaste por el propio peso de los bloques. Para facilitar la construcción de la bóveda, se han utilizado dinteles monolíticos de piedra entre pilastras, procedentes de una cantera diferente que proporciona una piedra de mayor resistencia. Cada uno pesa aproximadamente 840 kg.

As três habitações do piso superior, com escadas de acesso independentes, estão dispostas num único espaço aberto sob uma cobertura de duas águas, suportada por asnas de madeira do tipo "espanhola", com vão de 9,4 metros, com divisórias de madeira dotadas de isolamento acústico, que delimitam dois quartos, cada um deles com duas portas.

Uma das principais inovações do projeto para acelerar a construção é a atualização da argamassa utilizada nas juntas, cuja formulação foi estudada para permitir o empilhamento de vários blocos de pedra num mesmo dia com a ajuda de uma grua, sem necessidade de cunhas e evitando que a argamassa seja esmagada pelo próprio peso dos blocos. Para facilitar a construção da abóbada, foram utilizados lintéis monolíticos de pedra entre as pilastras, provenientes de uma pedreira diferente que fornece uma pedra de maior resistência. Cada um pesa aproximadamente 840 kg.

Design Criteria with a Gender Perspective

The rooms have no hierarchy and are all of the same size so as to avoid any distinction between double and single bedrooms. Without ensuite bathrooms, they have generous floor space of 12 or 13 m^2, avoiding predetermination of use and including storage space.

The kitchens are placed in the middle of the flats, integrated into the shared living space with a visual connection to the other spaces giving visibility to domestic tasks.

The distribution by means of movable partitions of reused wood is flexible and adaptable to various stages of family life and circumstances, allowing the home to be transformed or to evolve simply with no need for alterations. Longevity or durability was one of the main circu-

Criterios de diseño con perspectiva de género

Las habitaciones no están jerarquizadas. Todas tienen las mismas dimensiones, con el fin de evitar la distinción entre dormitorio doble e individual. No tienen baño en suite y disponen de una superficie generosa, de entre 12 y 13 m^2, que evita predeterminar su uso e incorpora espacio de almacenamiento.

La cocina se ubica en un lugar central de la vivienda, integrada en los espacios comunes del núcleo de convivencia, con conexión visual con el resto de los espacios para dar visibilidad a las tareas domésticas.

La distribución mediante tabiques móviles de madera reutilizada es flexible y adaptable a las diferentes etapas y circunstancias familiares, lo que permite la transformación y la evolución de la vivienda de forma sencilla, sin necesidad de obras.

Critérios de conceção com uma perspetiva de género

Os quartos não estão hierarquizados. Todos têm as mesmas dimensões, com o objetivo de evitar a distinção entre quarto duplo e individual. Não dispõem de casa de banho privativa e têm uma área generosa, entre 12 e 13 m^2, o que evita predeterminar a sua utilização e inclui espaço de arrumação.

A cozinha está localizada numa zona central da habitação, integrada nos espaços comuns do núcleo de convivência, com ligação visual com os restantes espaços para dar visibilidade às tarefas domésticas.

A organização, através de divisórias móveis de madeira reutilizada, é flexível e adapta-se às diferentes etapas e circunstâncias familiares, o que permite a transformação e a evolução da habitação de forma simples, sem necessidade de obras.

larity strategies for the building, involving flexibility of use over time.

Apparently rigid stone structures combined with wooden doors generate a flexible and versatile floor plan.

La longevidad o durabilidad es una de las principales estrategias de circularidad de esta edificación y requiere una gran flexibilidad de uso a lo largo del tiempo.

Estructuras de piedra aparentemente rígidas, combinadas con puertas de madera, generan una planta flexible y versátil.

A longevidade ou durabilidade é uma das principais estratégias de circularidade deste edifício e requer uma grande flexibilidade de utilização ao longo do tempo.

Estruturas de pedra aparentemente rígidas, combinadas com portas de madeira, criam uma planta flexível e versátil.

Self-Sufficiency and Town-Building

Self-sufficiency in building processes blurs the boundary between the resource spaces of town and country, as towns arise with materials sourced from their environs. Before the industrial revolution, it was scarcely necessary to seek specifically to integrate buildings into the landscape, for they were naturally erected using local materials and techniques. The recovery of cultural heritage thus becomes a means both of meeting decarbonization targets and of retrieving the notion of towns as aggregates of quiet, anonymous building.

Autosuficiencia y ciudad

La autosuficiencia en los procesos de construcción difumina la frontera entre el espacio productivo de la ciudad y el del campo, porque la ciudad se construye con materiales procedentes del territorio adyacente. Antes de la Revolución Industrial apenas era necesario plantear la integración paisajística como un objetivo específico, ya que las construcciones empleaban de forma natural los materiales y técnicas del entorno. La recuperación del patrimonio cultural se convierte así en una herramienta tanto para cumplir los objetivos de descarbonización como para recuperar la noción de ciudad entendida como la suma de intervenciones anónimas y silenciosas.

Autossuficiência e cidade

A autossuficiência nos processos de construção dilui a fronteira entre o espaço produtivo da cidade e o do campo, porque a cidade é construída com materiais provenientes do território adjacente. Antes da Revolução Industrial, quase não era necessário considerar a integração paisagística como um objetivo específico, uma vez que as construções utilizavam naturalmente os materiais e as técnicas dos arredores. A recuperação do património cultural torna-se, assim, uma ferramenta tanto para cumprir os objetivos de descarbonização como para recuperar a noção de cidade entendida como a soma de intervenções anónimas e silenciosas.

Public and private developers have recently built more than 300 dwellings in the Balearic Islands using local stone for structural elements. Thanks to the efforts of local architects and others from outside the islands, some quarries of *marès* sandstone (*maresseres*) have invested considerably in modernizing their facilities and developing their workforce with a view to remaining in business and preserving their trade, as

Recientemente, promotores públicos y privados han construido en las Islas Baleares más de 300 viviendas en las que se utiliza la piedra local en elementos estructurales. Gracias al esfuerzo de arquitectos locales y de fuera de las islas, algunas canteras de marès (*maresseres*) han realizado importantes inversiones para modernizar sus instalaciones y aumentar el número de

Recentemente, promotores públicos e privados construíram nas Ilhas Baleares mais de 300 habitações nas quais se utiliza a pedra local em elementos estruturais. Graças ao esforço de arquitetos locais e de fora das ilhas, algumas pedreiras de marès (*maresseres*) realizaram investimentos significativos para modernizar as suas instalações e aumentar o número de

The building within the surrounding landscape | El edificio en el paisaje circundante | O edifício na paisagem envolvente (Milena Villalba)



The housing complex along the village street | El conjunto de viviendas en la calle del pueblo | O conjunto habitacional na rua da aldeia (Milena Villalba)



in the last twelve years twelve of them had closed down.

trabajadores, con el objetivo de evitar su desaparición y mantener el oficio. En los últimos doce años habían cerrado doce canteras.

trabalhadores, com o objetivo de evitar o seu desaparecimento e preservar o ofício. Nos últimos doze anos, tinham encerrado doze pedreiras.

Environmental Indicators

The project's environmental indicators show distinctly low impacts throughout its lifecycle. Its embedded emissions total 304.67 kg CO_2/m^2, 59.4% less than the average value of 750 kg CO_2/m^2 for all building types, according to a 2010 study by the environmental consultants Societat Orgànica for the Catalan Building Technology Institute (ITeC), thereby avoiding the emission of 257,810.44 kg of CO_2. The combined heating and cooling demand is just 4.8 kWh/m^2, 84% below the threshold for "passive house" compliance (15 + 15 kWh/m^2·year), making the emissions associated with energy consumption over the building's lifespan just 0.85 kg CO_2/m^2·year and representing a total annual saving of 2,192.57 kg of CO_2. The waste generated during the works moreover amounted to just 20.11 tonnes (0.03 t/m^2), 50% less than the amount estimated for an equivalent conventional building. Finally, the flats' water use is 88 liters per person per day, 30% less than the average level recorded

Indicadores ambientales

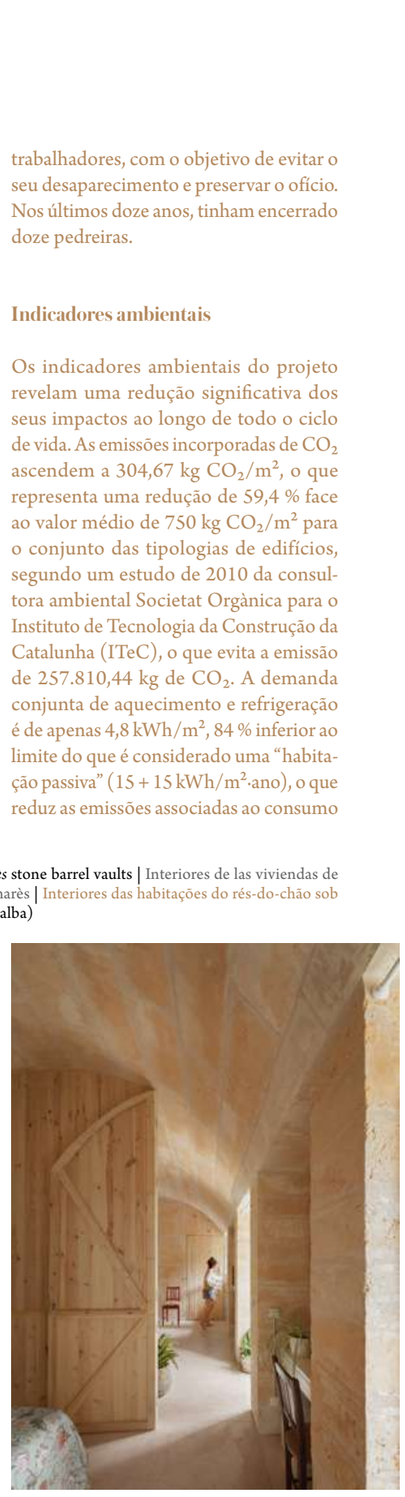
Los indicadores ambientales del proyecto ponen de manifiesto una reducción significativa de sus impactos a lo largo de todo el ciclo de vida. Las emisiones embebidas de CO_2 ascienden a 304,67 kg CO_2/m^2, lo que supone una reducción del 59,4 % respecto al valor medio de 750 kg CO_2/m^2 para el conjunto de las tipologías edificatorias, según un estudio de 2010 de la consultora ambiental Societat Orgànica para el Instituto de Tecnología de la Construcción de Cataluña (ITeC), lo que evita la emisión de 257.810,44 kg de CO_2. La demanda conjunta de calefacción y refrigeración es de tan solo 4,8 kWh/m^2, un 84 % inferior al límite de la considerada como "vivienda pasiva" (15 + 15 kWh/m^2·año), lo que reduce las emisiones asociadas al consumo energético durante la vida útil del edificio a 0,85 kg CO_2/m^2·año y supone un ahorro anual total de 2.192,57 kg de CO_2. Asimismo, la generación de residuos durante la fase de obra fue de 20,11 toneladas (0,03 t/m^2), un 50 % menos que la estimada para un edificio equivalente convencional. Final-

Indicadores ambientais

Os indicadores ambientais do projeto revelam uma redução significativa dos seus impactos ao longo de todo o ciclo de vida. As emissões incorporadas de CO_2 ascendem a 304,67 kg CO_2/m^2, o que representa uma redução de 59,4 % face ao valor médio de 750 kg CO_2/m^2 para o conjunto das tipologias de edifícios, segundo um estudo de 2010 da consultora ambiental Societat Orgànica para o Instituto de Tecnologia da Construção da Catalunha (ITeC), o que evita a emissão de 257.810,44 kg de CO_2. A demanda conjunta de aquecimento e refrigeração é de apenas 4,8 kWh/m^2, 84 % inferior ao limite do que é considerado uma "habitação passiva" (15 + 15 kWh/m^2·ano), o que reduz as emissões associadas ao consumo energético durante a vida útil do edifício para 0,85 kg de CO_2/m^2·ano e representa uma poupança anual total de 2.192,57 kg de CO_2. Além disso, a produção de resíduos durante a fase de construção foi de 20,11 toneladas (0,03 t/m^2), 50 % inferior à estimada para um edifício convencional equivalente. Por fim, o consumo de água

<>Ground-floor dwelling interiors beneath the *marès* stone barrel vaults | Interiores de las viviendas de planta baja bajo las bóvedas de cañón de piedra de marès | Interiores das habitações do rés-do-chão sob as abóbadas de berço de pedra de *marès* (Milena Villalba)



















<>Upper-floor interior beneath the timber roof structure | Interior de una vivienda de la planta superior bajo la estructura de madera de la cubierta | Interior de uma habitação do primeiro piso sob a estrutura de madeira da cobertura (Milena Villalba)

for the Balearic Islands according to the National Statistics Institute (INE).

Location: C/ Ses Monges 21, Santa Eugènia, Mallorca. Completion date: 2023. Architects: Carles Oliver Barceló and Xim Moyá Costa. Collaborators: Miquel Canyelles, Ernest Bordoy, Eduardo Yuste, Lara Fuster, Jaime Feliu, Aina Pons and Miquel Ramon. Structural engineering: Bernabeu Ingenieros S.L. Building services engineering: Miquel Ramon Oliver, Esteban Font Hocke and Toni Clar (Estudis d'Enginyeria). Environmental consultancy: Societat Orgànica S.C.C.L. Client: Instituto Balear de la Vivienda (IBAVI). Contractor: Obras y Construcciones Tomeu Rosselló S.L. Technical architects: Marco Menéndez, Joan Brunet and Alberto Rubido. Built area: 578.92 m². Photography: Milena Villalba (completed building and references), José Hevia and Carles Oliver (under construction).

mente, el consumo de agua se sitúa en 88 litros por persona y día, lo que representa una reducción del 30 % respecto al consumo medio registrado en las Islas Baleares, según datos del INE.

Situación: C/ Ses Monges 21, Santa Eugènia, Mallorca. Finalización de la obra: 2023. Autores: Carles Oliver Barceló y Xim Moyá Costa. Colaboradores: Miquel Canyelles, Ernest Bordoy, Eduardo Yuste, Lara Fuster, Jaime Feliu, Aina Pons y Miquel Ramon. Estructura: Bernabeu Ingenieros S.L. Instalaciones: Miquel Ramon Oliver, Esteban Font Hocke y Toni Clar (Estudis d'Enginyeria). Asesoría ambiental: Societat Orgànica S.C.C.L. Promotor: Instituto Balear de la Vivienda (IBAVI). Empresa constructora: Obras y Construcciones Tomeu Rosselló S.L. Arquitectos técnicos: Marco Menéndez, Joan Brunet y Alberto Rubido. Superficie construida: 578,92 m². Fotografías: Milena Villalba (obra terminada y referencias), José Hevia y Carles Oliver (obra en construcción).

situa-se nos 88 litros por pessoa por dia, o que representa uma redução de 30 % em relação ao consumo médio registado nas Ilhas Baleares, de acordo com dados do INE.

Localização: C/ Ses Monges 21, Santa Eugènia, Maiorca. Conclusão da obra: 2023. Arquitetos: Carles Oliver Barceló e Xim Moyá Costa. Colaboradores: Miquel Canyelles, Ernest Bordoy, Eduardo Yuste, Lara Fuster, Jaime Feliu, Aina Pons e Miquel Ramon. Engenharia de estruturas: Bernabeu Ingenieros S.L. Instalações: Miquel Ramon Oliver, Esteban Font Hocke e Toni Clar (Estudis d'Enginyeria). Consultoria ambiental: Societat Orgànica S.C.C.L. Promotor: Instituto Balear de la Vivienda (IBAVI). Empresa construtora: Obras y Construcciones Tomeu Rosselló S.L. Arquitetos técnicos: Marco Menéndez, Joan Brunet e Alberto Rubido. Área construída: 578,92 m². Fotografias: Milena Villalba (obra concluída e referências), José Hevia e Carles Oliver (obra em construção).

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Biographies | Biografías | Biografias

Carles Oliver Barceló

He graduated at the Barcelona University School of Architecture (2005) and is also a construction manager out of professional necessity. In his formative years he was awarded scholarships to study at the University of California, Los Angeles (UCLA), the Delft University of Technology (TU Delft), and the Madrid University School of Architecture (ETSAM). From 2007 to 2009 he shared a practice with Francisco Cifuentes. Since 2009 he has worked at the Balearic Islands Housing Institute (IBAVI), where he led the project Life Reusing Posidonia on the island of Formentera, and headed the Technical Department from 2019 to 2023. He has co-designed various pilot projects for publicly subsidized housing in Palma de Mallorca as well as restorations such as those at Sant Miquel 19, Can Lliro, and the Convent of Campos, currently in progress. His work has been recognized with various awards and exhibited both in Spain and abroad.

Arquitecto por la Escuela Técnica Superior de Arquitectura de Barcelona (2005) y maestro de obras por necesidad profesional. Durante sus estudios recibió becas para formarse en la Universidad de California en Los Ángeles (UCLA), la Universidad Técnica de Delft (TU Delft) y la Escuela Técnica Superior de Arquitectura de Madrid (ETSAM). Entre 2007 y 2009 compartió estudio con Francisco Cifuentes. Desde 2009 trabaja en el Instituto Balear de la Vivienda (IBAVI), donde ha dirigido el proyecto de adaptación al cambio climático Life Reusing Posidonia, en Formentera, y fue responsable del Departamento Técnico entre 2019 y 2023. Es coautor de diversos proyectos piloto de viviendas de protección pública en Palma y de intervenciones de rehabilitación como Sant Miquel 19, Can Lliro y el convento de Campos, actualmente en ejecución. Su obra ha recibido diversos premios y ha sido ampliamente publicada y expuesta tanto en España como en el extranjero.

Arquiteto formado pela Escola Técnica Superior de Arquitetura de Barcelona (2005) e mestre de obras por necessidade profissional. Durante os seus estudos, recebeu bolsas para estudar na Universidade da Califórnia em Los Angeles (UCLA), na Universidade Técnica de Delft (TU Delft) e na Escola Técnica Superior de Arquitetura de Madrid (ETSAM). Entre 2007 e 2009, partilhou um atelier com Francisco Cifuentes. Desde 2009, trabalha no Instituto Balear da Habitação (IBAVI), onde dirigiu o projeto de adaptação às alterações climáticas Life Reusing Posidonia, em Formentera, e foi responsável pelo Departamento Técnico entre 2019 e 2023. É coautor de vários projetos-piloto de habitação social em Palma e de intervenções de reabilitação, como Sant Miquel 19, Can Lliro e o convento de Campos, atualmente em execução. A sua obra recebeu diversos prémios e foi amplamente publicada e exposta, tanto em Espanha como no estrangeiro.

Xim Moyá Costa

He graduated at the Barcelona University School of Architecture (1989) and has worked for much of his career in the field of public housing at the Balearic Islands Housing Institute (IBAVI). In recent years his work has focused on sustainability, energy efficiency, and the recovery of traditional Balearic building techniques with the use of local materials and bioclimatic strategies aimed at reducing the environmental impact of construction.

Arquitecto por la Escuela Técnica Superior de Arquitectura de Barcelona (1989), ha desarrollado buena parte de su trayectoria profesional en el ámbito de la vivienda pública, en el Instituto Balear de la Vivienda (IBAVI). En los últimos años, su trabajo se ha centrado en la sostenibilidad, la eficiencia energética y la recuperación de las técnicas constructivas tradicionales de las Islas Baleares, mediante el empleo de materiales locales y estrategias bioclimáticas orientadas a reducir el impacto ambiental de la edificación.

Arquiteto formado pela Escola Técnica Superior de Arquitetura de Barcelona (1989), desenvolveu grande parte da sua carreira profissional na área da habitação pública, no Instituto Balear da Habitação (IBAVI). Nos últimos anos, o seu trabalho tem-se centrado na sustentabilidade, na eficiência energética e na recuperação das técnicas construtivas tradicionais das Ilhas Baleares, através da utilização de materiais locais e de estratégias bioclimáticas destinadas a reduzir o impacto ambiental da edificação.

Reconstruction of Quinta de Fundevila in Alvite, Cabeceiras de Basto, District of Braga

Reconstrucción de la Quinta de Fundevila en Alvite, Cabeceiras de Basto, Distrito de Braga

Reconstrução da Quinta de Fundevila em Alvite, Cabeceiras de Basto, Distrito de Braga

Fernando Cerqueira Barros

The Quinta de Fundevila farmstead is in the parish of Alvite within the municipality of Cabeceiras de Basto, district of Braga, fully integrated in the Baixo Minho cultural landscape of northern Portugal. The farm is situated on the lower slopes of a valley dominated by the imposing presence of Casa da Torre, a stately manor attributed to the Italian architect Nicolau Nasoni (1691-1773).

La Quinta de Fundevila se localiza en la parroquia de Alvite, municipio de Cabeceiras de Basto, distrito de Braga, plenamente integrada en el paisaje cultural y geográfico del Baixo Minho, en el norte de Portugal. Esta finca de producción y explotación agrícola se sitúa en la cota baja de un valle dominado visualmente por la imponente presencia de la Casa da Torre, obra de carácter señorial atribuida al arquitecto italiano Nicolau Nasoni (1691-1773).

A Quinta de Fundevila localiza-se na freguesia de Alvite, concelho de Cabeceiras de Basto, distrito de Braga, plenamente integrada na paisagem cultural e geográfica do Baixo Minho, no Norte de Portugal. Esta quinta de produção e exploração agrícola situa-se na cota baixa de um vale dominado visualmente pela imponente presença da Casa da Torre, obra de carácter senhorial atribuída ao arquiteto italiano Nicolau Nasoni (1691-1773).

< View of the raised granary and the secondary dwelling on entering Quinta de Fundevila from the south | Vista del hórreo y la casa secundaria al entrar desde el sur a la Quinta de Fundevila | Vista do espigueiro e da casa secundária à entrada da Quinta de Fundevila pelo sul



> Location of Quinta de Fundevila | Localización de la Quinta de Fundevila | Localização da Quinta de Fundevila (Google EarthTM)

Set in fertile alluvial farmland, Quinta de Fundevila consists of three distinct, complementary clusters: the main house, of the courtyard farmhouse type with closed geometry, built over several phases, plus an annex that housed winepresses and a cellar; the Casa dos Caseiros cluster, consisting of a cottage, a threshing house or barn, a threshing floor, and the associated raised granary; and finally a separate drying shed with a threshing floor, set apart on higher ground.

Implantada entre fértiles vegas agrícolas, la Quinta de Fundevila está constituida por tres núcleos edificados distintos y complementarios: la casa principal, caracterizada por una tipología de casa-patio de labor de geometría cerrada y con varias fases de evolución cronológica, junto a un edificio anexo que albergaba los lagares y la bodega; la Casa de los Caseros, conjunto compuesto por la vivienda, la casa de la era o pajar, la era y su correspondiente hórreo; y, finalmente, un secadero y una era autónomos, localizados en un plano topográfico más elevado y apartado de la finca.

Implantada entre férteis veigas agrícolas, a Quinta de Fundevila é constituída por três núcleos edificados distintos e complementares: a casa principal, caracterizada por uma tipologia de casa-pátio de lavoura de geometria fechada e com várias fases de evolução cronológica, juntamente com um edifício anexo que albergava os lagares e a adega; a Casa dos Caseiros, conjunto composto pela habitação, casa da eira ou palheiro, eira e o respetivo espigueiro associado; e, finalmente, um sequeiro e uma eira autónomos, localizados num plano topográfico mais elevado e afastado da quinta.



Aerial view of Quinta de Fundevila before and after reconstruction | Vista aérea de la Quinta de Fundevila antes y después de la reconstrucción | Vista aérea da Quinta de Fundevila antes e depois da reconstrução (1: Google EarthTM)



Architectural model of the Quinta de Fundevila complex | Maqueta arquitectónica del conjunto de la Quinta de Fundevila | Maqueta arquitetónica do conjunto da Quinta de Fundevila

When we started the project, all the buildings were ruined and overgrown. All that remained were the load-bearing walls of granite masonry, many of them crumbling and disintegrating, along with some remnants of timber from recent floor and roof collapses. These granite walls defined the physical and conceptual limits of our work.

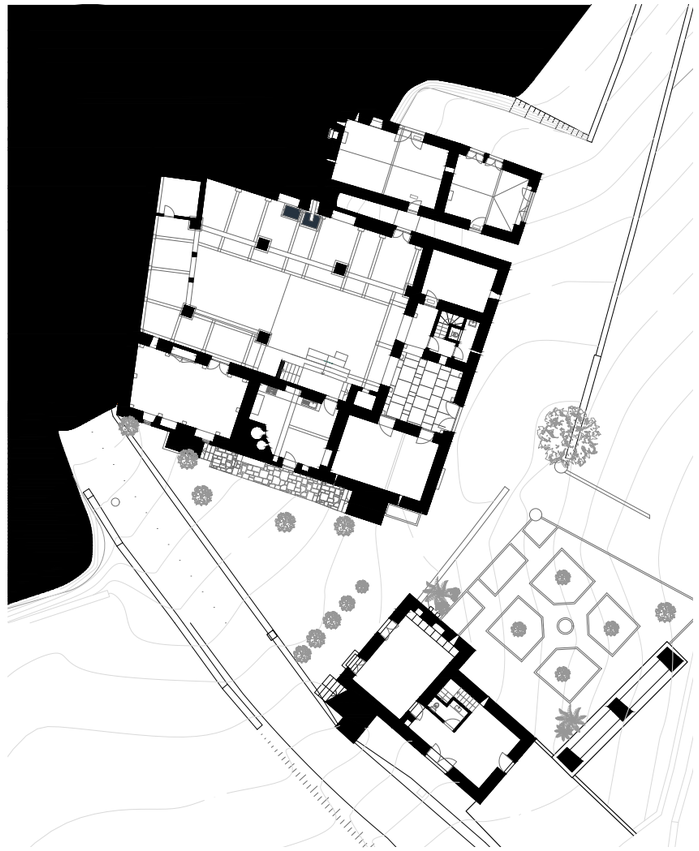
Setting out from the premise that one should not act upon or transform a reality that is not known, we deemed it essential as a methodology to conduct prior analyses and surveys so as to acquire a thorough knowledge of the extant structures. On the basis of what remained, and after some preliminary clearing of the site and detailed surveying, we sought to make sense of the ruins and their respective phases of development. Our chief aim was to gather as much information and material evidence as possible as a documentary and conceptual basis for rebuilding the ensemble and restoring its relationship with the surrounding landscape.

Cuando iniciamos el proyecto de intervención, la totalidad de los edificios se encontraba en estado de ruina, completamente invadida por la vegetación silvestre. Apenas permanecían en pie los sólidos muros de mampostería estructural de granito –muchos de ellos ya en avanzado proceso de degradación y colapso–, así como algunos restos de piezas de madera caídas como consecuencia de derrumbes recientes de los forjados y las cubiertas. Estos muros graníticos definían los límites físicos y conceptuales de nuestra intervención.

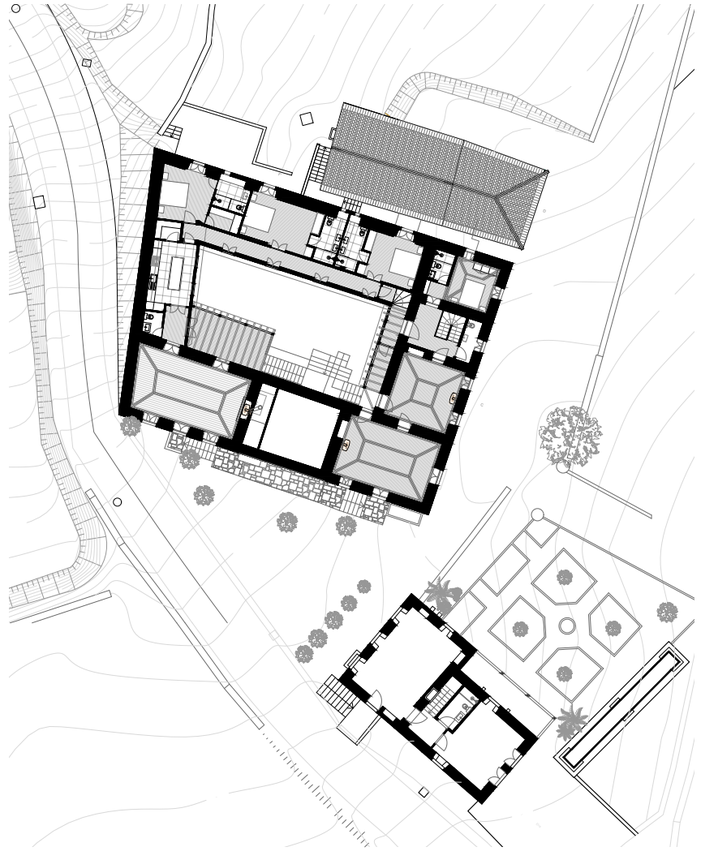
Partiendo del principio fundamental de que no se debe intervenir o transformar una realidad que no se conoce, juzgamos esencial, desde el punto de vista metodológico, desarrollar análisis y levantamientos previos que permitieran alcanzar un conocimiento riguroso de las estructuras conservadas. A partir de estas preexistencias, y tras una primera fase de desbroce general del terreno y de levantamiento detallado, iniciamos la lectura arquitectónica de los elementos y de sus respectivas fases constructivas. El

Quando iniciámos o projeto de intervenção, a totalidade dos edifícios encontrava-se em estado de ruína, completamente invadida pela vegetação espontânea. Permaneciam de pé praticamente apenas as sólidas paredes de alvenaria estrutural de granito –muitas delas já em adiantado processo de degradação e colapso –, bem como alguns vestígios de peças de madeira caídas em consequência de derrocadas recentes dos pavimentos e das coberturas. Estas paredes graníticas definiam os limites físicos e concetuais da nossa intervenção.

Partindo do princípio fundamental de que não se deve intervir ou transformar uma realidade que não se conhece, julgámos essencial, do ponto de vista metodológico, desenvolver análises e levantamentos prévios que permitissem alcançar um conhecimento rigoroso das estruturas conservadas. A partir destas preexistências, e após uma primeira fase de desmatação geral do terreno e de levantamento detalhado, iniciámos a leitura arquitetónica dos elementos e das suas respetivas fases construtivas. O objetivo primordial



Ground-floor plan of the complex | Planta baja del conjunto | Planta do rés do chão do conjunto



First-floor plan | Planta primera | Planta do primeiro andar

This analysis of the ruins allowed us to draw significant conclusions concerning the surviving heritage and its most notable values, and to deduce information about the site's history and development.

Notable in the main dwelling—the courtyard house—were the abutting interfaces between the various existing volumes, allowing us to infer a progressive development in a northeast–southwest direction around the east side of the courtyard, which would have been finally enclosed by the north wing. This growth occurred in various phases as of the sixteenth century—to which the earliest building, to the northeast, is dated—with successive extensions over the eighteenth and nineteenth centuries up to an addition to the north wing which may not have been completed. Among the outstanding extant features were two stone ovens in the central kitchen, accessible from both the courtyard and the outside, along with an interesting granite fountain built into one of the walls facing the center of the courtyard, as well as a set of stone corbels, pillars, and brackets clearly indicating the location, geometry, and dimensions of the old wooden galleries, which had disappeared.

El análisis de los vestigios permitió extraer conclusiones fundamentales sobre el patrimonio conservado, sus valores más significativos y la información que aportaba acerca de la historia y la evolución del inmueble.

En la vivienda principal, la casa-patio, destacan los enjarjes (*juntas de encosto*) entre los distintos volúmenes preexistentes, que nos permitieron deducir un crecimiento progresivo en sentido nordeste-suroeste, que bordeó el patio por el este y culminó con el cierre del ala norte. Este desarrollo se produjo en distintas fases desde el siglo XVI, período al que corresponde el núcleo primitivo situado al nordeste, con sucesivas ampliaciones durante los siglos XVIII y XIX, hasta una posible fase inacabada en el ala norte. Entre los elementos más representativos se conservaban los dos hornos de piedra de la cocina central –estancia con doble acceso, desde el interior del patio y desde el exterior–; la interesante fuente de granito integrada en uno de los muros orientados hacia el centro del patio; así como un conjunto de ménsulas, pilares y arranques estructurales de piedra que indicaban con claridad la ubicación, la geometría y las dimensiones de las antiguas galerías de madera, ya desaparecidas.

O objetivo primordial consistiu en recoger o maior número possível de dados, pistas e indícios materiais legados que servissem de base documental e concetual para o desenvolvimento do projeto de reconstrução e para a restituição da sua relação com a paisagem envolvente.

A análise dos vestígios permitiu retirar conclusões fundamentais sobre o património conservado, os seus valores mais significativos e a informação que fornecia sobre a história e a evolução do imóvel.

Na habitação principal, a casa-pátio, destacam-se as juntas de encosto entre os vários volumes preexistentes, que nos permitiram deduzir um crescimento progressivo no sentido nordeste-sudoeste, que contornou o pátio a nascente e culminou com o fecho da ala norte. Este desenvolvimento ocorreu em distintas fases desde o século XVI, período a que corresponde o núcleo primitivo situado a nordeste, com sucessivas ampliações durante os séculos XVIII e XIX, até uma possível fase inacabada na ala norte. Entre os elementos mais representativos conservavam-se os dois fornos de pedra da cozinha central –compartimento com duplo acesso, pelo interior do pátio e pelo exterior–; a interessante fonte de granito integrada numa das paredes orientadas para o centro do pátio; bem como um conjunto de mísulas, pilares e arranques estruturais de pedra que indicavam claramente a localização, a geometria e as dimensões das antigas varandas de madeira, já desaparecidas.





Sections | Secciones | Cortes

As regards the cottage, next to the threshing floor, its typological and organizational characteristics and spatial development were similarly discernible: the part facing the threshing ground and the raised granary proved to be the oldest and most vernacular, whereas the three-bay facade giving onto the small forecourt, forming an interface with main house, showed signs of being a more recent consolidation, likely dating from the early twentieth century.

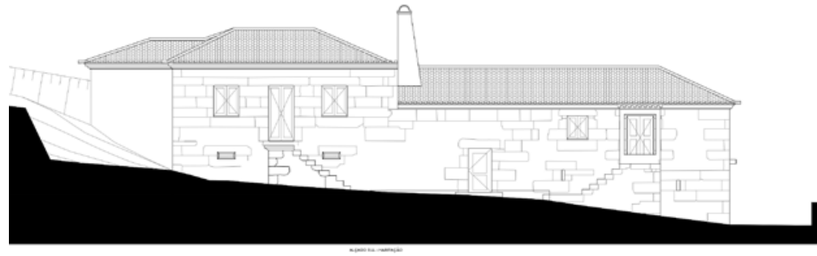
The project methodology followed our usual procedures for work on built heritage, in this case involving the building of new dwellings through the reconstruction and refurbishment of the ruined remains. The project's key premise was that the ensemble be rebuilt with absolute respect for the extant structures according to a hypothetical reconstruction of what the buildings would have been when fully occupied and materially and spatially complete. The reconstitution was to scrupulously follow the patterns of the region's building language, materials, and techniques, respecting the traditional spatiality, scales, and characters of these farmstead architectures of the Minho region, especially in the district of Basto.

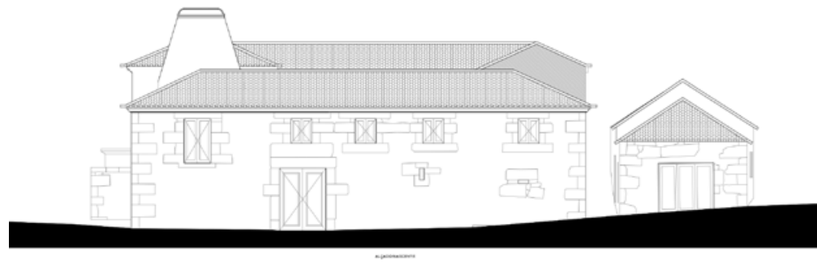
Por su parte, en la casa secundaria, junto a la era, fue igualmente posible reconocer la tipología, la organización y el desarrollo espacial: la sección orientada hacia la era y el hórreo se reveló como la más antigua y vernácula, mientras que la fachada de tres huecos orientada hacia el pequeño espacio de entrada –en relación directa con la casa principal– denotaba una intervención de consolidación más reciente, probablemente fechada en la primera mitad del siglo XX.

La metodología de proyecto e intervención siguió nuestros procedimientos habituales al trabajar sobre el patrimonio construido: el proyecto consistió en la reconstrucción de nuevas viviendas a partir de la recuperación y la rehabilitación de las ruinas existentes. El proyecto partió de una premisa fundamental: restituir el conjunto con absoluto respeto por las estructuras conservadas, a partir de una reconstrucción hipotética de lo que habrían sido estos inmuebles en su fase de máxima ocupación y plenitud material y espacial. Esta restitución procuró seguir escrupulosamente los patrones de lenguaje, los materiales y las técnicas constructivas de la región, con respeto por la organización del espacio, las escalas y los ambientes tradicionales característicos de estas arquitecturas vinculadas a las explotaciones agrícolas del Baixo Minho, en especial de la comarca de Basto.

Por sua vez, na casa secundária, junto à eira, foi igualmente possível reconhecer a tipologia, a organização e o desenvolvimento espacial: a secção voltada para a eira e para o espigueiro revelou-se a mais antiga e vernacular, enquanto a fachada de três vãos orientada para o pequeno espaço de entrada –em relação direta com a casa principal– denotava uma intervenção de consolidação mais recente, provavelmente datada da primeira metade do século XX.

A metodologia de projeto e de intervenção seguiu os nossos procedimentos habituais ao trabalhar sobre o património construído: o projeto consistiu na reconstrução de novas habitações a partir da recuperação e reabilitação das ruínas existentes. O projeto partiu de uma premissa fundamental: reconstituir o conjunto com absoluto respeito pelas estruturas conservadas, a partir de uma reconstrução hipotética do que teriam sido estes imóveis na sua fase de máxima ocupação e plenitude material e espacial. Esta reconstituição procurou seguir escrupulosamente os padrões de linguagem, os materiais e as técnicas construtivas da região, com respeito pela organização do espaço, pelas escalas e pelos ambientes tradicionais característicos destas arquiteturas ligadas às explorações agrícolas do Baixo Minho, em especial da região de Basto.





Elevations | Alzados | Alçados

We substantiated the design by sifting through the rubble for indicative remnants or fragments of wood that might tell us about the former colors, materials, dimensions, and details of woodwork. Our research also included painstaking fieldwork, including visits to nearby villages, houses, and farms with similar architectural characteristics and searching through books on folk architecture and in regional photographic archives.

On the principle that "a copy is never just a copy," and taking ideas from the farmstead remnants, we created buildings that establish a relationship of continuity, not disruption, with precedent. The reconstruction took shape through proposals of vernacular inspiration devised in close collaboration with the experienced local craftspeople—stonemasons and carpenters—who carried out the work, thereby helping preserve building knowledge and languages handed down over generations.

Para fundamentar el diseño, buscamos entre los escombros antiguos restos y fragmentos de piezas de madera que pudieran proporcionar indicaciones precisas sobre colores, materiales, dimensiones y detalles constructivos. Esta investigación se amplió con un minucioso trabajo de campo, que incluyó la visita a diversas aldeas, casas y fincas de la región con características arquitectónicas similares, así como la búsqueda en libros de arquitectura popular y archivos fotográficos regionales.

Partiendo del principio de que "copiar nunca es copiar", e inspirados por los vestigios existentes, creamos edificios que establecen una relación de continuidad, y no de ruptura, con lo existente. La solución se materializó a partir de propuestas de inspiración vernácula, desarrolladas en estrecha colaboración con experimentados artesanos locales –canteros y carpinteros–, que ejecutaron la obra y contribuyeron a preservar saberes y lenguajes transmitidos a lo largo de generaciones.

Para fundamentar o desenho, pesquisámos entre os escombros antigos vestígios e fragmentos de peças de madeira que nos pudessem fornecer indicações precisas sobre cores, materiais, dimensões e pormenores construtivos. Esta investigação foi complementada por um atento trabalho de campo, que incluiu a visita a diversas aldeias, casas e quintas da região com características arquitetónicas similares, bem como a pesquisa em livros de arquitetura popular e arquivos fotográficos regionais.

Partindo do princípio de que "copiar nunca é copiar", e inspirados pelos vestígios existentes, criámos edifícios que estabelecem uma relação de continuidade, e não de rutura, com o existente. A solução foi materializada a partir de propostas de inspiração vernácula, desenvolvidas em estreita colaboração com experientes artesãos locais –pedreiros e carpinteiros–, que executaram a obra e contribuíram para a preservação de saberes e linguagens transmitidos ao longo de gerações.





Reconstruction of the granite masonry walls | Reconstrucción de los muros de mampostería de granito | Reconstrução das paredes de alvenaria de granito

A key role in the supervision of the work and use of local resources was played by the client, Bernardo Pereira Leite, whose enthusiastic engagement in every project phase was of the essence. His constant involvement in the site's day-to-day progress, in seeking out materials still obtainable in the region, in selecting technical solutions, and in identifying and involving local master craftspeople resulted in a real dialog and rapport between the craftspeople, the project team, and the owner, and gave the worksite a collaborative, artisanal atmosphere.

We sought to achieve a functional distribution consistent both with the historical spaces we had retraced and the needs of modern life. The regional-style kitchen was kept in its original position, with the two rebuilt ovens. Outside, a monumental chimney, designed with the characteristic profiles and proportions of other local chimneys, is also consistent with the materiality and detailing typical of the Basto district and the Tâmega valley. The oldest part of the house, to the south and southeast, corresponding to the sixteenth-century suite, was given over to a living room and library and the main means of access. This area, with an independent entrance via the southwest wing, retains a secluded feel and a distinct historical character. The large space to the north of the kitchen was rebuilt as a dining hall, with a wooden *masseira* (dough trough) ceiling, and was linked to a large exterior covered gallery, with stairs that lead directly to the kitchen. This arrangement facilitates a smooth connection between the interior and the courtyard.

In the middle of the yard, connecting the house's convivial area with the more private quarters, a kitchen of a more

En este proceso de seguimiento de obra y de puesta en valor de los recursos locales, desempeñó un papel determinante el propio promotor, Bernardo Pereira Leite, cuya implicación activa y apasionada en todas las fases de los trabajos fue decisiva. Su participación constante en el día a día de la obra, en la prospección y búsqueda de materiales aún disponibles en la región, en la selección de las mejores soluciones técnicas y en la identificación y la movilización de maestros artesanos locales permitió establecer un verdadero diálogo y una estrecha complicidad entre el equipo de proyecto, la propiedad y los artesanos, y devolvió al tajo su dimensión gremial, artesanal y colectiva.

Se buscó una distribución funcional coherente tanto con la lectura de los espacios históricos como con las exigencias de la vida contemporánea. La cocina de carácter regional se mantuvo exactamente en su ubicación original, donde se encuentran los dos hornos reconstruidos. Hacia el exterior, una monumental chimenea, concebida a partir de las formas y proporciones características de las chimeneas tradicionales de la zona, respeta asimismo los materiales y los detalles propios de la edificación de la comarca de Basto y del valle del Tâmega. La parte más antigua del inmueble, situada al sur y sureste y correspondiente a las estancias del siglo XVI, se destinó al salón de estar y la biblioteca, además de albergar los principales accesos interiores. Esta zona, dotada de un acceso independiente por el ala suroeste, conserva una atmósfera de gran recogimiento y un marcado carácter histórico. El gran espacio situado al norte de la cocina se reconstruyó como comedor principal, con un techo de madera de tipo *masseira* (artesa o artesonado), y se vinculó a una amplia galería exterior cubierta, dotada de una escalinata que conecta directamente con la cocina. Esta disposición favorece una relación fluida entre el interior y el patio.

Neste processo de acompanhamento da obra e de valorização dos recursos locais, desempenhou um papel determinante o próprio dono de obra, Bernardo Pereira Leite, cujo envolvimento ativo e apaixonado em todas as fases dos trabalhos foi decisivo. A sua participação constante no quotidiano da obra, na prospeção e pesquisa de materiais ainda disponíveis na região, na seleção das melhores soluções técnicas e na identificação e mobilização de mestres artesãos locais permitiu estabelecer um verdadeiro diálogo e uma estreita cumplicidade entre a equipa de projeto, o proprietário e os artesãos, devolvendo ao estaleiro a sua dimensão corporativa, artesanal e coletiva.

Procurou-se uma distribuição funcional coerente tanto com a leitura dos espaços históricos como com as exigências da vida contemporânea. A cozinha de caráter regional foi mantida exatamente na sua localização original, onde se encontram os dois fornos reconstruídos. Para o exterior, uma monumental chaminé, concebida a partir das formas e proporções características das chaminés tradicionais da zona, respeita igualmente os materiais e os pormenores próprios do edificado da região de Basto e do vale do Tâmega. A parte mais antiga do imóvel, situada a sul e sudeste e correspondente aos compartimentos do século XVI, foi destinada à sala de estar e à biblioteca, além de albergar os principais acessos interiores. Esta zona, dotada de uma entrada independente pela ala sudoeste, conserva uma atmosfera de grande recolhimento e um marcado carácter histórico. O grande espaço localizado a norte da cozinha foi reconstruído como sala de jantar principal, com um teto de madeira do tipo masseira, e articulado com uma ampla varanda exterior coberta, dotada de uma escadaria que estabelece uma ligação direta à cozinha. Esta disposição favorece uma relação fluida entre o interior e o pátio.



Manual lifting of granite stones during construction | Elevación manual de piedras de granito durante la obra | Elevação manual de pedras de granito durante a obra





View of the farmstead from the road before and after reconstruction | Vista del conjunto desde la carretera antes y después de la reconstrucción | Vista do conjunto a partir da estrada antes e depois da reconstrução

functional style was built in the former barn space. Finally, in the whole north area, totally ruined owing to the more perishable materials used originally or possibly to this wing not having been completed, the choice was made to add a new volume with a more rational and self-contained layout, with three private suites each with its own bathroom.

En la zona central del patio, que conecta el área social con la zona más privada de la vivienda, se dispuso una cocina de carácter más funcional en el espacio que antiguamente había ocupado el pajar. Por último, en toda el área norte, completamente arruinada debido al empleo original de materiales más perecederos –o, posiblemente, por corresponder a una fase de obras que quedó inacabada–, se decidió incorporar un nuevo volumen organizado de manera más racional y contenida, en el que se instalaron tres suites privadas con cuartos de baño propios.

Na zona central do pátio, que liga a área social à zona mais privada da habitação, localizou-se uma cozinha de caráter mais funcional, no espaço anteriormente ocupado pelo palheiro. Por fim, em toda a área norte, completamente arruinada devido à utilização original de materiais mais perecíveis –ou, possivelmente, por corresponder a uma fase de obras que ficou inacabada–, decidiu-se incorporar um novo volume de organização espacial mais racional e contida, onde se instalaram três suites privadas com casas de banho próprias.

For each of these phases and sectors, different construction details and materials were defined in keeping with the ensemble's development over the years and spatial hierarchy. Taking cues from the existing granite corbels, we rebuilt the wooden gallery in the courtyard with traits characteristic of extended balconies and verandas in the Basto district. The living room gallery, larger and linked to a reception room, features a wooden balustrade crafted so as to replicate a historic example found locally. The functional kitchen area, occupying the former barn space, is clad with wooden slats (*ripado*), and the bedroom wing, in place of the more recent extension originally built of perishable materials, is finished with whitewashed slate shingles, a common style for sidings on such volumes in this region's architecture.

In the relatively small cottage (Casa de los Caseros), the spatial logic and material hierarchy were resolved more simply and intuitively. Most notable was the building of a new wooden gallery taking advantage of the L-shaped recess in the ground plan, flanked and sheltered by the granary. The gallery opens out over a new garden designed for the space between the main house, this secondary dwelling, and the threshing floor.

Form, function, materiality, and language are thus conjoined, allowing the hierarchy of spaces and the various phases of development to be clearly traced. This is a hypothetical reconstitution conceived as new traditional construction, executed as rigorously as possible and rooted in the regional architecture from which it springs. We worked chiefly with natural materials: granite, wood, lime, and clay tiles. The salvaging and building processes were carried out in phases by small local teams and with close cooperation between the architect and client.

Para cada una de estas fases y sectores del edificio se definieron detalles y materiales constructivos distintos, de acuerdo con la lógica de su evolución cronológica y la jerarquía de los espacios. A partir de la información proporcionada por las ménsulas de granito preexistentes, reconstruimos la galería de madera del patio de acuerdo con los rasgos característicos del tipo de solana o galería propio de las tierras de Basto. La galería del salón de estar, de mayores dimensiones y vinculada a una sala de representación, presenta una balaustrada de madera diseñada como réplica de un ejemplar histórico identificado en la región. La zona de la cocina funcional, correspondiente al antiguo pajar, está revestida exteriormente con lamas (*ripado*) de madera, mientras que el ala de los dormitorios, asociada a la ampliación más reciente y construida originalmente con materiales estructurales más perecederos, presenta un revestimiento de escamas de pizarra enjalbegadas en blanco, una solución constructiva y estética habitual en este tipo de volúmenes de la arquitectura regional.

En la Casa de los Caseros, de menores dimensiones, esta lógica espacial y la jerarquización de los materiales se resolvieron de forma más sencilla e intuitiva. Destaca la construcción de una nueva galería de madera que aprovecha el espacio resguardado por la planta en L de la casa y queda protegida y flanqueada por el hórreo. La galería se abre hacia el nuevo jardín que proyectamos en el espacio comprendido entre la casa principal, esta vivienda secundaria y la era.

De este modo, forma, función, materia y lenguaje se complementan y permiten una lectura clara de la jerarquía de los espacios y de las distintas fases de construcción del inmueble. Se trata de una restitución hipotética concebida como una nueva construcción tradicional, lo más rigurosa posible, cimentada en las raíces de la arquitectura regional de la que procede. Trabajamos mayoritariamente con materiales naturales –granito, madera, cal

Para cada uma destas fases e setores do edifício, definiram-se detalhes e materiais construtivos distintos, de acordo com a lógica da sua evolução cronológica e a hierarquia dos espaços. A partir da informação fornecida pelas mísulas de granito preexistentes, reconstituímos a varanda de madeira do pátio, de acordo com as características da tipologia de varanda própria das terras de Basto. A varanda do salão de estar, de maiores dimensões e ligada a uma sala de aparato e representação, apresenta uma balaustrada em madeira desenhada como réplica de um exemplar histórico identificado na região. A zona da cozinha funcional, correspondente ao antigo palheiro, surge revestida exteriormente a ripado de madeira, enquanto a ala dos quartos, associada à ampliação mais recente, originalmente construída com materiais estruturais mais perecíveis, apresenta-se revestida em escamas de ardósia, caiadas a branco, uma solução construtiva e estética habitual neste tipo de volumes da arquitetura regional.

Na Casa dos Caseiros, de menores dimensões, esta lógica espacial e a hierarquização dos materiais resolveram-se de forma mais simples e intuitiva. Destaca-se a construção de uma nova varanda de madeira que aproveita o espaço resguardado pela planta em L da casa e fica protegida e ladeada pelo espigueiro. A varanda abre-se para o novo jardim que projetámos no espaço compreendido entre a casa principal, esta habitação secundária e a eira.

Deste modo, forma, função, matéria e linguagem complementam-se e permitem uma leitura clara da hierarquia dos espaços e das diferentes fases de construção do imóvel. Trata-se de uma reconstituição hipotética concebida como uma nova construção tradicional, o mais rigorosa possível, alicerçada nas raízes da arquitetura regional de que procede. Trabalhámos maioritariamente com materiais naturais –granito, madeira, cal e telha–. O processo de recuperação e as obras decorreram por fases, a cargo de pequenas equi-



< View of the courtyard from the entrance, looking west, before and after reconstruction | Vista del patio desde la entrada hacia el oeste antes y después de la reconstrucción | Vista do pátio a partir da entrada, em direção a oeste, antes e depois da reconstrução





> View of the courtyard looking east before, during and after reconstruction | Vista del patio hacia el este antes, durante y después de la construcción | Vista do pátio em direção a este antes, durante e depois da reconstrução





The works began with a general clearing of the site, consolidation of surviving walls, and rebuilding of the crumbling stonemasonry. The local masons used traditional techniques even for manually hoisting granite ashlars and rubble stones. Some cracked stones were consolidated or newly dressed, with profiles and textures matching the originals.

y teja–. El proceso de recuperación y las obras se desarrollaron por fases, a cargo de pequeños equipos locales y en estrecha colaboración entre el arquitecto y el promotor.

El proyecto se inició con la limpieza general del conjunto, la consolidación de los muros conservados y la reconstrucción de las fábricas de piedra que se habían derrumbado. Los canteros locales recurrieron incluso a técnicas tradicionales para la elevación manual de sillares y mampuestos de granito. Algunas piezas fracturadas se consolidaron o se labraron de nuevo, con el mismo despiece y textura que las originales.

pas locais e em estreita colaboração entre o arquiteto e o dono de obra.

O projeto iniciou-se com a limpeza geral do conjunto, a consolidação das paredes conservadas e a reconstrução das alvenarias de pedra que haviam ruído. Os pedreiros locais recorreram, inclusivamente, a técnicas tradicionais para a elevação manual de silhares e pedras de alvenaria de granito. Alguns elementos em pedra que se encontravam fraturados foram reparados e recompostos, ou em alguns casos substituídos por novas peças, de similar dimensão e textura







Next came structural carpentry work for rebuilding the floors and roofs, along with the making of decorative items and details designed in keeping with research into traditional models and with a strict hierarchy. This is especially evident in the various tail profiles of the beams in porches and galleries and the eaves, as well as in the varied joinery and the patterns of the railings and balustrades.

A continuación, avanzaron los trabajos de carpintería estructural para la ejecución de los forjados y las cubiertas, así como la fabricación de los elementos decorativos y de detalle, diseñados a partir de la investigación de modelos tradicionales y de acuerdo con una rigurosa jerarquía. Esta resulta especialmente visible en los distintos perfiles de remate de las vigas de porches y galerías, junto a los aleros, así como en la modulación de las carpinterías de taller y en el diseño de antepechos y balaustradas.

Seguidamente, avançaram os trabalhos de carpintaria estrutural para a execução de pavimentos e coberturas, bem como o fabrico dos elementos de pormenor, desenhados com base na investigação de modelos tradicionais e de acordo com uma rigorosa hierarquia decorativa. Esta é especialmente visível nos distintos perfis de remate dos barrotes de suporte do telhado, na área dos alpendres e varandas, nomeadamente no pormenor de remate dos beirados, bem como na modulação das caixilharias e no desenho das guardas e balaustradas.

For large-scale new elements, such as the monumental chimney, or in the wholly rebuilt volumes, such as the bedroom wing, mixed solutions were used, with concrete structures and voided slabs combined with granite masonry and timber roof framing.

En los elementos nuevos de gran dimensión, como la monumental chimenea, o en los volúmenes reconstruidos en su totalidad, como el ala de los dormitorios, se recurrió a soluciones mixtas, con estructuras de hormigón y forjados aligerados, complementadas con fábricas de mampostería de granito y estructuras de cubierta de madera.

Nos elementos novos de grande dimensão, como a monumental chaminé, ou nos volumes reconstruídos integralmente, como a ala dos quartos, recorreu-se a soluções mistas com estruturas de betão e lajes aligeiradas, complementadas por alvenarias de granito e estruturas de cobertura em madeira.





< View of the courtyard looking south before, during and after reconstruction | Vista del patio hacia el sur antes, durante y después de la construcción | Vista do pátio em direção a sul antes, durante e depois da reconstrução

> Remains of the stone buildings before reconstruction and timber roof framing during construction | Restos de las construcciones de piedra antes de la reconstrucción y estructura de madera de la cubierta durante la obra | Vestígios das construções de pedra antes da reconstrução e estrutura de madeira da cobertura durante a obra

We scrupulously maintained the spatial logic and character of Minho farmhouses: austere and rugged on the outside, with bare granite walls of large regular blocks; cozy, light, and smooth on the inside, with walls plastered and limewashed.

Mantuvimos escrupulosamente la lógica espacial y ambiental de las casas de labor minhotas: austeras y duras hacia el exterior, con sus muros de granito visto construidos con grandes bloques regulares; acogedoras, ligeras y suaves hacia el interior, con sus muros revocados y pintados con cal.

Mantivemos escrupulosamente a lógica espacial e ambiental das casas de lavoura minhotas: austeras e duras para o exterior, com as suas paredes de granito à vista, construídas com grandes blocos regulares; acolhedoras, leves e suaves para o interior, com as suas paredes rebocadas e pintadas com cal.





< Ruined stone building before reconstruction and timber roof structure during construction | Edificio de piedra en ruinas antes de la reconstrucción y estructura de madera de la cubierta durante la obra | Edifício de pedra em ruínas antes da reconstrução y estrutura de madeira da cobertura durante a obra

> 1. Exposed timber roof structure in the restored interiors 2. Living room with traditional timber ceiling 3. Interior with a painted wooden *masseira* (dough trough) ceiling | 1. Estructura de madera vista de las cubiertas en los interiores rehabilitados 2. Salón con cubierta de madera 3. Interior con techo de tipo *masseira* (artesa) pintado | 1. Estrutura de madeira das coberturas à vista nos interiores reabilitados 2. Sala de estar com teto tradicional de madeira 3. Interior com teto de masseira



1



2



3

In the main rooms, circulation areas, and kitchens, the interior finishes reproduce the materiality and codes of local building tradition. Nationally sourced pinewood floorboards were used along with painted wooden baseboards and wooden planks between roof beams, as well as traditional *masseira* inverted dough-trough ceilings in the library and dining hall. The more functional areas, by contrast, such as the bathrooms, kitchen, and some bedrooms, were given neutral contemporary finishes, though still with natural materials, such as pinewood flooring or polished Lioz limestone for wet surfaces.

The main doors and interior shutters were executed in painted wood with traditional designs. The windows, chosen with a view to containing costs, were of lacquered aluminum joinery of the same red hue as the other joinery and exterior woodwork.

A vital part of this process of characterizing spaces was the researching and recovery of traditional colors and pigments. With reference to traces found in the ensemble and other regional examples, historical color tones—such as traditional oxblood red, ochers, blues, browns, and greens—were identified for use on beams, planks, and doors as well as in the limewash and plaster coatings of the walls facing the courtyard.

The rebuilding of Quinta de Fundevila was not a mere nostalgic reconstruction of the past but an opportunity to invent a new ensemble on the ruins of the old one. It was an exercise of invention based on rigorous historical details, concrete material evidence, and a care-

En los salones principales, las zonas de circulación y las cocinas, los acabados interiores mantienen los materiales y lenguajes propios de la tradición constructiva local. Se utilizaron tarimas de madera de pino nacional, rodapiés de madera pintada y entablados de madera en los entrevigados de las cubiertas, además de techos tradicionales de tipo *masseira* (artesa) en la biblioteca y el comedor principal. Por su parte, las áreas más funcionales, como los cuartos de baño, la cocina y algunos dormitorios, presentan acabados más neutros y actuales, aunque mantienen el uso de materiales naturales, como la madera de pino en los pavimentos y la piedra de Lioz pulida en las superficies húmedas.

Las puertas principales y las fraileras o contraventanas interiores se ejecutaron en madera pintada, con un diseño tradicional. Para las ventanas se optó, por razones de contención de costes, por carpinterías de aluminio lacado en el mismo tono rojo empleado en las restantes carpinterías y elementos exteriores de madera.

En este proceso de cualificación de los ambientes, desempeñó un papel determinante la investigación y la recuperación de colores y pigmentos tradicionales. A partir de vestigios identificados en el propio conjunto y en otros ejemplos de la región, se recuperaron tonalidades históricas –como el tradicional rojo "sangre de buey", los ocres, azules, castaños y verdes–, que se aplicaron en carpinterías, puertas y entablados, así como en los revestimientos enjalbegados y enlucidos de los paramentos orientados al patio.

La reconstrucción de la Quinta de Fundevila no representó una mera restitución nostálgica del pasado, sino la oportunidad

Nos salões principais, nas áreas de circulação e nas cozinhas, os acabamentos interiores mantêm os materiais e as linguagens próprios da tradição construtiva local. Utilizou-se soalho de madeira de pinho nacional, rodapés de madeira pintada e forros de madeira entre as vigas das coberturas, além de tetos tradicionais do tipo masseira na biblioteca e na sala de jantar principal. Por sua vez, as áreas mais funcionais, como os quartos de banho, a cozinha e alguns quartos, apresentam acabamentos mais neutros e atuais, embora mantenham a utilização de materiais naturais, como o soalho de pinho e a pedra de Lioz polida nas superfícies húmidas.

As portas principais e as portadas interiores foram executadas em madeira pintada de desenho tradicional. Para as caixilharias das janelas, optou-se, por razões de contenção de custos, pela aplicação de caixilharia de alumínio termolacado no mesmo tom de vermelho utilizado nas restantes carpintarias e elementos exteriores de madeira.

Neste processo de qualificação dos ambientes, desempenhou um papel determinante a pesquisa e recuperação de cores e pigmentos tradicionais. A partir de vestígios identificados no próprio conjunto e noutros exemplos da região, recuperaram-se tonalidades históricas –como o tradicional vermelho "sangue de boi", os ocres, azuis, castanhos e verdes–, que foram aplicadas nas caixilharias, portas e forros de madeira, bem como nos revestimentos caiados e rebocados das paredes voltadas para o pátio.

A reconstrução da Quinta de Fundevila não representou uma mera reconstituição nostálgica do passado, mas antes a oportu-



< Wooden gallery overlooking the courtyard, providing access to the main dining room | Galería de madera abierta al patio que da acceso al comedor principal | Varanda de madeira aberta para o pátio que dá acesso à sala de jantar principal

> 1. Detail of the red-painted wooden joinery, with a traditional handcrafted fastening locally known as *Taramelo or Caravelho* 2. Stone steps and traditional wooden door leading to the former kitchen | 1. Detalle de la carpintería de madera pintada de rojo con una pieza de cierre artesanal conocida localmente como *taramelo o caravelho* 2. Escalones de piedra y puerta tradicional de madera de acceso a la cocina antigua | 1. Pormenor da caixilharia de madeira pintada de vermelho, peça de fecho, artesanal, localmente designada de Taramelo ou Caravelho 2. Degraus de pedra e porta tradicional de madeira de acesso à antiga cozinha







Covered wooden gallery overlooking the garden and the main house | Galería cubierta de madera que mira al jardín y a la casa principal | Varanda coberta de madeira voltada para o jardim e para a casa principal

ful, informed reading of the existing complex. The project thus showed that heritage restoration and the practice of traditional architecture require knowledge, sensitivity, and creativity, for in situations such as these, repeating is never repetitive and rebuilding is never mere reproduction. Picking up the thread of time to recover traditional rationales that have become partially lost involves an interpretative and creative endeavor able to restore missing links and to join the various parts of a puzzle continually evolving.

The most human and gratifying aspect of the project is that the ensemble has been fully returned to life: today it is lived in again and keeps alive the history, experience, and memory accumulated over the years. The client himself played a key role in this restoration of life to the buildings by decorating the spaces with furnishings, artworks, and objects linked to his family's memory, thereby materializing an intangible bond and a temporal continuity with a dwelling and a place that belonged to his forebears for generations.

The power, honesty, and authenticity of this approach were reflected recently in a deeply moving experience. Two octogenarian siblings who were born and raised on the farm made a visit, aware that it had been rebuilt, with the idea of holding a family gathering there. On entering the central courtyard they were moved to tears as they immediately recognized—from the scale, lighting, coloring, and wooden galleries—the old house of their younger days. This living, spontaneous testimony seems to confirm that our work effectively recovered the former structures, with their memory and the key pieces of a collective identity that architecture helps preserve and transmit.

de inventar una nueva casa sobre las ruinas de la antigua. Este ejercicio de invención partió de datos históricos rigurosos, de indicios materiales concretos y de una lectura atenta y fundamentada del conjunto edificado. La intervención demuestra así que la rehabilitación del patrimonio y la práctica de la arquitectura tradicional exigen siempre conocimiento, sensibilidad y creatividad, pues, en situaciones como ésta, repetir nunca es repetir y reconstruir nunca es sólo reconstruir. Retomar el hilo del tiempo y recuperar lógicas tradicionales en parte perdidas exige una labor de interpretación y creación capaz de recomponer los eslabones que faltan y unir las diferentes piezas de un puzle en constante transformación.

La dimensión más humana y gratificante de esta obra reside en que el conjunto edificado ha sido plenamente devuelto a la vida: hoy vuelve a estar habitado y mantiene viva la historia, las experiencias y la memoria acumuladas a lo largo del tiempo. El propio promotor desempeñó un papel central en esta recuperación de la vida de la casa, al incorporar a sus espacios piezas de mobiliario, obras de arte y objetos vinculados a la memoria familiar. De este modo, reforzó el vínculo inmaterial y la continuidad temporal con la casa y con un lugar que había pertenecido a sus antepasados durante generaciones.

La fuerza, la verdad y la autenticidad de este enfoque quedaron reflejadas en un episodio reciente y profundamente emocionante. Dos hermanos octogenarios que habían nacido y crecido en la finca visitaron el inmueble, conscientes de que había sido reconstruido, con la intención de celebrar allí un encuentro familiar. Al entrar en el patio central se emocionaron al reconocer de inmediato, en la escala, la luz, el color y las galerías de madera, la vieja casa de su infancia y juventud. Este testimonio vivo y espontáneo confirma, de algún modo, que el trabajo realizado consiguió recuperar la antigua edificación, su memoria y los fragmentos fundamentales de una identidad colectiva que la arquitectura contribuye a preservar y transmitir.

nidade de inventar uma nova casa sobre as ruínas da antiga. Esse exercício de invenção partiu de dados históricos rigorosos, de indícios materiais concretos e de uma leitura atenta e fundamentada do conjunto edificado. A intervenção demonstra, assim, que a reabilitação do património e a prática da arquitetura tradicional exigem sempre conhecimento, sensibilidade e criatividade, pois, em situações como esta, repetir nunca é repetir e reconstruir nunca é apenas reconstruir. Retomar o fio do tempo e recuperar lógicas tradicionais em parte perdidas exige um trabalho de interpretação e criação capaz de recompor os elos que faltam e unir as diferentes peças de um puzzle em constante transformação.

A dimensão mais humana e gratificante desta obra reside no facto de o conjunto edificado ter sido plenamente devolvido à vida: hoje encontra-se novamente habitado e mantém vivas a história, as vivências e a memória acumuladas ao longo do tempo. O próprio dono de obra assumiu um papel central nesta recuperação da vida da casa, ao integrar nos seus espaços peças de mobiliário, obras de arte e objetos ligados à memória familiar. Deste modo, reforçou o vínculo imaterial e a continuidade temporal com a casa e com um lugar que pertencera aos seus antepassados durante gerações.

A força, a verdade e a autenticidade desta abordagem ficaram refletidas num episódio recente e profundamente emocionante. Dois irmãos octogenários que haviam nascido e crescido na quinta visitaram o imóvel, sabendo que este tinha sido reconstruído, com o intuito de ali realizar um encontro familiar. Ao entrarem no pátio central, emocionaram-se ao reconhecerem de imediato, na escala, na luz, na cor e nas varandas de madeira, a velha casa da sua infância e juventude. Este testemunho vivo e espontâneo confirma, de algum modo, que o trabalho realizado conseguiu recuperar a antiga edificação, a sua memória e os fragmentos fundamentais de uma identidade coletiva que a arquitetura contribui para preservar e transmitir.

Aerial view of Quinta de Fundevila in its landscape setting | Vista aérea de la Quinta de Fundevila en su entorno paisajístico | Vista aérea da Quinta de Fundevila na sua envolvente paisagística



The contemporary practice of architecture with traditional roots shows clearly that tradition involves not so much venerating things past as keeping them alive. Tradition is transmission, and the best way of transmitting this valuable legacy along with its building knowledge is to perpetuate it in daily practice, working alongside local artisans, encouraging their engagement, using natural materials obtainable in situ, and recovering traditional techniques for the creation of contemporary work with a sense of place.

La práctica contemporánea de una arquitectura de raíz tradicional demuestra con claridad que la tradición no consiste en el culto pasivo de las cenizas, sino en el acto vivo de mantener encendido el fuego. Tradición es transmisión, y la mejor forma de transmitir este valioso legado y estos saberes constructivos es mantenerlos vivos en la práctica cotidiana: trabajar codo a codo con los artesanos locales, favorecer su implicación, recurrir a materiales naturales disponibles en el lugar y recuperar técnicas tradicionales para crear obras contemporáneas vinculadas al lugar.

A prática contemporânea de uma arquitetura de raiz tradicional demonstra com clareza que a tradição não consiste no culto passivo das cinzas, mas no ato vivo de manter o fogo aceso. Tradição é transmissão, e a melhor forma de transmitir este valioso legado e estes saberes construtivos é mantê-los vivos na prática quotidiana: trabalhar lado a lado com os artesãos locais, promover o seu envolvimento, recorrer a materiais naturais disponíveis no local e recuperar técnicas tradicionais para criar obras contemporâneas vinculadas ao lugar.

Secondary dwelling with the garden and the raised granary | Casa secundaria con el jardín y el hórreo | Casa secundária com o jardim e o espigueiro



Biography | Biografía | Biografia

Fernando Cerqueira Barros

Fernando earned a degree and an M.Arch at the Porto University School of Architecture and is undertaking PhD research on the architectural heritage of the cross-border region of Gerês/Xurés. He is a researcher at the Nuno Portas Study Center, in the Architecture, City, and Landscape Heritage Group, and is part of the associated UNESCO Chair. His professional practice centers on heritage restoration. For his rehabilitation project at the Monastery of São João de Cabanas he received the 2025 Espaço National Architecture Award, an honorable mention in the 2026 National Urban Refurbishment Awards, and a recognition linked to the 2024 Philippe Rotthier European Architecture Prize. His research work and advocacy of heritage in northwest Iberia was also rewarded with an honorable mention in the First Iberian Traditional Architecture Research Awards (2012) and with the 2025 Cantapaxarín Award, given by the Asturian *Hórreo* Granary Association. In 2026 he received the Rafael Manzano Prize for New Traditional Architecture.

Arquitecto y máster en Arquitectura por la Faculdade de Arquitectura da Universidade do Porto, desarrolla su investigación doctoral sobre el patrimonio arquitectónico de la región transfronteriza Gerês/Xurés. Es investigador del Centro de Estudos Nuno Portas, dentro del Grupo Patrimonio de la Arquitectura, de la Ciudad y del Territorio, y forma parte de la Cátedra UNESCO. Su práctica profesional se centra en la rehabilitación del patrimonio. Por el proyecto de rehabilitación del Monasterio de São João de Cabanas ha recibido el Prémio Nacional de Arquitectura Espaço 2025, una Mención de Honor en el Prémio Nacional de Reabilitação Urbana 2026 y un reconocimiento en el Premio Europeo de Arquitectura Philippe Rotthier 2024. Su labor de investigación y defensa del patrimonio del noroeste peninsular ha sido reconocida también con una Mención de Honor en el I Premio Ibérico de Investigación en Arquitectura Tradicional (2012) y con el Premio Cantapaxarín 2025, otorgado por la Asociación del Hórreo Asturiano. En 2026 recibió el Premio Rafael Manzano de Nueva Arquitectura Tradicional.

Arquiteto e mestre em Arquitetura pela Faculdade de Arquitectura da Universidade do Porto, desenvolve a sua investigação de doutoramento sobre o património arquitetónico da região transfronteiriça Gerês/Xurés. É investigador do Centro de Estudos Nuno Portas, no âmbito do Grupo Património da Arquitetura, da Cidade e do Território, e integra a Cátedra UNESCO. A sua prática profissional centra-se na reabilitação do património. Pelo projeto de reabilitação do Mosteiro de São João de Cabanas, recebeu o Prémio Nacional de Arquitectura Espaço 2025, uma Menção Honrosa no Prémio Nacional de Reabilitação Urbana 2026 e um reconhecimento no Prémio Europeu de Arquitetura Philippe Rotthier 2024. O seu trabalho de investigação e defesa do património do noroeste peninsular foi também reconhecido com uma Menção Honrosa no I Prémio Ibérico de Investigação em Arquitetura Tradicional (2012) e com o Prémio Cantapaxarín 2025, atribuído pela Asociación del Hórreo Asturiano. Em 2026, recebeu o Prémio Rafael Manzano de Nova Arquitetura Tradicional.

New Life for Aging Materials: Ryokan Yamazaki in Echizen, Fukui Prefecture

Una nueva vida para materiales antiguos: Ryokan Yamazaki en Echizen, prefectura de Fukui

Uma nova vida para os materiais antigos: Ryokan Yamazaki, em Echizen, na prefeitura de Fukui

Hironobu Furihata, Justin Tsai

Facing the Sea of Japan, Echizen nestles in Fukui Prefecture at a comfortable distance from the ancient capital of Kyoto, from where merchants and artisans migrated to build Echizen's prosperous reputation as a coastal center of crafts. The windswept Hokuriku hot-spring area is also renowned for the Echizen snow-crab dish. We were asked by the owner of Ryokan Yamazaki, who specializes in such delicacies, to not only replace the inn's decaying concrete structures but also to reassert its regional identity with a thoroughly authentic architectural experience for guests, which involved the reassembly on a nearby property of a salvaged folk house (*Kominka*) from elsewhere in the region.

Situada frente al mar de Japón, Echizen se encuentra en la prefectura de Fukui, a una distancia relativamente corta de la antigua capital de Kioto, desde donde emigraron comerciantes y artesanos que contribuyeron a convertirla en un próspero centro costero de producción artesanal. La región de Hokuriku, conocida por sus aguas termales y sus fuertes vientos, también es famosa por su especialidad gastronómica, el cangrejo de las nieves de Echizen. El propietario de Ryokan Yamazaki, especializado en esta y otras delicias locales, nos encargó no sólo sustituir las deterioradas estructuras de hormigón del *ryokan*, sino también reafirmar su identidad regional y ofrecer a los huéspedes una experiencia arquitectónica plenamente auténtica. Para ello, se reconstruyó en una

De frente para o mar do Japão, Echizen situa-se na prefeitura de Fukui, a uma distância confortável da antiga capital, Quioto, de onde comerciantes e artesãos migraram, contribuindo para a prosperidade e a reputação de Echizen como centro costeiro de artesanato. A região termal de Hokuriku, exposta aos ventos, é também famosa pelo caranguejo-das-neves de Echizen, uma especialidade gastronómica local. Fomos contactados pelo proprietário do Ryokan Yamazaki, estabelecimento especializado nestas iguarias, para não só substituir as estruturas de betão em estado de deterioração, mas também reafirmar a sua identidade regional, proporcionando aos hóspedes uma experiência arquitetónica inteiramente autêntica. Para tal, foi reconstruída

< *Genkan*



> Aerial view of Ryokan Yamazaki | Vistas aérea del Ryokan Yamazaki | Vistas aérea do Ryokan Yamazaki (Google Earth)

The primary rationale for the regeneration was technical. Reinforced concrete has proven particularly susceptible to the harsh sea winds along this coast. Airborne chlorides from sea salt induce concrete corrosion, as their accumulation at the surface of internal steel reinforcement breaks down the metal's passive protective layer, resulting in rusting and large expansion. Ryokan Yamazaki's original structure could therefore be expected to have an optimal service life of only four decades.

parcela adyacente una vivienda tradicional japonesa (*kominka*) recuperada de otro lugar de la región.

La principal razón para la rehabilitación era de carácter técnico. El hormigón armado ha demostrado ser especialmente vulnerable a los fuertes vientos marinos de esta costa. Los cloruros presentes en las sales transportadas por el aire provocan la corrosión de las armaduras de acero del hormigón, ya que su acumulación en la superficie del metal destruye la capa pasiva que lo protege, lo que da lugar a la formación de óxido y a un considerable aumento de volumen. Por tanto, se estimaba que la estructura original del Ryokan Yamazaki tendría una vida útil óptima de apenas cuatro décadas.

num terreno próximo uma habitação tradicional japonesa (*kominka*) recuperada de outro local da região.

A principal razão para a reconstrução foi de natureza técnica. O betão armado revelou-se particularmente suscetível aos ventos marítimos intensos ao longo desta costa. Os cloretos transportados pelo ar, provenientes do sal marinho, provocam a corrosão das armaduras do betão armado, uma vez que a sua acumulação na superfície das armaduras de aço destrói a camada protetora passiva do metal, levando à sua oxidação e, consequentemente, a uma expansão considerável. Assim, era de esperar que a estrutura original do Ryokan Yamazaki tivesse uma vida útil ótima de apenas quatro décadas.





Interior spaces before relocation and restoration | Espacios interiores antes del traslado y la restauración | Espaços interiores antes da deslocação e do restauro

Façade before relocation and restoration | Fachada antes del traslado y la restauración | Fachada antes da deslocação e do restauro



Transitioning to a vernacular timber structure allows the inn to better resist salt corrosion, with the lack of steel rebars rendering it immune to rusting and spalling. The superior strength-to-weight ratio and structural flexibility of timbers also let them absorb and dissipate wind buffeting and seismic shocks, as is vital in such seismically active seaside environments. The tranquility instilled by timber also enhances the experience of regional cuisine. Wood has aesthetic value, making one feel closer to nature, and this too was instrumental in the owner's decision to renovate.

In the 1970s our founder, Hironobu Furihata, pioneered a scientific yet sensitive method known as Kominka Saisei—pre-war timber folk-house restoration—involving first carefully dismantling disused timber-framed folk houses all across Japan and then reassembling them on the same or another site. This earned Hironobu the Architectural Institute of Japan's Prize for Special

La sustitución de la estructura original por otra de madera, siguiendo las técnicas constructivas vernáculas, permite al *ryokan* resistir mejor la corrosión provocada por la salinidad del ambiente marino, ya que la ausencia de armaduras de acero evita los problemas de oxidación y desprendimiento del hormigón. Además, la elevada relación entre resistencia y peso de la madera, así como su flexibilidad estructural, le permiten absorber y disipar los esfuerzos provocados por las ráfagas de viento y los movimientos sísmicos, algo especialmente importante en un entorno costero de elevada actividad sísmica. La tranquilidad que transmite la madera también contribuye a mejorar la experiencia gastronómica de los huéspedes. Su valor estético y la sensación de proximidad a la naturaleza que proporciona fueron asimismo factores determinantes en la decisión del propietario de rehabilitar el establecimiento.

En la década de 1970, nuestro fundador, Hironobu Furihata, fue pionero en el

A transição para uma estrutura vernácula de madeira permite à estalagem resistir melhor à corrosão induzida pelo sal, uma vez que a ausência de armaduras de aço a torna imune à corrosão destas e ao destacamento do betão. A relação resistência-peso superior e a flexibilidade estrutural da madeira também permitem que esta absorva e dissipe as forças provocadas pelas rajadas de vento e os impactos sísmicos, o que é vital em ambientes costeiros com elevada atividade sísmica. A tranquilidade transmitida pela madeira valoriza também a experiência da gastronomia regional. A madeira tem um valor estético que proporciona uma sensação de proximidade com a natureza, o que foi também determinante na decisão do proprietário de realizar esta renovação.

Na década de 1970, o nosso fundador, Hironobu Furihata, foi pioneiro no desenvolvimento de um método científico, mas sensível, conhecido como *Kominka Saisei* –restauro de casas tradicionais de madeira anteriores à Segunda Guerra Mundial–,

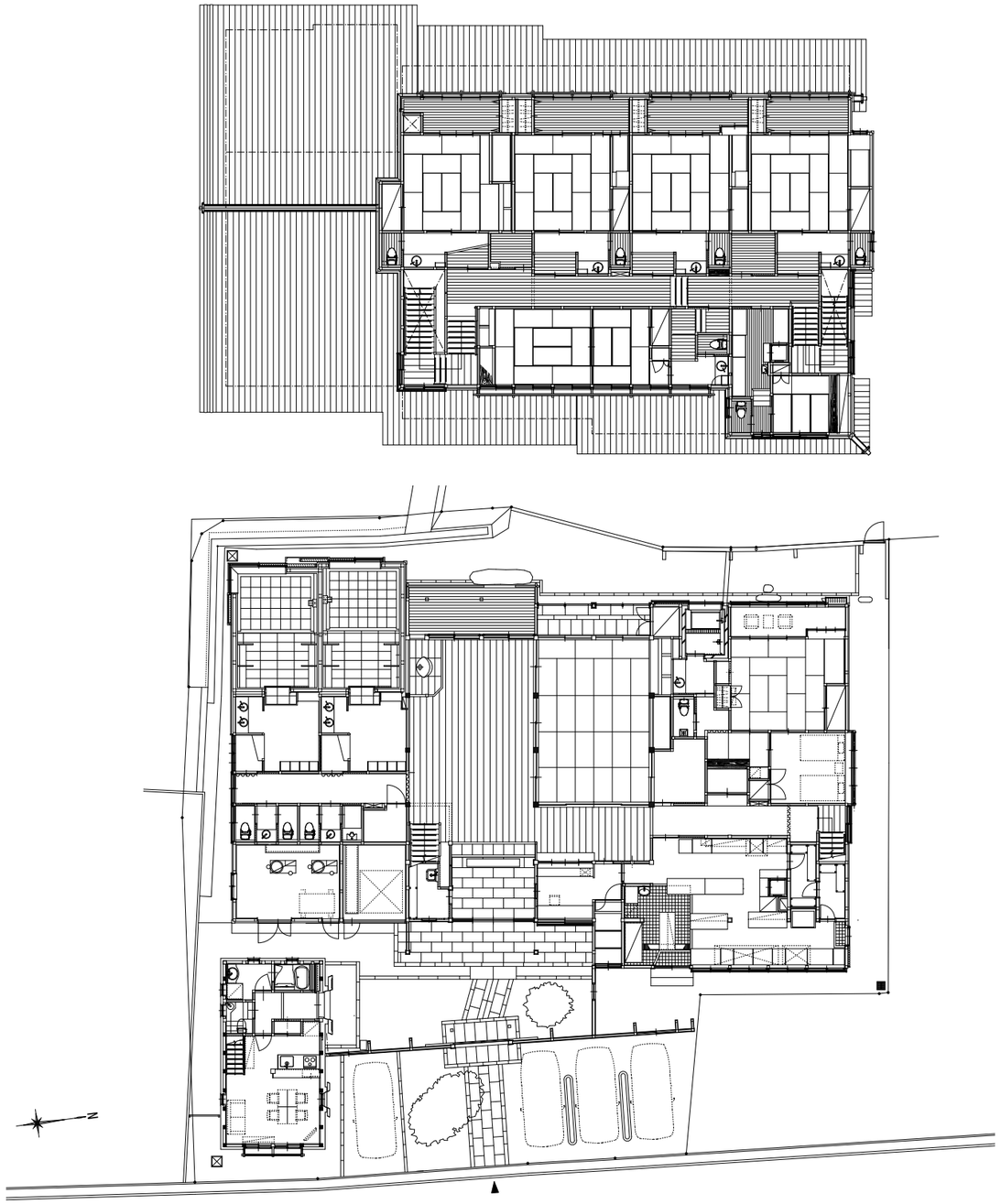
Contributions in 1990, and continues to inform our designs. Since then we have breathed new life into more than 300 derelict folk houses, albeit with renewed roofs and fitted out for modern conveniences.

desarrollo de un método riguroso desde el punto de vista científico, pero respetuoso con la arquitectura tradicional, conocido como *Kominka Saisei* –restauración de viviendas populares de madera anteriores a la Segunda Guerra Mundial–. Este método consiste en desmontar cuidadosamente antiguas viviendas populares con estructura de madera, en desuso y repartidas por todo Japón, para reconstruirlas posteriormente en su emplazamiento original o en otro lugar. Este trabajo le valió el Premio a las Contribuciones Especiales del Instituto de Arquitectura de Japón en 1990 y sigue siendo una referencia fundamental para nuestros proyectos. Desde entonces, hemos dado una nueva vida a más de 300 viviendas populares abandonadas, con cubiertas renovadas y adaptadas a las comodidades de la vida moderna.

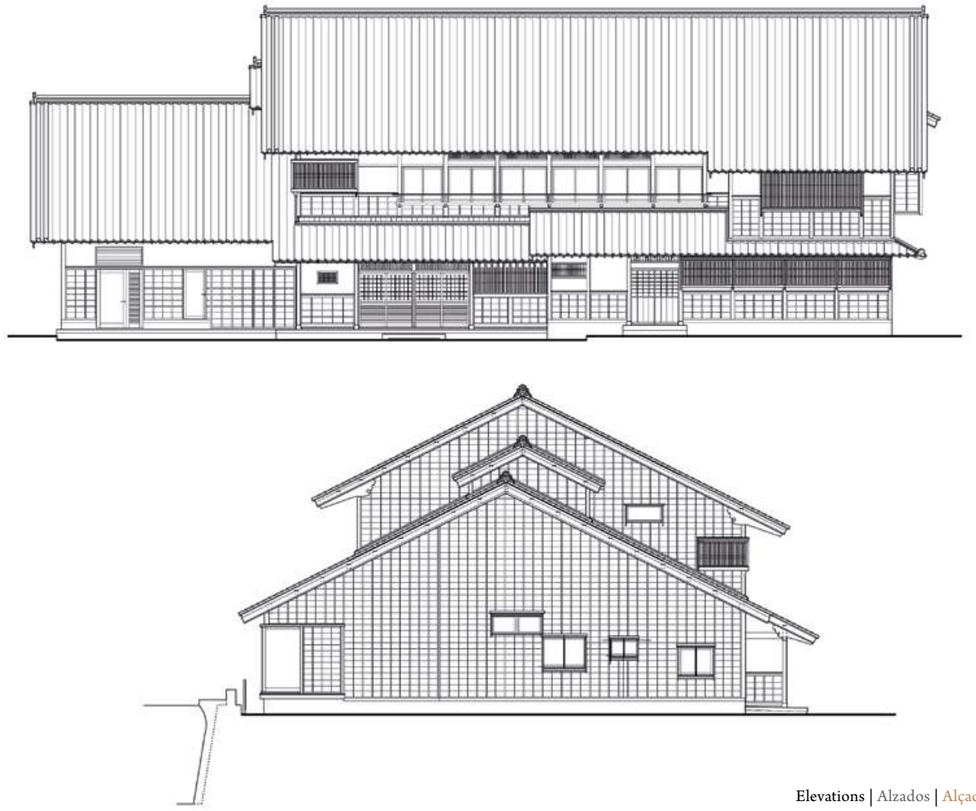
que consiste, em primeiro lugar, na desmontagem cuidadosa de casas tradicionais com estrutura de madeira, já sem utilização, em todo o Japão, e, de seguida, na sua remontagem no mesmo local ou noutro. Este trabalho valeu a Hironobu o Prémio por Contribuições Especiais do Instituto de Arquitetura do Japão em 1990 e continua a influenciar os nossos projetos. Desde então, demos uma nova vida a mais de 300 casas tradicionais abandonadas, com coberturas renovadas e adaptadas às comodidades modernas.

Building from the road | Edificio desde la carretera | Edifício a partir da estrada





Ground- and second-floor plans | Plantas baja y segunda | Plantas do rés-do-chão e do segundo piso



Elevations | Alzados | Alçados

This is the methodology we chose for the Ryokan Yamazaki inn, for which we were able to acquire a traditional Hokuriku home built over 120 years ago. Though this historic house was larger than a typical dwelling, its reuse conferred a distinctive architectural identity suitable for a hospitality setting, aligned with the owner's vision. The house was delicately dismantled and its timber frame relocated to the new site, where it would be reassembled to replace the demolished concrete structure.

All of the original fittings and interior materials, where possible, were carefully preserved to retain the atmosphere of the place. We also included a white-plastered storehouse from the same site, positioning it beside the main building on the street frontage. Finally, to complete the composition, we built boundary walls and a gate to define the entrance, reinforcing the traditional aesthetic.

The beauty of reuse lies in the new life given to aging materials, something much appreciated by visitors at Ryokan Yamazaki, who are struck by the expressive but discreet use of old timber especially apparent in the interiors. We again showed that building traditions and craftsmanship can forge a rich experience that appeals to users of any kind of space, tapping into the culturally diverse

Esta fue la metodología que elegimos para la rehabilitación de Ryokan Yamazaki, para la que pudimos adquirir una vivienda tradicional de la región de Hokuriku construida hacía más de 120 años. Aunque esta casa histórica era de mayores dimensiones que una vivienda habitual, su reutilización permitió dotar al establecimiento de una identidad arquitectónica distintiva, adecuada para su uso como *ryokan* y acorde con la visión del propietario. La vivienda se desmontó cuidadosamente y su estructura de madera se trasladó al nuevo emplazamiento, donde se reconstruyó para sustituir la estructura de hormigón demolida.

Conservamos cuidadosamente, siempre que fue posible, todos los elementos originales y los materiales interiores para preservar la atmósfera del lugar. También incorporamos un almacén de paredes encaladas procedente del mismo emplazamiento, que situamos junto al edificio principal, en el frente de la calle. Por último, para completar el conjunto, construimos muros de cerramiento y una puerta de acceso que delimitan la entrada y refuerzan el carácter tradicional del conjunto.

La belleza de la reutilización reside en la nueva vida que se da a los materiales antiguos, algo que aprecian especialmente los huéspedes del Ryokan Yamazaki, a quienes sorprende el uso expresivo pero discreto de la madera antigua, particularmente visible en los interiores. Una vez

Esta é a metodologia que escolhemos para a estalagem Ryokan Yamazaki, para a qual conseguimos adquirir uma residência tradicional de Hokuriku, construída há mais de 120 anos. Embora esta residência histórica fosse maior do que uma habitação típica, a sua reutilização conferiu-lhe uma identidade arquitetónica distinta, adequada a um estabelecimento de alojamento, em consonância com a visão do proprietário. A residência foi cuidadosamente desmontada e a sua estrutura de madeira transportada para o local da estalagem, onde foi reconstruída para substituir a estrutura de betão demolida.

Todos os elementos originais e materiais interiores, sempre que possível, foram cuidadosamente preservados para manter a atmosfera do local. Incluímos também um edifício de armazenamento com reboco branco, proveniente do mesmo terreno, que foi colocado ao lado do edifício principal, junto à frente de rua. Por fim, para completar a composição, construímos muros de delimitação e um portão para definir a entrada, reforçando assim a estética tradicional.

A beleza da reutilização reside na nova vida conferida aos materiais antigos, algo muito apreciado pelos visitantes do Ryokan Yamazaki, que ficam impressionados com a utilização expressiva, mas discreta, da madeira antiga, especialmente evidente nos espaços interiores. Mostrá-

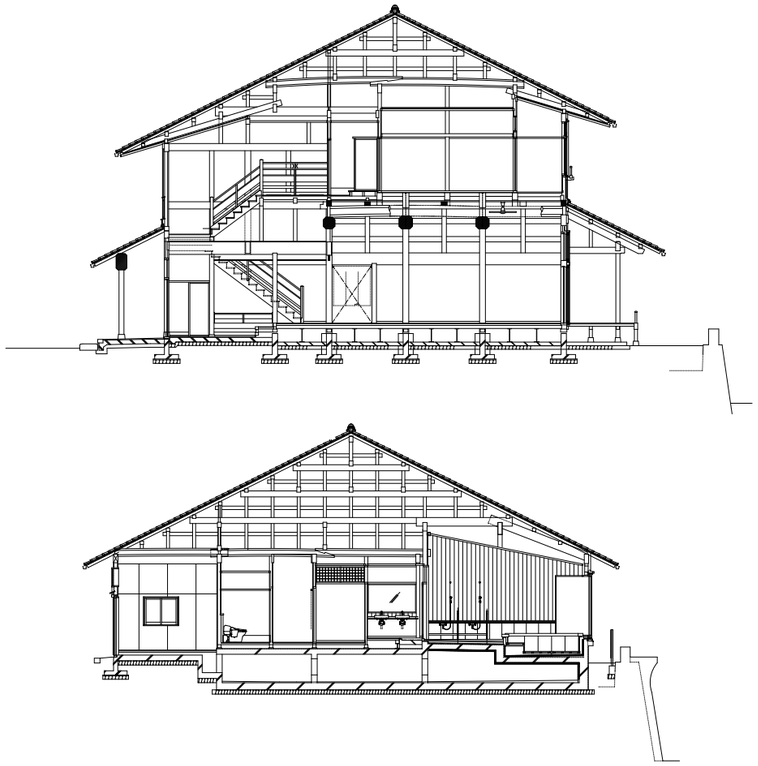
Interior spaces | Espacios interiores | Espaços interiores











Sections | Secciones | Secções

yet universal appreciation of vernacular styles.

An exceptional home preserving the spirit of the Hokuriku region, it was far from a typical house. As a marvelous building with a long history but no future, its forlorn appearance was touching. How long had it been derelict? There is no word for this but destiny. Perhaps it was hidden away for Ryokan Yamazaki to find. Now the transformed building standing on the Echizen coast overflows with joy, and I am certain of its future prosperity. (Hironobu Furihata)

más, hemos demostrado que las tradiciones constructivas y los oficios artesanales pueden crear experiencias enriquecedoras para los usuarios de cualquier tipo de espacio, al apelar a una valoración de la arquitectura vernácula que, pese a sus diversas manifestaciones culturales, tiene un carácter universal.

Era una vivienda excepcional que conservaba el espíritu de la región de Hokuriku, muy alejada de una casa corriente. Un edificio maravilloso, con una larga historia, pero sin futuro, cuyo aspecto de abandono resultaba conmovedor. ¿Cuánto tiempo llevaría deshabitado? No encuentro otra palabra para explicarlo que destino. Quizá había permanecido oculto hasta que el Ryokan Yamazaki lo encontrara. Ahora, el edificio transformado se alza en la costa de Echizen, rebosante de alegría, y estoy convencido de que le espera un futuro próspero. (Hironobu Furihata)

mos mais uma vez que as tradições construtivas e o saber-fazer artesanal podem proporcionar uma experiência enriquecedora que atrai os utilizadores de qualquer tipo de espaço, tirando partido de uma valorização dos estilos vernáculos que, embora varie entre culturas, é universal.

Uma casa excecional que preservava o espírito da região de Hokuriku, muito diferente de uma habitação comum. Era um edifício magnífico, com uma longa história, mas sem futuro, cujo aspeto desolado era comovente. Há quanto tempo estaria ao abandono? Não há outra palavra para o descrever senão destino. Talvez estivesse escondido à espera de ser descoberto pelo Ryokan Yamazaki. Agora, o edifício transformado, situado na costa de Echizen, transborda de alegria, e estou certo de que terá um futuro próspero. (Hironobu Furihata)



Entrance and covered passage | Acceso y pasaje cubierto | Acesso e passagem coberta

Biographies | Biografías | Biografias

Furihata Architectural Design Office

Founded in 1963, Furihata Architectural Design Office has pioneered traditional Japanese architecture for over six decades, inventing and continually refining its *Kominka Saisei* method for dismantling and restoring timber folk houses. Its central location in Nagano Prefecture has enabled it to undertake projects across Japan as well as overseas. It has received more than 60 architectural prizes, the most recent being the 2018 Silver A' Design Award for the Ryokan Yamazaki project.

Fundado en 1963, el estudio Furihata Architectural Design Office ha sido pionero en el ámbito de la arquitectura tradicional japonesa durante más de seis décadas, a lo largo de las cuales ha desarrollado y perfeccionado continuamente su método *Kominka Saisei*, dedicado al desmontaje y la restauración de viviendas tradicionales de madera. Su ubicación en la prefectura de Nagano le ha permitido desarrollar proyectos tanto en Japón como en el extranjero. Ha recibido más de 60 premios de arquitectura, el más reciente de ellos el Silver A' Design Award de 2018 por el proyecto Ryokan Yamazaki.

Fundado em 1963, o Gabinete de Arquitetura Furihata tem sido pioneiro na arquitetura tradicional japonesa há mais de seis décadas, desenvolvendo e aperfeiçoando continuamente o seu método *Kominka Saisei* para a desmontagem e o restauro de casas tradicionais de madeira. A sua localização central na prefeitura de Nagano permitiu-lhe realizar projetos em todo o Japão, assim como no estrangeiro. Já recebeu mais de 60 prémios de arquitetura, sendo o mais recente o Silver A' Design Award de 2018, pelo projeto Ryokan Yamazaki.

Hironobu Furihata

Hironobu Furihata is the founder of Furihata Architectural Design Office and a pioneer of the *Kominka Saisei* method, which involves the careful dismantling and reassembly of traditional timber houses. In recognition of his contributions to Japanese architecture, he received the Architectural Institute of Japan Prize for Special Contribution in 1990 and the Commissioner for Cultural Affairs Award in 2025.

Hironobu Furihata es el fundador de Furihata Architectural Design Office y uno de los pioneros del método *Kominka Saisei*, que consiste en el cuidadoso desmontaje y posterior reconstrucción de viviendas tradicionales japonesas con estructura de madera. En reconocimiento a su contribución a la arquitectura japonesa, recibió en 1990 el Premio a la Contribución Especial del Instituto de Arquitectura de Japón y en 2025 el Premio del Comisionado de Asuntos Culturales.

Hironobu Furihata é o fundador do Furihata Architectural Design Office e um dos pioneiros do método *Kominka Saisei*, que consiste na desmontagem cuidadosa e posterior reconstrução de habitações tradicionais japonesas com estrutura de madeira. Em reconhecimento pelo seu contributo para a arquitetura japonesa, recebeu, em 1990, o Prémio de Contribuição Especial do Instituto de Arquitetura do Japão, e o Prémio do Comissário para os Assuntos Culturais em 2025.

Justin Tsai

Justin Tsai grew up in the Taiwanese cities of Tainan and Taipei, where he acquired a passion for eclectic and vernacular architectural heritage. He currently studies at the Bartlett School of Architecture, University College London, with a focus on vernacular materials and architectural politics. He has interned at the Furihata Architectural Design Office in Nagano Prefecture, Japan.

Justin Tsai creció en las ciudades taiwanesas de Tainan y Taipéi, donde desarrolló su interés por el patrimonio arquitectónico ecléctico y vernáculo. Actualmente estudia en la Bartlett School of Architecture del University College London, donde centra su formación en los materiales vernáculos y la dimensión política de la arquitectura. Ha realizado prácticas en el estudio Furihata Architectural Design Office, en la prefectura de Nagano, Japón.

Justin Tsai cresceu nas cidades taiwanesas de Tainan e Taipé, onde desenvolveu uma paixão pelo património arquitetónico eclético e vernáculo. Atualmente, estuda na Bartlett School of Architecture, da University College London, com especial interesse pelos materiais vernáculos e pelas questões políticas relacionadas com a arquitetura. Realizou um estágio no Gabinete de Arquitetura Furihata, na prefeitura de Nagano, no Japão.

Villa San Miguel: Restoration and Reconstruction of a Recreational House in Los Carabancheles, Madrid

La Villa San Miguel: Restauración y construcción de un palacete de Los Carabancheles, Madrid

A Villa San Miguel: Restauro e construção de um palacete de Los Carabancheles, Madrid

Juan de Dios
de la Hoz Martínez

Villa San Miguel was one of many recreational houses built between the eighteenth and twentieth centuries in the district known as "Los Carabancheles," with a pleasant climate cooler than that of the capital despite the latter's proximity.[1] This circumstance led it to become a summer refuge for the Madrilenian aristocracy and gentry, who chose it as the site of their summer houses and villas and places of recreation (of which the most celebrated is the remarkable Finca de Vista Alegre).[2] The earliest record of the plot of Villa San Miguel is from 1874, when the property together with a house and garden owned by Ramona Albert were bequeathed to her grandsons Eduardo and Miguel Rovira Montenegro. The latter chose to demolish most of the dwelling and to have the architect Francisco Andrés Octavio

La Villa San Miguel fue uno de los palacetes construidos entre los siglos XVIII y XX en los entonces denominados "Carabancheles", un lugar que disfrutaba de un clima suave, más fresco que el de la capital y muy próximo a esta[1]. Esta circunstancia hizo que se convirtiera en lugar de veraneo de la aristocracia y la alta burguesía madrileñas, que eligieron estos terrenos para construir casas y palacios, así como quintas residenciales y de recreo (la más conocida es la extraordinaria Finca de Vista Alegre)[2]. La primera noticia del solar de la Villa San Miguel data de 1874, cuando la finca y la casa con jardín, propiedad de Ramona Albert, fueron legadas a sus nietos Eduardo y Miguel Rovira Montenegro. Este último decidió derribar casi por completo la antigua casa y encargar al arquitecto Francisco Andrés Octavio Palacios (1846-1912) la construcción de

A Villa San Miguel foi um dos palacetes construídos entre os séculos XVIII e XX na zona então denominada "Carabancheles", um local que gozava de um clima ameno, mais fresco do que o da capital e muito próximo desta[1]. Graças a estas condições, tornou-se um destino de veraneio da aristocracia e da alta burguesia madrilena, que escolheram estes terrenos para construir casas e palácios, bem como quintas residenciais e de recreio (a mais conhecida é a extraordinária Finca de Vista Alegre)[2]. A primeira referência à propriedade da Villa San Miguel data de 1874, quando a quinta e a casa com jardim, pertencentes a Ramona Albert, foram legadas aos seus netos Eduardo e Miguel Rovira Montenegro. Este último decidiu demolir quase por completo a antiga casa e encarregou o arquiteto Francisco Andrés Octavio Palacios (1846-1912) da construção de uma

< South elevation after the intervention | Alzado sur tras la intervención | Alçado sul após a intervenção



> Site plan | Plano de situación | Planta de localização

Palacios (1846-1912) build a pleasure-house—a hotel, in the language of the time. He is a little-known figure albeit responsible for a considerable output in Madrid given the quality of his projects and designs and his tenure as municipal architect. His most notable work included the Mahou brewery (in Calle Amaniel, now the ABC Museum), the construction of the Fiesta Alegre Fronton Arena, the restoration of Teatro de la Comedia, renovations of the schools of San Ildefonso and Virgen de la Paloma, and, with José López Sallaberry, the remodeling and extension of Calle Preciados and the connection of Calle del Callao with Calle Alcalá known as the project for the creation of the Gran Vía.

una vivienda de recreo, un "hotel" en la terminología de la época. Se trata de un arquitecto poco conocido, aunque autor de una obra muy relevante en Madrid, tanto por la calidad de sus encargos y proyectos como por haber desempeñado el cargo de arquitecto municipal. Entre sus obras más destacadas se encuentran la fábrica de cervezas Mahou (calle Amaniel, hoy Museo ABC), la dirección de obra del Frontón Fiesta Alegre, la restauración del Teatro de la Comedia, la reforma del Colegio de San Ildefonso y del Instituto de Enseñanza Secundaria Virgen de la Paloma, así como, junto con José López Sallaberry, el proyecto de reforma y prolongación de la calle Preciados y de conexión de la calle del Callao con la de Alcalá, conocido como el proyecto de apertura de la Gran Vía.

casa de recreio, um "hotel" na terminologia da época. Trata-se de um arquiteto pouco conhecido, embora seja autor de uma obra muito relevante em Madrid, tanto pela qualidade das suas encomendas e projetos como por ter desempenhado o cargo de arquiteto municipal. Entre as suas obras mais notáveis encontram-se a fábrica de cerveja Mahou (rua Amaniel, hoje Museu ABC), a direção da obra do Frontón Fiesta Alegre, a restauração do Teatro de la Comedia, a remodelação do Colégio de San Ildefonso e do Instituto de Ensino Secundário Virgen de la Paloma, bem como, em conjunto com José López Sallaberry, o projeto de remodelação e prolongamento da Rua Preciados e de ligação da Rua do Callao à Rua de Alcalá, conhecido como o projeto de abertura da Gran Vía.

The pleasure-house changed hands and function several times, even accommodating, from 1950 to 1970, a minor seminary. Unfortunately, the building was abandoned and became progressively decrepit as it was squatted and dilapidated, losing all of its decorative features. Between 2000 and 2017 it also suffered several fires resulting in the collapse of nearly all of its volume, leaving it in the ruinous state we found at the start of our assignment.

This state is plain to see in the photos, with the building largely ruined, overgrown, without its roof and floors, and with its few remaining walls unstable and the main story missing. At ground-floor level a few partition walls were still standing; the basement was filled with

La pequeña villa de recreo cambió varias veces de propietario y de uso, llegando a albergar, entre 1950 y 1970, una Escuela Apostólica. Desgraciadamente, el edificio fue abandonado y se deterioró de forma progresiva hasta que fue ocupado y desmantelado, perdiendo todos sus elementos decorativos. Entre los años 2000 y 2017 sufrió, además, varios incendios, que provocaron el derrumbe y colapso de prácticamente todo el volumen del edificio, hasta alcanzar el estado de ruina en el que se encontraba al inicio del proyecto.

Las imágenes muestran dicho estado, con el edificio colapsado casi en su totalidad, completamente cubierto de vegetación, sin cubierta ni forjados, con los escasos alzados conservados en grave riesgo de desplome y la planta principal desapa-

A pequena villa de recreio mudou várias vezes de proprietário e de uso, chegando a albergar, entre 1950 e 1970, uma Escola Apostólica. Infelizmente, o edifício foi abandonado e deteriorou-se progressivamente até ser ocupado e desmantelado, perdendo todos os seus elementos decorativos. Entre 2000 e 2017, foi ainda alvo de vários incêndios, que provocaram o colapso de praticamente todo o volume do edifício, até atingir o estado de ruína em que se encontrava no início do projeto.

As imagens mostram esse estado, com o edifício quase totalmente desmoronado, completamente coberto de vegetação, sem cobertura nem pavimentos estruturais, com os poucos alçados conservados em grave risco de desabamento e o piso principal desaparecido. No piso térreo res-

North and east elevations before and after the intervention | Alzados norte y este antes y después de la intervención | Alçados norte e este antes e após a intervenção



South and west elevations before and after the intervention | Alzados sur y oeste antes y después de la intervención | Alçados sul e oeste antes e após a intervenção



rubble; the flooring had disappeared; the west side was unrecognizable and encroached on by undergrowth, with an annex of reinforced concrete pillars and beams that had been partially rammed into the original walls; and the main entrance was hardly to be seen.

We were commissioned by the Aguacate-Duquesa de Tamames developers' association to restore the facades, stabilize the remaining masonry, and reinstate the building on its original ground plan, as the Madrid City Urbanism Department required the extant parts to be preserved and the facades rebuilt. This involved consolidating the remains still standing and also building new walls with suitable structural support, up to the house's full original elevation. The project management was entrusted to Lourdes García Moreno and Luis de la Hoz, with the firm JMI as contractor.

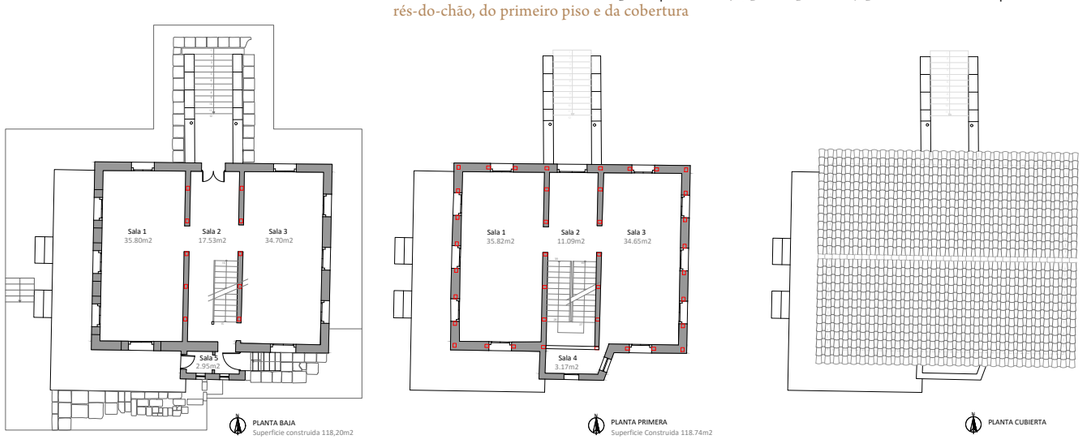
recida. La planta baja conservaba únicamente algunos paños de tabiques; la planta sótano se encontraba colmatada por material derrumbado; los suelos habían desaparecido; el lado oeste del edificio era irreconocible y se encontraba cubierto por la maleza y por un edificio anexo construido con vigas y pilares de hormigón armado, embutido en parte en los muros del edificio original; y la entrada principal apenas era visible.

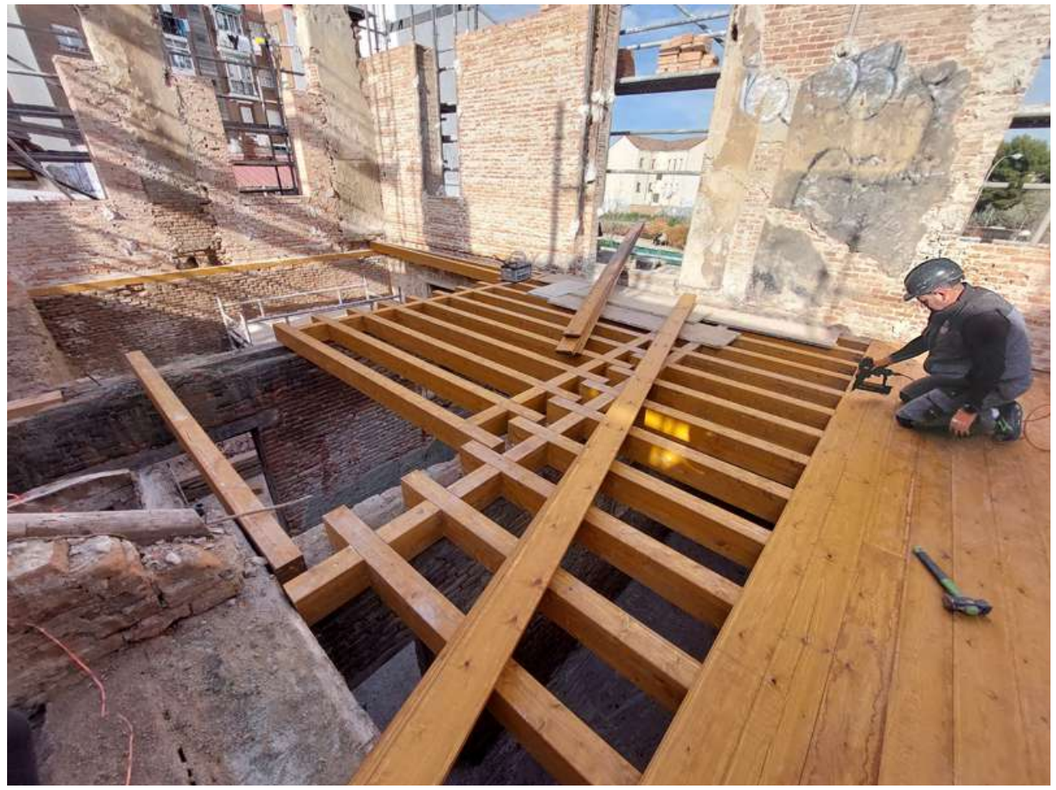
El encargo fue realizado por la Junta de Compensación Aguacate-Duquesa de Tamames, con el objetivo de recuperar las fachadas, asegurar la estabilidad de sus restos y completar la planta del inmueble original, ya que la Gerencia Municipal de Urbanismo del Ayuntamiento de Madrid establecía la obligación de conservar los restos y reconstruir dichas fachadas. Lógicamente, ello obligaba no sólo a asegurar los restos que se mantenían en pie, sino también a ejecutar nuevos muros y dotarlos de la adecuada solución estructural, elevándolos hasta las cotas de coronación que el edificio tenía en origen. La dirección de ejecución de la obra corrió a cargo de Lourdes García Moreno y Luis de la Hoz, siendo JMI la empresa contratista.

tavam apenas algumas secções de paredes divisórias; a cave estava preenchida por escombros; os pavimentos tinham desaparecido; o lado oeste do edifício estava irreconhecível e coberto por vegetação e por um edifício anexo construído com vigas e pilares de betão armado, parcialmente embutido nas paredes do edifício original; e a entrada principal mal era visível.

A obra foi encomendada pela Junta de Compensación Aguacate-Duquesa de Tamames, com o objetivo de recuperar as fachadas, garantir a estabilidade dos elementos remanescentes e completar a planta do edifício original, uma vez que a Gerencia Municipal de Urbanismo do Ayuntamiento de Madrid tinha determinado a obrigação de conservar esses elementos e reconstruir as referidas fachadas. Logicamente, isso obrigava não só a garantir a estabilidade dos elementos que ainda se mantinham de pé, mas também a construir novos muros e dotá-los de uma solução estrutural adequada, elevando-os até às cotas de coroamento que o edifício tinha originalmente. A direção de execução da obra ficou a cargo de Lourdes García Moreno e Luis de la Hoz, sendo a JMI a empresa empreiteira.

Ground floor, first floor and roof plans | Planta baja, planta primera y planta de cubiertas | Plantas do rés-do-chão, do primeiro piso e da cobertura





New floors of timber joists and planks | Nuevos forjados de viguetas y tablones de madera | Novos pavimentos de vigotas e pranchas de madeira

In the two lower facades (north and south), the top level of the walls reaches 8.13 m (loft floor surface), further to the 1.50 m of the building's elevation over the terrain. The level of the east and west facades is higher still, up to a total of nearly 13 m at the top of the gable ends. These heights meant it was impracticable, given the instability resulting from excessive clearance, to merely rebuild the walls, which would have been much exposed to horizontal stresses. In view of this it was suggested that the floors also be rebuilt with the reference of the beam pockets found in some of the facades (for joists of 12 × 14 cm, laid every 26 or 32 cm between centers, depending on the rooms), thereby improving the building's structural behavior by leaving it fully braced and at no risk from lateral thrust or tipping. This allowed us to restore its exterior aspect close to

En las dos fachadas más bajas (norte y sur), la cota superior de los muros alcanza los 8,13 m (cara superior del forjado), a los que se suman 1,50 m correspondientes a la elevación del edificio sobre el terreno natural. Esta cota es aún mayor en las fachadas este y oeste, donde alcanza casi 13 m de altura total en la parte superior del piñón de cierre de los testeros de cubierta. Estas alturas hacían inviable, por su inestabilidad derivada de la excesiva altura libre, la mera reconstrucción de los muros, que habrían quedado muy expuestos a los esfuerzos horizontales. Ante esta situación, se planteó también la recuperación de los forjados a partir de los mechinales descubiertos en varias de las fachadas (viguetas de 12 × 14 cm, dispuestas cada 26 o 32 cm entre ejes, según la estancia), de forma que el comportamiento estructural del edificio mejorara al quedar completamente arriostrado y

Nas duas fachadas mais baixas (norte e sul), a cota superior dos muros atinge os 8,13 m (face superior do pavimento estrutural), aos quais se somam 1,50 m correspondentes à elevação do edifício acima do terreno natural. Esta cota é ainda maior nas fachadas leste e oeste, onde atinge quase 13 m de altura total no vértice superior das empenas da cobertura. Estas alturas tornavam inviável, devido à instabilidade associada a uma altura livre excessiva, a mera reconstrução dos muros, que teriam ficado muito expostos aos esforços horizontais. Perante esta situação, propôs-se também a recuperação dos pavimentos estruturais a partir dos encaixes das vigotas descobertos em várias das fachadas (vigotas de 12 × 14 cm, dispostas a cada 26 ou 32 cm entre eixos, consoante o compartimento), de modo a que o comportamento estrutural do edifício melhorasse, ficando completamente



Construction of the timber-framed masonry facade walls | Construcción de los muros entramados de fachada | Construção das paredes exteriores de alvenaria com estrutura de madeira



1



2

1. Timber-framed masonry walls and installation of the floor joists 2. Installation of the corbels on the timber frame | 1. Muros entramados y colocación de las viguetas del forjado 2. Colocación de los canecillos sobre el entramado | 1. Paredes de alvenaria com estrutura de madeira e colocação das vigotas do pavimento 2. Colocação dos cachorros sobre a estrutura de madeira

that of the original, complete with joinery and roofing. But no interior finishes or fixtures were executed, so the building cannot be occupied until it has been fitted out and made ready for use.

After historical documentation, the project entailed a thorough archaeological investigation, under the direction of the archaeologist Mónica Major González, with the aim of recovering as many elements as possible during the clearing work so that they might be reintegrated authentically, as in the original. Daily photos were accordingly sent of the progress of work for documentation of the remains unearthed. At the same time we thoroughly documented the materials used, the construction techniques employed, and any elements not originally apparent, such as the necesaria—the septic tank or cesspit—at the rear of the building, or the front steps and paving of granite around much of its perimeter.

The reconstruction was based on these data and elements, using only bricks, lime, and wood, with timber-framed masonry walls and wooden roofing. This is a system widely employed in Madrilenian buildings of the time, in which wooden posts (of 20 × 16 cm, 147 cm apart) and beams are joined with nails, and the spaces in between filled with brickwork bonded with lime mortar. The joints were matched to the existing ones, both horizontally, with a width of no more than 1 cm, and vertically, with spacing of less than 1 cm. The courses were started at the corners alternately with a cut brick followed by stretchers so as to bond the masonry and align the vertical joints in alternate courses.

sin riesgo de empujes o vuelcos laterales. Además, ello permitía recuperar un aspecto exterior similar al original, con las carpinterías y la nueva cubierta. No se ha ejecutado, sin embargo, ningún tipo de acabado ni instalación en el interior, por lo que el edificio no podrá utilizarse hasta que se lleven a cabo las obras de rehabilitación y acondicionamiento necesarias para su puesta en uso.

Para llevar a cabo esta intervención, tras la documentación histórica, se desarrolló una exhaustiva investigación arqueológica bajo la dirección de la arqueóloga Mónica Major González. El objetivo era recuperar la mayor cantidad posible de elementos durante las tareas de desescombro para destinarlos a su reintegración de la forma más fidedigna y próxima al original. Por ello, a diario se enviaban fotografías del avance de los trabajos para documentar el estado de los restos encontrados. Paralelamente, se realizó una completa documentación de los materiales empleados, las técnicas constructivas y la posible identificación de espacios que no se apreciaban en origen, como la "necesaria", o tanque o pozo de recogida de aguas sucias, localizada en la parte trasera del edificio, o la escalinata y los acerados de granito que rodean gran parte de la edificación.

La recuperación se ha llevado a cabo a partir de estos datos y elementos, utilizando exclusivamente ladrillo, cal y madera, mediante muros de fábrica con entramados y cubierta de madera. Se trata de un sistema muy habitual en las construcciones madrileñas de esta época, en el que los pies derechos verticales (de 20 × 16 cm, separados 147 cm) y las carreras horizontales de madera se unen entre sí mediante clavos, y los espacios entre ellos se completan con ladrillo macizo recibido con mortero de cal. Las juntas se han hecho coincidir con las existentes, tanto horizontales, con un grosor no superior a 1 cm, como verticales, con separación inferior a 1 cm. Las hiladas se han iniciado en las esquinas alternando un ladrillo cortado con un tizón para trabar la fábrica y aplomar las juntas verticales de hiladas alternas.

contraventado e sem risco de impulsos ou tombamentos laterais. Além disso, tal permitia recuperar um aspeto exterior semelhante ao original, com as caixilharias e a nova cobertura. No entanto, não foi executado qualquer tipo de acabamento nem instaladas quaisquer infraestruturas no interior, pelo que o edifício não poderá ser utilizado até que sejam realizadas as obras de reabilitação e acondicionamento necessárias para a sua utilização.

Para levar a cabo esta intervenção, após a documentação histórica, foi realizada uma investigação arqueológica exaustiva sob a direção da arqueóloga Mónica Major González. O objetivo era recuperar o maior número possível de elementos durante os trabalhos de remoção dos escombros, para que fossem reintegrados da forma mais fiel possível ao original. Por isso, eram enviadas diariamente fotografias do avanço dos trabalhos, a fim de documentar o estado dos vestígios encontrados. Paralelamente, foi realizada uma documentação completa dos materiais utilizados, das técnicas de construção e da possível identificação de espaços que não eram originalmente visíveis, como a "necesaria", ou tanque ou poço de recolha de águas residuais, localizado na parte traseira do edifício, ou a escadaria e os passeios de granito que rodeiam grande parte do edifício.

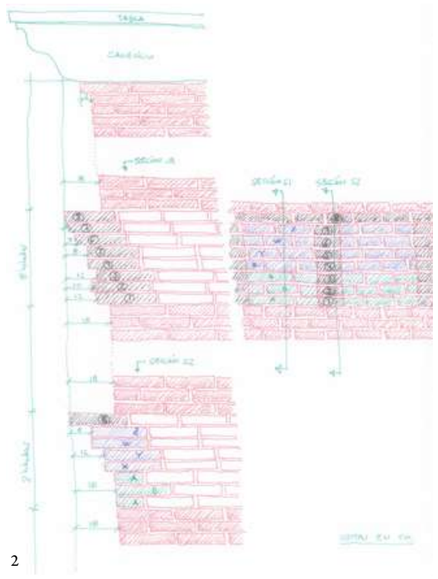
A recuperação foi levada a cabo com base nestes dados e elementos, utilizando exclusivamente tijolo, cal e madeira, com recurso a muros de alvenaria com estruturas de madeira e cobertura de madeira. Trata-se de um sistema muito comum nas construções madrilenhas desta época, no qual os montantes verticais (de 20 × 16 cm, separados por 147 cm) e as vigas horizontais de madeira são unidos entre si por

pletan con fábrica de ladrillo macizo tomada con mortero de cal. Las juntas se han igualado a las existentes, tanto las horizontales, con un ancho máximo de 1 cm, como las verticales (inferior a 1 cm). Además, las hiladas se han comenzado en las esquinas, donde, en hiladas alternas, se ha dispuesto un ladrillo terciado seguido de ladrillos a soga. Este ajuste permite mantener la modulación del aparejo en el resto del muro y alinear en una misma vertical las juntas correspondientes de las hiladas alternas.

meio de pregos, e os espaços entre eles são preenchidos com alvenaria de tijolo maciço assente com argamassa de cal. As juntas foram uniformizadas de acordo com as existentes, tanto as horizontais, com uma largura máxima de 1 cm, como as verticais (com largura inferior a 1 cm). Além disso, as fiadas foram iniciadas nos cantos, onde, em fiadas alternadas, foi disposto um tijolo de três quartos, seguido de tijolos dispostos à meia vez. Este ajuste permite manter a modulação do aparelho no resto do muro e alinhar na mesma vertical as juntas correspondentes das fiadas alternadas.



1



2

< 1. Setting out the brickwork in relation to the corbels 2. Detail drawn on site to indicate the brick bonding pattern | 1. Replanteo de la fábrica de ladrillo en correspondencia con los canecillos 2. Detalle dibujado en obra para indicar el aparejo de ladrillo | 1. Marcação da alvenaria de tijolo em correspondência com os cachorros 2. Pormenor desenhado em obra para indicar o aparelho de tijolo

> Southwest corner before and after the intervention | Esquina suroeste antes y después de la intervención | Canto sudoeste antes e após a intervenção (v Miguel Carrera)





This framework of timber and brick supports the floors, of wooden joists and planks with a compression layer, and the roof, also wholly of timber, with a ridge-and-rafter system. The floors rest on base plates, and one of these (on the north side) was fortunately conserved, so the rest were laid out so as to be all level at the top. No parts were removed, and where any were damaged, wood filling was applied as required, secured with resorcinol glue.

Sobre esta estructura entramada de madera y ladrillo se construyen los forjados, formados por viguetas y tablones de madera con capa de compresión, así como la cubierta, también íntegramente de madera, resuelta mediante una estructura de pares e hilera central. Los forjados se apoyan sobre durmientes y, afortunadamente, uno de ellos (en el lado norte) se conservaba, por lo que el resto se replanteó para que todos quedaran enrasados por su cara superior. En ningún caso se desmontó ninguna de las piezas y, cuando estas presentaban deterioros, se realizaron los correspondientes enchuletados de madera por la parte superior de las zonas dañadas, encolados con resorcina.

Sobre esta estrutura entramada de madeira e tijolo são construídos os pavimentos estruturais, formados por vigotes e pranchas de madeira com camada de compressão, bem como a cobertura, também inteiramente em madeira, realizada através de uma estrutura de pares (caibros) e uma viga de cumeeira. Os pavimentos estruturais assentam sobre vigas de apoio e, felizmente, uma delas (no lado norte) encontrava-se preservada, pelo que as restantes foram implantadas de modo a que todas ficassem alinhadas pela face superior. Em nenhum caso foi desmontada qualquer uma das peças e, quando estas apresentavam danos, foram realizados os correspondentes enxertos de madeira sobre as zonas danificadas, colados com cola de resorcina.

< Northwest corner | Esquina noroeste | Canto noroeste (Miguel Carrera)

> North elevation before and after the intervention | Alzado norte antes y después de la intervención | Alçado norte antes e após a intervenção (v Miguel Carrera)







Of particular significance was the appearance among the rubble of two nearly whole corbels, which served as models, along with old photos, for the new eaves, which rest on these corbels, ornamented on either side with knobs and supported by brickwork brackets. At the eaves, the pan tiles were laid projecting by 10 cm with the wider end outward, as is traditional in much of Madrid. The cover tiles have half of their length on the eaves and are set back 4 cm relative to the pan tiles. The roof surface was fitted over rigid waterproof underlay.

The brickwork windowsills replicate those appearing in old photos, though their outward slope was slightly accentuated. Incisions were made on the underside as drip grooves and the brick joints were pointed sharply to help shed rainwater.

Particularmente importante fue la aparición, entre los escombros, de dos canecillos casi íntegros, que han servido de modelo, junto con las fotografías antiguas, para la construcción del nuevo alero, apoyado sobre ménsulas de ladrillo y los citados canes, decorados en ambos lados con piezas troncocónicas. En estos aleros, las tejas canales se han dispuesto con un vuelo de 10 cm, colocando la boca ancha hacia el exterior, como es tradicional en muchas zonas de Madrid. La teja cobija dispone de media teja en el alero y se retranquea 4 cm respecto de la canal. Toda la cubierta se ha ejecutado sobre planchas impermeables rígidas.

Los alféizares de ladrillo de las ventanas reproducen las características de los que aparecen en las fotografías antiguas, si bien se incrementó ligeramente su pendiente hacia el exterior. Además, se ejecutó un corte en su cara inferior a modo de goterón y se dejaron más marcadas las llagas entre los ladrillos para facilitar la evacuación del agua.

Foi particularmente importante o achado, entre os escombros, de dois cachorros quase intactos, que serviram de modelo, juntamente com as fotografias antigas, para a construção do novo beiral, assente em mísulas de tijolo e nos referidos cachorros, decorados de ambos os lados com peças troncocónicas. Nestes beirais, as telhas de canal foram dispostas com uma saliência de 10 cm, colocando a parte mais larga virada para o exterior, como é tradicional em muitas zonas de Madrid. A telha de capa é constituída por meia telha no beiral e fica recuada 4 cm em relação à telha de canal. Toda a cobertura foi executada sobre placas rígidas impermeáveis.

Os peitoris de tijolo das janelas reproduzem as características dos que aparecem nas fotografias antigas, embora a sua inclinação para o exterior tenha sido ligeiramente aumentada. Além disso, foi feito um corte na sua face inferior para servir de pingadeira e as juntas verticais entre os tijolos foram deixadas mais marcadas para facilitar o escoamento da água.

[1] These houses are dealt with by two recent publications: *En este lugar de Carabanchel*, by Francisco José Nicolás, and *Empresarios catalanes y sus palacios y casas de recreo en Carabanchel* en los siglos XIX y XX, by Carlos Barciela López. Both survey some of the most notable properties that made Los Carabancheles a significant place of residence for the nineteenth-century aristocracy and gentry.

[2] Cecilia Ardanaz and Gonzalo López Muñiz Moragas were the historians responsible for drawing up the historical survey. This involved a thorough investigation and sifting of documentation at the Spanish National Library, the Madrid Institute of Architects Historical Department, the Madrid Region Digital Library, the Spanish National Archive, the Archive of the Madrid Region, the Land Registry, and the Archive of Notarial Records.

[1] Existen dos publicaciones recientes dedicadas a estos palacetes: *En este lugar de Carabanchel*, de Francisco José Nicolás, y *Empresarios catalanes y sus palacios y casas de recreo en Carabanchel en los siglos XIX y XX*, de Carlos Barciela López. Ambas ofrecen una visión de algunas de las principales fincas de recreo que convirtieron a los Carabancheles en un importante enclave residencial de la nobleza y la alta burguesía durante el siglo XIX.

[2] Cecilia Ardanaz y Gonzalo López Muñiz Moragas fueron los historiadores encargados de redactar la memoria histórica. Para ello llevaron a cabo un exhaustivo trabajo de investigación, con el expurgo de documentación en la Biblioteca Nacional de España, el Servicio Histórico del COAM, la Biblioteca Digital de la Comunidad de Madrid, el Archivo General de la Administración, el Archivo Regional de la Comunidad de Madrid, el Registro de la Propiedad y el Archivo de Protocolos.

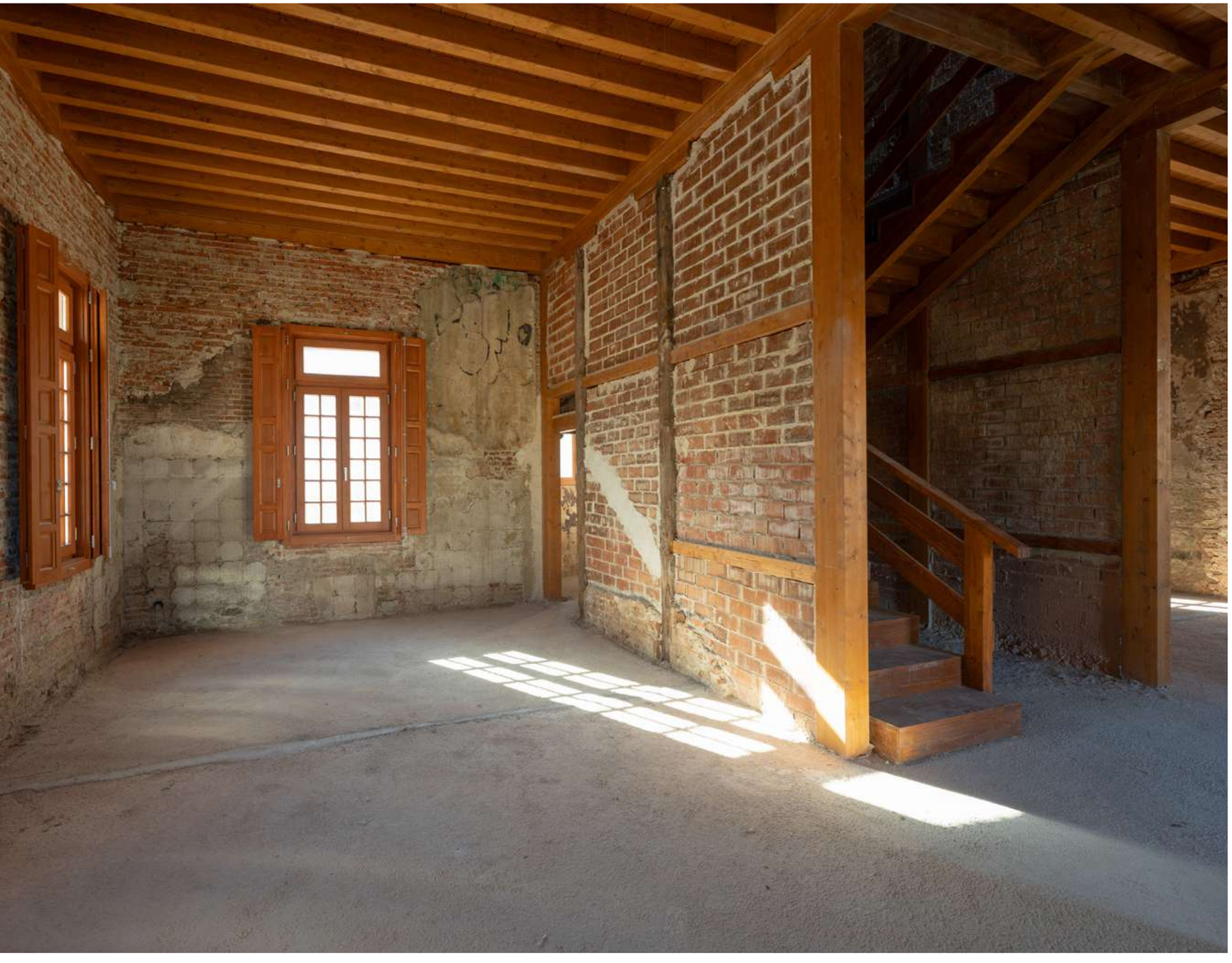
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[2] Cecilia Ardanaz e Gonzalo López Muñiz Moragas foram os historiadores encarregados de redigir a memória histórica. Para tal, realizaram um trabalho de investigação exaustivo, que incluiu a pesquisa e análise de documentação na Biblioteca Nacional de Espanha, no Serviço Histórico do COAM, na Biblioteca Digital da Comunidade de Madrid, no Arquivo Geral da Administração, no Arquivo Regional da Comunidade de Madrid, no Registo Predial e no Arquivo de Protocolos.





> Stairwell and rooms before and after the intervention | Caja de escalera y salas antes y después de la intervención | Caixa de escadas e salas antes e após a intervenção



Interior view | Vista interior | Vista interior

Biography | Biografía | Biografia

Juan de Dios de la Hoz Martínez

Born in Madrid in 1963. He worked in the firm of his father, a draftsman, until qualifying as an architect at the Madrid Polytechnic University in 1988. Over nearly forty years he has practiced professionally in the Madrid Region, Castilla-La Mancha, Extremadura, Andalusia, the Murcia and Valencia Regions, the Canary Islands, and Aragón, as well as in Rome and Panama City. He engages chiefly in the restoration and rehabilitation of historic heritage and has worked on six cathedrals as well as dozens of castles, monasteries, palaces, and churches. In all cases he has sought to use primarily traditional materials and techniques. He has received many prizes and awards, including the Rafael Manzano Prize for New Traditional Architecture (2018), the Madrid Region Culture Prize (2017), and the Europa Nostra Award (2016). He is also a member of the Board of Trustees of the Traditional Building Cultures Foundation.

Nació en Madrid en 1963. Trabajó en la empresa de su padre, delineante de profesión, hasta obtener el título de arquitecto por la Universidad Politécnica de Madrid en 1988. Durante casi cuarenta años ha desarrollado su actividad profesional en Madrid, Castilla-La Mancha, Extremadura, Andalucía, Murcia, la Comunidad Valenciana, Canarias y Aragón, así como en Roma y Ciudad de Panamá. Dedicado fundamentalmente a la restauración y la rehabilitación del patrimonio histórico, ha intervenido en seis catedrales, además de en decenas de castillos, monasterios, palacios e iglesias. En todos los casos ha procurado utilizar de manera predominante materiales y técnicas tradicionales. Ha recibido numerosos premios y distinciones, entre los que figuran el Premio Rafael Manzano de Nueva Arquitectura Tradicional (2018), el Premio de Cultura de la Comunidad de Madrid (2017) y el Premio Europa Nostra (2016). Es también miembro del Patronato de la Fundación Culturas Constructivas Tradicionales.

Nasceu em Madrid em 1963. Trabalhou na empresa do pai, desenhador técnico de profissão, até obter o diploma de arquiteto pela Universidade Politécnica de Madrid, em 1988. Ao longo de quase quarenta anos, desenvolveu a sua atividade profissional em Madrid, Castela-La Mancha, Extremadura, Andaluzia, Múrcia, Comunidade Valenciana, Ilhas Canárias e Aragão, bem como em Roma e na Cidade do Panamá. Dedicado fundamentalmente ao restauro e à reabilitação do património histórico, interveio em seis catedrais, além de dezenas de castelos, mosteiros, palácios e igrejas. Procurou sempre utilizar predominantemente materiais e técnicas tradicionais. Recebeu inúmeros prémios e distinções, entre os quais se destacam o Prémio Rafael Manzano de Nova Arquitetura Tradicional (2018), o Prémio de Cultura da Comunidade de Madrid (2017) e o Prémio Europa Nostra (2016). É também membro do Patronato da Fundação Culturas Construtivas Tradicionais.

Ses Veles Puigpunyent: Building Tradition and Passive Strategies for Low-Impact Public Housing in Mallorca

Ses Veles Puigpunyent: Tradición constructiva y estrategias pasivas para una vivienda pública de bajo impacto en Mallorca

Ses Veles Puigpunyent: Tradição construtiva e estratégias passivas para uma habitação pública de baixo impacto em Maiorca

Marc Alventosa,
Joan Fortuny,
Xavier Morell

Located in Puigpunyent, a small municipality at the foot of the Sierra de Tramuntana in Mallorca, this public housing project, commissioned by IBAVI (the Balearic Housing Institute), arose from a reflection on how to build within Mallorcan tradition using local resources, passive strategies, and time-honored building systems reinterpreted from a contemporary viewpoint. Sustainability is included not as an addition but as part of a single architectural rationale in which environmental, material, and spatial options converge.

Ubicado en Puigpunyent, un pequeño municipio al pie de la Sierra de Tramuntana, en Mallorca, este proyecto de vivienda pública, impulsado por el IBAVI (Instituto Balear de la Vivienda), surgió de una reflexión sobre cómo construir desde el territorio a partir de recursos locales, estrategias pasivas y sistemas constructivos tradicionales reinterpretados desde una mirada contemporánea. La sostenibilidad no se incorpora como una capa añadida, sino que forma parte de una misma lógica arquitectónica en la que convergen las decisiones ambientales, materiales y espaciales.

Localizado em Puigpunyent, um pequeno município no sopé da Serra de Tramuntana, em Maiorca, este projeto de habitação pública, promovido pelo IBAVI (Instituto Balear da Habitação), surgiu de uma reflexão sobre como construir partindo do território e utilizando recursos locais, estratégias passivas e sistemas construtivos tradicionais reinterpretados a partir de uma perspetiva contemporânea. A sustentabilidade não é incorporada como uma camada adicional, mas faz parte de uma mesma lógica arquitetónica na qual convergem as decisões ambientais, materiais e espaciais.

< Main façade and entrance to the dwellings | Fachada principal y acceso a las viviendas | Fachada principal e acesso às habitações (José Hevia)



> Site plan | Plano de situación | Planta de localização

Puigpunyent conserves a character shared with many villages of the Mallorcan interior, with stonework, pitched tiled roofs, and close ties between architecture, climate, and landscape. The location is slightly cooler than other parts of the island. Landscape and climate as well as local standards were design determinants from the outset of the project. On the one hand, there were strict regulations on the use of stone in facades, and on the other, the commission specified especially ambitious environmental and energy targets.

Puigpunyent conserva el carácter de muchos pueblos del interior de Mallorca, con construcciones de piedra, cubiertas inclinadas de teja y una estrecha relación entre arquitectura, clima y paisaje. La parcela se ubica en una zona ligeramente más fresca que otras partes de la isla. Tanto el paisaje y el clima como la normativa local fueron determinantes desde el inicio del proyecto. Por un lado, existía una normativa estricta sobre la integración de la piedra en las fachadas; por otro, el encargo planteaba unos objetivos ambientales y energéticos especialmente ambiciosos.

Puigpunyent conserva o caráter de muitas povoações do interior de Maiorca, com edifícios de pedra, coberturas inclinadas de telha e uma estreita relação entre arquitetura, clima e paisagem. O terreno situa-se numa zona ligeiramente mais fresca do que outras partes da ilha. Tanto a paisagem e o clima como a regulamentação local foram determinantes desde o início do projeto. Por um lado, existia uma regulamentação rigorosa sobre a integração da pedra nas fachadas; por outro, o projeto tinha objetivos ambientais e energéticos particularmente ambiciosos.

1. Excavation of the site and recovery of local stone 2. Test wall built with earth and stones from the excavation 3. Composition of the cyclopean wall: local stone and earth | 1. Excavación del terreno y recuperación de piedra local 2. Muro de prueba construido con tierra y piedras procedentes de la excavación 3. Composición del muro ciclópeo: piedra local y tierra | 1. Escavação do terreno e recuperação de pedra local 2. Muro de ensaio construído com terra e pedras provenientes da escavação 3. Composição da parede ciclópica: pedra local e terra (José Hevia)



1



2



3

The role of IBAVI in this regard was crucial. As a public body it has for years been promoting research in the fields of social housing, sustainability, and local materials, along with ways of building able to reduce environmental impact. Far from operating only with a public administrative outlook, the institute fosters experimentation and applied innovation. This allowed the project to be conducted as a research initiative on materials and climate in which many of the options chosen were the result of tests, studies, and adjustments made along the way.

One main starting point was a study for the Cyclopean walls that were to be built of earth and stones dug from the site itself, and the use in the work of some of the waste generated during construction, such as crushed brick.

The building options chosen were shaped from the start by the housing crisis on the island and the need for the flats to be completed in a short timeline. Accordingly, the timing for a structural system of Cyclopean walls with lime—whose curing process takes months, as opposed to concrete systems, which reach roughly 70% strength in seven days—was incompatible with the stipulated delivery period.

For this reason the idea of erecting a single load-bearing layer of Cyclopean masonry was ruled out in favor of a hybrid solution able to meet the thermal and material specifications while allowing the work to be carried out time-efficiently. The chosen approach was to erect a double wall: an inner load-bearing structure of bricks fired with biomass and filled with quarry sand for thermal inertia, and an envelope of Cyclopean lime masonry 45 cm thick.

En este sentido, el papel del IBAVI fue fundamental. Como institución pública, lleva años impulsando investigaciones sobre vivienda social, sostenibilidad y materiales de proximidad, además de promover formas de construcción capaces de reducir el impacto ambiental. Lejos de operar únicamente desde una lógica administrativa, el instituto fomenta procesos de experimentación e innovación aplicada. Esta actitud permitió desarrollar el proyecto como un campo de investigación material y climática, en el que muchas de las decisiones fueron el resultado de ensayos, estudios y ajustes realizados a lo largo del proceso.

Uno de los principales puntos de partida fue el estudio de los muros ciclópeos construidos con la tierra y las piedras procedentes de la propia excavación del terreno, así como la integración en la obra de parte de los residuos generados durante la construcción, como el ladrillo machacado.

La emergencia habitacional existente en la isla y la necesidad de construir estas viviendas en un plazo muy reducido condicionaron desde el inicio las decisiones constructivas del proyecto. En este contexto, los tiempos de ejecución de un sistema estructural de muros ciclópeos de cal –cuyos procesos de fraguado requieren varios meses, frente a los sistemas de hormigón, que alcanzan aproximadamente el 70 % de su resistencia en siete días– resultaban incompatibles con los plazos de entrega exigidos.

Por este motivo, se descartó resolver el edificio mediante una única hoja portante de muro ciclópeo y se optó por una solución híbrida que permitiera mantener las prestaciones térmicas y materiales previstas, al tiempo que hacía posible una ejecución más rápida y eficiente. La estrategia consistió en construir un sistema de dos capas: una estructura interior portante realizada con ladrillos cocidos con biomasa, rellenos de arena de cantera para aportar inercia térmica, y una envolvente

Neste sentido, o papel do IBAVI foi fundamental. Enquanto instituição pública, há anos que promove investigações sobre habitação social, sustentabilidade e materiais locais, além de promover formas de construção capazes de reduzir o impacto ambiental. Longe de funcionar apenas com base numa lógica administrativa, o instituto incentiva processos de experimentação e inovação aplicada. Esta atitude permitiu desenvolver o projeto como um campo de investigação sobre materiais e clima, no qual muitas das decisões resultaram de ensaios, estudos e ajustes realizados ao longo do processo.

Um dos principais pontos de partida foi o estudo dos muros ciclópicos construídos com terra e pedras provenientes da própria escavação do terreno, bem como a integração na obra de parte dos resíduos gerados durante a construção, como o tijolo triturado.

A emergência habitacional existente na ilha e a necessidade de construir estas habitações num prazo muito curto condicionaram, desde o início, as decisões construtivas do projeto. Neste contexto, os prazos de execução de um sistema estrutural de muros ciclópicos de cal – cujos processos de presa requerem vários meses, em comparação com os sistemas de betão, que atingem aproximadamente 70 % da sua resistência em sete dias– revelaram-se incompatíveis com os prazos de entrega exigidos.

Por este motivo, descartou-se a possibilidade de construir o edifício com uma única parede portante de alvenaria ciclópica e optou-se por uma solução híbrida que permitisse manter as características térmicas e materiais previstas, ao mesmo tempo que possibilitasse uma execução mais rápida e eficiente. A estratégia consistiu na construção de um sistema de duas camadas: uma estrutura interior portante realizada com tijolos cozidos com recurso a biomassa, preenchidos com areia de



1



2

1. Local production of ceramic pieces fired using biomass 2. Ceramic blocks filled with quarry sand and cork shavings | 1. Producción local de piezas cerámicas cocidas con biomasa 2. Bloques cerámicos rellenos de arena de cantera y virutas de corcho | 1. Produção local de peças cerâmicas cozidas com biomassa 2. Blocos cerâmicos preenchidos com areia de pedreira e aparas de cortiça (José Hevia)

The use of ceramic masonry for the inner load-bearing layer allowed the work to progress quickly, with an early start being made on interior fixtures and finishes. This was essential to optimizing the project timing, enabling the erection in parallel of the Cyclopean enclosure with its necessarily longer building and curing times. The hybrid solution thus complied not just with the technical and environmental criteria but also with a building timeline responding to the housing crisis and the need for much reduced delivery times.

Vital to this process were the tests and analyses performed at the Science & Technology Laboratory of the Balearic Islands University (UIB) by Dr. Juan Muñoz and Dr. Cristian Carmona, who examined and verified the self-supporting capacity of the Cyclopean wall and its thermal behavior in view of applicable standards. As a result of this work, and in order to fulfil the transmittance values set by the Spanish building standards (CTE), waste cork chippings were incorporated. This brought simultaneous improvements in the system's thermal insulation, hygroscopic performance, and environmental behavior.

The use of such materials is not only for aesthetic or identitarian reasons, as each one contributes to the building's climate behavior. The thermal mass of the walls and flooring, the breathability of the claddings and coatings, and the hygroscopic capacity of the materials regulates humidity and passively stabilizes indoor temperatures. Rather than relying on complex technological systems, the project recovered climate-responsive principles historically present in Mediterranean architecture, updating them to meet today's standards of comfort and efficiency.

The Trombe roof is probably the most innovative aspect in this regard. Partly based on the traditional sloping roofs of local architecture, it includes a solar gain chamber to capture warmth in the winter months. The system collects solar energy and conveys warm air to the interiors, significantly moderating energy demand. In the summer, by contrast, the same chamber is refreshed and shaded, promoting heat dissipation and cross ventilation.

This system allows the block to be seen as a nearly-zero energy building (NZEB), in which energy demand is reduced by largely passive means. Orientation, cross ventilation, sun shading, thermal inertia, and solar gain combine in a single indoor climate system. The building's final energy consumption is just 7.02 kWh/m²/year, and its CO_2 emissions are some 50% lower than those of conventional buildings. The circularity criteria applied during the project also minimized waste generation and allowed for future dismantling and reuse of materials.

La ejecución de la hoja interior portante mediante fábrica cerámica permitió levantar la estructura del edificio con gran rapidez y, sobre todo, iniciar de forma temprana los trabajos de instalaciones y acabados interiores. Esta circunstancia resultó fundamental para optimizar los tiempos globales de la obra, ya que hizo posible desarrollar en paralelo la construcción de la envolvente exterior ciclópea, cuyos tiempos de ejecución y fraguado son necesariamente más largos. De este modo, la solución híbrida respondía no sólo a criterios técnicos y ambientales, sino también a una estrategia constructiva adaptada a la urgencia habitacional y a la necesidad de reducir significativamente los plazos de entrega.

En este proceso resultaron fundamentales los ensayos y análisis realizados en el Laboratorio Científico-Técnico de la Universitat de les Illes Balears (UIB), de la mano del Dr. Juan Muñoz y del Dr. Cristian Carmona, quienes estudiaron y verificaron tanto la capacidad autoportante del muro ciclópeo como su comportamiento térmico de acuerdo con la normativa vigente. Como resultado de estos trabajos, y con el objetivo de cumplir los valores de transmitancia exigidos por el Código Técnico de la Edificación, se incorporaron virutas de corcho procedentes de residuos. Esto permitió mejorar simultáneamente el aislamiento térmico, la higroscopicidad y el comportamiento ambiental del sistema.

La utilización de estos materiales no responde únicamente a una voluntad estética o identitaria. Cada uno de ellos participa en el comportamiento climático del edificio. La masa térmica de los muros y pavimentos, la transpirabilidad de los revestimientos y la capacidad higroscópica de los materiales permiten regular la humedad y estabilizar de forma pasiva la temperatura interior. En lugar de depender de sistemas tecnológicos complejos, el proyecto recupera principios climáticos históricamente presentes en la arquitectura mediterránea y los actualiza conforme a los estándares contemporáneos de confort y eficiencia.

La cubierta Trombe constituye probablemente el elemento más innovador del proyecto en este sentido. Inspirada parcialmente en las cubiertas tradicionales a dos aguas de la arquitectura local, incorpora una cámara de captación solar que permite aprovechar el aire calentado durante el invierno para climatizar las viviendas. Durante los meses fríos, el sistema capta la energía solar y conduce el aire caliente hacia el interior, lo que reduce la demanda energética. En verano, por el contrario, la misma cámara funciona como un espacio ventilado y de sombra, lo que favorece la disipación del calor y potencia la ventilación cruzada.

Este sistema permitió concebir el edificio como un *Nearly Zero Energy Building* (NZEB), en el que la reducción de la demanda energética se consigue principalmente mediante estrategias pasivas. La orientación, la ventilación cruzada,

A execução da parede interior portante através de alvenaria cerâmica permitiu erguer a estrutura do edifício com grande rapidez e, sobretudo, iniciar antecipadamente os trabalhos de instalações e acabamentos interiores. Esta circunstância revelou-se fundamental para otimizar os prazos globais da obra, uma vez que permitiu desenvolver em paralelo a construção da envolvente exterior em alvenaria ciclópica, cujos tempos de execução e presa são necessariamente mais longos. Desta forma, a solução híbrida respondeu não só a critérios técnicos e ambientais, mas também a uma estratégia construtiva adaptada à urgência habitacional e à necessidade de reduzir significativamente os prazos de entrega.

Neste processo, revelaram-se fundamentais os ensaios e análises realizados no Laboratório Científico-Técnico da Universitat de les Illes Balears (UIB), com a colaboração do Dr. Juan Muñoz e do Dr. Cristian Carmona, que estudaram e verificaram tanto a capacidade autoportante do muro ciclópico como o seu comportamento térmico, de acordo com as normas em vigor. Como resultado destes trabalhos, e com o objetivo de cumprir os valores de transmitância exigidos pelo Código Técnico de la Edificación, foram incorporadas aparas de cortiça provenientes de resíduos. Isto permitiu melhorar simultaneamente o isolamento térmico, a higroscopicidade e o desempenho ambiental do sistema.

A utilização destes materiais não se deve apenas a uma questão estética ou de identidade. Cada um deles contribui ativamente para o comportamento climático do edifício. A massa térmica das paredes e dos pavimentos, a respirabilidade dos revestimentos e a capacidade higroscópica dos materiais permitem regular a humidade e estabilizar de forma passiva a temperatura interior. Em vez de depender de sistemas tecnológicos complexos, o projeto recupera princípios climáticos historicamente presentes na arquitetura mediterrânica e atualiza-os de acordo com os padrões contemporâneos de conforto e eficiência.

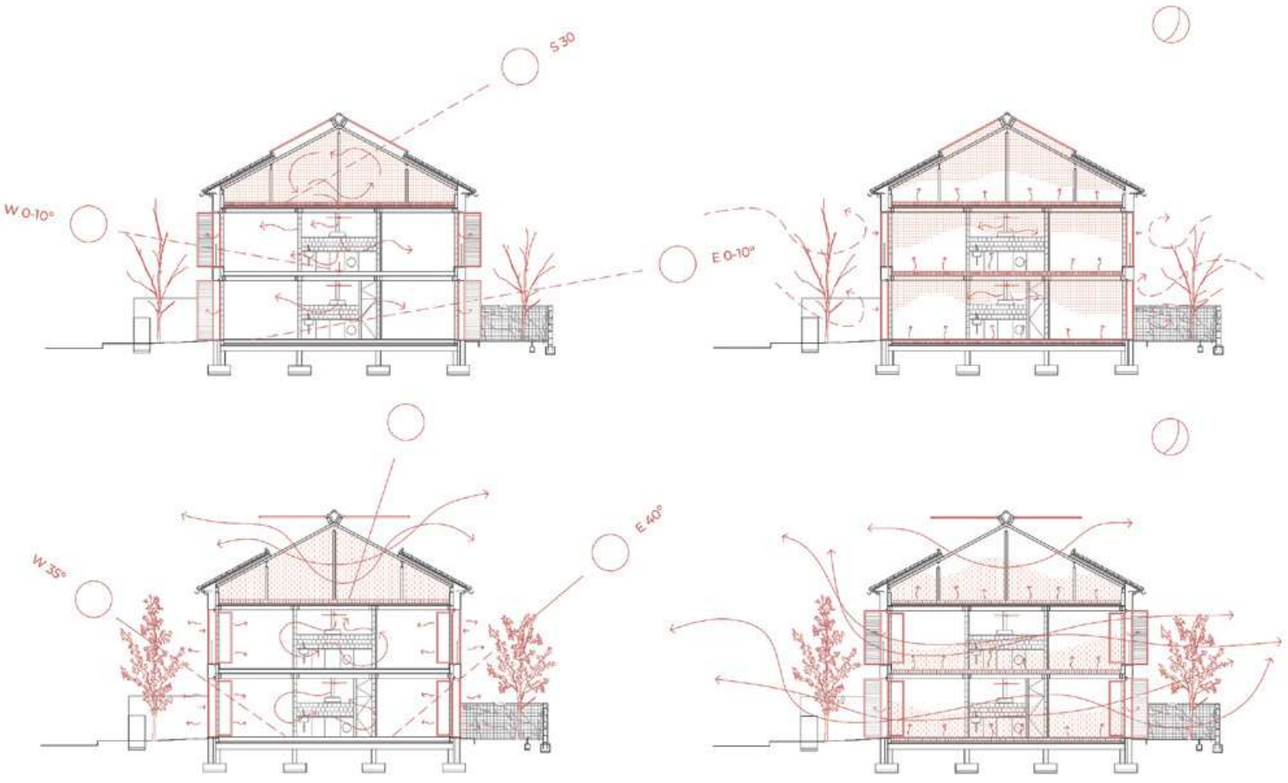
A cobertura Trombe constitui, provavelmente, o elemento mais inovador do projeto neste sentido. Inspirada, em parte, nos telhados tradicionais de duas águas da arquitetura local, incorpora uma câmara de captação solar que permite aproveitar o ar aquecido durante o inverno para climatizar as habitações. Durante os meses frios, o sistema capta a energia solar e conduz o ar quente para o interior, o que reduz a demanda energética. No verão, pelo contrário, essa mesma câmara funciona como um espaço ventilado e com sombra, o que favorece a dissipação do calor e potencia a ventilação cruzada.

Este sistema permitiu conceber o edifício como um *Nearly Zero Energy Building* (NZEB), no qual a redução da demanda energética é alcançada principalmente através de estratégias passivas. A orien-

las protecciones solares, la inercia térmica y la captación solar forman parte de un mismo sistema climático integrado. El consumo energético final del edificio alcanza apenas 7,02 kWh/m²·año, mientras que las emisiones de CO_2 se reducen aproximadamente un 50 % respecto a las de construcciones convencionales. Del mismo modo, los criterios de circularidad aplicados en el proyecto permitieron reducir significativamente la generación de residuos durante la obra y prever el futuro desmontaje y la reutilización de los materiales.

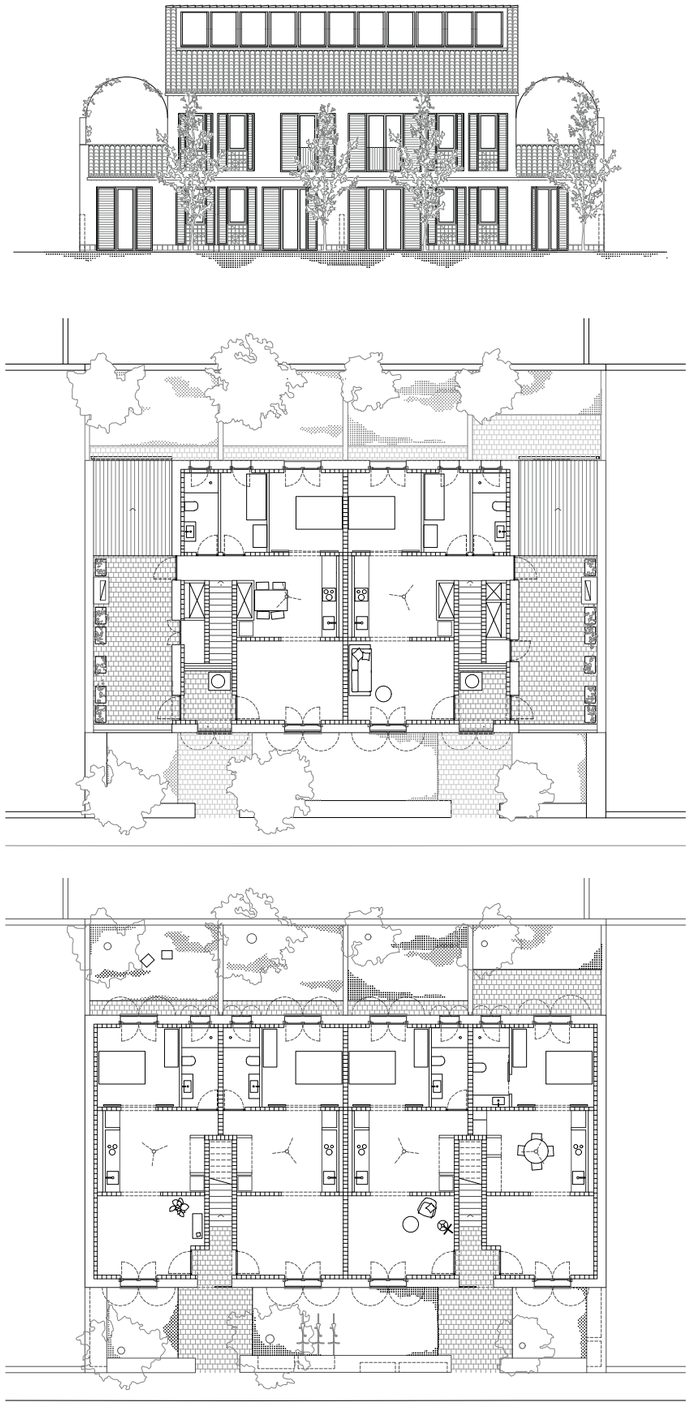
tação, a ventilação cruzada, as proteções solares, a inércia térmica e a captação solar fazem parte de um único sistema climático integrado. O consumo energético final do edifício atinge apenas 7,02 kWh/m²·ano, enquanto as emissões de CO_2 são reduzidas em cerca de 50 % em relação às de edifícios convencionais. Da mesma forma, os critérios de circularidade aplicados no projeto permitiram reduzir significativamente a produção de resíduos durante a obra e prever a futura desmontagem e reutilização dos materiais.

Passive climate strategies and thermal behaviour of the building | Estrategias climáticas pasivas y comportamiento térmico del edificio | Estratégias climáticas passivas e comportamento térmico do edifício





The building within the landscape of Puigpunyent | El edificio en el paisaje de Puigpunyent | O edifício na paisagem de Puigpunyent (José Hevia)



Aside from its technical aspects, Ses Veles Puigpunyent prompts a reflection on domesticity and the relationship between dwelling spaces and exteriors. The block is organized over two floors and contains six flats: four on the ground floor and two above. The lower flats have one bedroom and adjoining private gardens while the upper ones have two bedrooms and large side terraces. The floor plan is made up of three structural bays, configuring spaces that are open, flexible, and easily ownable by their residents.

Más allá de los aspectos técnicos, el proyecto también plantea una reflexión sobre la domesticidad y la relación entre la vivienda y el espacio exterior. El edificio se organiza en dos plantas y alberga seis viviendas: cuatro unidades en la planta baja y dos en la planta superior. Las viviendas inferiores cuentan con un dormitorio y acceso directo a jardines privados, mientras que las superiores disponen de dos dormitorios y amplias terrazas laterales. Tres crujías estructurales organizan la planta y permiten configurar espacios abiertos, flexibles y fácilmente apropiables por sus habitantes.

Para além dos aspetos técnicos, o projeto suscita também uma reflexão sobre a vida doméstica e a relação entre a habitação e o espaço exterior. O edifício está organizado em dois pisos e alberga seis habitações: quatro unidades no rés-do-chão e duas no piso superior. As habitações do rés-do-chão dispõem de um quarto e acesso direto a jardins privados, enquanto as do piso superior dispõem de dois quartos e amplos terraços laterais. Três crujias estruturais organizam a planta e permitem configurar espaços abertos, flexíveis e facilmente apropriáveis pelos seus habitantes.

< Elevation and floor plans | Alzado y plantas | Alçado e plantas

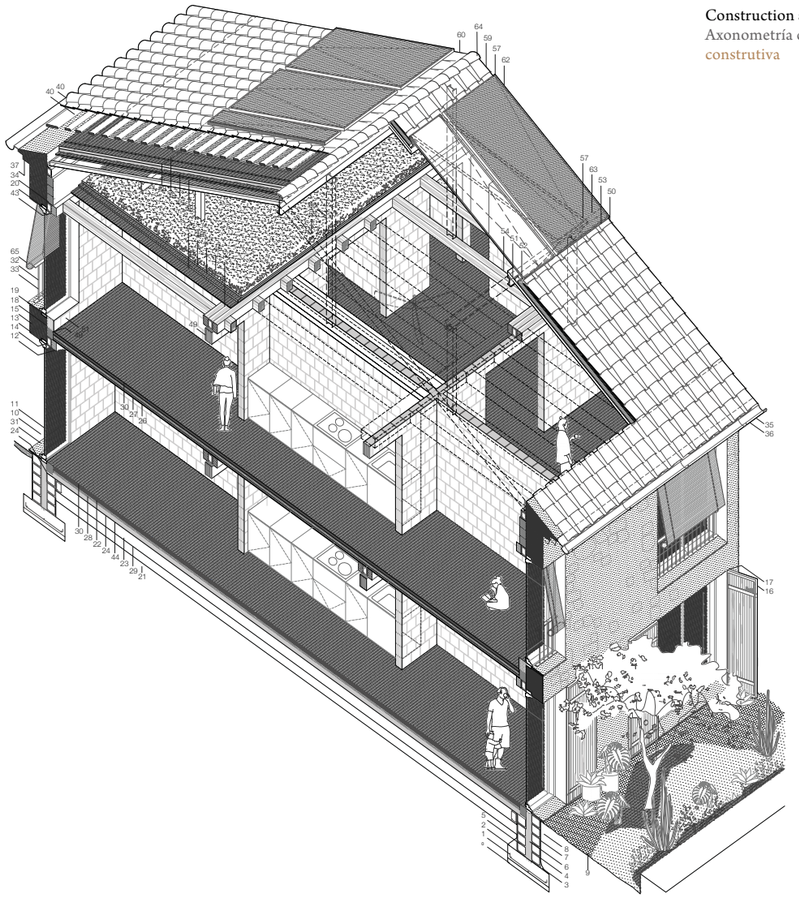
> Main façade and entrance courtyard | Fachada principal y patio de acceso | Fachada principal e pátio de acesso (José Hevia)



The kitchen has a central position in each flat, articulating the domestic realm and contributing to smooth connections between the interior and exterior. Residual or overly hierarchical spaces are generally avoided and every square meter is intended to be employed in diverse ways that could vary over time. Such flexibility is especially appreciable in the smaller flats, where opportunities for the inhabitants to take ownership of the spaces are of particular value.

La cocina ocupa una posición central dentro de las viviendas y articula los distintos espacios domésticos, con lo que favorece relaciones más fluidas entre el interior y el exterior. En general, el proyecto evita los espacios residuales o excesivamente jerarquizados y busca que cada metro cuadrado pueda utilizarse de maneras diversas y cambiantes a lo largo del tiempo. Esta flexibilidad resulta especialmente relevante en viviendas de dimensiones reducidas, donde la posibilidad de apropiación por parte de sus habitantes adquiere un valor fundamental.

A cozinha ocupa uma posição central nas habitações e articula os diferentes espaços domésticos, favorecendo assim relações mais fluidas entre o interior e o exterior. De um modo geral, o projeto evita espaços residuais ou excessivamente hierarquizados e procura que cada metro quadrado possa ser utilizado de formas diversas e variáveis ao longo do tempo. Esta flexibilidade é especialmente relevante em habitações de dimensões reduzidas, onde a possibilidade de apropriação por parte dos seus habitantes assume um valor fundamental.



Construction axonometric drawing | Axonometría constructiva | Axonometria construtiva

Connectivity with the exterior is one of the project's notable aspects. In a Mediterranean climate such as that of Mallorca, where one can live outdoors for much of the year, the relationship between interior and exterior is of the essence. Pergolas, terraces, and courtyards function as mediatory spaces in terms of climate and domesticity, allowing everyday life to extend beyond the building limits.

La relación con el exterior constituye uno de los aspectos más importantes del proyecto. En un clima mediterráneo como el de Mallorca, que permite habitar los espacios exteriores durante gran parte del año, la relación entre el interior y el exterior adquiere un papel central. Las pérgolas, las terrazas y los patios funcionan como espacios de mediación climática y doméstica, de modo que la vida cotidiana puede extenderse más allá del límite construido.

A relação com o exterior constitui um dos aspetos mais importantes do projeto. Num clima mediterrânico como o de Maiorca, que permite habitar os espaços exteriores durante grande parte do ano, a relação entre o interior e o exterior assume um papel central. As pérgulas, os terraços e os pátios funcionam como espaços de mediação climática e doméstica, de modo que a vida quotidiana pode estender-se para além dos limites da construção.



Entrance courtyard | Patio de acceso | Pátio de acesso (José Hevia)

The terraces of the upper flats, particularly ample in relation to the size of the apartments, add considerably to their spatial quality and possibilities of use. The gardens adjoining the ground floor likewise allow for a degree of connection between residents, with visual and spatial relationships encouraging a dynamic of community coexistence.

Las terrazas de las viviendas superiores, particularmente generosas en proporción al tamaño de los apartamentos, amplían considerablemente su calidad espacial y las posibilidades de uso. Del mismo modo, los jardines de la planta baja permiten cierto grado de vinculación entre los vecinos y establecen relaciones visuales y espaciales que favorecen una dinámica de convivencia comunitaria.

Os terraços das habitações do piso superior, particularmente amplos em relação à dimensão dos apartamentos, aumentam consideravelmente a sua qualidade espacial e as possibilidades de utilização. Da mesma forma, os jardins do rés-do-chão permitem um certo grau de ligação entre os vizinhos e estabelecem relações visuais e espaciais que favorecem uma dinâmica de convivência comunitária.



Ground level patios | Patios en planta baja | Pátios no rés do chão (José Hevia)

The flats have now been inhabited and monitored for a year, and the data gathered on their energy behavior have been extraordinarily positive, for they remain consistently within the thermal comfort range while consuming little energy. Beyond energy data, one of the project's most notable outcomes has been the quality of spatial relationships generated. A telling image of this was captured once the flats had been occupied, showing the inhabitants on the threshold between the interior and the garden using this intermediate space as a natural extension of the domestic sphere. The scene conveys a sense of ease and ownership of the place that is especially significant to us as architects.

Las viviendas ya llevan un año habitadas y monitorizadas, y la información obtenida sobre su comportamiento energético ha sido extraordinariamente positiva, ya que mantienen una temperatura constante dentro del rango de confort y un consumo energético muy reducido. Sin embargo, más allá de los datos energéticos, quizá uno de los mayores logros del proyecto reside en la calidad de las relaciones espaciales que genera. Existe una imagen especialmente significativa tomada una vez habitadas las viviendas. En ella pueden verse sus habitantes ocupando el umbral entre el interior de la casa y el jardín y utilizando ese espacio intermedio como una extensión natural de la vida doméstica. La escena transmite una sensación de confort y apropiación del espacio que resulta importante para nosotros como arquitectos.

As habitações já estão ocupadas e são monitorizadas há um ano, e a informação obtida sobre o seu desempenho energético tem sido extraordinariamente positiva, uma vez que mantêm uma temperatura constante dentro da faixa de conforto térmico e um consumo energético muito reduzido. No entanto, para além dos dados energéticos, talvez uma das maiores conquistas do projeto resida na qualidade das relações espaciais que gera. Existe uma fotografia particularmente significativa, tirada depois de as habitações terem sido ocupadas. Nela, é possível ver os seus habitantes a ocupar o limiar entre o interior da casa e o jardim e a utilizar esse espaço intermédio como uma extensão natural da vida doméstica. A cena transmite uma sensação de conforto e apropriação do espaço que se revela importante para nós, enquanto arquitetos.

South façade and private terraces | Fachada sur y terrazas privadas | Fachada sul e terraços privados (José Hevia)









Detail of the cyclopean stone wall façade built with stone extracted during excavation on the same plot, and of the primary ventilation system of the Trombe roof | Detalle de la fachada de muro ciclópeo con piedra extraída de excavación de la misma parcela y de la ventilación primaria de la cubierta Trombe | Pormenor da fachada em alvenaria ciclópica de pedra extraída durante a escavação do próprio terreno e do sistema de ventilação primária da cobertura Trombe (José Hevia)

The works were also marked by a spirit of cooperation between the two offices, Alventosa Morell in Barcelona and Joan Fortuny Arquitectos based in Mallorca. The involvement of professionals with local connections was vital in resolving construction issues and in work with traditional techniques and materials still forming part of the island's material culture.

In this regard, the project avoided treating tradition as a frozen image or a mere reproduction of vernacular elements. Traditional Mallorcan architecture appears not as a stylistic gesture but as cultural precedent regarding how to build in this climate and landscape. The pitched roof, stonework, lime, sun shading, and thermal mass are not formal allusions but systems which historically catered for specific environmental conditions.

El proceso de obra también estuvo marcado por una lógica de colaboración entre las dos oficinas, Alventosa Morell, en Barcelona, y Joan Fortuny Arquitectos, con sede en Mallorca. La participación de profesionales vinculados al territorio resultó fundamental tanto para resolver aspectos constructivos como para trabajar con técnicas y materiales tradicionales que todavía forman parte de la cultura material de la isla.

En ese sentido, el proyecto evita entender la tradición como una imagen congelada o como una mera reproducción de elementos vernáculos. La arquitectura tradicional mallorquina no aparece aquí como un gesto estilístico, sino como un aprendizaje cultural sobre cómo construir en ese clima y en ese paisaje. La cubierta inclinada, la piedra, la cal, las protecciones solares o la masa térmica no constituyen citas formales, sino sistemas que históricamente respondieron a unas condiciones ambientales específicas.

O processo de construção foi também marcado por uma lógica de colaboração entre os dois gabinetes, a Alventosa Morell, em Barcelona, e a Joan Fortuny Arquitectos, com sede em Maiorca. A participação de profissionais ligados ao território revelou-se fundamental, tanto para resolver aspetos construtivos como para trabalhar com técnicas e materiais tradicionais que ainda fazem parte da cultura material da ilha.

Nesse sentido, o projeto evita entender a tradição como uma imagem estática ou como uma mera reprodução de elementos vernáculos. A arquitetura tradicional de Maiorca não surge aqui como um gesto estilístico, mas sim como uma aprendizagem cultural sobre como construir nesse clima e nessa paisagem. A cobertura inclinada, a pedra, a cal, as proteções solares ou a massa térmica não constituem citações formais, mas sim sistemas que, historicamente, responderam a condições ambientais específicas.

The project's innovation arose precisely from this revisiting of tradition. The building systems are essentially simple and familiar, but employed in those combinations and with those aims required today. The Cyclopean facade executed with stone dug from the site, the Trombe roof integrated into a traditional house type, or the use of local materials according to criteria of circularity brought historical techniques up to date without prejudice to their local grounding.

The end result is a residential ensemble with low environmental impact that has supported the local economy and local know-how. Through the use of materials from the vicinity, passive thermal strategies, and reversible building sys-

La innovación del proyecto surge precisamente de esa reinterpretación de la tradición. Los sistemas constructivos son esencialmente sencillos y conocidos, pero se utilizan mediante las combinaciones y con los objetivos hoy requeridos. La fachada ciclópea realizada con piedra procedente de la excavación, la cubierta Trombe integrada en una tipología doméstica tradicional o el empleo de materiales locales conforme a criterios de circularidad permiten actualizar técnicas históricas sin perder su vínculo con el territorio.

El resultado es un conjunto residencial que reduce su impacto ambiental al tiempo que fortalece las economías y los saberes locales. Mediante el empleo de materiales de proximidad, estrategias

A inovação do projeto surge precisamente dessa reinterpretação da tradição. Os sistemas construtivos são essencialmente simples e conhecidos, mas são utilizados através de combinações e com objetivos que respondem às exigências atuais. A fachada ciclópica realizada com pedra proveniente da escavação, a cobertura Trombe integrada numa tipologia habitacional tradicional ou a utilização de materiais locais de acordo com critérios de circularidade permitem atualizar técnicas históricas sem perder a sua ligação ao território.

O resultado é um conjunto habitacional que reduz o seu impacto ambiental, ao mesmo tempo que reforça as economias e os saberes locais. Através da utilização de materiais de proximidade, estratégias

View from the terrace towards one of the dwellings on the upper floor, and semi-covered access to the ground-floor dwellings | Vista desde la terraza hacia una de las viviendas del piso superior y acceso semicubierto a las viviendas de la planta baja | Vista a partir do terraço para uma das habitações do piso superior e acesso semicoberto às habitações do rés do chão (José Hevia)









1. Interior with timber ceiling and relationship to the garden 2. Living area | 1. Interior con techo de madera y relación con el jardín 2. Espacio de estar | 1. Interior com teto de madeira e relação com o jardim 2. Espaço de estar (José Hevia)

tems, the project posits a way of building able simultaneously to address the climate crisis and to perpetuate Mallorcan island culture. Rather than opposing innovation and tradition, Ses Veles Puigpunyent shows that many answers for sustainable contemporary architecture are to be found precisely in a careful update of existing building knowledge.

Ses Veles Puigpunyent is a multifamily housing block built in 2024 in Puigpunyent (Mallorca), with an area of 400 m². The project was designed by Joan Fortuny and Alventosa Morell Arquitectes (Marc Alventosa and Xavier Morell) in collaboration with Baltasar Nicolau (building engineer); Andrea Capella Mònaco, Joan Martí Elias, Carolina Capella Mònaco, Jordi Adell Roig, Júlia Nabona Jasans, Sandra Vargas, Marina Morey, Gori Llambias, Raquel Mirón, Rebeca López, and Eric Moyá (architects); Estudis d'Enginyeria de les Illes (engineering), and Juan Fortuny Siquier (structures). Photos by José Hevia.

pasivas y sistemas reversibles, el proyecto propone una manera de construir capaz de responder simultáneamente a la emergencia climática y a la cultura insular mallorquina. Más que oponer innovación y tradición, Ses Veles Puigpunyent plantea que muchas de las respuestas para una arquitectura contemporánea sostenible pueden encontrarse precisamente en la actualización cuidadosa de conocimientos constructivos existentes.

Ses Veles Puigpunyent es un proyecto de vivienda plurifamiliar construido en 2024 en Puigpunyent (Mallorca), con una superficie de 400 m². El proyecto fue desarrollado por Joan Fortuny y Alventosa Morell Arquitectes (Marc Alventosa y Xavier Morell), con la colaboración de Baltasar Nicolau (arquitecto técnico); Andrea Capella Mònaco, Joan Martí Elias, Carolina Capella Mònaco, Jordi Adell Roig, Júlia Nabona Jasans, Sandra Vargas, Marina Morey, Gori Llambias, Raquel Mirón, Rebeca López y Eric Moyá (arquitectos); Estudis d'Enginyeria de les Illes (ingeniería), y Juan Fortuny Siquier (estructuras). Las fotografías son de José Hevia.

passivas e sistemas reversíveis, o projeto propõe uma forma de construir capaz de responder simultaneamente à emergência climática e à cultura insular de Maiorca. Em vez de opor inovação e tradição, Ses Veles Puigpunyent sugere que muitas das respostas para uma arquitetura contemporânea sustentável podem ser encontradas precisamente na atualização cuidadosa dos conhecimentos construtivos existentes.

Ses Veles Puigpunyent é um projeto de habitação multifamiliar construído em 2024 em Puigpunyent (Maiorca), com uma área de 400 m². O projeto foi desenvolvido por Joan Fortuny e Alventosa Morell Arquitectes (Marc Alventosa e Xavier Morell), com a colaboração de Baltasar Nicolau (arquiteto técnico); Andrea Capella Mònaco, Joan Martí Elias, Carolina Capella Mònaco, Jordi Adell Roig, Júlia Nabona Jasans, Sandra Vargas, Marina Morey, Gori Llambias, Raquel Mirón, Rebeca López e Eric Moyá (arquitetos); Estudis d'Enginyeria de les Illes (engenharia) e Juan Fortuny Siquier (estruturas). As fotografias são de José Hevia.

Biographies | Biografías | Biografias

Marc Alventosa

Marc Alventosa is an architect, cofounder of Alventosa Morell Arquitectes. He graduated at the La Salle University School of Architecture in Barcelona and earned a postgraduate degree in Architecture and Energy Efficiency at the Polytechnic University of Catalonia (UPC). Since 2014, with Xavier Morell, he has been conducting projects focused on sustainability, energy efficiency, and spatial quality. His work has been recognized with various national and international awards and featured by specialist architectural media.

Marc Alventosa es arquitecto y cofundador de Alventosa Morell Arquitectes. Graduado por la Escola Tècnica Superior d'Arquitectura La Salle de Barcelona y con un posgrado en Arquitectura y Eficiencia Energética por la Universitat Politècnica de Catalunya (UPC), desarrolla junto a Xavier Morell, desde 2014, proyectos centrados en la sostenibilidad, la eficiencia energética y la calidad espacial. Su trabajo ha sido reconocido con diversos premios nacionales e internacionales y publicado en medios especializados de arquitectura.

Marc Alventosa é arquiteto e cofundador da Alventosa Morell Arquitectes. Formado pela Escola Tècnica Superior d'Arquitectura La Salle de Barcelona e com uma pós-graduação em Arquitetura e Eficiência Energética pela Universitat Politècnica de Catalunya (UPC), desenvolve, em conjunto com Xavier Morell, desde 2014, projetos centrados na sustentabilidade, na eficiência energética e na qualidade espacial. O seu trabalho tem sido reconhecido com vários prémios nacionais e internacionais e publicado em meios de comunicação especializados em arquitetura.

Xavier Morell

Xavier Morell is an architect, cofounder of Alventosa Morell Arquitectes. He graduated at the La Salle University School of Architecture in Barcelona and went into partnership with Marc Alventosa in 2014. His professional practice focuses on the development of designs combining sustainability, building efficiency, and responsiveness to context. His firm's work has been recognized internationally and featured by specialist architectural journals and platforms.

Xavier Morell es arquitecto y cofundador de Alventosa Morell Arquitectes. Graduado por la Escola Tècnica Superior d'Arquitectura La Salle de Barcelona, fundó el estudio junto a Marc Alventosa en 2014. Su práctica profesional se centra en el desarrollo de proyectos que integran sostenibilidad, eficiencia constructiva y atención al contexto. La obra del estudio ha sido reconocida internacionalmente y publicada en destacadas revistas y plataformas especializadas en arquitectura.

Xavier Morell é arquiteto e cofundador da Alventosa Morell Arquitectes. Formado pela Escola Tècnica Superior d'Arquitectura La Salle, de Barcelona, fundou o gabinete juntamente com Marc Alventosa em 2014. A sua prática profissional centra-se no desenvolvimento de projetos que integram sustentabilidade, eficiência construtiva e atenção ao contexto. O trabalho realizado pelo estúdio tem sido reconhecido internacionalmente e publicado em revistas de referência e plataformas especializadas em arquitetura.

Joan Fortuny Giró

Joan Fortuny is an architect whose firm, founded in 2010 in Barcelona, has since 2016 been based in Palma de Mallorca. His professional practice explores the use of local materials, vernacular techniques, and proximity economy models in contemporary architecture rooted in place and with low environmental impact. His work embraces housing, public space, and urbanism in projects often arising from public tenders. Since 2022 he has taught sustainable construction and rehabilitation at the Balearic Island University (UIB). His track record has been recognized with various national and international awards and his work featured by specialist media, both printed and digital.

Joan Fortuny Giró es arquitecto. Fundó su estudio en Barcelona en 2010 y, desde 2016, tiene su sede en Palma. Su práctica profesional investiga el uso de materiales locales, técnicas vernáculas y modelos de economía de proximidad para desarrollar una arquitectura contemporánea, arraigada al lugar y de bajo impacto ambiental. Su trabajo abarca proyectos de vivienda, espacio público y urbanismo, con frecuencia surgidos de concursos públicos. Desde 2022 imparte docencia en construcción sostenible y rehabilitación en la Universitat de les Illes Balears (UIB). Su trayectoria ha sido reconocida con diversos premios nacionales e internacionales y publicada en medios especializados, tanto impresos como digitales.

Joan Fortuny Giró é arquiteto. Fundou o seu gabinete em Barcelona em 2010 e, desde 2016, tem a sua sede em Palma. A sua prática profissional investiga a utilização de materiais locais, técnicas vernáculas e modelos de economia de proximidade para desenvolver uma arquitetura contemporânea, enraizada no local e de baixo impacto ambiental. O seu trabalho abrange projetos de habitação, espaços públicos e urbanismo, frequentemente resultantes de concursos públicos. Desde 2022, leciona construção sustentável e reabilitação na Universitat de les Illes Balears (UIB). A sua trajetória foi reconhecida com vários prémios nacionais e internacionais e publicada em meios de comunicação especializados, tanto impressos como digitais.

Dar Al-A'mir: Architecture of Geography, Al-Baha, Saudi Arabia

Dar Al-A'mir: Arquitectura de la geografía en Al-Baha, Arabia Saudí

Dar Al-A'mir: Arquitetura da geografia, Al-Baha, Arábia Saudita

M. Hosam Jiroudy

Nature and Culture

The Arabian Peninsula has a varied topography and climate and a wealth of natural resources, with landscape ranging from coral coasts and cool mountains of plutonic rock in the southwest to expanses of limestone, sandstone, and basalt on the arid Arabian plateau, along with fertile oases, sources of mud for bricks. Over centuries, these settings have contributed to the development of diverse cultures and building traditions,

Naturaleza y cultura

La península arábiga presenta una topografía y un clima variados, así como una gran riqueza de recursos naturales. Su paisaje abarca desde las costas coralinas y las frescas montañas de rocas plutónicas del suroeste hasta las extensiones de piedra caliza, arenisca y basalto de la árida meseta arábiga, además de fértiles oasis que proporcionan barro para la fabricación de ladrillos. A lo largo de los siglos, estos entornos han contribuido al desarrollo de

Natureza e cultura

A Península Arábica apresenta uma topografia e um clima variados, bem como uma grande riqueza de recursos naturais, com paisagens que vão desde as costas de coral e as montanhas de rocha plutónica, de clima mais fresco, no sudoesteaté extensões de calcário, arenito e basalto no árido planalto Arábico, a par de oásis férteis que fornecem barro para o fabrico de tijolos. Ao longo dos séculos, estes cenários contribuíram para o desenvolvimento de

< The gradual growth of the house during construction, assimilating a fruit tree that bears the mix and the savor of its own soil | El crecimiento gradual de la casa durante la construcción, como un árbol frutal que lleva en sus frutos la esencia y el sabor de la tierra en la que crece | O crescimento gradual da casa durante a construção, como uma árvore de fruto que traz nos seus frutos a essência e o sabor da terra onde cresce (Saudi Umran Society)



> Location of the house on the edge of Al-A'mir village in Baljurashi (Al-Baha region) | Ubicación de la casa en el límite de la aldea de Al-A'mir, en Baljurashi (región de Al-Baha) | Localização da casa no limite da aldeia de Al-A'mir, em Baljurashi (região de Al-Baha) (Google Maps)

resulting in distinct architectural vernaculars.

In southwestern Arabia among the Al-Sarah mountains, this house stands at the edge of Al-A'mir village in Baljurashi (region of Al-Baha). Often referred to as the Garden of Hijaz, these highlands have rich soils, seasonal rainfall, and a temperate climate, with volcanic formations and sedimentary valleys populated by communities rooted in tribal continuity, agriculture, and the rhythms of weekly markets.

Traditional architecture south of Al-Sarah is a pure expression of place, responding to terrain, climate, and social life: fortified towers, compact urban fabrics, narrow alleyways, and intimate

diversas culturas y tradiciones constructivas, que han dado lugar a expresiones arquitectónicas vernáculas diferenciadas.

En el suroeste de Arabia, entre las montañas de Al-Sarah, esta casa se alza en el límite de la aldea de Al-A'mir, en Baljurashi (región de Al-Baha). Conocidas a menudo como el Jardín del Hiyaz, estas tierras altas cuentan con suelos fértiles, precipitaciones estacionales y un clima templado, con formaciones volcánicas y valles sedimentarios habitados por comunidades vinculadas a la continuidad tribal, la agricultura y los ritmos de los mercados semanales.

La arquitectura tradicional al sur de Al-Sarah constituye una expresión directa del lugar y responde al terreno, el clima y la

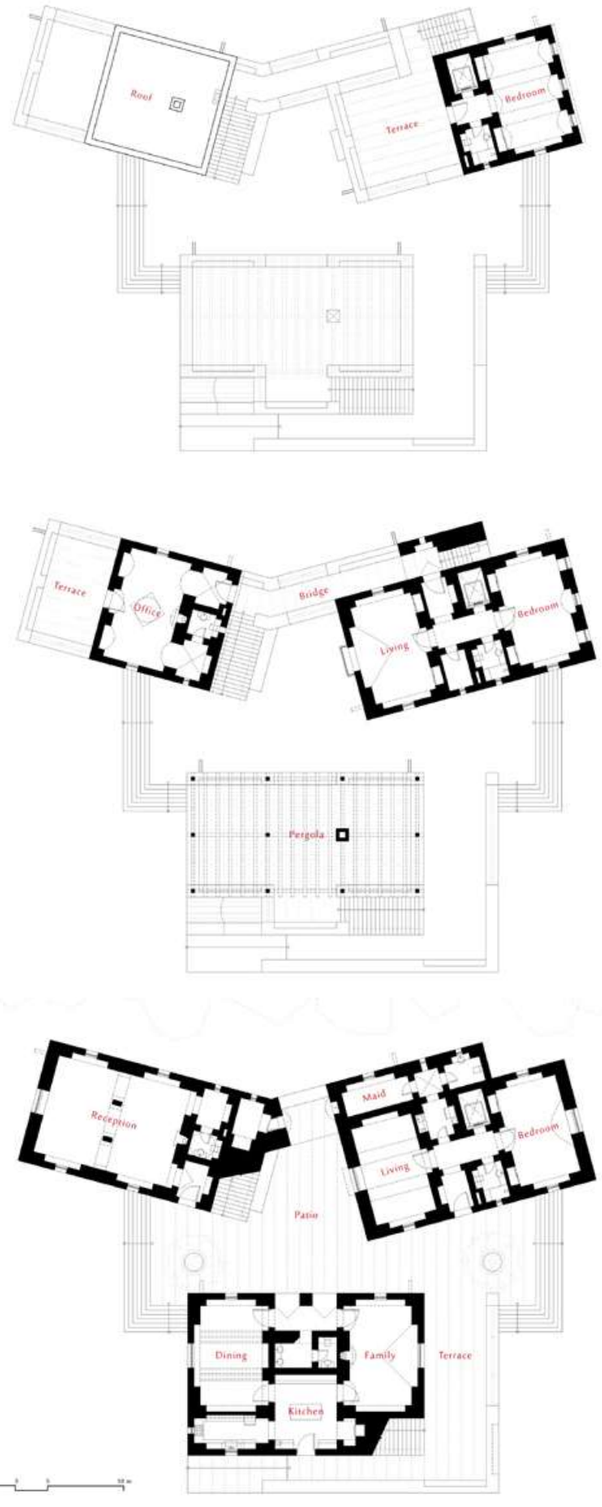
diversas culturas e tradições de construção, resultando em estilos arquitetónicos vernáculos distintos.

No sudoeste da Arábia, entre as montanhas de Al-Sarah, esta casa ergue-se nos arredores da aldeia de Al-A'mir, em Baljurashi (região de Al-Baha). Frequentemente designadas como o "Jardim do Hijaz", estas terras altas apresentam solos férteis, precipitação sazonal e um clima temperado, com formações vulcânicas e vales sedimentares habitados por comunidades enraizadas na continuidade tribal, na agricultura e nos ritmos dos mercados semanais.

A arquitetura tradicional a sul de Al-Sarah é uma expressão direta do lugar, adaptando-se ao terreno, ao clima e à vida social:

North elevation design proposal | Propuesta de diseño del alzado norte | Proposta de desenho do alçado norte





Ground-floor, first-floor, and second-floor plans | Plantas baja, primera y segunda | Plantas do rés-do-chão, primeiro e segundo pisos

squares. Buildings rise with slender openings, made entirely of local stone, earth, and wood. Traditionally there was an interplay between built form and landscape, a harmony reflecting the inhabitants' resourcefulness in creating beauty that draws on the land without exhausting it.

Dar Al-A'mir emerged from the owner's long-standing aspiration to revive the stone construction he observed as a child with his late father. He envisioned a home that would stand as a legacy. This aim shaped the approach: building today as his ancestors would have done, while preserving the history and culture of the place.

As construction encroaches on and makes use of nature, the continuation of traditional practice generally involves transitioning from a mindset of abundance to one of scarcity, consuming only what is needed and using materials optimally. The design thus adopts the spatial logic and structural clarity of historical structures while integrating contemporary needs sustainably.

vida social mediante torres fortificadas, tejidos urbanos compactos, callejuelas estrechas y plazas de escala íntima. Los edificios, con vanos esbeltos, están construidos íntegramente con piedra, tierra y madera locales. Tradicionalmente existió una estrecha relación entre la forma construida y el paisaje, una armonía que refleja el ingenio de sus habitantes para crear belleza a partir de los recursos de la tierra sin agotarlos.

Dar Al-A'mir surgió del deseo, largamente perseguido por su propietario, de recuperar la construcción en piedra que había observado de niño junto a su difunto padre. Su intención era crear una casa que perdurase como legado. Este propósito determinó el planteamiento del proyecto: construir hoy como lo habrían hecho sus antepasados y, al mismo tiempo, preservar la historia y la cultura del lugar.

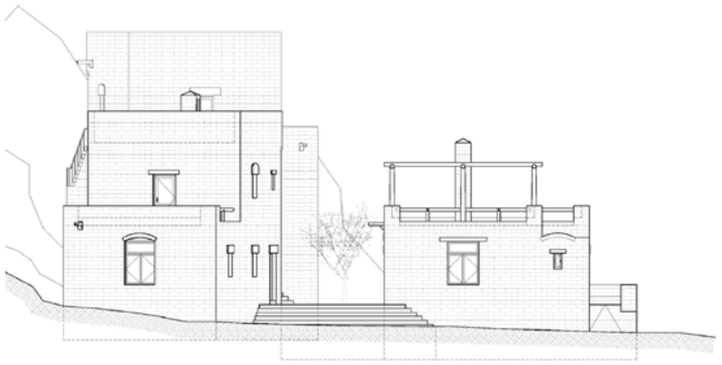
Dado que la construcción ocupa y utiliza el medio natural, la continuidad de las prácticas tradicionales implica, por lo general, pasar de una mentalidad de abundancia a otra de escasez, que permita consumir únicamente lo necesario y aprovechar los materiales de manera óptima. El diseño adopta así la lógica espacial y la claridad estructural de las construcciones históricas, al tiempo que integra de forma sostenible las necesidades contemporáneas.

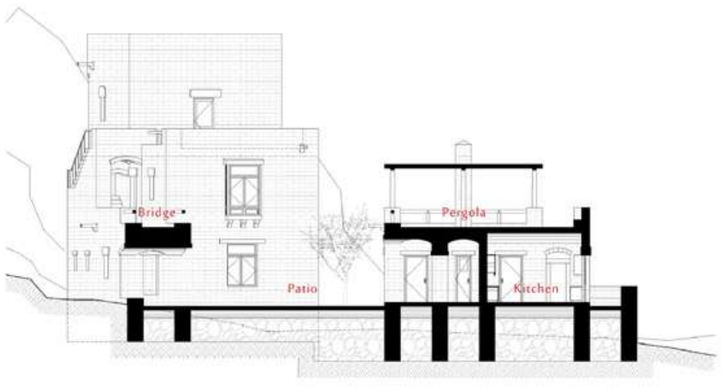
torres fortificadas, tecidos urbanos compactos, ruelas estreitas e praças de escala íntima. Os edifícios erguem-se com vãos esbeltos, construídos inteiramente com pedra, terra e madeira locais. Tradicionalmente existiu uma relação entre a forma construída e a paisagem, uma harmonia que reflete o engenho dos habitantes para criar uma beleza que tira partido da terra sem a esgotar.

Dar Al-A'mir surgiu da aspiração de longa data do proprietário de dar nova vida à construção em pedra que tinha praticado em criança com o seu falecido pai. Ele imaginou uma casa que se tornasse um legado. Este objetivo moldou a abordagem: construir hoje tal como os seus antepassados teriam feito, preservando simultaneamente a história e a cultura do local.

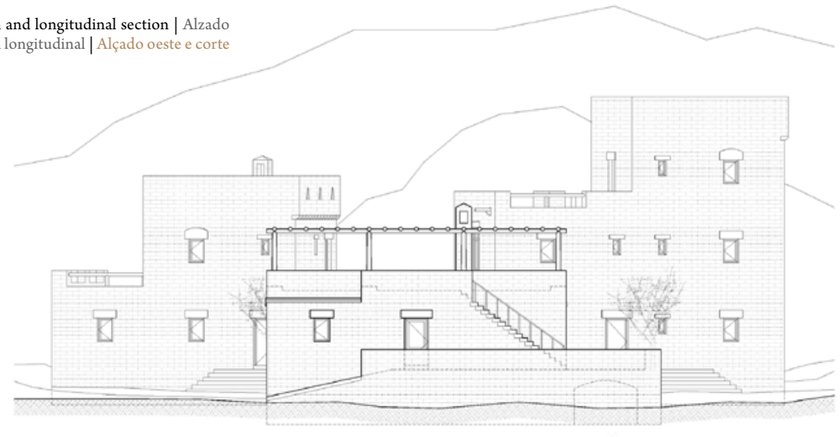
Uma vez que a construção ocupa e utiliza o meio natural, a continuidade das práticas tradicionais implica, geralmente, a transição de uma mentalidade de abundância para uma de escassez, consumindo apenas o necessário e utilizando os materiais de forma otimizada. O projeto adota, assim, a lógica espacial e a clareza estrutural das construções históricas, integrando simultaneamente as necessidades contemporâneas de forma sustentável.

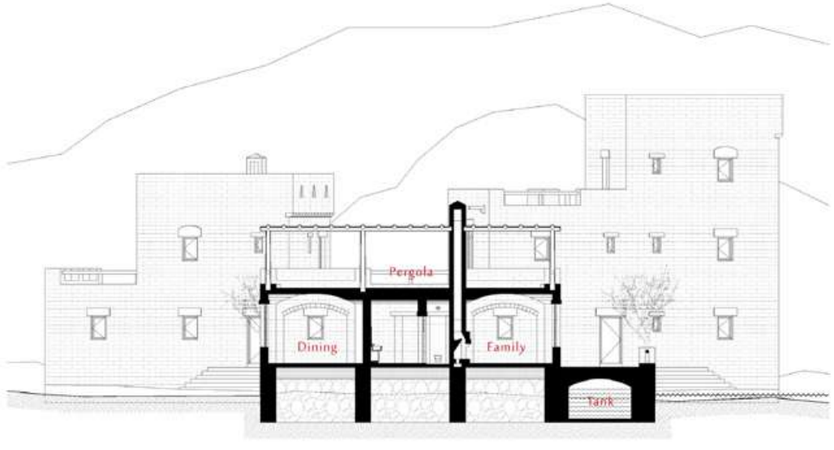
North elevation and cross-section | Alzado norte y sección transversal | Alçado norte e corte transversal





West elevation and longitudinal section | Alzado oeste y sección longitudinal | Alçado oeste e corte longitudinal





The owner's desire to house his children, grandchildren, and guests gave rise to a composition of stepped volumes in the local style. This anchors the house to the terrain, frames expansive views, and invites residents and visitors to engage with the area and the region's built heritage. Functionally, the program comprises three interconnected structures embedded in a rocky hillside: a north block for guests with a library above, a west block for living and dining with access to a terrace, and a three-level residential suite to the south, each floor having its own entrance. This arrangement enables circulation horizontally around the three masses and vertically via stairs, offering varied prospects from rooms and terraces. The interstitial space between blocks contains a shaded patio for outdoor gatherings while preserving privacy.

Internally, each space is distinguished by a unique interaction of stone, wood, and brick, avoiding repetition while maintaining overall character.

El deseo del propietario de alojar a sus hijos, nietos e invitados dio lugar a una composición de volúmenes escalonados según la tradición local. Esta disposición arraiga la casa en el terreno, enmarca amplias vistas e invita a residentes y visitantes a relacionarse con el entorno y con el patrimonio construido de la región. Funcionalmente, el programa se distribuye en tres estructuras interconectadas e insertas en una ladera rocosa: un bloque al norte destinado a los invitados, con una biblioteca en la planta superior; un bloque al oeste para las zonas de estar y comedor, con acceso a una terraza; y un bloque residencial de tres niveles al sur, cada uno con acceso independiente. Esta organización permite circular horizontalmente alrededor de los tres volúmenes y verticalmente mediante escaleras, y ofrece distintas perspectivas desde las estancias y terrazas. El espacio intermedio entre los bloques alberga un patio sombreado destinado a reuniones al aire libre, al tiempo que preserva la privacidad.

En el interior, cada espacio se distingue por una combinación singular de piedra, madera y ladrillo, que evita la repetición y mantiene al mismo tiempo el carácter unitario del conjunto.

O desejo do proprietário de acolher os seus filhos, netos e convidados deu origem a uma composição de volumes escalonados, ao estilo local. Isto ancora a casa ao terreno, enquadra vistas amplas e convida os residentes e visitantes a interagir com a área e com o património arquitetónico da região. Do ponto de vista funcional, o projeto compreende três estruturas interligadas, integradas numa encosta rochosa: um bloco a norte destinado aos hóspedes, com uma biblioteca no piso superior; um bloco a oeste destinado à sala de estar e de jantar, com acesso a um terraço; e um bloco residencial de três pisos a sul, sendo que cada piso tem a sua própria entrada. Esta disposição permite a circulação horizontal em torno dos três corpos e a circulação vertical através de escadas, oferecendo vistas variadas a partir das divisões e terraços. O espaço intersticial entre os blocos acolhe um pátio sombreado para convívios ao ar livre, preservando simultaneamente a privacidade.

No interior, cada espaço distingue-se por uma interação única entre pedra, madeira e tijolo, evitando a repetição e mantendo, ao mesmo tempo, o caráter geral.

Materials and Structure

The stones of this region express the geology of Sarat Al-Baha against the broader geodiversity of Arabia. Locally quarried granite—dense, thermally efficient, and structurally resilient—can be shaped and assembled on-site, creating a dialogue between raw origins and final form.

Local materials were prepared and erected using traditional methods. A stone workshop was established on-site and rocks extracted from the site itself and from nearby areas were manually processed and employed in structural masonry: foundations, exterior walls, columns, lintels, floors, and arched roofs.

Materiales y estructura

Las piedras de esta región son expresión de la geología de Sarat Al-Baha dentro de la amplia geodiversidad de Arabia. El granito de extracción local –denso, eficiente desde el punto de vista térmico y resistente estructuralmente– puede labrarse y colocarse en obra, lo que establece un diálogo entre la materia en su estado original y su forma final.

Los materiales locales se prepararon y colocaron mediante métodos tradicionales. Se instaló a pie de obra un taller de cantería, donde se trabajaron manualmente las piedras extraídas del propio emplazamiento y de zonas cercanas para emplearlas en elementos estructurales de fábrica: cimientos, muros exteriores, columnas, dinteles, forjados y cubiertas abovedadas.

Los cimientos, sobre los que descansan muros portantes de 80 centímetros de espesor, se construyeron mediante hiladas monolíticas y trabadas de piedra para aportar estabilidad estructural y soportar las cubiertas abovedadas, lo que garantiza su durabilidad y comportamiento térmico. Cada bloque se labró manualmente hasta alcanzar una altura uniforme, lo que pone de manifiesto el potencial físico y estético de la piedra. Un elemento destacado de las mezquitas y viviendas históricas de esta región es el *zafer*, una columna tallada habitualmente en madera de enebro. En este caso, se reinterpretó mediante piezas monolíticas de granito labradas a mano, que respetan las proporciones tradicionales y aportan mayor capacidad portante para sostener las plantas superiores.

Materiais e estrutura

As pedras desta região refletem a geologia de Sarat Al-Baha no contexto da geodiversidade mais ampla da Arábia. O granito extraído localmente –denso, termicamente eficiente e estruturalmente resistente– pode ser talhado e colocado em obra, criando um diálogo entre as origens em bruto e a forma final.

Os materiais locais foram preparados e erigidos utilizando métodos tradicionais. Foi criada uma oficina de cantaria no local, onde as pedras extraídas do próprio terreno e de áreas próximas foram trabalhadas manualmente e utilizadas na alvenaria estrutural: fundações, paredes exteriores, colunas, lintéis, pavimentos e coberturas abobadadas.

As fundações que suportam paredes estruturais com 80 centímetros de espessura foram construídas com fiadas monolíticas e interligadas de pedra, para conferir estabilidade estrutural e sustentar as coberturas abobadadas, garantindo durabilidade e desempenho térmico. Cada bloco foi talhado manualmente até uma altura uniforme, evidenciando o potencial físico e estético da pedra. Uma característica proeminente nas mesquitas e casas históricas desta região é o *zafer*, uma coluna esculpida, geralmente em madeira de zimbro. Aqui, esta foi reinterpretada em peças monolíticas de granito talhadas à mão, respeitando as proporções ancestrais e, ao mesmo tempo, proporcionando maior capacidade portante para suportar os pisos superiores.

1: Stages in transforming available stone boulders into finished building blocks 2: Stone ties placed every third course in the foundations and walls | 1: Fases de transformación de los bloques de piedra disponibles en piezas acabadas para la construcción 2: Llaves de piedra dispuestas cada tres hiladas en los cimientos y muros | 1: Etapas de transformação dos blocos de pedra disponíveis em peças acabadas para a construção 2: Travas de pedra dispostas a cada três fiadas nas fundações e paredes (2: Yazid Al-Shehri)



1



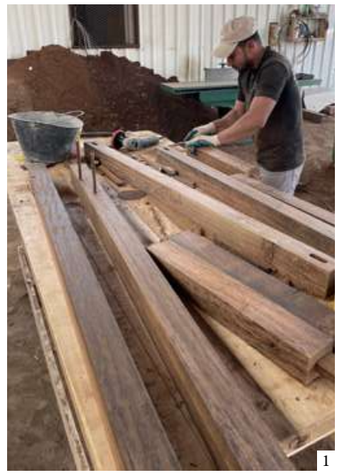
2







A variety of brick and stone ceiling configurations | Diversas configuraciones de techos de ladrillo y piedra | Diversas configurações de tetos de tijolo e pedra



1



2



3

1. On-site assembly of wooden doors and windows 2. Installation of the reception hall ceiling 3. Dining hall ceiling | 1. Montaje de puertas y ventanas de madera en obra 2. Instalación del techo del vestíbulo de recepción 3. Teto do comedor | 1. Montagem de portas e janelas de madeira em obra 2. Instalação do teto do átrio de receção 3. Teto da sala de jantar

All the wood used in the project was reclaimed and then repurposed on-site. After cleaning and cutting, pieces were put together using all-wood joints allowing for seasonal expansion and contraction. Reclaimed teak was used for doors, windows, lintels, and flooring, while pine poles were reused as structural elements in flat roofs and for pergolas. Local load-bearing bricks—an evolution from mud, chosen for their structural and thermal qualities—were used for interior walls and vaulted ceilings.

Toda la madera utilizada en el proyecto era recuperada y se reutilizó en la propia obra. Tras su limpieza y corte, las piezas se ensamblaron mediante uniones realizadas íntegramente en madera, que permiten los movimientos estacionales de dilatación y contracción. La madera de teca recuperada se empleó en puertas, ventanas, dinteles y pavimentos, mientras que los rollizos de pino se reutilizaron como elementos estructurales en cubiertas planas y pérgolas. Para los muros interiores y las cubiertas abovedadas se utilizaron ladrillos portantes locales –una evolución del adobe, elegidos por sus propiedades estructurales y térmicas–.

Toda a madeira utilizada no projeto foi recuperada e posteriormente reutilizada no local. Após a limpeza e o corte, as peças foram montadas utilizando encaixes executados inteiramente em madeira, permitindo a expansão e contração sazonais. Foi utilizada teca recuperada nas portas, janelas, lintéis e pavimentos, e foram reutilizados elementos roliços de pinho como elementos estruturais em coberturas planas e em pérgulas. Foram utilizados tijolos estruturais locais –uma evolução da construção em terra, escolhidos pelas suas qualidades estruturais e térmicas– nas paredes interiores e nas coberturas abobadadas.





Zafer, the traditional column of southern Arabia, carved from a single piece of granite in the reception hall and complemented by a timber ceiling | *Zafer,* la columna tradicional del sur de Arabia, tallada en una única pieza de granito en la sala de recepción y complementada por un techo de madera | *Zafer,* a coluna tradicional do sul da Arábia, talhada numa única peça de granito na sala de receção e complementada por um teto de madeira

Place and People

The project's realization reflects the owner's vision, his bond with his village, and his commitment to its building heritage, all of which deeply influenced the team's work.

Despite the availability of stone and wood on-site, we faced a challenge in finding local craftsmen capable of working with solid masonry or skilled in carpentry. What distinguished this project in social terms was the participation of two locals from the neighboring village of Al-Namas; one managed materials, labor, and building, while his son assisted in construction control. This partnership ensured that locals were embedded in the project, and we hope the experience they gained may serve in future ventures.

Lugar y personas

La realización del proyecto refleja la visión del propietario, su vínculo con su pueblo y su compromiso con el patrimonio constructivo local, aspectos que influyeron profundamente en el trabajo del equipo.

A pesar de la disponibilidad de piedra y madera en el propio emplazamiento, uno de los principales retos fue encontrar artesanos locales capaces de trabajar con fábrica maciza o que tuvieran experiencia en carpintería. En el ámbito social, el proyecto destacó por la participación de dos personas de la cercana localidad de Al-Namas: una de ellas se ocupó de la gestión de los materiales, la mano de obra y la construcción, mientras que su hijo colaboró en el control de la obra. Esta colaboración garantizó la participación local en el proyecto y esperamos que la experiencia adquirida pueda resultar útil en futuras iniciativas.

Lugar e pessoas

A concretização do projeto reflete a visão do proprietário, a sua ligação à sua aldeia e o seu compromisso com o património construído local, fatores que influenciaram profundamente o trabalho da equipa.

Apesar da disponibilidade de pedra e madeira no local, deparámo-nos com o desafio de encontrar artesãos locais capazes de trabalhar com alvenaria maciça ou com experiência em carpintaria. O que distinguiu este projeto do ponto de vista social foi a participação de dois habitantes locais da aldeia vizinha de Al-Namas; um deles geriu os materiais, a mão-de-obra e a construção, enquanto o seu filho colaborou na supervisão da obra. Esta parceria garantiu a integração dos habitantes locais no projeto, e esperamos que a experiência que adquiriram possa ser útil em futuros projetos.

1. Remains of a local *Roshan* 2. A reinterpretation of the local *Roshan*, overlooking the patio to the north from the owner's second-floor living suite 3. Windows handcrafted from reclaimed solid teak | 1. Restos de un antiguo *roshan* 2. Una reinterpretación del *roshan* local, con vistas al patio situado al norte desde la zona de estar del propietario en la segunda planta 3. Ventanas realizadas artesanalmente con madera maciza de teca recuperada | 1. Vestígios de um antigo *roshan* 2. Uma reinterpretação do *roshan* local, com vista para o pátio situado a norte a partir da zona de estar do proprietário no segundo piso 3. Janelas executadas artesanalmente em madeira maciça de teca recuperada



1



3



2

Dar Al-A'mir has attracted visitors from the region and further afield—regional officials, university professors and students, representatives of the Royal Institute of Traditional Arts, the Saudi Umran Society, etc. They have observed and documented the project's progress, recognizing the uniqueness of its design and construction methods as well as its cultural resonance. Shortly after completion, it was nominated for the Philippe Rotthier 2024 European Prize of Architecture.

Dar Al-A'mir ha atraído a visitantes tanto de la región como de otros lugares –autoridades regionales, profesores y estudiantes universitarios, representantes del Royal Institute of Traditional Arts, la Saudi Umran Society, entre otros–, que han seguido y documentado el desarrollo del proyecto y han reconocido la singularidad de su diseño y sus métodos constructivos, así como su relevancia cultural. Poco después de su finalización, el proyecto fue nominado al Premio Europeo de Arquitectura Philippe Rotthier 2024.

Dar Al-A'mir tem atraído visitantes da região e de outras partes –autoridades regionais, professores e estudantes universitários, representantes do Instituto Real de Artes Tradicionais, da Saudi Umran Society, etc. Estes observaram e documentaram o avanço do projeto, reconhecendo a singularidade da sua conceção e dos seus métodos de construção, bem como a sua relevância cultural. Pouco depois da sua conclusão, foi nomeado para o Prémio Europeu de Arquitetura Philippe Rotthier 2024.



The central patio, a private outdoor space where the entire family can gather | El patio central, un espacio exterior privado donde puede reunirse toda la familia | O pátio central, um espaço exterior privado onde toda a família se pode reunir (Yazid Al-Shehri)



The eastern fruit garden, accessed from the patio through a vaulted opening | El huerto frutal situado al este, al que se accede desde el patio a través de un vano abovedado | O pomar situado a leste, ao qual se acede a partir do pátio através de um vão abobadado (Yazid Al-Shehri)



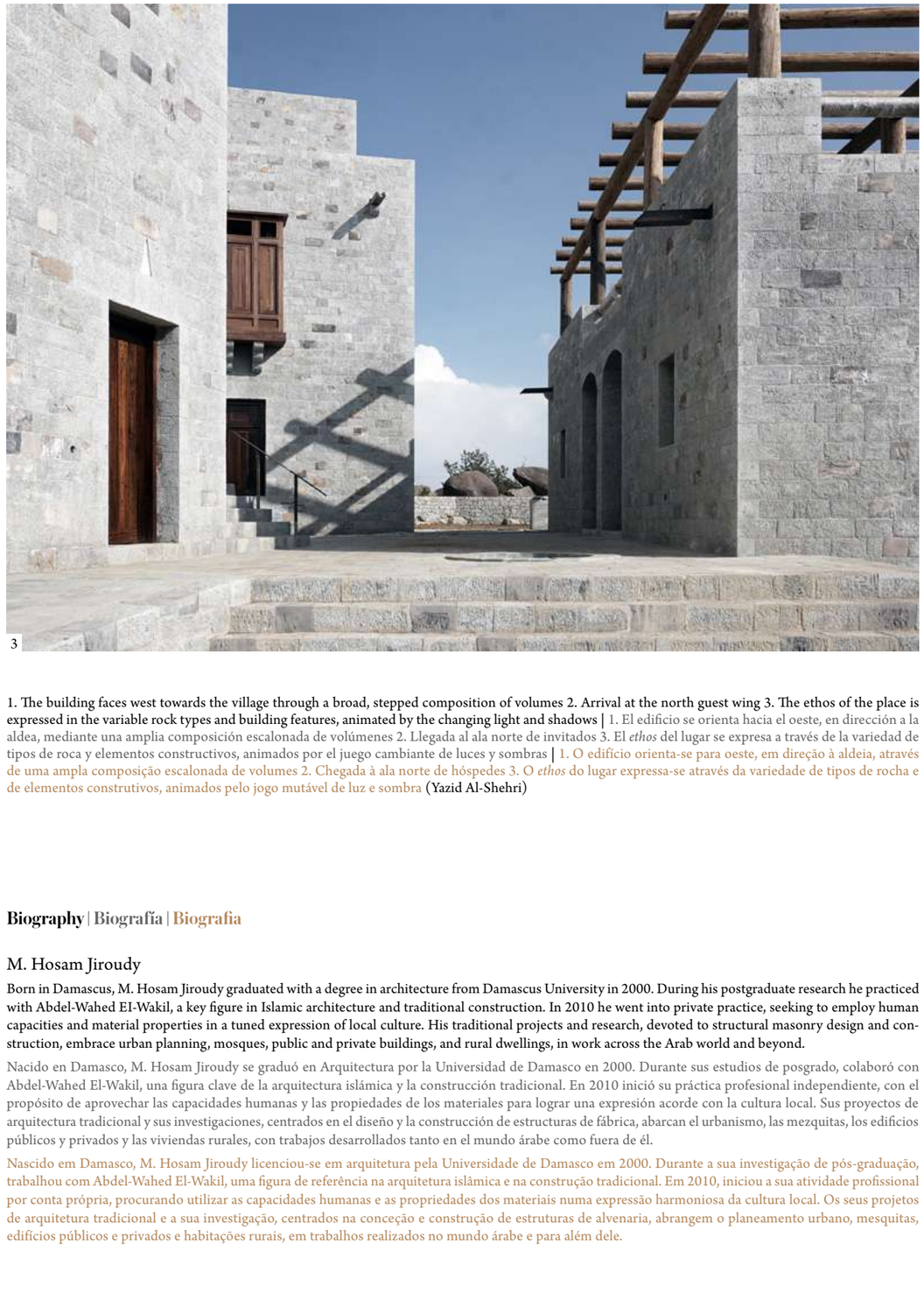
Central patio looking east towards the rocky hillside | Patio central, con vistas hacia el este y la ladera rocosa | Pátio central, com vista para leste e para a encosta rochosa (Yazid Al-Shehri)



he library is the private retreat of the owner on top of the reception hall, linked with the south wing via a bridge | La biblioteca es el refugio privado del propietario, situado sobre el vestíbulo de recepción y conectado con el ala sur mediante un puente | A biblioteca é o refúgio privado do proprietário, situado por cima do átrio de receção e ligado à ala sul através de uma ponte (Yazid Al-Shehri)



1



3

1. The building faces west towards the village through a broad, stepped composition of volumes 2. Arrival at the north guest wing 3. The ethos of the place is expressed in the variable rock types and building features, animated by the changing light and shadows | 1. El edificio se orienta hacia el oeste, en dirección a la aldea, mediante una amplia composición escalonada de volúmenes 2. Llegada al ala norte de invitados 3. El *ethos* del lugar se expresa a través de la variedad de tipos de roca y elementos constructivos, animados por el juego cambiante de luces y sombras | 1. O edifício orienta-se para oeste, em direção à aldeia, através de uma ampla composição escalonada de volumes 2. Chegada à ala norte de hóspedes 3. O *ethos* do lugar expressa-se através da variedade de tipos de rocha e de elementos construtivos, animados pelo jogo mutável de luz e sombra (Yazid Al-Shehri)

Biography | Biografía | Biografia

M. Hosam Jiroudy

Born in Damascus, M. Hosam Jiroudy graduated with a degree in architecture from Damascus University in 2000. During his postgraduate research he practiced with Abdel-Wahed EI-Wakil, a key figure in Islamic architecture and traditional construction. In 2010 he went into private practice, seeking to employ human capacities and material properties in a tuned expression of local culture. His traditional projects and research, devoted to structural masonry design and construction, embrace urban planning, mosques, public and private buildings, and rural dwellings, in work across the Arab world and beyond.

Nacido en Damasco, M. Hosam Jiroudy se graduó en Arquitectura por la Universidad de Damasco en 2000. Durante sus estudios de posgrado, colaboró con Abdel-Wahed El-Wakil, una figura clave de la arquitectura islámica y la construcción tradicional. En 2010 inició su práctica profesional independiente, con el propósito de aprovechar las capacidades humanas y las propiedades de los materiales para lograr una expresión acorde con la cultura local. Sus proyectos de arquitectura tradicional y sus investigaciones, centrados en el diseño y la construcción de estructuras de fábrica, abarcan el urbanismo, las mezquitas, los edificios públicos y privados y las viviendas rurales, con trabajos desarrollados tanto en el mundo árabe como fuera de él.

Nascido em Damasco, M. Hosam Jiroudy licenciou-se em arquitetura pela Universidade de Damasco em 2000. Durante a sua investigação de pós-graduação, trabalhou com Abdel-Wahed El-Wakil, uma figura de referência na arquitetura islâmica e na construção tradicional. Em 2010, iniciou a sua atividade profissional por conta própria, procurando utilizar as capacidades humanas e as propriedades dos materiais numa expressão harmoniosa da cultura local. Os seus projetos de arquitetura tradicional e a sua investigação, centrados na conceção e construção de estruturas de alvenaria, abrangem o planeamento urbano, mesquitas, edifícios públicos e privados e habitações rurais, em trabalhos realizados no mundo árabe e para além dele.

Alys Beach: Architecture and the Public Realm on Florida's Emerald Coast

Alys Beach: Arquitectura y espacio público en la Costa Esmeralda de Florida

Alys Beach: Arquitetura e Espaço Público na Costa Esmeralda da Flórida

Marieanne Khoury-Vogt, Erik Vogt

The Making of Alys Beach

The Alys Beach masterplan was drawn up by DPZ & Co. and the original design charrette took place in 2003, followed by official groundbreaking in May 2004. The Stephens family established Alys Beach Construction within the development team to refine construction details and methods, and this model later expanded into a guild of approved builders.

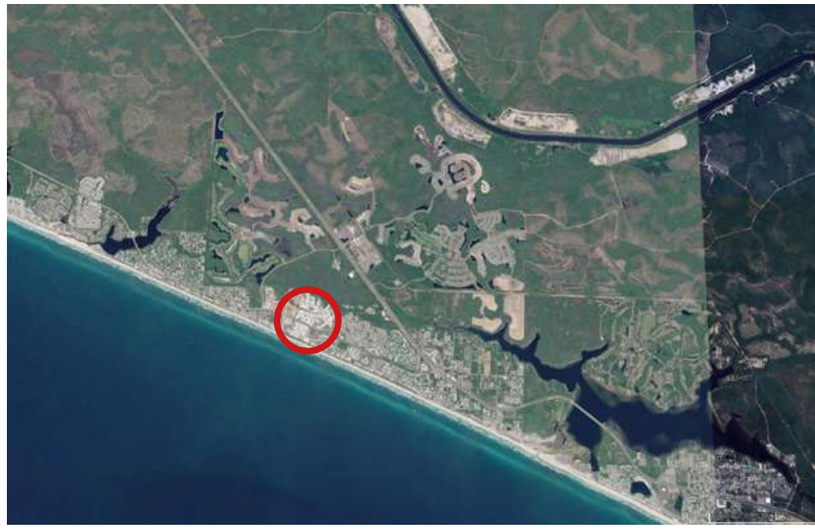
La creación de Alys Beach

El plan director de Alys Beach fue elaborado por DPZ & Co. y el primer taller de diseño colaborativo se celebró en 2003. Las obras comenzaron oficialmente en mayo de 2004. La familia Stephens creó Alys Beach Construction como parte del equipo promotor para perfeccionar los detalles y métodos constructivos, y este modelo se amplió posteriormente hasta constituir un gremio de constructores autorizados.

A criação de Alys Beach

O plano diretor de Alys Beach foi elaborado pela DPZ & Co. e o primeiro workshop de projeto colaborativo realizou-se em 2003. As obras tiveram início oficialmente em maio de 2004. A família Stephens criou a Alys Beach Construction como parte da equipa promotora, com o objetivo de aperfeiçoar os detalhes e métodos construtivos. Este modelo foi posteriormente alargado, dando origem a uma associação de construtores autorizados.

< View from Gulf Green towards the sea | Vista desde Gulf Green hacia el mar | Vista a partir de Gulf Green em direção ao mar (Tommy Crowe)



> Location of Alys Beach | Localización de Alys Beach | Localização de Alys Beach (Google)

For the Stephens family, this is a legacy project rather than simply another resort development. The ambition was to build an enduring town with a distinctive public realm, a discernible architectural character, and a meaningful connection with its climate and landscape. Its quality would depend on long-sustained stewardship.

Our work at Alys Beach began in the early years of development. We were commissioned by the Stephens family and the Alys Beach development team, part of EBSCO Industries, to serve as Town Architects.

Para la familia Stephens, este proyecto representa un legado que va más allá de la creación de un nuevo complejo turístico. Su propósito era construir una localidad que perdurara, con espacios públicos distintivos, una identidad arquitectónica reconocible y una estrecha relación con el clima y el paisaje del lugar. Su calidad dependería de una gestión y un cuidado continuados.

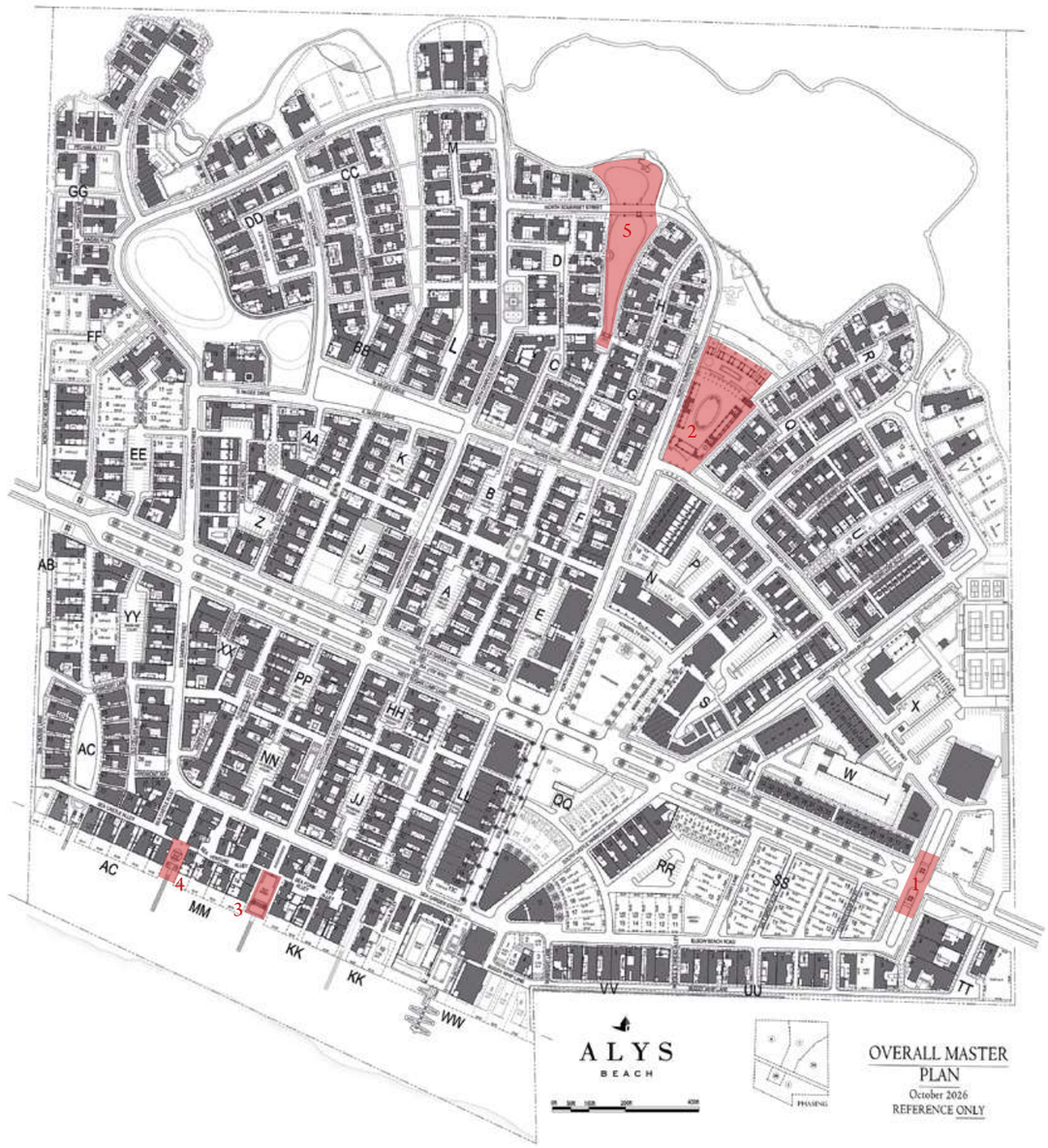
Nuestra participación en Alys Beach comenzó durante los primeros años de su desarrollo. La familia Stephens y el equipo promotor de Alys Beach, perteneciente a EBSCO Industries, nos encargaron asumir la función de arquitectos responsables de la localidad (*Town Architects*).

Para a família Stephens, este projeto representa um legado que vai além da criação de um novo empreendimento turístico. O objetivo era construir uma localidade duradoura, com um espaço público distintivo, uma identidade arquitetónica reconhecível e uma estreita relação com o clima e a paisagem do lugar. A sua qualidade dependeria de uma gestão e de um cuidado contínuos ao longo do tempo.

A nossa participação em Alys Beach começou durante os primeiros anos do seu desenvolvimento. A família Stephens e a equipa promotora de Alys Beach, pertencente à EBSCO Industries, encarregaram-nos de assumir a função de arquitetos responsáveis pela localidade (*Town Architects*).

Location of Alys Beach | Localización de Alys Beach | Localização de Alys Beach (Kurt Lischka)





Master plan of Alys Beach showing the five public spaces discussed in this article. 1: Butteries; 2: Caliza Pool; 3: Gulf Green; 4: Turtle Bale Baths; 5: Lake Marilyn | Plan director de Alys Beach con los cinco espacios públicos analizados en este artículo. 1: Butteries; 2: Caliza Pool; 3: Gulf Green; 4: Turtle Bale Baths; 5: Lake Marilyn | Plano diretor de Alys Beach com os cinco espaços públicos analisados neste artigo. 1: Butteries; 2: Caliza Pool; 3: Gulf Green; 4: Turtle Bale Baths; 5: Lake Marilyn

We have worked closely with the developer, the Master Planner, and, since 2016, the Architecture Review Committee (ARC) to shape the town's architectural character. We review the work of architects designing at Alys Beach, interpreting the town plan and Design Code

Hemos trabajado en estrecha colaboración con el promotor, el responsable del plan director y, desde 2016, el Comité de Revisión Arquitectónica (*Architecture Review Committee*, ARC) para definir el carácter arquitectónico de la localidad. Revisamos los proyectos de los arquitectos que traba-

Temos trabalhado em estreita colaboração com o promotor, o responsável pelo plano diretor e, desde 2016, a Comissão de Revisão Arquitetónica (*Architecture Review Committee*, ARC) para definir o caráter arquitetónico da localidade. Revemos os projetos dos arquitetos que trabalham em

and ensuring coherence in the Design Vision. We at Khoury Vogt Architects have also designed houses, multifamily blocks, civic spaces, and commercial projects for the town.

Alys Beach is located on the Gulf of Mexico on Florida's Emerald Coast, along the scenic coastal highway known as 30A. Its setting is characterized by white sand, dunes, scrub vegetation, coastal lakes, pine forests, and blue-green water. The subtropical climate gives it heat, humidity, fierce sunshine, heavy seasonal rain, salt air, strong coastal winds, and a recurring threat of hurricanes. These conditions are determinants of the architecture.

jan en Alys Beach, interpretamos el plan urbanístico y el Código de Diseño y velamos por la coherencia con la visión arquitectónica del conjunto. Desde Khoury Vogt Architects también hemos diseñado viviendas unifamiliares, edificios residenciales multifamiliares, espacios públicos y proyectos comerciales para la localidad.

Alys Beach se encuentra a orillas del golfo de México, en la Costa Esmeralda de Florida, junto a la carretera panorámica costera conocida como 30A. Su entorno se caracteriza por las playas de arena blanca, las dunas, la vegetación arbustiva, los lagos costeros, los pinares y las aguas de tonos azules y verdes. El clima es subtropical, con altas temperaturas, humedad, intensa radiación solar, abundantes lluvias estacionales, ambiente salino, fuertes vientos costeros y una amenaza recurrente de huracanes. Estas condiciones son determinantes para la arquitectura.

Alys Beach, interpretamos o plano urbanístico e o Código de Desenho e asseguramos a coerência com a visão arquitetónica do conjunto. Na Khoury Vogt Architects, também projetámos moradias unifamiliares, edifícios residenciais multifamiliares, espaços públicos e projetos comerciais para a localidade.

Alys Beach situa-se nas margens do golfo do México, na Costa Esmeralda da Florida, junto à estrada panorâmica costeira conhecida como 30A. A sua envolvente caracteriza-se pelas praias de areia branca, dunas, vegetação arbustiva, lagos costeiros, pinhais e águas de tons azuis e verdes. O clima subtropical caracteriza-se pelas temperaturas elevadas, humidade, intensa radiação solar, chuvas sazonais abundantes, ambiente salino, ventos costeiros fortes e ameaça recorrente de furacões. Estas condições são determinantes para a arquitetura.

The development bisected by Coastal Highway 30A | El conjunto atravesado por la carretera costera 30A | O conjunto atravessado pela estrada costeira 30A (Clark Brewer)





Housing and common space in Alys Beach | Viviendas y espacios comunes en Alys Beach | Habitações e espaços comuns em Alys Beach (Courtesy of Alys Beach)

About 35% of the town lies between the Gulf and the 30A highway, and 65% to the north. The masterplan establishes a progression from formal urban spaces near the center to quieter coastal streets, and northward to preserved native landscape. Alys Beach is conceived as a walkable town, not a lot of isolated houses, in which streets, passages, courtyards, greens, and civic spaces form an interconnected public realm. Private life unfolds in and around courtyards, gardens, loggias, terraces, and roofs. Predominantly white masonry gives the town visual unity and contrasts with shade, greenery, sky, and water.

Aproximadamente el 35 % de la localidad se encuentra entre el golfo de México y la carretera 30A, mientras que el 65 % restante se extiende hacia el norte. El plan director establece una transición desde los espacios urbanos más formales del centro hacia las calles costeras más tranquilas y, en dirección norte, hacia el paisaje natural autóctono, que se conserva. Alys Beach se concibe como una localidad pensada para ser recorrida a pie, y no como una mera agrupación de viviendas aisladas. En ella las calles, los pasajes, los patios, las zonas verdes y los espacios públicos conforman una red interconectada de espacios públicos. La vida privada se desarrolla en los patios, los jardines, las logias, las terrazas y las azoteas, así como en los espacios que los rodean. El predominio del blanco en los muros confiere unidad visual al conjunto y contrasta con las sombras, la vegetación, el cielo y el agua.

Cerca de 35% da localidade situa-se entre o golfo do México e a estrada 30A, enquanto os restantes 65% se estendem para norte. O plano diretor estabelece uma transição dos espaços urbanos mais formais do centro para as ruas costeiras mais tranquilas e, em direção a norte, até à paisagem natural autóctone, que é preservada. Alys Beach foi concebida como uma localidade pensada para ser percorrida a pé, e não como um mero conjunto de habitações isoladas, na qual as ruas, passagens, pátios, espaços verdes e espaços públicos formam uma rede interligada de espaços públicos. A vida privada desenvolve-se nos pátios, jardins, lógias, terraços e coberturas, bem como nos espaços que os rodeiam. O predomínio da alvenaria branca confere unidade visual ao conjunto e contrasta com as sombras, a vegetação, o céu e a água.



Alys Beach's whitewashed houses and roofscape | Las viviendas encaladas de Alys Beach y sus cubiertas | As casas caiadas de Alys Beach e as suas coberturas (Kurt Lischka)

Traditional Principles and Architectural Design

Our starting point was the plan prepared by DPZ & Co. and its vision of a compact coastal settlement. Our task was to translate that vision into buildings, streets, urban spaces, and details so as to form a coherent townscape.

An overarching aim has been to preserve unity without imposing uniformity. Alys Beach has a strong and immediately discernible identity, but it should not feel as though every building were designed by the same hands or built at the same time. The challenge has been to establish consistency in massing, materials, scale, frontage, and climate response while allowing individual architects to contribute invention and variety.

Principios tradicionales y diseño arquitectónico

Nuestro punto de partida fue el plan elaborado por DPZ & Co. y su visión de un asentamiento costero compacto. Nuestra tarea consistía en trasladar esa visión a los edificios, las calles, los espacios urbanos y los detalles arquitectónicos para configurar un conjunto urbano coherente.

Uno de los principales objetivos ha sido preservar la unidad sin imponer la uniformidad. Alys Beach posee una identidad marcada y fácilmente reconocible, pero no debería dar la impresión de que todos sus edificios han sido diseñados por las mismas personas o construidos en la misma época. El reto ha consistido en establecer una coherencia en las volumetrías, los materiales, la escala, los frentes edificados y la respuesta a las condiciones climáticas, al tiempo que se permite a cada arquitecto ser creativo y aportar variedad.

Princípios tradicionais e desenho arquitetónico

O nosso ponto de partida foi o plano elaborado pela DPZ & Co. e a sua visão de um assentamento costeiro compacto. A nossa tarefa consistia em traduzir essa visão em edifícios, ruas, espaços urbanos e detalhes arquitetónicos, de modo a configurar um conjunto urbano coerente.

Um dos principais objetivos tem sido preservar a unidade sem impor a uniformidade. Alys Beach possui uma identidade marcada e facilmente reconhecível, mas não deve dar a impressão de que todos os seus edifícios foram projetados pelas mesmas pessoas ou construídos na mesma época. O desafio tem consistido em estabelecer uma coerência nas volumetrias, nos materiais, na escala, nas frentes edificadas e na resposta às condições climáticas, ao mesmo tempo que se permite a cada arquiteto contribuir com criatividade e variedade.

A second aim has been to ensure that each building contributes to the public realm. A house at Alys Beach is not seen only as a private object: its walls, openings, entrances, plantings, and interface with the street are all part of a shared experience. We therefore consider how every proposal affects its neighbors, the street, significant sightlines, the skyline, and the sequence of public spaces.

Un segundo objetivo ha sido garantizar que cada edificio contribuya a la configuración del espacio público. En Alys Beach, una vivienda no se concibe únicamente como un elemento privado: sus muros, huecos, accesos, elementos vegetales y relación con la calle forman parte de una experiencia compartida. Por ello, estudiamos cómo afecta cada propuesta a los edificios vecinos, a la calle, a las principales perspectivas visuales, al perfil urbano y a la secuencia de espacios públicos.

Um segundo objetivo tem sido garantir que cada edifício contribua para a configuração do espaço público. Em Alys Beach, uma habitação não é concebida apenas como um elemento privado: os seus muros, vãos, acessos, elementos vegetais e relação com a rua fazem parte de uma experiência partilhada. Por isso, estudamos de que forma cada proposta afeta os edifícios vizinhos, a rua, as principais perspetivas visuais, o perfil urbano e a sequência de espaços públicos.



Pedestrian walkways | Paseos peatonales | Percursos pedonais (Chris Luker)

We understand tradition not as a fixed style or catalog of historical motifs but as accumulated knowledge of proportion, hierarchy, permanence, climatic comfort, and the relationship between private buildings and public spaces.

At an urban scale, the house type was based on patio houses in Antigua, Guatemala, while the continuous zero-lot-line streetscape is informed by the restrained architectural palette of Bermuda. Over the years, we and other architects have infused the place with Mediterranean, Moorish, Caribbean, Latin American, and other warm-climate styles in which masonry buildings define shady streets, courts, gardens, and plazas. At the scale of houses, precedents have included the Roman atrium

Entendemos la tradición no como un estilo fijo o un catálogo de motivos históricos, sino como un conocimiento acumulado sobre las proporciones, las jerarquías, la permanencia, el confort climático y la relación entre los edificios privados y los espacios públicos.

A escala urbana, la tipología residencial se inspiró en las casas con patio de Antigua, Guatemala, mientras que la continuidad de los frentes edificados, con construcciones alineadas a los límites de las parcelas, toma como referencia la sobriedad del lenguaje arquitectónico de las Bermudas. A lo largo de los años, tanto nosotros como otros arquitectos hemos incorporado al conjunto influencias mediterráneas, moriscas, caribeñas, hispanoamericanas y de otras tradiciones arquitectónicas

Entendemos a tradição não como um estilo fixo ou um catálogo de motivos históricos, mas como um conhecimento acumulado sobre as proporções, as hierarquias, a permanência, o conforto climático e a relação entre os edifícios privados e os espaços públicos.

À escala urbana, a tipologia residencial inspirou-se nas casas com pátio de Antigua, na Guatemala, enquanto a continuidade das frentes edificadas, com construções alinhadas pelos limites dos lotes, toma como referência a sobriedade da linguagem arquitetónica das Bermudas. Ao longo dos anos, tanto nós como outros arquitetos incorporámos no conjunto influências mediterrânicas, mouriscas, caribenhas, latino-americanas e de outras tradições arquitetónicas próprias de climas

1: Surroundings of the Boult House 2: Street in Alys Beach | 1: Entorno de la casa Boult 2: Calle de Alys Beach | 1: Arredores da casa Boult 2: Rua de Alys Beach (Chris Luker)







1



2



3

Elevation and details of the Castro House | Alzado y detalles de la casa Castro | Alçado e pormenores da casa Castro (2: MK Sadler 3: Jack Gardner)

house, courtyard houses of the Mediterranean and Islamic worlds, and Caribbean and Bermudian traditions suited to hot and stormy climes. Rather than copy precedents literally, we study the underlying intelligence: compact urban form, thick walls, sheltered openings, shaded outdoor spaces, internal courts, cross ventilation, controlled views, and transitional spaces.

propias de climas cálidos, en las que los edificios de fábrica delimitan calles sombreadas, patios, jardines y plazas. A escala doméstica, los referentes incluyen la casa con atrio romana, las viviendas con patio del Mediterráneo y del mundo islámico, así como las tradiciones arquitectónicas del Caribe y las Bermudas, adaptadas a climas cálidos y tormentosos. En lugar de reproducir literalmente estos modelos, estudiamos los principios que los sustentan: la compacidad de la trama urbana, los muros gruesos, los huecos protegidos, los espacios exteriores sombreados, los patios interiores, la ventilación cruzada, las vistas controladas y los espacios de transición.

quentes, nas quais os edifícios de alvenaria delimitam ruas sombreadas, pátios, jardins e praças. À escala doméstica, as referências incluem a casa romana de átrio, as habitações com pátio do Mediterrâneo e do mundo islâmico, bem como as tradições arquitetónicas das Caraíbas e das Bermudas, adaptadas a climas quentes e sujeitos a tempestades. Em vez de reproduzirmos literalmente estes modelos, estudamos os princípios que lhes estão subjacentes: a compacidade da malha urbana, as paredes espessas, os vãos protegidos, os espaços exteriores sombreados, os pátios interiores, a ventilação cruzada, as vistas controladas e os espaços de transição.

Over thirty years we have studied these traditions through immersive travel, measured observation, drawing, photography, historical research, and persistent designing and building. Direct observation and walking in spaces we have admired has been of particular value. Drawings alone cannot fully convey the sensation of strolling from a bright street into a shady passage, coming upon a court open to the heavens, or glancing into a recessed room lit by sunlight reflected from a facing of plaster.

Innovation takes place within this framework. Contemporary ways of living, hurricane-resistant construction, energy systems, and expectations of comfort are integrated into interpretations of zaguans, loggias, screens, stair halls, roof terraces, pools, and courts. On compact residential sites we strive for intimacy and spatial generosity through courtyards, long axes, framed views, changes in height, attenuated daylight, and connections between interior and exterior spaces.

In individual homes, a courtyard is often what organizes the whole. It lets light, air, water, and landscape into a dwelling and affords privacy in a relatively dense urban setting. Interior rooms are often arranged around a courtyard, extending the gathering space and generating layered views. These long axes make compact houses feel ample and give one a sense of discovery. You can look in from a path or street through carved zaguan gates and glimpse a landscaped court and yet see only a portion of what it offers to those inside.

Durante más de treinta años hemos estudiado estas tradiciones mediante viajes de inmersión, observaciones y levantamientos arquitectónicos, dibujos, fotografías, investigaciones históricas y una práctica constante que incluye diseño y construcción. La observación directa y la experiencia de recorrer los espacios que admiramos han resultado especialmente valiosas. Los dibujos, por sí solos, no pueden transmitir plenamente la sensación de pasar de una calle luminosa a un pasaje sombreado, descubrir un patio abierto al cielo o contemplar una estancia retranqueada que recibe la luz del sol reflejada en un paramento revocado.

La innovación se desarrolla dentro de este marco. Las formas de vida contemporáneas, los sistemas constructivos resistentes a los huracanes, las instalaciones y las exigencias actuales de confort se integran en reinterpretaciones de zaguanes, logias, celosías, cajas de escalera, terrazas en cubierta, piscinas y patios. En las parcelas residenciales de dimensiones reducidas procuramos crear espacios íntimos y, al mismo tiempo, generosos mediante patios, largos ejes visuales, vistas enmarcadas, variaciones de altura, luz natural tamizada y conexiones entre los espacios interiores y exteriores.

En las viviendas, el patio suele ser el elemento que organiza el conjunto. Permite la entrada de luz, aire, agua y vegetación en la vivienda y proporciona privacidad en un entorno urbano relativamente denso. Las estancias interiores suelen disponerse alrededor de un patio, lo que amplía los espacios de reunión y genera perspectivas visuales sucesivas. Estos ejes prolongados hacen que las viviendas compactas parezcan más amplias y ofrecen una sensación de descubrimiento. Desde un camino o una calle, es posible mirar a través de las puertas talladas de un zaguán y entrever un patio ajardinado, aunque sólo se perciba una parte de lo que este ofrece a quienes se encuentran en el interior.

Durante mais de trinta anos, estudámos estas tradições através de viagens de imersão, observações e levantamentos arquitetónicos, desenhos, fotografias, investigação histórica e uma prática constante do projeto e da construção. A observação direta e a experiência de percorrer os espaços que admiramos têm sido especialmente valiosas. Os desenhos, por si só, não conseguem transmitir plenamente a sensação de passar de uma rua luminosa para uma passagem sombreada, descobrir um pátio aberto ao céu ou contemplar uma divisão recuada que recebe a luz do sol refletida numa superfície rebocada.

A inovação desenvolve-se dentro deste enquadramento. As formas de vida contemporâneas, os sistemas construtivos resistentes a furacões, os sistemas energéticos e as exigências atuais de conforto integram-se em reinterpretações de zaguanes, lógias, gelosias, caixas de escadas, terraços de cobertura, piscinas e pátios. Nos lotes residenciais de dimensões reduzidas, procuramos criar espaços íntimos e, ao mesmo tempo, generosos através de pátios, eixos visuais prolongados, vistas enquadradas, variações de altura, luz natural filtrada e ligações entre os espaços interiores e exteriores.

Nas habitações individuais, o pátio é frequentemente o elemento que organiza o conjunto. Permite a entrada de luz, ar, água e vegetação na habitação e proporciona privacidade num ambiente urbano relativamente denso. As divisões interiores dispõem-se muitas vezes em torno de um pátio, o que amplia os espaços de convívio e gera perspetivas visuais sucessivas. Estes eixos prolongados fazem com que as habitações compactas pareçam mais amplas e proporcionam uma sensação de descoberta. A partir de um caminho ou de uma rua, é possível olhar através dos portões esculpidos de um zaguão e vislumbrar um pátio ajardinado, embora apenas se perceba uma parte do que este oferece a quem se encontra no interior.

Elevation and views of the Glavine House | Alzado y vistas de la casa Glavine | Alçado e vistas da casa Glavine (2, 3: Robert Peterson)





2



3

Exterior and interior views of the Glavine House lookout | Vistas exteriores e interiores del mirador de la casa Glavine | Vistas exteriores e interiores do miradouro da casa Glavine (Robert Peterson)





We believe the transition between indoors and outdoors should be choreographed and never abrupt. We try to encourage a sense of hierarchy and declension in the entry into a home. Deep openings, galleries, loggias, pools and fountains, covered terraces, operable screens, and shady courts mediate between air-conditioned interiors and the coastal outdoors. Outdoor spaces are treated as essential parts of architecture, not as residual leftovers around a building.

Some of our most meaningful spaces are also the simplest and most restrained: a vaulted entrance hall aligned with a courtyard, a stair illuminated from above, a recessed window over a narrow street, a loggia in which the Gulf is framed, or a roof terrace looking out over the Alys Beach skyline. Water and landscape are prominent, conjoined through fountains, pools, lush plantings, and flowering vines. Together they enliven the outdoor ambiance through sound, reflected light, shade, cooling, and a constant connection with the sea. The predominantly east–west orientation of lots allows sunlight and sea breezes to permeate the town from south to north. Parks and greens punctuate the streetscape and provide beachward gathering sites.

Creemos que la transición entre el interior y el exterior debe estar cuidadosamente articulada y nunca ser abrupta. Procuramos establecer una sensación de jerarquía y una gradación espacial en el acceso a las viviendas. Los huecos profundos, las galerías, las logias, las piscinas y fuentes, las terrazas cubiertas, las celosías móviles y los patios sombreados actúan como espacios de transición entre los interiores climatizados y el ambiente exterior costero. Los espacios exteriores se conciben como partes esenciales de la arquitectura, y no como superficies residuales alrededor de los edificios.

Algunos de nuestros espacios más significativos son también los más sencillos y sobrios: un vestíbulo de entrada abovedado y alineado con un patio, una escalera iluminada desde arriba, una ventana retranqueada sobre una calle estrecha, una logia que enmarca las vistas del golfo de México o una terraza en cubierta desde la que se contempla el perfil urbano de Alys Beach. El agua y la vegetación tienen una presencia destacada y se integran mediante fuentes, piscinas, plantaciones exuberantes y enredaderas floridas. Juntas, enriquecen el ambiente de los espacios exteriores mediante el sonido, la luz reflejada, la sombra, el frescor y una conexión constante con el mar. La orientación predominantemente este-oeste de las parcelas permite que la luz solar y las brisas marinas penetren en la localidad de sur a norte. Los parques y las zonas verdes interrumpen la continuidad de los frentes edificados y ofrecen lugares de encuentro en dirección a la playa.

Acreditamos que a transição entre o interior e o exterior deve ser cuidadosamente articulada e nunca abrupta. Procuramos estabelecer uma sensação de hierarquia e uma gradação espacial no acesso à habitação. Os vãos profundos, as galerias, as lógias, as piscinas e fontes, os terraços cobertos, as gelosias móveis e os pátios sombreados funcionam como espaços de transição entre os interiores climatizados e o ambiente exterior costeiro. Os espaços exteriores são concebidos como partes essenciais da arquitetura, e não como áreas residuais em torno dos edifícios.

Alguns dos nossos espaços mais significativos são também os mais simples e sóbrios: um vestíbulo de entrada abobadado e alinhado com um pátio, uma escada iluminada a partir de cima, uma janela recuada sobre uma rua estreita, uma lógia que enquadra as vistas do golfo do México ou um terraço de cobertura de onde se contempla o perfil urbano de Alys Beach. A água e a vegetação têm uma presença marcante e integram-se através de fontes, piscinas, plantações exuberantes e trepadeiras floridas. Em conjunto, enriquecem o ambiente dos espaços exteriores através do som, da luz refletida, da sombra, da frescura e de uma ligação constante ao mar. A orientação predominantemente este-oeste dos lotes permite que a luz solar e as brisas marítimas penetrem na localidade de sul para norte. Os parques e os espaços verdes interrompem a continuidade das frentes edificadas e oferecem locais de encontro em direção à praia.

Elevations, floor plan and section of now Raw & Juicy (formerly Fontville Press) | Alzados, planta y sección de Raw & Juicy (anteriormente Fontville Press) | Alçados, planta e corte de Raw & Juicy (anteriormente Fontville Press)







Entrance and courtyard at Raw & Juicy (formerly Fontville Press) | Acceso y patio de Raw & Juicy (anteriormente Fontville Press) | Entrada e pátio de Raw & Juicy (anteriormente Fontville Press) (Kurt Lischka, Jack Gardner)

Building for the Florida Coast

Challenges at Alys Beach include the coastal climate, hurricane regulations, mechanical systems, and pressure to enlarge or enclose spaces at the expense of the courtyard type. Restraint, hierarchy, and clarity remain of the essence. Buildings respond through massing, shading, orientation, protected openings, cross ventilation where practical, light-colored surfaces and transitional spaces. White walls and roofs reflect sunlight while deep reveals cast shadows and wood and stone add texture.

The Design Code put in place favors materials with weight, depth, texture, and the ability to age well. Masonry construction is preferred, both architecturally and environmentally. It gives the buildings an air of permanence and is well suited to the coastal climate when properly designed and constructed. Steel-troweled stucco, stone, wood, copper, bronze, and other durable metals give tactile variety. We prefer materials integral to construction over claddings intended merely to produce an image.

But traditional techniques cannot always be reproduced literally; we preserve their architectural logic while developing present-day designs with engineers, builders, and manufacturers. Building codes require hurricane resistance, waterproofing, energy performance, approved products, and modern mechanical systems. Building to fortified standards gives our owners a sense of security, as their homes are designed to withstand hurricanes. And we are lucky that Alys Beach is naturally situated about 30 feet above sea level.

We favor local sourcing where suitable materials and expertise exist, but durability is paramount in a seaside environment and materials must perform reliably and be maintainable. Most buildings at Alys Beach rely on fortified masonry and concrete construction engineered for coastal wind loads. Reinforced concrete, impact-resistant windows and doors with integrated waterproofing, slurried tile roofing, and stone and wood details are key ingredients of all buildings here.

Construir en la costa de Florida

Entre los desafíos que plantea Alys Beach se encuentran el clima costero, la normativa de construcción frente a huracanes, las instalaciones y la presión por ampliar o cerrar espacios en detrimento de la tipología de vivienda con patio. La sobriedad, la jerarquía y la claridad siguen siendo principios fundamentales. Los edificios responden a estas condiciones mediante su volumetría, las soluciones de protección solar, la orientación, los huecos protegidos, la ventilación cruzada cuando resulta viable, las superficies de colores claros y los espacios de transición. Los muros y las cubiertas blancos reflejan la luz solar, mientras que las profundas jambas de los huecos proyectan sombras y la madera y la piedra aportan textura.

El Código de Diseño establecido favorece los materiales con peso, profundidad, textura y capacidad para envejecer adecuadamente. Se da preferencia a la construcción de fábrica, tanto por razones arquitectónicas como ambientales. Esta confiere a los edificios una sensación de permanencia y, cuando está correctamente proyectada y ejecutada, se adapta bien al clima costero. Los revestimientos de estuco realizados con llana, la piedra, la madera, el cobre, el bronce y otros metales duraderos aportan variedad de texturas. Preferimos los materiales que forman parte integrante de la construcción frente a los revestimientos cuya única finalidad es crear una determinada imagen.

Sin embargo, las técnicas tradicionales no siempre pueden reproducirse literalmente. Conservamos su lógica arquitectónica y, al mismo tiempo, desarrollamos soluciones nuevas en colaboración con ingenieros, constructores y fabricantes. La normativa de edificación exige resistencia frente a los huracanes, impermeabilización, eficiencia energética, productos homologados e instalaciones mecánicas modernas. La construcción conforme a estándares de resistencia reforzada proporciona a los propietarios una sensación de seguridad, ya que sus viviendas están diseñadas para resistir los huracanes. Además, tenemos la suerte de que Alys Beach se encuentra situada de forma natural a unos nueve metros sobre el nivel del mar.

Damos preferencia a los materiales y proveedores locales cuando existen recursos y conocimientos técnicos adecuados, pero en un entorno costero la durabilidad es primordial, por lo que los materiales deben ofrecer un comportamiento fiable y permitir un mantenimiento adecuado. La mayoría de los edificios de Alys Beach se construyen con sistemas reforzados de fábrica y hormigón, calculados para resistir las cargas de viento propias del entorno costero. El hormigón armado, las ventanas y puertas resistentes a impactos con sistemas de impermeabilización integrados, las cubiertas de teja con juntas selladas mediante mortero y los detalles de piedra y madera son elementos fundamentales de todas las construcciones de la localidad.

Construir na costa da Florida

Entre os desafios que Alys Beach apresenta encontram-se o clima costeiro, a regulamentação de construção resistente a furacões, as instalações mecânicas e a pressão para ampliar ou encerrar espaços em detrimento da tipologia de habitação com pátio. A sobriedade, a hierarquia e a clareza continuam a ser princípios fundamentais. Os edifícios respondem a estas condições através da sua volumetria, das soluções de proteção solar, da orientação, dos vãos protegidos, da ventilação cruzada quando viável, das superfícies de cores claras e dos espaços de transição. As paredes e coberturas brancas refletem a luz solar, enquanto os vãos profundos projetam sombras e a madeira e a pedra acrescentam textura.

O Código de Desenho estabelecido privilegia os materiais com peso, profundidade, textura e capacidade para envelhecer adequadamente. Dá-se preferência à construção em alvenaria, tanto por razões arquitetónicas como ambientais. Esta confere aos edifícios uma sensação de permanência e, quando corretamente projetada e executada, adapta-se bem ao clima costeiro. Os revestimentos de estuque alisados com talocha de aço, a pedra, a madeira, o cobre, o bronze e outros metais duradouros proporcionam variedade de texturas. Preferimos os materiais que fazem parte integrante da construção aos revestimentos cuja única finalidade é criar uma determinada imagem.

No entanto, as técnicas tradicionais nem sempre podem ser reproduzidas literalmente. Preservamos a sua lógica arquitetónica e, ao mesmo tempo, desenvolvemos soluções atuais em colaboração com engenheiros, construtores e fabricantes. A regulamentação da construção exige resistência a furacões, impermeabilização, eficiência energética, produtos homologados e instalações mecânicas modernas. A construção de acordo com normas de resistência reforçada proporciona aos proprietários uma sensação de segurança, uma vez que as suas habitações são projetadas para resistir a furacões. Além disso, temos a sorte de Alys Beach se situar naturalmente a cerca de nove metros acima do nível do mar.

Damos preferência aos materiais e fornecedores locais quando existem recursos e conhecimentos técnicos adequados, mas, num ambiente costeiro, a durabilidade é primordial, pelo que os materiais devem oferecer um desempenho fiável e permitir uma manutenção adequada. A maioria dos edifícios de Alys Beach é construída com sistemas reforçados de alvenaria e betão, dimensionados para resistir às cargas de vento próprias do ambiente costeiro. O betão armado, as janelas e portas resistentes a impactos com sistemas de impermeabilização integrados, as coberturas de telha com juntas seladas com argamassa e os detalhes em pedra e madeira são elementos fundamentais de todas as construções da localidade.

Loggia at the Sales Center | Logia del Sales Center | Loggia do Sales Center (Jack Gardner)







Details of the Sales Center | Detalles del Sales Center | Pormenores do Sales Center (Jack Gardner)

Apparently simple architecture requires considerable precision. Parapets, copings, scuppers, roof terraces, concealed drainage, window recesses, thresholds, balconies, and transitions between conditioned and exterior spaces must all be carefully resolved. In a climate of sun but also heavy rain with salinity and wind, water management is a serious matter.

Details are developed in drawings at multiple scales and, where needed, mock-ups. We attend to opening depths, plaster returns, roof junctions, railings, screens, and drainage. Woodwork, metalwork, stone, tiles, and plaster form parts of compositions. Continuity among builders and craftspeople is also valued. Many honed their skills at Seaside and Rosemary Beach, Alys Beach's New Urbanist predecessors along 30A, and are knowledgeable of local standards and methods.

Una arquitectura aparentemente sencilla requiere una precisión considerable. Los petos, las albardillas, los desagües de los petos, las terrazas en cubierta, los sistemas de drenaje ocultos, los huecos retranqueados de las ventanas, los umbrales, los balcones y las transiciones entre los espacios climatizados y los exteriores deben resolverse cuidadosamente. En un clima caracterizado por un intenso soleamiento, pero también por lluvias abundantes, salinidad y viento, la gestión del agua constituye una cuestión fundamental.

Los detalles constructivos se desarrollan a partir de dibujos a distintas escalas y, cuando es necesario, maquetas o prototipos a escala real. Prestamos especial atención a la profundidad de los huecos, los encuentros de los revestimientos de yeso o mortero en las jambas, las uniones de las cubiertas, las barandillas, las celosías y los sistemas de drenaje. Los trabajos de carpintería, forja, cantería, colocación de tejas y revestimientos forman parte de distintas composiciones. También valoramos la continuidad de los constructores y artesanos que participan en las obras. Muchos perfeccionaron sus habilidades en Seaside y Rosemary Beach, los precedentes de Alys Beach vinculados al movimiento del Nuevo Urbanismo y situados también junto a la carretera 30A, por lo que conocen bien las normas y los métodos constructivos locales.

Uma arquitetura aparentemente simples exige uma precisão considerável. Os parapeitos, os capeamentos, os escoadouros dos parapeitos, os terraços de cobertura, os sistemas de drenagem ocultos, os vãos recuados das janelas, as soleiras, as varandas e as transições entre os espaços climatizados e os exteriores devem ser cuidadosamente resolvidos. Num clima caracterizado por uma intensa exposição solar, mas também por chuvas abundantes, salinidade e vento, a gestão da água constitui uma questão fundamental.

Os detalhes construtivos são desenvolvidos através de desenhos a diferentes escalas e, quando necessário, de maquetas ou protótipos à escala real. Prestamos especial atenção à profundidade dos vãos, aos remates dos revestimentos nas ombreiras, às ligações das coberturas, às guardas, às gelosias e aos sistemas de drenagem. Os trabalhos de carpintaria, serralharia, cantaria, assentamento de telhas e revestimentos fazem parte das composições arquitetónicas. Valorizamos também a continuidade dos construtores e artesãos que participam nas obras. Muitos aperfeiçoaram as suas competências em Seaside e Rosemary Beach, os precedentes de Alys Beach associados ao movimento do Novo Urbanismo e também situados ao longo da estrada 30A, pelo que conhecem bem as normas e os métodos construtivos locais.

From the beginning, for example, we collaborated with E.F. San Juan to develop a catalog of doors and windows with carefully prescribed lite proportions meeting the Design Code. We have also worked with their talented woodworkers on finely carved millwork, with skilled masons capable of making complex profiled cast-in-place concrete appear seamless, with plaster and stucco crews who meticulously hand-trowel wall surfaces, and with painters and other tradespeople who understand and embrace the exacting demands of custom construction.

An owner typically selects a lot and then commissions an architect. Following ARC approval, a builder coordinates specialized subcontractors and craftspeople, or the builder may join in earlier to align design with budgets and priorities. The process depends on collaboration between architects, builders, artisans, engineers, landscape architects, and interior designers, especially for unusual geometries, custom assemblies, or handcrafted finishes. We remain involved during construction through site visits, reviews of alignments and samples, and resolution of details that drawings cannot fully anticipate.

Desde el principio, por ejemplo, colaboramos con E.F. San Juan en el desarrollo de un catálogo de puertas y ventanas con proporciones de los paños acristalados cuidadosamente definidas, conforme a lo establecido en el Código de Diseño. También hemos trabajado con sus expertos carpinteros en la elaboración de elementos de madera finamente tallados; con albañiles especializados, capaces de ejecutar complejas molduras de hormigón moldeado in situ con una apariencia continua y sin juntas visibles; con equipos de revocadores y estucadores que trabajan meticulosamente a mano las superficies de los muros; y con pintores y otros profesionales de los oficios de la construcción que comprenden y asumen las exigencias de precisión propias de las obras realizadas a medida.

Por lo general, el propietario selecciona primero una parcela y después encarga el proyecto a un arquitecto. Una vez obtenida la aprobación del Comité de Revisión Arquitectónica (ARC), un constructor coordina a los subcontratistas y artesanos especializados, aunque también puede incorporarse en una fase anterior para ajustar el diseño al presupuesto y a las prioridades del propietario. El proceso depende de la colaboración entre arquitectos, constructores, artesanos, ingenieros, paisajistas y diseñadores de interiores, especialmente cuando se trata de geometrías poco habituales, soluciones constructivas a medida o acabados artesanales. Nuestra participación continúa durante la construcción mediante visitas de obra, la revisión de alineaciones y muestras de materiales, y la resolución de detalles que no pueden preverse por completo en los planos.

Desde o início, por exemplo, colaborámos com a E.F. San Juan no desenvolvimento de um catálogo de portas e janelas com proporções dos panos envidraçados cuidadosamente definidas, em conformidade com o Código de Desenho. Também trabalhámos com os seus experientes carpinteiros na execução de elementos de madeira finamente entalhados; com pedreiros especializados, capazes de executar complexas molduras de betão moldado in situ com uma aparência contínua e sem juntas visíveis; com equipas de rebocadores e estucadores que alisam meticulosamente à mão as superfícies das paredes; e com pintores e outros profissionais dos ofícios da construção que compreendem e assumem as exigências de precisão próprias das obras realizadas à medida.

De um modo geral, o proprietário seleciona primeiro um lote e depois encomenda o projeto a um arquiteto. Após a aprovação da Comissão de Revisão Arquitetónica (ARC), um construtor coordena os subempreiteiros e artesãos especializados, embora também possa integrar o processo numa fase anterior para ajustar o projeto ao orçamento e às prioridades do proprietário. O processo depende da colaboração entre arquitetos, construtores, artesãos, engenheiros, arquitetos paisagistas e designers de interiores, especialmente quando se trata de geometrias pouco habituais, soluções construtivas à medida ou acabamentos artesanais. A nossa participação prolonga-se durante a construção através de visitas à obra, da revisão de alinhamentos e amostras de materiais e da resolução de detalhes que não podem ser inteiramente previstos nos desenhos.

Designing the Public Realm

The public realm, established by DPZ during the master-planning charrette, is a sequence of streets, walks, gardens, courts, and gathering places. Its boundaries are defined by private walls, entrances, and openings, with civic structures and shared amenities as landmarks. Our designs for the Butteries, Caliza Pool, Gulf Green, Turtle Bale Baths, and Lake Marilyn/Somerset Bridge explore these relationships at different scales. Together these projects use clear geometry, proportion, sculptural form, light, shade, and water to mark points of arrival, frame social spaces, and connect landscape and architecture.

El diseño del espacio público

El espacio público, definido por DPZ durante el taller de diseño colaborativo del plan director, se articula mediante una secuencia de calles, paseos, jardines, patios y lugares de encuentro. Sus límites están delimitados por los muros, accesos y huecos de las propiedades privadas, mientras que los edificios públicos y los equipamientos compartidos actúan como hitos urbanos. Nuestros proyectos para las Butteries, la Caliza Pool, el Gulf Green, los Turtle Bale Baths y el Lake Marilyn/Somerset Bridge exploran estas relaciones a distintas escalas. En conjunto, recurren a geometrías claras, proporciones, formas escultóricas, luz, sombra y agua para señalar los puntos de llegada, delimitar los espacios de encuentro y establecer conexiones entre el paisaje y la arquitectura.

O desenho do espaço público

O espaço público, definido pela DPZ durante o workshop de projeto colaborativo do plano diretor, articula-se através de uma sequência de ruas, passeios, jardins, pátios e locais de encontro. Os seus limites são definidos pelos muros, acessos e vãos das propriedades privadas, enquanto os edifícios públicos e os equipamentos partilhados funcionam como marcos urbanos. Os nossos projetos para as Butteries, Caliza Pool, Gulf Green, Turtle Bale Baths e Lake Marilyn/Somerset Bridge exploram estas relações a diferentes escalas. Em conjunto, recorrem a geometrias claras, proporções, formas escultóricas, luz, sombra e água para assinalar os pontos de chegada, delimitar os espaços de convívio e estabelecer ligações entre a paisagem e a arquitetura.



Butteries | Butteries | Butteries (Courtesy of Alys Beach)

The Butteries

The Butteries mark the eastern and western boundaries of Alys Beach by Scenic Highway 30A. They are styled after the traditional Bermudian buttery, a small masonry structure with a pyramidal roof used to keep provisions cool before the days of electric refrigeration. At Alys Beach this modest building type takes on a civic role. The paired placement and elongated proportions give these little pavilions a presence suited to the scale of the highway, while their simple white forms connect them with the town's character. They jointly establish a threshold with a distinctive silhouette, demonstrating how small structures can help define the identity of a place. In each buttery, ceramic tile panels and carved text recount the history of Walton County, adding a narrative dimension to the visitor experience. They also accommodate electrical and irrigation controls serving the 30A corridor at Alys, integrating infrastructure into enduring civic landmarks.

Las Butteries

Las Butteries señalan los límites oriental y occidental de Alys Beach junto a la carretera panorámica 30A. Su diseño se inspira en las *butteries* tradicionales de las Bermudas, pequeñas construcciones de fábrica con cubierta piramidal que se utilizaban para mantener frescos los alimentos antes de la aparición de la refrigeración eléctrica. En Alys Beach, este modesto tipo constructivo adquiere una función pública. Su disposición en pareja y sus proporciones alargadas confieren a estos pequeños pabellones una presencia adecuada a la escala de la carretera, mientras que sus sencillas formas blancas los vinculan con el carácter arquitectónico de la localidad. Juntos establecen un umbral de acceso con una silueta distintiva y demuestran cómo las pequeñas construcciones pueden contribuir a definir la identidad de un lugar. En cada *buttery*, unos paneles de azulejos cerámicos y textos tallados relatan la historia del condado de Walton, lo que añade una dimensión narrativa a la experiencia del visitante. También albergan los sistemas de control eléctrico y de riego que dan servicio al tramo de la carretera 30A a su paso por Alys Beach, de modo que integran las infraestructuras en hitos urbanos concebidos para perdurar.

As Butteries

As Butteries assinalam os limites oriental e ocidental de Alys Beach, junto à estrada panorâmica 30A. O seu desenho inspira-se nas *butteries* tradicionais das Bermudas, pequenas construções de alvenaria com cobertura piramidal que eram utilizadas para manter os alimentos frescos antes do aparecimento da refrigeração elétrica. Em Alys Beach, esta modesta tipologia construtiva adquire uma função pública. A sua disposição em pares e as suas proporções alongadas conferem a estes pequenos pavilhões uma presença adequada à escala da estrada, enquanto as suas formas brancas e simples os associam ao caráter arquitetónico da localidade. Em conjunto, estabelecem um limiar de acesso com uma silhueta distintiva e demonstram como as pequenas construções podem contribuir para definir a identidade de um lugar. Em cada *buttery*, painéis de azulejos cerâmicos e textos esculpidos contam a história do condado de Walton, o que acrescenta uma dimensão narrativa à experiência do visitante. Também albergam os sistemas de controlo elétrico e de rega que servem o troço da estrada 30A que atravessa Alys Beach, integrando as infraestruturas em marcos urbanos concebidos para perdurar.

Caliza Pool

Caliza Pool is an open-air amenity for residents and guests bounded by streets, a path, and preserved pine woodland. As the town's first communal space it was intended, through its forms and arrangement, to connect with the timeless archetype of the Greek agora. Rather than being gathered into a single building, the program is dispersed over a series of stoas, each distinct in function and form. Connected by garden walls, they contain a raised stone terrace holding the main pool, an ellipse of water flush with the paving. The south stoa is anchored by the entry hall, a tower-like *tetrapylon* marking a primary urban axis. Adjoining the hall is an arcaded salon open to the pool, surmounted by a roof

Caliza Pool

Caliza Pool es un espacio comunitario al aire libre destinado a residentes y visitantes, delimitado por calles, un sendero y un pinar conservado. Como primer espacio comunitario de la localidad, su diseño buscaba establecer, mediante sus formas y su disposición, una conexión con el arquetipo atemporal del ágora griega. En lugar de concentrarse en un único edificio, el programa se distribuye entre una serie de estoas, cada una con una función y una configuración propias. Estas se conectan mediante muros de jardín y delimitan una terraza elevada de piedra que alberga la piscina principal, una lámina de agua elíptica enrasada con el pavimento. La estoa meridional se articula en torno al vestíbulo de acceso, un *tetrapylon* de

Caliza Pool

Caliza Pool é um espaço comunitário ao ar livre destinado a residentes e visitantes, delimitado por ruas, um caminho e um pinhal preservado. Como primeiro espaço comunitário da localidade, o seu desenho procurava estabelecer, através das suas formas e disposição, uma ligação ao arquétipo intemporal da ágora grega. Em vez de se concentrar num único edifício, o programa distribui-se por uma série de estoas, cada uma com uma função e uma configuração próprias. Estas ligam-se através de muros de jardim e delimitam um terraço elevado de pedra que alberga a piscina principal, uma superfície de água elíptica nivelada com o pavimento. A estoa meridional articula-se em torno do vestíbulo de entrada, um *tetrapylon*

terrace that looks out to the Gulf. On the west side is the dining stoa, with expansive open loggias flanking the solid form of the enclosed kitchen and niched bar. In counterpoint to this, the bath stoa bookends a trellised lap pool with two bathhouses, each organized around an atrium. Adjacent is the fountain house, enclosing the pool equipment with a cascading facade of water.

aspecto monumental que señala uno de los principales ejes urbanos. Junto a este se encuentra un salón porticado abierto hacia la piscina, coronado por una terraza en cubierta con vistas al golfo de México. En el lado occidental se sitúa la estoa destinada a la restauración, con amplias logias abiertas que flanquean el volumen macizo de la cocina cerrada y el bar con nichos.

de aspeto monumental que assinala um dos principais eixos urbanos. Junto a este encontra-se um salão porticado aberto para a piscina, encimado por um terraço de cobertura com vista para o golfo do México. No lado ocidental situa-se a estoa destinada à restauração, com amplas lógias abertas que ladeiam o volume maciço da cozinha fechada e do bar com nichos. Em



Caliza Pool | Caliza Pool | Caliza Pool (Jack Gardner)

The north end, bounded by an allée of Medjool palms, steps down to a children's pool conceived as a floating raft, complete with wooden masts and sailcloth canopy. Cabanas, in the form of classical treasury houses, are arrayed around the curved northern side, alternating with enclosed garden courts and overlooking an oak-shaded terrace and the woods beyond. *Caliza* is Spanish for limestone and this material, in the form of Dominican shellstone, thematically links the various elements, from paving to fountains to custom furnishings. The stonework is complemented by a palette of materials including inlaid beach pebble "rugs", marble mosaic facades, Cuban-tile wall panels, and stainless steel curtains. The stoas are rendered with integrally colored plaster and the ensemble is unified by a continuous veneer of troweled white stucco, which changes color with the shifting daylight.

Como contrapunto, la estoa de los baños delimita los extremos de una piscina alargada para nadar, cubierta por una pérgola, mediante dos pabellones de baños, cada uno organizado alrededor de un atrio. Junto a ellos se encuentra el pabellón de la fuente, que alberga las instalaciones de la piscina tras una fachada por la que el agua cae en cascada.

El extremo norte, delimitado por una avenida de palmeras datileras Medjool, desciende mediante una serie de escalones hasta una piscina infantil concebida como una balsa flotante, con mástiles de madera y un toldo de lona. Alrededor del lado norte curvo se disponen varias cabañas inspiradas en los tesoros de la arquitectura clásica, que alternan con patios ajardinados cerrados y ofrecen vistas a una terraza sombreada por robles y al bosque que se extiende más allá. Caliza es el término español que designa la piedra caliza, un material que, en su variedad de piedra coralina dominicana, sirve de hilo conductor entre los distintos elementos del conjunto, desde los pavimentos y las fuentes hasta el mobiliario diseñado a medida. Los trabajos de cantería se complementan con una variedad de materiales que incluye "alfombras" de guijarros de playa incrustados en el pavimento, fachadas revestidas de mosaico de mármol, paneles murales de azulejos cubanos y cortinas de acero inoxidable. Las estoas presentan revestimientos de mortero coloreado en masa, mientras que una capa continua de estuco blanco alisado con llana unifica el conjunto y adquiere distintas tonalidades según las variaciones de la luz natural a lo largo del día.

contraponto, a estoa dos banhos delimita as extremidades de uma piscina alongada para natação, coberta por uma pérgula, através de dois pavilhões de banhos, cada um organizado em torno de um átrio. Junto a estes encontra-se o pavilhão da fonte, que alberga os equipamentos da piscina por detrás de uma fachada pela qual a água cai em cascata.

A extremidade norte, delimitada por uma alameda de palmeiras-datileiras Medjool, desce através de uma série de degraus até uma piscina infantil concebida como uma jangada flutuante, com mastros de madeira e um toldo de lona de vela. Em torno do lado norte curvo dispõem-se várias cabanas inspiradas nos tesouros da arquitetura clássica, que alternam com pátios ajardinados fechados e oferecem vistas para um terraço sombreado por carvalhos e para o bosque que se estende mais além. *Caliza* é o termo espanhol para pedra calcária, um material que, na sua variedade de pedra calcária conquífera dominicana, serve de elemento de ligação entre os diferentes componentes do conjunto, desde os pavimentos e as fontes até ao mobiliário desenhado à medida. Os trabalhos de cantaria são complementados por uma variedade de materiais que inclui "tapetes" de seixos de praia incrustados no pavimento, fachadas revestidas de mosaicos de mármore, painéis de azulejos cubanos e cortinas de aço inoxidável. As estoas apresentam revestimentos de argamassa colorida na massa, enquanto uma camada contínua de estuque branco alisado com talocha unifica o conjunto e adquire diferentes tonalidades conforme as variações da luz natural ao longo do dia.

The Gulf Green

One of the major north-south axes, Charles Street, terminates at a public space landward of the dune crest. The only program here was for restrooms to serve beachgoers and a landscaped area to open up the view. Because of the significance of this space, as an inaugural point of the town's beachside development and an axial terminus, it was felt that something monumental was called for. Thus the project was conceived as a gateway, a propylaeum, to the sea, responding not only to the long vista preceding it but to the broad sweep of the Gulf.

Gulf Green

Uno de los principales ejes norte-sur, Charles Street, culmina en un espacio público situado al pie de la cresta de las dunas, en su lado interior. El programa previsto para este lugar se limitaba a unos aseos para los usuarios de la playa y una zona ajardinada que permitiera abrir las vistas. Dada la importancia de este espacio, tanto por constituir uno de los puntos iniciales del desarrollo urbano junto a la playa como por señalar el remate de un eje, se consideró necesario dotarlo de cierta monumentalidad. Así, el proyecto se concibió como una puerta de acceso al mar, unos propileos que responden tanto a la prolongada perspectiva visual que los precede como a la vasta extensión del golfo de México.

Gulf Green

Um dos principais eixos norte-sul, Charles Street, termina num espaço público situado no lado interior da crista das dunas. O programa previsto para este local limitava-se a instalações sanitárias para os utilizadores da praia e a uma zona ajardinada que permitisse abrir as vistas. Dada a importância deste espaço, tanto por constituir um dos pontos iniciais do desenvolvimento urbano junto à praia como por assinalar o remate de um eixo, considerou-se necessário conferir-lhe uma certa monumentalidade. Assim, o projeto foi concebido como uma porta de acesso ao mar, uns propileus que respondem tanto à longa perspetiva visual que os precede como à vasta extensão do golfo do México.

Gulf Green (Jack Gardner)



The minimal program of his-and-her bathrooms is rendered in the form of a common landscape element, the jardinière, but aggrandized in the classical tradition of the colossus, a figure whose meaning is transformed by monumentality. In their form, the two jardinières relate to the green as landscape ornaments, bounding the space on its seaward side; in their scale, they relate to the Gulf as a gateway, framing the approach from the town and also marking the way into it from the sea.

The pedestals, housing the restrooms, are clad in beige cement panels, embedded with local oyster shells. Their pattern recalls fish scales and ocean waves. The urns above, cast in place and clad in integrally colored stucco, carry native palmetto, the only species that can withstand the harsh salt air from the Gulf at that height. A simple raised parterre of Bermuda grass forms the foreground while broad steps between the jardinières ascend to a wooden deck. Furnished like a front porch, it overlooks the Gulf, providing a communal space from which to take in the sunset, a ritual that connects the community to the sea.

El sencillo programa de aseos para hombres y mujeres adopta la forma de un elemento habitual de la jardinería, la jardinera, pero ampliado según la tradición clásica del coloso, en la que el significado de una figura se transforma mediante la monumentalidad. Por su forma, las dos jardineras se relacionan con la zona verde como elementos ornamentales del paisaje y delimitan el espacio por el lado del mar; por su escala, se relacionan con el golfo como una puerta monumental que enmarca el acceso desde la localidad y, al mismo tiempo, señala la entrada a esta desde el mar.

Los pedestales, que albergan los aseos, están revestidos con paneles de cemento de color beige en los que se incrustan conchas de ostras locales. Su disposición evoca las escamas de los peces y las olas del mar. Las grandes urnas superiores, ejecutadas in situ y revestidas de estuco coloreado en masa, albergan palmitos autóctonos, la única especie capaz de resistir, a esa altura, el ambiente salino extremo procedente del golfo. Un sencillo parterre elevado de césped Bermuda ocupa el primer plano, mientras que una amplia escalinata entre las jardineras asciende hasta una plataforma de madera. Amueblada como un porche, esta se abre hacia el golfo y ofrece un espacio comunitario desde el que contemplar la puesta de sol, un ritual que vincula a la comunidad con el mar.

O programa reduzido de instalações sanitárias para homens e mulheres assume a forma de um elemento habitual dos jardins, a floreira, mas ampliado até atingir uma escala monumental, segundo a tradição clássica do colosso, na qual o significado de uma figura se transforma através da monumentalidade. Pela sua forma, as duas floreiras relacionam-se com a zona verde como elementos ornamentais da paisagem e delimitam o espaço do lado do mar; pela sua escala, relacionam-se com o golfo como uma porta monumental que enquadra o acesso a partir da localidade e, ao mesmo tempo, assinala a entrada nesta a partir do mar.

Os pedestais, que albergam as instalações sanitárias, são revestidos com painéis de cimento de cor bege nos quais estão incrustadas conchas de ostras locais. A sua disposição evoca as escamas dos peixes e as ondas do mar. As grandes urnas superiores, executadas in situ e revestidas de estuque colorido na massa, albergam palmeiras autóctones do tipo palmetto, a única espécie capaz de resistir, àquela altura, ao ambiente salino extremo proveniente do golfo. Um simples canteiro elevado de relva Bermuda ocupa o primeiro plano, enquanto uma ampla escadaria entre as floreiras sobe até uma plataforma de madeira. Mobilada como um alpendre, esta abre-se para o golfo e oferece um espaço comunitário de onde se pode contemplar o pôr do sol, um ritual que liga a comunidade ao mar.

Turtle Bale Baths

Like the Gulf Green, Turtle Bale Baths is a Gulfside anchor for one of Alys Beach's north-south axes; in this case, a walkway that crosses 30A and northward. Two carefully scaled restrooms rise out of the scrub on a stone plinth, flanking the overwalk landing. Their stepped pyramidal roofs have softly uplit lanterns, forming another gateway to the Gulf.

Turtle Bale Baths

Al igual que Gulf Green, Turtle Bale Baths constituye el remate junto al golfo de uno de los ejes norte-sur de Alys Beach; en este caso, un paseo peatonal que cruza la carretera 30A y se prolonga hacia el norte. Dos pabellones de aseos de proporciones cuidadosamente estudiadas emergen de la vegetación arbustiva sobre un basamento de piedra y flanquean el punto de llegada de la pasarela elevada. Sus cubiertas piramidales escalonadas están coronadas por

Turtle Bale Baths

Tal como Gulf Green, Turtle Bale Baths constitui o remate junto ao golfo de um dos eixos norte-sul de Alys Beach; neste caso, um percurso pedonal que atravessa a estrada 30A e se prolonga para norte. Duas instalações sanitárias de escala cuidadosamente proporcionada erguem-se entre a vegetação arbustiva, sobre um embasamento de pedra, e ladeiam o patamar de acesso ao passadiço sobre as dunas. As suas coberturas piramidais

linternas suavemente iluminadas desde abajo y configuran una nueva puerta de acceso al golfo.

escalonadas são rematadas por lanternins suavemente iluminados a partir da base, que configuram outra porta de acesso ao golfo do México.

Lake Marilyn and Somerset Bridge

Lake Marilyn and Somerset Bridge came about in 2005, two years after the planning charrette, born of the need for an irrigation reservoir to serve the entire community. The ensemble terminates the first north-south walkway, which runs from here all the way south to the Gulf.

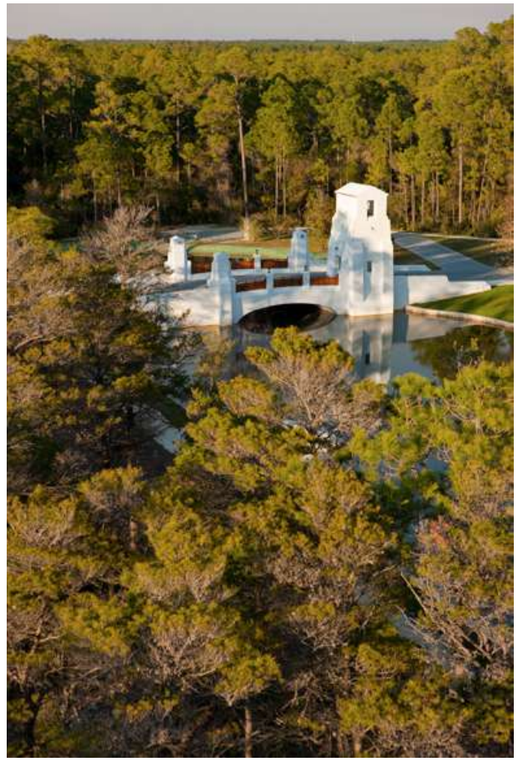
Lake Marilyn y Somerset Bridge

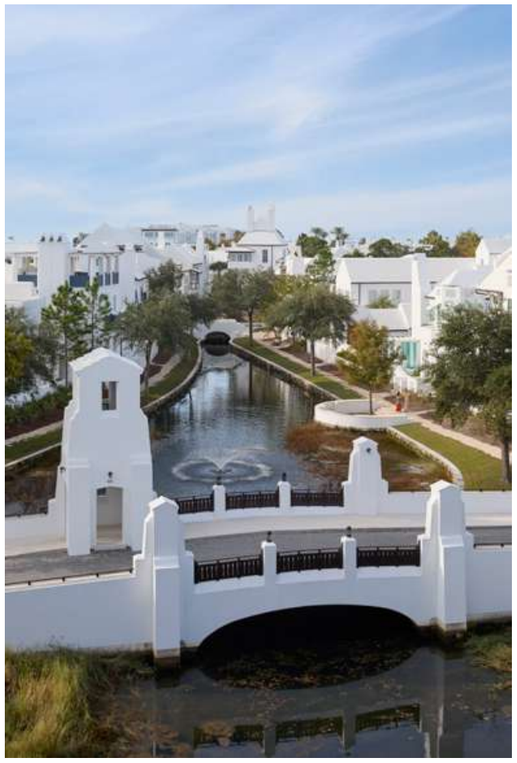
Lake Marilyn y Somerset Bridge surgieron en 2005, dos años después del taller de diseño colaborativo, como respuesta a la necesidad de disponer de un embalse de riego que abasteciera a toda la localidad. El conjunto constituye el extremo norte del primer paseo peatonal que recorre Alys Beach de norte a sur, desde este punto hasta el golfo de México.

Lake Marilyn e Somerset Bridge

Lake Marilyn e Somerset Bridge surgiram em 2005, dois anos após o workshop de planeamento colaborativo, da necessidade de criar um reservatório de água para a rega de toda a localidade. O conjunto constitui o remate do primeiro percurso pedonal norte-sul, que se prolonga desde este ponto até ao golfo do México.

Lake Marilyn and Somerset Bridge | Lake Marilyn and Somerset Bridge | Lake Marilyn and Somerset Bridge (Tommy Crow, Courtesy of Alys Beach)







Lake Marilyn and Somerset Bridge | Lake Marilyn and Somerset Bridge | Lake Marilyn and Somerset Bridge (Lisa Romerein)

Within the urban-to-rural interface guiding planning at Alys Beach, the lake has an intentionally picturesque character, connecting with the woodland preserve to the north. A winding path circumscribes the lake, bordered by blueberry hedges and a sloping bed of perennial peanut, a groundcover that, unlike turf grass, requires little to no fertilizer or pesticide.

The lakeside architecture is episodic, subsumed to context. A pedestrian bridge and fountain mark the southern edge and connect with an east-west path through the town. A semicircular terrace juts into the lake, its wall benches shaded by a willow tree. The vehicular bridge spanning the lake features a tower styled after the town's simple gabled facades. From here a prospect can be taken southward to the sea. The lake is supplied by wells and an aeration pump, powered by the windmill on its northern shore, helps precipitate iron

Dentro de la transición entre lo urbano y lo rural que da forma a la planificación de Alys Beach, el lago presenta un carácter deliberadamente pintoresco y establece una conexión con el área de bosque protegido situada al norte. Un sendero sinuoso rodea el lago, bordeado por setos de arándanos y un talud cubierto de maní perenne, una planta tapizante que, a diferencia del césped convencional, apenas requiere fertilizantes ni pesticidas.

La arquitectura que rodea el lago se presenta como una sucesión de intervenciones puntuales, subordinadas a su entorno. Un puente peatonal y una fuente señalan el límite meridional y conectan con un sendero que atraviesa la localidad de este a oeste. Una terraza semicircular se adentra en el lago, con bancos de obra junto a sus muros, a la sombra de un sauce. El puente para vehículos que cruza el lago incorpora una torre inspirada en las sencillas fachadas a dos aguas de la localidad. Desde este punto se abre una perspectiva

No âmbito da transição entre o urbano e o rural que orienta o planeamento de Alys Beach, o lago apresenta um caráter deliberadamente pitoresco e estabelece uma ligação com a área florestal protegida a norte. Um caminho sinuoso contorna o lago, ladeado por sebes de mirtilos e por um canteiro inclinado de amendoim-perene, uma planta de cobertura do solo que, ao contrário dos relvados convencionais, requer poucos ou nenhuns fertilizantes ou pesticidas.

A arquitetura em torno do lago surge pontualmente e subordina-se ao contexto paisagístico. Uma ponte pedonal e uma fonte assinalam o limite sul e estabelecem uma ligação com um percurso este-oeste que atravessa a localidade. Um terraço semicircular projeta-se sobre o lago, com bancos integrados nos seus muros e sombreados por um salgueiro. A ponte rodoviária que atravessa o lago apresenta uma torre inspirada nas fachadas simples de empena características da localidade. A partir deste

from the water before its distribution for irrigation.

hacia el sur que alcanza el mar. El lago se abastece mediante pozos, y una bomba de aireación, alimentada por el molino de viento situado en su orilla norte, favorece la precipitación del hierro presente en el agua antes de su distribución para el riego.

ponto, abre-se uma perspetiva visual para sul, em direção ao mar. O lago é abastecido por poços, enquanto uma bomba de arejamento, alimentada pelo moinho de vento situado na sua margem norte, ajuda a precipitar o ferro presente na água antes da sua distribuição para rega.

A Town in Evolution

Alys Beach has developed a strong urban and community identity, evident in the use made of its streets, courts, greens, paths, restaurants, and civic spaces. The masonry architecture has generally performed well, although salt, humidity, sun, wind, and rain are bound to cause wear. Buildings, landscapes, and public spaces are cared for, and the ARC committee reviews any alterations so as to protect the town's coherence.

Residents engage closely with architectural decisions, sometimes with vigorous debate—a sign of the importance attached to the town's aesthetic and public realm. The achievement, we believe, is a distinct identity that remains open to change and to the input of many architects and builders. Our role is to sustain a conversation between individual freedom and collective responsibility, tradition and invention, private life and public space.

Una localidad en evolución

Alys Beach ha desarrollado una marcada identidad urbana y comunitaria, que se manifiesta en el uso de sus calles, patios, zonas verdes, senderos, restaurantes y espacios públicos. En general, la arquitectura de fábrica ha mostrado un buen comportamiento, aunque la salinidad, la humedad, el sol, el viento y la lluvia provocan inevitablemente cierto desgaste. Los edificios, las zonas ajardinadas y los espacios públicos reciben un mantenimiento continuo, y el Comité de Revisión Arquitectónica (ARC) supervisa cualquier modificación para preservar la coherencia del conjunto.

Los residentes participan activamente en las decisiones arquitectónicas, en ocasiones mediante intensos debates, lo que demuestra la importancia que conceden a la estética y al espacio público de la localidad. Creemos que el principal logro ha sido la creación de una identidad propia que permanece abierta al cambio y a las aportaciones de numerosos arquitectos y constructores. Nuestra función consiste en mantener un diálogo entre la libertad individual y la responsabilidad colectiva, entre la tradición y la innovación, y entre la vida privada y el espacio público.

Uma localidade em evolução

Alys Beach desenvolveu uma forte identidade urbana e comunitária, evidente na utilização das suas ruas, pátios, espaços verdes, caminhos, restaurantes e espaços públicos. A arquitetura em alvenaria tem apresentado, de um modo geral, um bom desempenho, embora a salinidade, a humidade, o sol, o vento e a chuva provoquem inevitavelmente algum desgaste. Os edifícios, as áreas ajardinadas e os espaços públicos são objeto de cuidados e manutenção, enquanto a Comissão de Revisão Arquitetónica (ARC) analisa quaisquer alterações, de modo a preservar a coerência do conjunto urbano.

Os residentes participam ativamente nas decisões arquitetónicas, por vezes através de debates intensos, o que demonstra a importância atribuída à estética e ao espaço público da localidade. Consideramos que a principal conquista reside na criação de uma identidade própria, que permanece aberta à mudança e aos contributos de numerosos arquitetos e construtores. O nosso papel consiste em manter um diálogo entre a liberdade individual e a responsabilidade coletiva, a tradição e a inovação, a vida privada e o espaço público.

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Marieanne Khoury-Vogt

Marieanne Khoury-Vogt is an architect and urban planner. She studied at the École Spéciale d'Architecture in Paris and holds a Bachelor of Architecture, a Master of Architecture, and a Master of Urban Planning from the University of Wisconsin–Milwaukee. In 2001, she co-founded Khoury Vogt Architects (KVA) with Erik Vogt in Miami. Now based in Alys Beach, Florida, the practice explores the relationship between classical principles, vernacular traditions, and contemporary architecture. As Town Architect of Alys Beach, she has played a central role in shaping the community's architectural character and development. In 2023, KVA received the Arthur Ross Award from the Institute of Classical Architecture & Art, while Khoury-Vogt was individually recognized with the 2024 Urban Guild's Barranco Award. In 2026, she and Erik Vogt received the Seaside Prize.

Marieanne Khoury-Vogt es arquitecta y urbanista. Estudió en la École Spéciale d'Architecture de París y obtuvo los títulos de grado en Arquitectura, máster en Arquitectura y máster en Urbanismo por la Universidad de Wisconsin-Milwaukee. En 2001 fundó junto con Erik Vogt el estudio Khoury Vogt Architects (KVA) en Miami. Actualmente establecido en Alys Beach, Florida, el estudio explora la relación entre los principios clásicos, las tradiciones vernáculas y la arquitectura contemporánea. Como arquitecta responsable de Alys Beach (*Town Architect*), ha desempeñado un papel fundamental en la definición del carácter arquitectónico y el desarrollo de esta comunidad. En 2023, KVA recibió el Arthur Ross Award del Institute of Classical Architecture & Art, mientras que Khoury-Vogt fue distinguida individualmente con el Barranco Award 2024 del Urban Guild. En 2026, recibió junto con Erik Vogt el Seaside Prize.

Marieanne Khoury-Vogt é arquiteta e urbanista. Estudou na École Spéciale d'Architecture, em Paris, e obteve os graus de licenciatura em Arquitetura, mestrado em Arquitetura e mestrado em Urbanismo pela Universidade de Wisconsin-Milwaukee. Em 2001, fundou, juntamente com Erik Vogt, o atelier Khoury Vogt Architects (KVA), em Miami. Atualmente sediado em Alys Beach, na Flórida, o atelier explora a relação entre os princípios clássicos, as tradições vernaculares e a arquitetura contemporânea. Como arquiteta responsável por Alys Beach (*Town Architect*), desempenhou um papel fundamental na definição do caráter arquitetónico e no desenvolvimento desta comunidade. Em 2023, a KVA recebeu o Arthur Ross Award do Institute of Classical Architecture & Art, enquanto Khoury-Vogt foi distinguida individualmente com o Barranco Award 2024 do Urban Guild. Em 2026, recebeu, juntamente com Erik Vogt, o Seaside Prize.

Erik Vogt

Erik Vogt is an architect with a Bachelor of Architecture from the University of Miami and a Master of Architecture from Yale University. In 2001, he co-founded Khoury Vogt Architects (KVA) with Marieanne Khoury-Vogt in Miami. Now based in Alys Beach, Florida, the practice works across architecture, urban design, and town planning, with an emphasis on traditional building types and forms. As Town Architect of Alys Beach, he has played a central role in shaping the community's architectural character and development. The firm's work has received numerous awards, including the 2023 Arthur Ross Award from the Institute of Classical Architecture & Art. In 2026, Vogt and Khoury-Vogt received the Seaside Prize.

Erik Vogt es arquitecto, graduado en Arquitectura por la Universidad de Miami y con un máster en Arquitectura por la Universidad de Yale. En 2001 fundó junto con Marieanne Khoury-Vogt el estudio Khoury Vogt Architects (KVA) en Miami. Actualmente establecido en Alys Beach, Florida, el estudio desarrolla proyectos de arquitectura, diseño urbano y planeamiento urbanístico, con especial atención a las tipologías y las formas constructivas tradicionales. Como arquitecto responsable de Alys Beach (*Town Architect*), ha desempeñado un papel fundamental en la definición del carácter arquitectónico y el desarrollo de esta comunidad. El trabajo del estudio ha recibido numerosos reconocimientos, entre ellos el Arthur Ross Award 2023 del Institute of Classical Architecture & Art. En 2026, recibió junto con Marieanne Khoury-Vogt el Seaside Prize.

Erik Vogt é arquiteto, licenciado em Arquitetura pela Universidade de Miami e com um mestrado em Arquitetura pela Universidade de Yale. Em 2001, fundou, juntamente com Marieanne Khoury-Vogt, o atelier Khoury Vogt Architects (KVA), em Miami. Atualmente sediado em Alys Beach, na Flórida, o atelier desenvolve projetos de arquitetura, desenho urbano e planeamento urbanístico, com especial atenção às tipologias e formas construtivas tradicionais. Como arquiteto responsável por Alys Beach (*Town Architect*), desempenhou um papel fundamental na definição do caráter arquitetónico e no desenvolvimento desta comunidade. O trabalho do atelier recebeu numerosos reconhecimentos, entre os quais o Arthur Ross Award 2023 do Institute of Classical Architecture & Art. Em 2026, recebeu, juntamente com Marieanne Khoury-Vogt, o Seaside Prize.

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Bamboo, Earth, and Resistance: Reclaiming Nepali Vernacular Architecture in the Face of Conservation and Reconstruction

Bambú, tierra y resistencia: Reivindicar la arquitectura vernácula nepalí como vía para la conservación y la reconstrucción

Bambu, Terra e Resistência: A Valorização da Arquitetura Vernácula Nepalesa Face à Conservação e à Reconstrução

Abstract | Resumen | Resumo

Nepal's mountainous geography has historically fragmented its communities, giving rise to over a hundred languages and a diversity of vernacular architecture built from locally sourced materials such as timber, stone, bamboo, and earth. These traditional practices, supported by common resources and communal labor systems such as *parma*, produced earthquake-resistant, culturally authentic housing rooted in this land. Drawing on the author's experience as founder of ABARI, a social enterprise dedicated to earth and bamboo construction, this essay presents case studies demonstrating that locally sourced, low-carbon materials can meet modern safety standards while restoring natural landscapes and cultural sovereignty.

La geografía montañosa de Nepal ha favorecido históricamente el aislamiento de sus comunidades, lo que ha dado lugar a más de un centenar de lenguas y a una gran diversidad de arquitectura vernácula construida con materiales locales como madera, piedra, bambú y tierra. Estas prácticas tradicionales, sustentadas en recursos comunes y en sistemas de trabajo comunitario como el *parma*, dieron lugar a viviendas resistentes a los terremotos, culturalmente arraigadas y estrechamente vinculadas al territorio. A partir de la experiencia del autor como fundador de ABARI, una empresa con fines sociales dedicada a la construcción con tierra y bambú, este ensayo presenta varios casos de estudio que muestran cómo los materiales locales y de baja huella de carbono pueden cumplir las normas de seguridad actuales y, al mismo tiempo, contribuir a la recuperación de los paisajes naturales y de la soberanía cultural.

A geografia montanhosa do Nepal fragmentou historicamente as suas comunidades, dando origem a mais de uma centena de línguas e a uma diversidade de arquitetura vernácula construída com materiais de origem local, tais como madeira, pedra, bambu e terra. Estas práticas tradicionais, apoiadas por recursos comuns e sistemas de trabalho comunitário, como o *parma*, produziram habitações resistentes a sismos e culturalmente autênticas, com raízes nesta terra. Com base na experiência do autor como fundador da ABARI, uma empresa social dedicada à construção com terra e bambu, este artigo apresenta estudos de caso que demonstram que materiais de origem local e com baixas emissões de carbono podem cumprir as normas de segurança modernas, ao mesmo tempo que restauram as paisagens naturais e a soberania cultural.

< Monks meditating under the bamboo truss (Chemi Dorje Lama)

Introduction

Roughly two-thirds of Nepal's landscape is mountainous, making interregional travel and communication historically challenging. In former times, mountains were barriers to interaction between communities, resulting in the emergence of hyperlocal, context-specific knowledge systems within remarkably short distances. This geographic and cultural fragmentation explains why Nepal, a small country 1,400 km long and some 300 km wide, has over a hundred languages, reflecting distinct worldviews, arts, crafts, agricultural practices, and architectural traditions.

With limited materials at their disposal—mostly timber, stone, bamboo, and earth—these communities designed and built extraordinary structures (Tiwari 2010; Bernier 1997). Some were multistoried and conceived to withstand both earthquakes and the harsh Himalayan climate (Rijal et al. 2010).

Association of Forest and Shelter

Materials were locally sourced from common resources, at scarcely any cost: timber from local forests, stones from local quarries (abundant in the mountains), and soil procured on-site. Labor was bartered. If A helped in the construction of B's house for ten days, then B would reciprocate in the construction of A's house for ten days. This labor exchange system is called *parma* in Nepali. If the owner was disabled or elderly, neighbors would lend a hand without expecting any return. Thus one could build a house with little capital thanks to strong communal links and access to common resources. In these communities homelessness was rare.

As "development" and capitalism crept in, these independent communities began to be subject to regulation. Common resources such as forests, quarries, and rivers became state rather than communal property (Regmi 1999), and the state started charging citizens for materials that were hitherto free.

Whereas before the 1970s almost everyone in rural areas was decently housed, once the government regulated access to forest resources, timber, a primary structural material, became scarce. Many vernacular buildings erected after this time lacked timber reinforcement, making them seismically vulnerable, and in the 2015 Gorkha earthquake, post-1970s vernacular buildings suffered greatly (Adhikary 2016). Lately, using the rhetoric of climate change, the government has further curtailed forest access, forcing people to rely on materials such as cement and steel.

Conservation and Climate Change Versus Indigenous Rights

The notion of "conservation" is a colonial construct born in response to the West's encounter with the tropical East (Wilber 1979). The British used the conservation concept to justify their control of Indian forests, fenced off from local communities. Similarly, in the 1970s, in order to "conserve" nature from traditional forestry access, Nepal created its first national park in Chitwan with the help of the army, driving many Indigenous people out of their homeland. This sometimes violent drive for the creation of national parks extended through the 1970s and on to our time (Upreti 2001). The discourse is now about climate change mitigation, under which more Indigenous people are being stripped of forestry access rights. Even some international conservation organizations have proved to be directly funding evictions (Domínguez and Luoma 2020).

When Indigenous people are denied forestry rights, they are denied their rights to shelter, food, medicine, and even their traditional worldview.

Reconstruction after the 2015 Earthquake: A Missed Opportunity

On April 12 and May 22, 2015, two massive earthquakes struck central Nepal, measuring 7.8 and 7.3 on the Richter scale and killing 8,856 people. Considering their magnitude, the casualties were few, for similar earthquakes in Pakistan (2005) and Turkey (2011) had a combined death toll of over 80,000. In the aftermath, the media and government decried vernacular houses as weak and unsafe, yet properly built traditional structures survived the quakes even at the epicenter (Adhikary 2016).

In a country where 74% of buildings were made of local materials, the building codes that had allowed traditional construction were soon supplanted by new government regulations and guidelines, leading to a sharp decline in this tradition of construction and craftsmanship. In the name of "Building Back Better," the World Bank-funded reconstruction program did little to promote traditional building. Even when its methods could be applied, cement had to be included in the earth mixture in addition to steel reinforcement, and reinforced concrete elements in place of timber.

An average house before the earthquake would cost around USD 5,000, but following these government mandates, a similar house cost over USD 20,000. Many homebuyers have had to go to Dubai and other Gulf States to work under harsh conditions and with few labor rights to earn such money. Thus self-sufficient Nepalis who could once build handsome dwellings with resources from the commons have been forced abroad to be able to pay for a basic concrete house.

Barpak: Building Back Worse

After the earthquake, the Nepali government subjected villages with unique vernacular architecture to cookie-cutter designs lacking both character and functionality (Upadhaya et. al 2022). One example is the village of Barpak, at the epicenter. Originally with beautiful cobblestone streets, elaborate stone walls, and roofs of slate (Fig. 1), it was a testimony to Gorkha's architectural aesthetic and identity. After the earthquake, with government and foreign intervention and a drive for safety and modernization, it was rebuilt with imported bricks, metal frameworks, and corrugated sheet-metal roofs, wholly foreign to the place. A historic village has been turned into concrete jungle, making one wonder if modernization must be synonymous with loss of cultural identity.

Figure 1: Barpak before the earthquake (Nepali Times)





Figure 2: Barpak after the earthquake (Nepali Times)

Over ten years, the official imposition of cement and steel reduced the percentage of vernacular Nepali architecture from 74% of all homes in 2011 to just 54% in 2021.

ABARI: Celebration of Vernacular Practice

In 2006, after returning from college in Northern New Mexico with a specialization in earth construction, I set up a private social enterprise called ABARI with a mission to reinstate traditional earthen materials in contemporary architecture. I was inspired by the architecture of New Mexico, which repurposes ancient adobe techniques in a modern context.

Far from that arid environment with relatively low seismicity, I explored ways of making earthen buildings in Nepal resistant to earthquakes and monsoons. Traditionally, artisan builders did this by using timber as lateral reinforcement and creating large overhangs with timber struts. But as timber was becoming highly regulated, I had to look into alternative materials.

Bamboo

After timber, bamboo has been used for centuries in Nepal in building, for rafters, beams, and wall elements in traditional architecture. In the 2011 census, 1,096,988 homes, representing 20.23% of the total, were reported as having bamboo in their outer walls.

Bamboo possesses several structural advantages: it is ductile, flexible, and lightweight, making it well suited for earthquake-resistant construction. Historically, bamboo use was constrained by a lack of treatment facilities, and so builders would design bamboo components to be easily replaceable. Untreated bamboo is susceptible to biological degradation, including termite and beetle damage and fungal decay. In sheltered indoor conditions, its lifespan typically ranges from two to six years, and it deteriorates within a year if exposed to the elements. Hence it was used primarily for temporary structures or replaceable objects.

Additionally, due to limited joinery techniques—mostly rope bindings—bamboo was rarely used for primary structural members. Even today, it is associated with makeshift shelters, scaffolding, and low-cost structures, particularly in rural and marginalized communities. Given its limited lifespan when untreated, it is considered a poor man's timber.

Bamboo as Grass

Bamboo belongs to the *Poaceae* family, which includes plants such as rice, wheat, and maize. It is one of the fastest-growing plants on earth and abundant in Africa, South America, and Asia, where it is celebrated as a symbol of refinement, humility, and resilience. Light and strong, it is comparable to bird bone in density and to steel in strength, and also to carbon fiber. For these reasons, in 1906 Santos-Dumont made the first ever sustained flight in Europe in a biplane with a bamboo fuselage (International Civil Aviation Organization, n.d.).

Studies by the International Network for Bamboo and Rattan (INBAR) have shown that bamboo is a natural composite with a strength-to-weight ratio comparable to that of mild steel in certain applications.

Bamboo is also an integral part of the Nepali cultural landscape, as more than 10% of the population is reliant on it. Nepal has 55 bamboo species, ranging from tropical to alpine. But despite its rich history, until recently the interest in using it in contemporary contexts has been limited. The availability of concrete and steel on one hand, and the stigmatization of vernacular architecture and craft on the other, have impeded any revival.

Accordingly, my design and research firm ABARI has set out to reinvestigate traditional construction materials for contemporary uses. Luckily, since bamboo is considered grass, it is not regulated by forestry laws, thus making it easy to plant, harvest, and move about.

Challenges to Making Bamboo Mainstream

- Non-Durability in Natural State

The first challenge was to find an effective treatment method that was cheap and portable. We modified the Boucherie system of applying pressurized preservative to the basal end of bamboo, sending boron through the vascular bundles and pushing out starch through the branches and the top end. This method, also known as sap displacement, increases durability by more than 50 years through replacing the starch with alkaline material.



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Figure 3: Boucherie system applied to bamboo by the author

Figure 4: Multiple bamboo culms connected by custom-made brackets (Chemi Dorje Lama)

The Boucherie method works when bamboo is treated within 24 hours of harvesting, i.e., while its vascular bundles are green. Cheap and efficient, it is great for small-scale projects and when plantations are scattered.

- Pressure Treatment

Better suited to larger-scale construction is a vacuum-pressure system in which bamboo is placed in a large vacuum chamber and pressurized preservatives are forced in at the nodes. The bamboo does not need to be green, and should contain less than 20% moisture. This is a scalable technique used by many industries, including timber.

- Joinery

Bamboo is a heterogeneous material with inconsistent geometry and its variable diameters make standardization and connections challenging. It is most commonly assembled by means of fish-mouth joints, with the ends being carved to fit snugly into other pieces. There are no specialized power tools, so these joints are often made by hand. Traditionally, they were reinforced with cane or rope; today, special nuts and bolts are used, sometimes grouted with cement. Such connections become complex when one has to join more than two pieces—especially when designing a three-dimensional truss.

Accordingly, ABARI has developed metal brackets for anchoring bamboo culms with threaded rods. These are custom-made for different angles and tolerate diameter variations of up to 3 mm. This hybrid system permits standardization of joints, using industrial plates. It also allows one to design complex trusses and to assemble multiple pieces.

- Fighting Preconceptions

More than technical issues such as treatment and joinery, public perception is the main difficulty with bamboo. As it has traditionally been seen in Nepal as a temporary material, bamboo houses are regarded as a sign of poverty, and changing such perceptions is not easy.

So we realized that people were not ready to build their homes with bamboo. There was demand, however, for public buildings such as schools and community centers. Moreover, public facilities normally require a large span, traditionally accomplished using steel trusses. With bamboo and its high weight-to-strength ratio, we knew that with our jointing system we could build free-spanning trusses such as had never been tried in Nepal. I decided to run ABARI as a social enterprise, with the aim of providing sustainable public construction solutions using locally available materials.

This was not an easy task because we had to set up a whole supply chain—from harvesting and treatment to capacity development—and provide design-and-build services to make natural construction look desirable today. And while advancing what seemed a noble cause, we had to remain competitive.

School in Balimtar

One of our early projects was the construction of a small pre-primary school, which I wanted to be a replicable demonstration. Fortunately, a friend of mine, Justin Wickham, was building a stone school in a remote Gorkha village—so remote that the closest hardware store was five hours away. The idea was to build a model school which would demonstrate that one can build an inspiring space for learning with materials that are locally available and sustainable. I volunteered to build the roof with bamboo and stone according to vernacular tradition. We had a limited budget and the project took us almost three years, but the three-classroom school turned out spectacularly, with reinforced ashlar masonry plastered with earth, bamboo trusses, and stone slates, showing that one does not need a large budget or industrial materials to build a public amenity.



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Figure 5: Classroom interior plastered with earth

Figure 6: Demonstration Early Childhood Development Center using local materials such as bamboo, stone, earth, and slate

I was becoming disillusioned because I knew I would not be able to pay my bills if I kept volunteering like this. Yet fate had other plans for us. Just after we completed the school, a huge earthquake struck Nepal, with its epicenter 12 km away in Barpak. Our school was one of the very few such buildings to survive the devastation.

Overnight, our work was recognized, as national and international media such as CNN, the New York Times, China Central Television, and the BBC gave us coverage.



Figure 7: Compressed earth block machine designed for community use

Tragic as it was, the earthquake proved that buildings made of earth, bamboo, and stone are seismically resilient. It proved that with local resources, one can still build beautiful spaces that meet people's needs with vernacular flavor. It showed that there is no need for imported industrial technologies or materials to make structures that are safe, nice to be in, and good to look at.

After the 2015 Earthquake

After the earthquake, some 40,000 schools had to be rebuilt, which seemed a good opportunity to pitch our ideas to the government. On the basis of our work at Balimtar, the government immediately approved our prototype design for a modular school. It is rare, even internationally, for a government to approve such materials as earth and bamboo for the construction of public schools.



Figure 8: Open-source rammed-earth design model



Figure 9: Classroom interior (open-source design)



Figure 10: Many schools were built in different districts to our open-source plans

We advocated for an owner-driven reconstruction system, in which the owner has control over design and materials. Our designs became popular and we received many requests to build schools all over the country. We were unable to serve them all, so we put the designs online in open-source documents. We also trained hundreds of people to make their own bricks. Over twelve classrooms were built using these designs, and there were nearly one million downloads. We also released open-source designs for homes of earth and bamboo that can be built for USD 3,000.

Yet after the earthquake, we feared the government would prescribe industrial cookie-cutter designs across the country, undermining thousands of years of vernacular architectural tradition. Unfortunately, that is what happened. Backed by the World Bank, the authorities made natural building difficult, and even when it was allowed, tons of cement and steel had to be added. Many people wanted to build in our style, but Nepali building codes, which had been quite favorable to natural construction before the earthquake, were changed to prioritize concrete and steel. Ten years on, one sees traditional vernacular architecture being displaced by modern industrial dreariness.

We wanted to contribute to the large-scale post-earthquake reconstruction effort, but we were fighting with limited resources against bureaucracies that preferred centralized settlements that could be easily monitored and banks willing to have a large portion of the population in debt. Our idea of owner-driven houses, built of freely available materials, ran contrary to the wider agenda.

Nevertheless, pockets of opportunity opened up among some alternatively thinking individuals and organizations.

Madan Puraskar Pustakalaya

Our biggest commission after the earthquake was for the reconstruction of a public archive, in the middle of the Kathmandu Valley. Erecting such a building of earth and bamboo in an urban area would have been nearly impossible before the earthquake. But the slender, lightweight, ductile bamboo roof was psychologically comforting to those who had witnessed heavy concrete structures come down like houses of cards.

We finished the library in nine months using rammed earth, wattle and daub, and bamboo trusses, celebrating the technology we had been exploring for the last six years. The two-story structure has



Figure 11: Library interior, celebrating the slenderness of bamboo (ABARI)



Figure 12: Earth paints protected by bamboo overhangs

all of its bamboo members exposed, forming a complex web-like truss network. We separated the walls from the roof, as was done in the vernacular architecture of western Nepal, so that if the walls came down in an earthquake, the roofing would remain in place.

Building a public facility in an urban area with earth and bamboo involved a symbolic victory, because such materials had been considered unfit for public spaces. The library has become a tourist attraction, receiving thousands of visitors.

Mahamudra Hall

The Mahamudra Meditation Center stands atop a mountain about an hour from Kathmandu, accessed on foot or by off-road vehicle in dry weather.

The center is the brainchild of Chogyal Rinpoche, a young Tibetan master and torchbearer of a medieval esoteric lineage of Buddhism. He believes the time has come for ordinary people to have access to knowledge that was hitherto the preserve of Tibetan masters, and envisioned a place of learning where people could enjoy not only mystic wisdom but also architecture and natural surroundings that radiate a sense of spirituality.

Mahamudra Hall has six roof layers supported by handcrafted bamboo forming a mandala-like truss sixteen meters high, making it one of the tallest bamboo structures in South Asia. The walls are of rammed earth, with breathability suited to a place of meditation. The structure has a square layout and its tall copper roof is designed to symbolically channel energy toward the heavens. Tall latticed windows allow the floor of the meditation hall to be bathed in sunlight of varying intensity through the day.

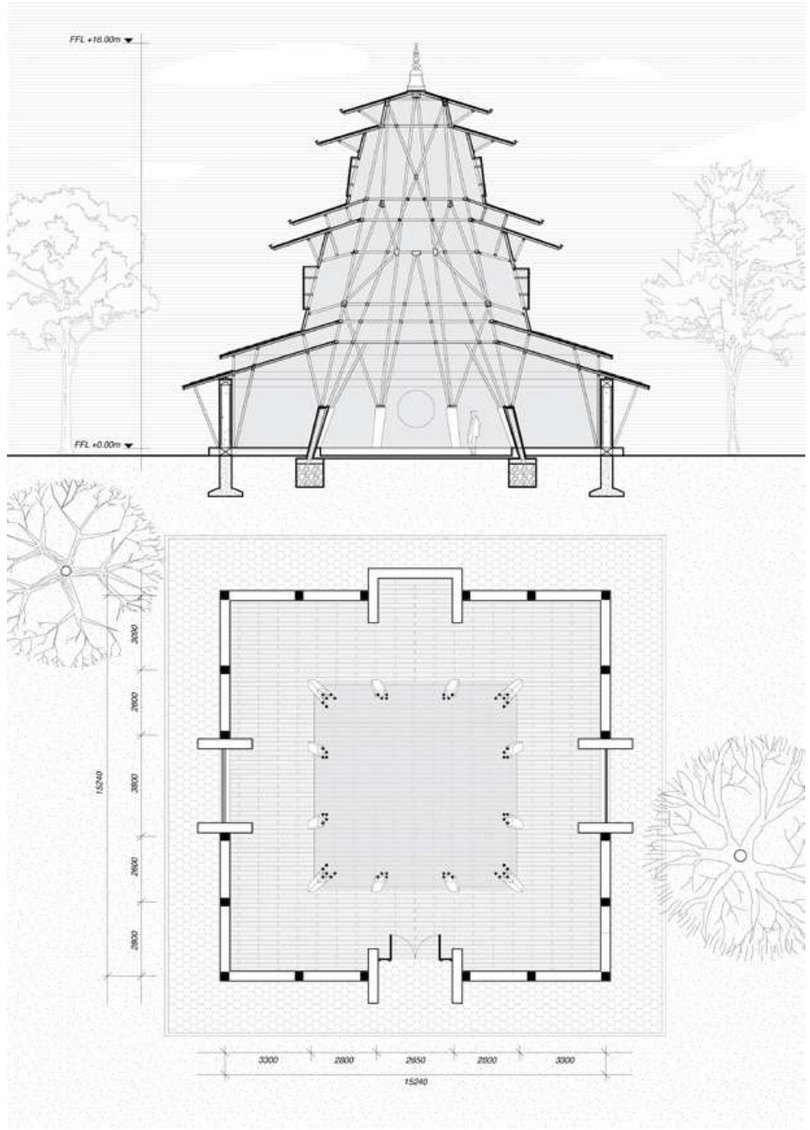


Figure 13: Elevation and plan of the Mahamudra Center (Asmita Sigdel)



Figure 14: Cement-free rammed earth, celebrating the colors of local clay (ABARI)

Similarly, the center's dining hall is vaulted with curved bamboo over wattle-and-daub walls. The curving bamboo seems to encapsulate the devotees, sheltering them from the harsh Himalayan environment. The walls of the accommodations are insulated with sheep's wool and plastered with earth, forming a salubrious haven for spirituality on this solitary mountain.

Figure 15: Mandala-shaped truss (Chemi Dorje Lama)

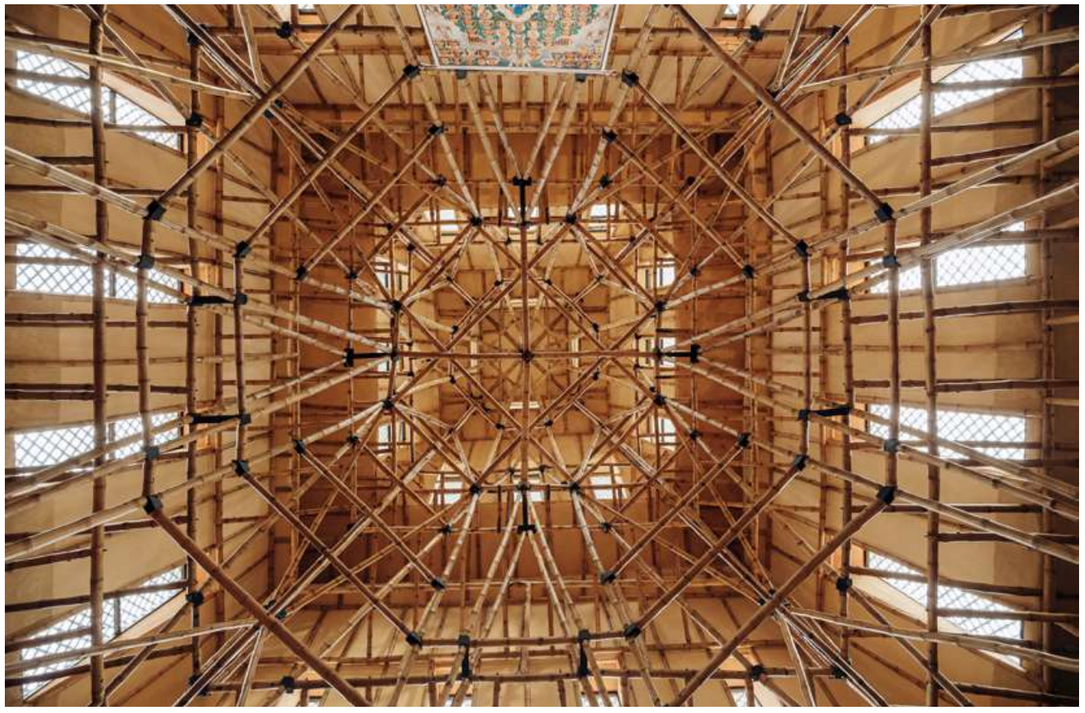




Figure 17: Exterior view of the Center (Chemi Dorje Lama)

Creating a System That Is Good for People and Planet

As mentioned, forests are highly regulated in Nepal, but bamboo is fortunately classified as a non-timber forestry product, which simplifies its plantation, harvesting, and use.

Figure 18: Land devastated by flooding (Google Earth)

Figure 19: Land restored and celebrated (Chemi Dorje Lama)



18



19

In 2010, devastating flooding in Chitwan district forced many families off their land, leaving large deposits of sand that made the soil untillable. So we invested in a recently flooded area with the aim of restoring it and creating a stock of bamboo for use in construction.

Bamboo is hardy and can grow fast in tough conditions, with an extensive root system that helps control erosion. It is pliable, bending with a flood and springing back as the waters recede. All these characteristics make it ideal for land restoration.

After a few years of planting, the whole community got involved. Now we have restored the entire riverbank and in the process created a repertoire of bamboo for building, in an example of how one can build structures and restore land at the same time with multiple benefits for people and planet.

Conclusion

In Nepal there is a belief that true freedom stems from sovereignty over the essentials of life: food, shelter, and clothing—*gas bas kapas* in Nepali. Over time, especially since the colonial era, people's control over these essentials has been steadily eroded. What was once in communities' reach is now regulated and monetized. The ideal of self-sufficiency is increasingly undermined in the name of safety, conservation, and climate action. Despite this, locally sourced materials such as bamboo and earth still offer ways for people to regain control over their housing, with homes that do not come at the planet's expense and offer seismic safety, thermal comfort, and a healthy living environment. Such housing can both support the regeneration of the natural world and, as against the costly and dreary corporate model, offer something better.

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Biography | Biografía | Biografia

Nripal Adhikary

Based in Kathmandu, Adhikary leads ABARI, a practice centered on rigorous research and experimentation. Through extensive material testing and the study of vernacular traditions, ABARI promotes owner-driven reconstruction using locally sourced stone and materials such as bamboo, reed, and adobe. This research-based approach shows that these natural materials offer strength, flexibility, and earthquake resistance comparable to industrial options while being renewable, lighter, and ecologically sound, especially considering Nepal's bamboo-rich landscape. Beyond testing, Adhikary's research redesigns traditional materials to conform to contemporary aesthetics and functional needs, with a focus on seismic resilience, supported by local supply chains. Notable projects demonstrating this research include the Madan Puraskar Library, Mahamudra Monastery, and Kopila Valley School. He was a 2019 Emerging Architecture Award finalist and won the 2024 Fred Webster Prize.

George Knight

Léon Krier, Our Teacher

Léon Krier, nuestro maestro

Léon Krier, o nosso professor

Abstract | Resumen | Resumo

Léon Krier (1946–2025) was an outstanding architect and urbanist who voiced a scathing critique of modernist architecture and planning over more than a half century. His ideas are central to the New Urbanism movement in the United States, and he served as designer for such projects as Poundbury in Dorchester, UK, and Ciudad Cayalá in Guatemala, among numerous other commissions. He published prolifically and is famed for his trenchant cartoons. Krier was also an accomplished educator, having taught at architecture schools in universities such as Princeton, Virginia, Cornell, Notre Dame, and Yale. "Léon Krier, Our Teacher" describes his pedagogical method over four, semester-long advanced design studios taught with George Knight at Yale.

Léon Krier (1946–2025) fue un destacado arquitecto y urbanista que, durante más de medio siglo, formuló una incisiva crítica de la arquitectura y el urbanismo modernos. Sus ideas ocupan un lugar central en el movimiento del Nuevo Urbanismo en Estados Unidos, y fue autor de proyectos como Poundbury, en Dorchester (Reino Unido), y Ciudad Cayalá, en Guatemala, entre otros muchos encargos. Publicó numerosos trabajos y es célebre por sus mordaces viñetas. Krier desarrolló asimismo una importante labor docente y enseñó en escuelas de arquitectura de universidades como Princeton, Virginia, Cornell, Notre Dame y Yale. "Léon Krier, nuestro maestro" describe el método pedagógico que aplicó a lo largo de cuatro talleres avanzados de proyectos, de un semestre de duración cada uno, impartidos junto con George Knight en Yale.

Léon Krier (1946–2025) foi um arquiteto e urbanista notável que, ao longo de mais de meio século, teceu uma crítica mordaz à arquitetura e ao planeamento modernistas. As suas ideias são fundamentais para o movimento do Novo Urbanismo nos Estados Unidos, tendo sido o responsável pelo desenho de projetos como Poundbury, em Dorchester, no Reino Unido, e a Ciudad Cayalá, na Guatemala, entre inúmeras outras obras. Publicou prolificamente e é famoso pelos seus desenhos satíricos incisivos. Krier foi também um educador consumado, tendo lecionado em escolas de arquitetura de universidades como Princeton, Virgínia, Cornell, Notre Dame e Yale. "Léon Krier, o nosso professor" descreve o seu método pedagógico ao longo de quatro ateliers avançados de projeto, cada um com a duração de um semestre, ministrados em conjunto com George Knight, em Yale.

The Yale School of Architecture

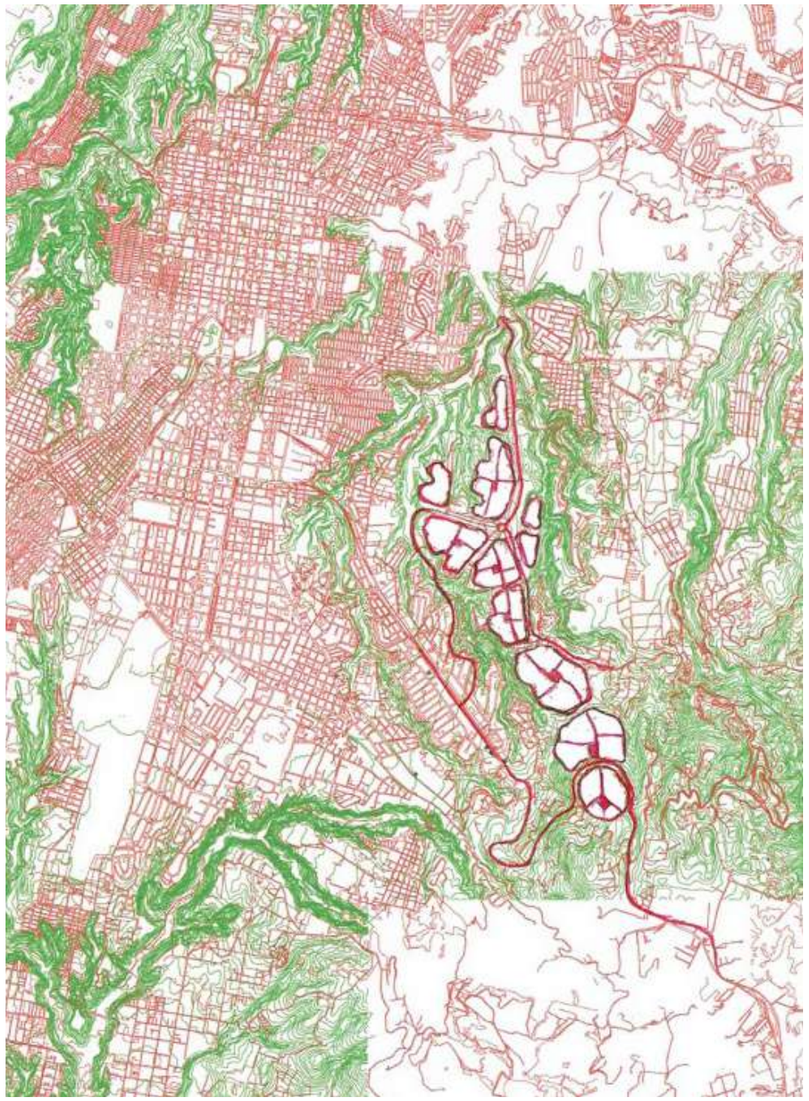
By 2015, it had become a Yale School of Architecture tradition to gather the entire student and faculty body in the capacious fourth floor "pit" of Rudolph Hall, an unrepentantly brutalist landmark of bush-hammered concrete, daring cantilevers, and expanses of undivided glazing, for a preview of the semester's advanced design studios. Dean Robert A. M. Stern, master of ceremonies through the morning in his double-breasted sport coat, yellow socks, and Italian loafers, was visibly delighted with the array of practitioners from around the world which he had hand-picked to lead the school's semester-long design courses. Recalling the rancorous, challenging review panels of his own education at Yale, Stern reveled in the diverse, and even conflicting, design ideologies embodied by the visiting critics he had recruited—a group which perennially included such "starchitects" of the day as Zaha Hadid, Frank Gehry, and Rafael Viñoly.

By this point, Stern was operating with a well-earned confidence he could hardly have mustered at the beginning of his deanship in 1998, when concerns were loudly murmured that his avowed interest in traditional architecture might prevail in the curriculum and jeopardize the school's reputation for innovation and experimentation. Such a gathering firmly allayed this apprehension, expressing the "pluralism" which became the byword of his long tenure. Simultaneously, Stern's decision to include Léon Krier in this group was noteworthy. Krier, who had first been brought to Yale in 1991 under the deanship of Thomas Beeby and would be leading his ninth studio, had long leveled a withering critique at modernist architecture and called for a rediscovery of traditional materials and forms with which to repair a world broken by hyper-industrialization.1 Stern was determined that the school maintain such a critical position, even if it was at odds with that of the instructors invited to lead other advanced studios.

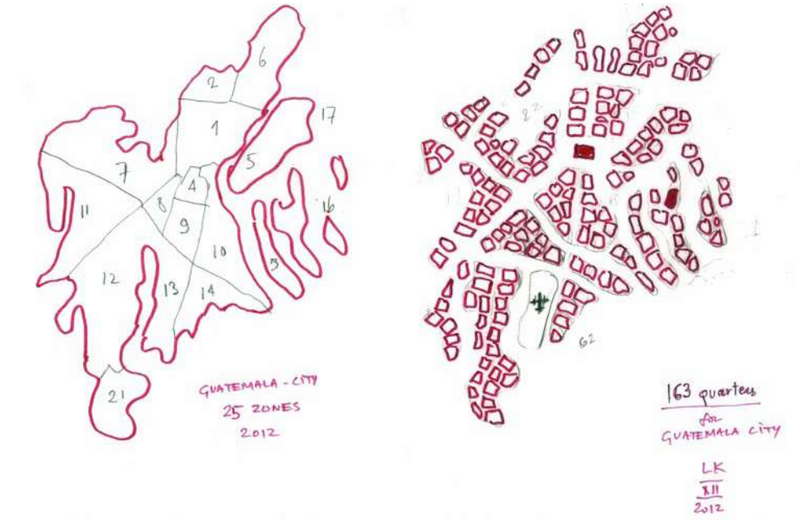
The morning proceeded as had many before, with lengthy verbal and slide presentations of proposed studio sites, programs, and philosophies. Students in their final year filled the floor space while scores of others peered over classmates' shoulders from the studio trays and bridges overhead. Stern then opened the floor for questions to the future teachers: "How many days will you be in New Haven over the semester?" "Will we work in teams or individually?" As details were ironed out, the questions to the critics became more substantive. "What do you mean, the studio will have no physical site?" "What role will parametricism play in the pedagogy?" "How will the textual supplant the formal?" At one point a student interrogated Krier. "Will we actually be expected to design in a traditional manner?" Krier fielded the question with characteristic clarity. "If this were a French language class, you would not expect to learn German, correct?" Responding across an expanse of paprika-colored carpeting, Krier added, "This is a studio on the traditional city so, of course, we will be designing with traditional forms and materials."



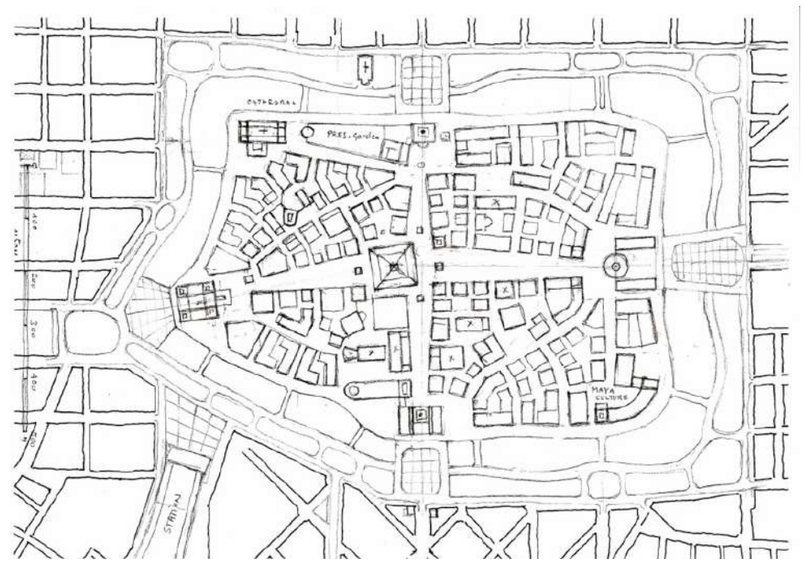
Léon Krier, Frank Gehry, and others during a studio review at the Yale School of Architecture in 2004 (Yale School of Architecture)



Regional plan for Guatemala City showing "Guatemaya" and Ciudad Cayalá, 2012 (Léon Krier)



Regional plan of Guatemala City and Ciudad Cayalá, 2012 (Léon Krier)



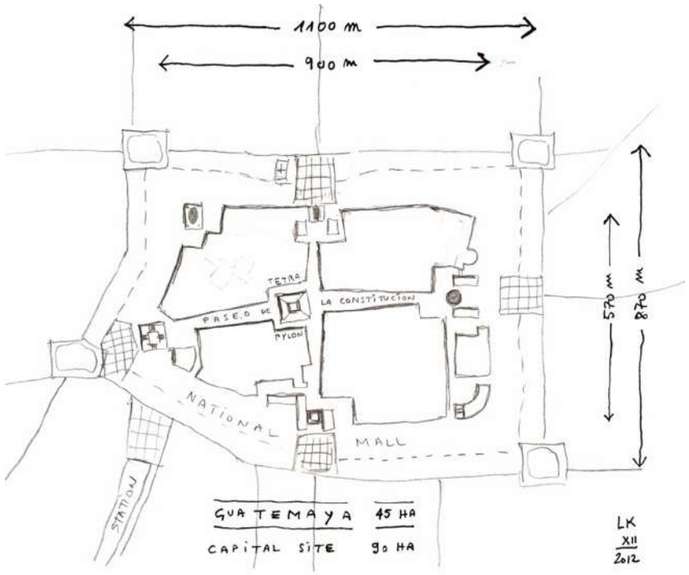
"Guatemaya" master plan, 2012 (Léon Krier)

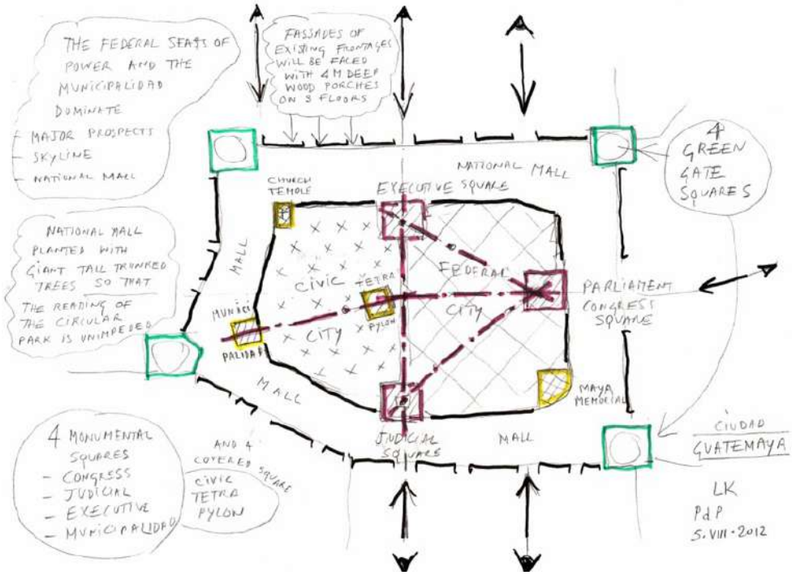
The Masterplan

Over the four years we taught at Yale together, Krier invariably organized the studio's proposed work around a masterplan that he would draw up for a given site. This approach differed to that of many other critics at the school who typically dedicated the first weeks of the semester to student-led planning prior to any architectural elaboration. Krier was notoriously inflexible regarding student proposals to alter a given arrangement. One student recalled, "There was one rule: Krier's masterplan could not be altered."[2] Yet such "rules" were born not of obstinacy or imperiousness but rather of pedagogical method. Krier recognized that urban design was a less familiar discipline for architecture students and, he believed, it was most effective to ask them to work within the parameters of a well-considered plan. Rather than shuttering his students' creativity, Krier sought to vest his designs with social, artistic, and pragmatic prompts for inquiry and discovery.

Despite his many years of teaching,[3] Krier approached each studio with vigor. He devoted weeks prior to the start of a semester to making a plan to guide students' work. This process was memorable in a 2013 studio in which Krier proposed a new federal and municipal capitol, "Guatemaya", to be built on the grounds of Guatemala City's current Centro Cívico, a district, Krier noted, "that had promised to be Guatemala's Brasilia but had become a sordid exemplar of modernist failure both in urban and architectural terms." The studio was to build on the early success of the still-in-construction Ciudad Cayalá, a new quarter only a few miles away, for which he had served as planner and advisor. Krier's uncanny ability to make the complex appear simple is exemplified in a drawing he prepared for Cayalá. Wielding a deft red pen over an intricate plan of the existing layout, he illustrated his hallmark planning tenets: A city is conceived as a polycentric organism in which each center's size is defined by the limits of walkability; each center has a discernible identity typically embodied by a civic structure/plaza and is subdivided into quarters; circulation routes are set at the edges rather than in the middle of the assemblage; the plan adapts to the terrain rather than the reverse.

Krier began his planning for Guatemaya with a study of the Guatemala City metropolis, transposing an existing system of 25 administrative "zones" into a network of 163 "quarters." Here too, one sees Krier's prioritization of discernible groupings of blocks and neighborhoods around legible centers. From this scale, Krier developed his proposal for a new governmental district. Working iteratively in his preferred format of freehand ink drawings on A4 sheets, he based the boundary on existing circulation routes and traced the dimensional limits of a walkable core. While the limits would ideally have been defined by a natural feature offering long vistas, such as the ravines he had known as a child in Luxembourg, for Guatemaya's comparatively level ground, he proposed a generous belt of trees and parkland, a "national mall", within which to set the new capitol.

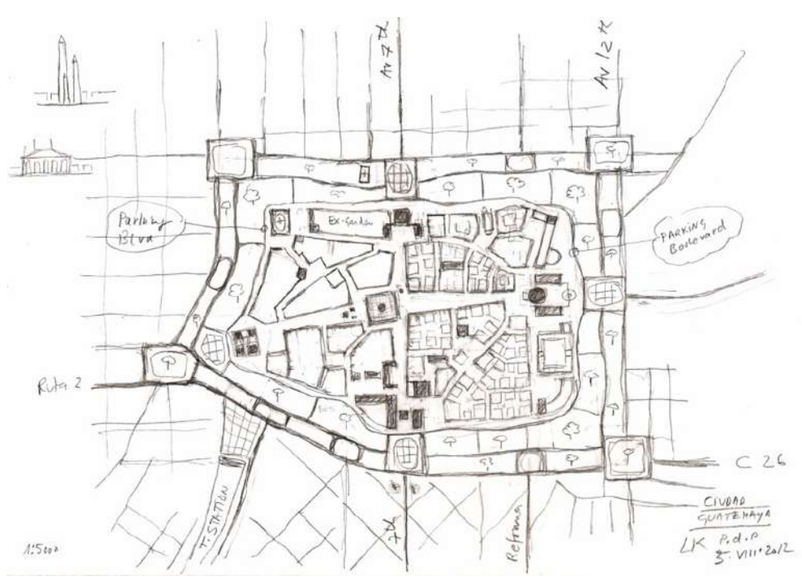


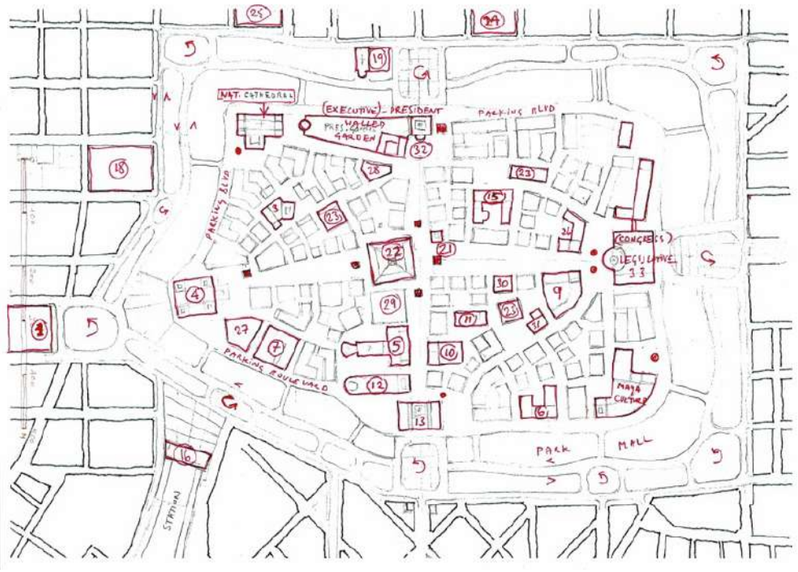


"Guatemaya" master plan studies, 2012 (Léon Krier)

He began by drawing two primary perpendicular avenues like the *cardo* and *decumanus* defining the Roman *castrum* type at the core of such cities as Paris, Barcelona, or London. This initial organizational stroke produced a plan of four quarters where, at the crossing of the avenues, Krier habitually located a large public space. In his Guatemaya plan, he proposed an enormous "tetra-pylon" or double-sided arch at this intersection, a further indulgence of his fascination with Roman architecture.

Despite his reliance on ancient planning principles, Krier critiqued and sought to overcome the *castrum*'s martial rigidity. For example, he proposed a secondary set of civic buildings to visually





"Guatemaya" master plan studies, 2012 (Léon Krier)

terminate, rather than reinforce, the otherwise continuous cardinal axes. Similarly, he defined the corners of his plan not with bastions but with prominent cultural and religious uses. Even more notably, he introduced eccentric geometries into the plan at the outset. Intrigued by the stress distribution patterns found in such phenomena as shattering glass or dried lakebeds, Krier sought to give life to the Cartesian lattice. "It's as if one shook the board on which the building blocks sit… just a little" he noted, as his drawn blocks were increasingly liberated from the grid. Meandering diagonal secondary streets, like those first formed by opportunistic cart drivers in under-administered medieval cities, further dissolved any monotony. Sensitive to the charge of willful formalism, he countered that such planning was "vernacular" as opposed to "classical" and therefore better suited to the day-to-day uses proposed in a given quarter. Inevitably, these secondary streets led to squares scaled to the more quotidian uses of the surrounding blocks, at the core of the quarters.

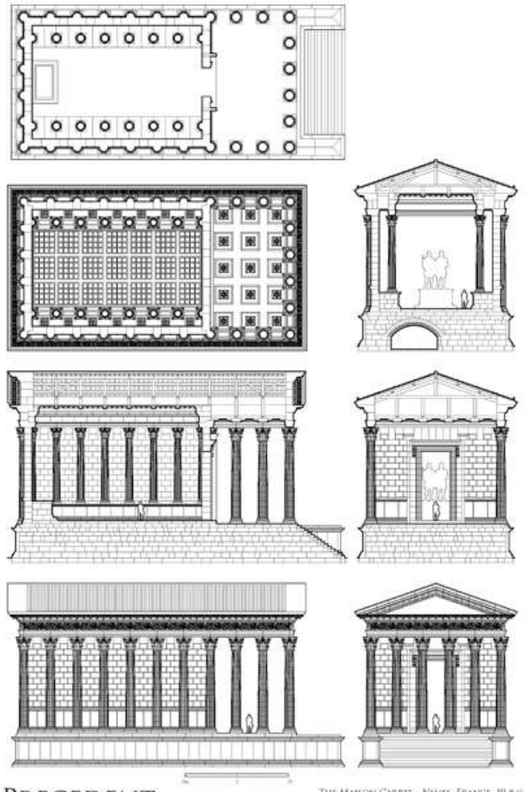
Though it was not immediately apparent to his eager students, Krier's carefully prepared masterplan served as a fertile garden in which their talents could take root, find identity, respond to circumstance, and flourish.

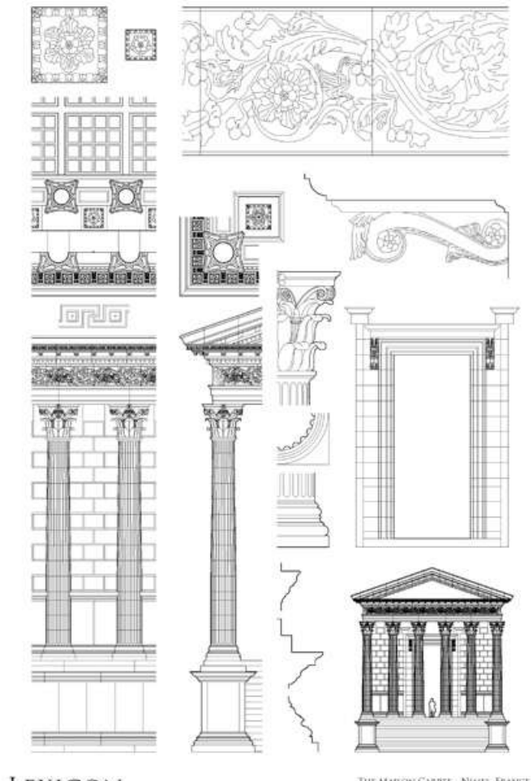
Learning a Language and Finding a Voice

The précis of Krier's 2007 studio at Yale entitled *E.U.R. Interrota* declared, "Students need not worry about personal expression and style because this comes automatically with the practice of speech. It doesn't work the other way round." To many of our students—all talented, all ambitious, and all concerned about personal expression—this gnomic statement seemed, at first, inscrutable. After all, their education to date had largely prioritized a quest for individual brilliance and originality while offering less opportunity to gain a conversance with form, material, proportion, and assembly. Krier inverted this approach, believing that a student's expressive potential was aided, if not discovered, through the study of exemplary architectural and urban form. As he indicated in a handwritten note faxed to the studio on their return from a travel week, "Several signs tell me that the variegated Rome trip has kindled a fire in all of you, as it has in me—I keep drawing arches, like the guy in *Close Encounters of the Third Kind*, not knowing exactly what he is working on." He closed the missive with a familiar invitation: "Any fax questions will be readily answered." With such support, Krier would lead the students through a process of iterative drawing of exceptional buildings, both classical and vernacular, notable and obscure, contributing to the studio site's character.

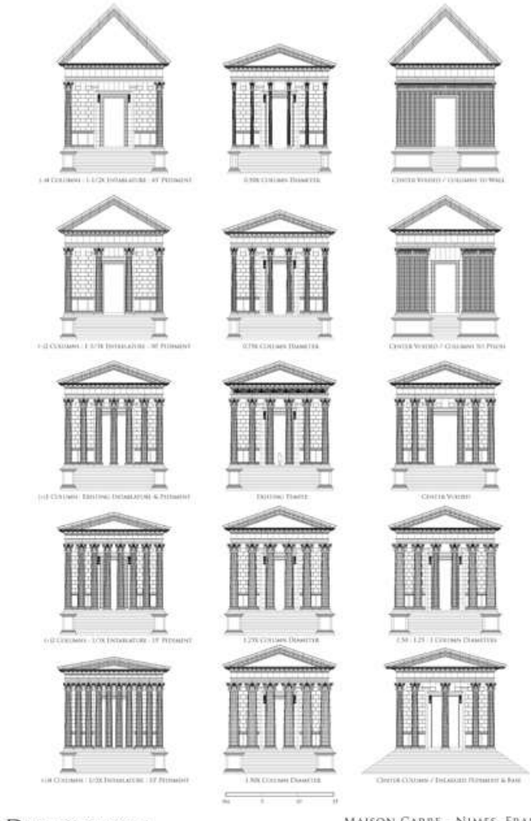
A memorable example of this methodology occurred at the outset of his 2015 Yale studio, *A New New Haven*—his last one at Yale—in which he proposed to transform the waterfront of the university's host city into a productive and appealing urban quarter by supplanting a toxic surface highway interchange with a graceful harbor bridge. His first assignment to the students was to immerse themselves in the best of the city's centuries of architecture. While some were familiar with this approach, few had ever drawn to Krier's required level of fidelity and resolution. Many questioned why the studio devoted so much time to drawing existing buildings. Krier, the polyglot, frequently cited the way in which a child, ever mimetic, learns to talk: "We learn speech by imitating the noises we hear made by our parents and come to assign meaning to them." Selecting buildings of various types, characters, and vintages, Krier oversaw the studio's drawing and re-drawing of plans, sections, and elevations with ever-increasing levels of clarity and appreciation for form, material, proportion, and assembly.

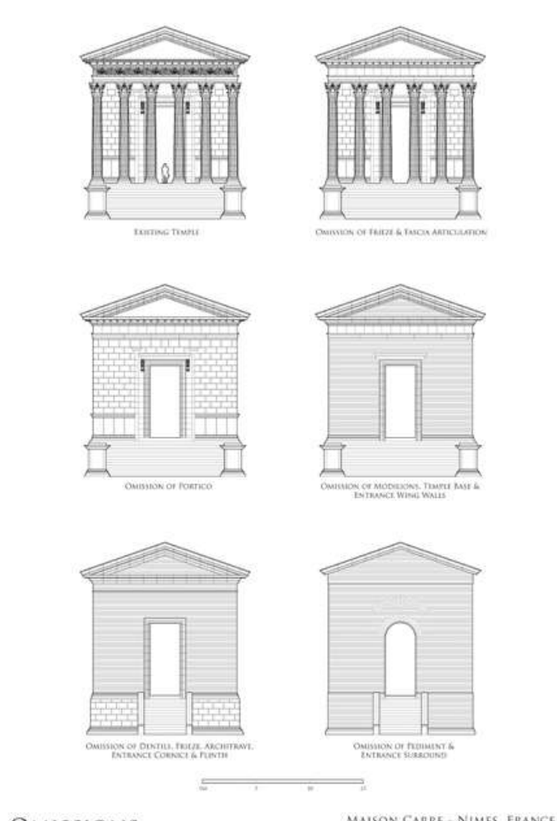
Student work by Aaron Taylor, Yale School of Architecture, 2007



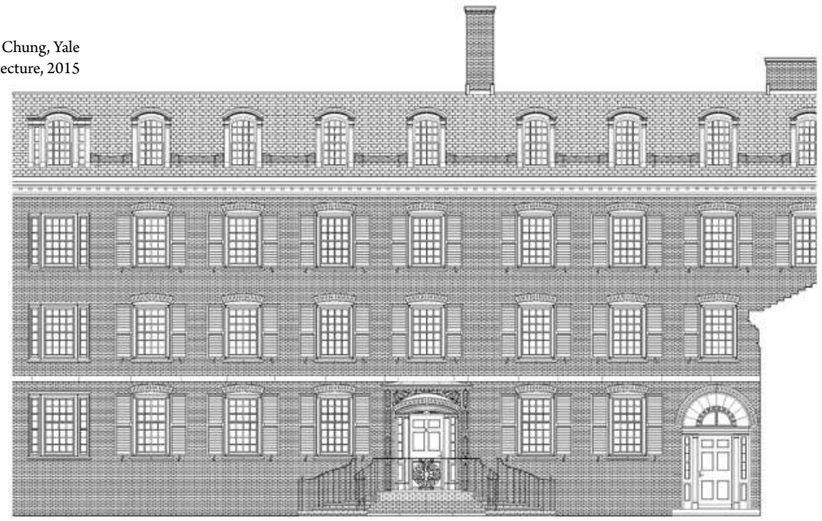


Student work by Aaron Taylor, Yale School of Architecture, 2007

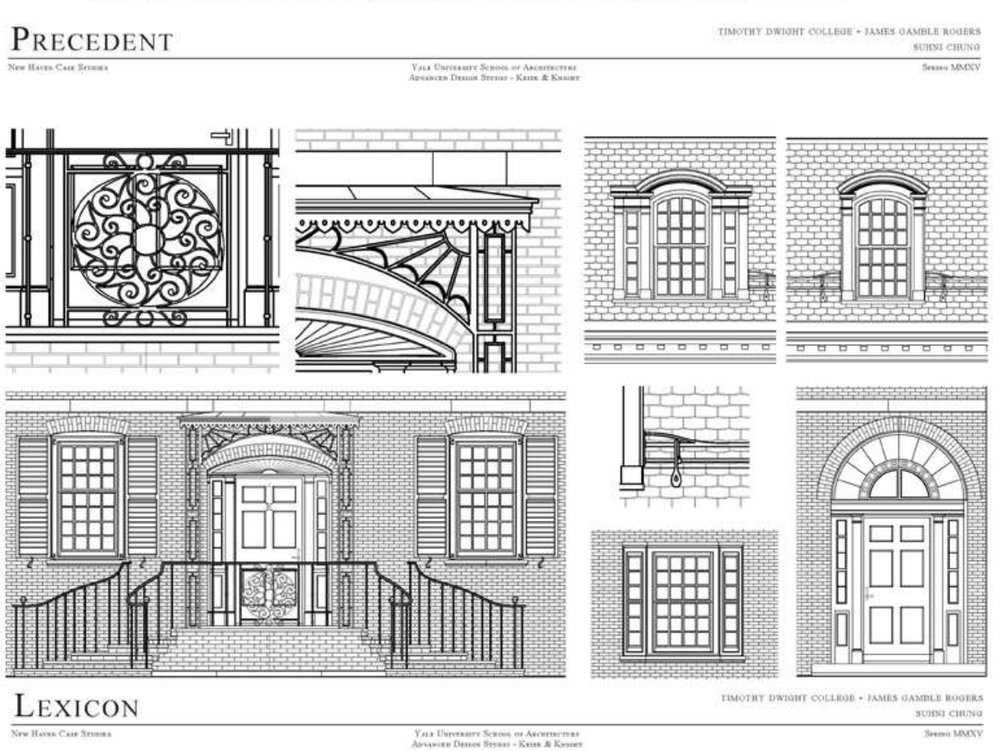




The students were asked to extract specific elements, "parts of speech" in Krier's terms, from their drawn precedents to create a "lexicon" of form from which they could assemble new buildings. The students produced catalogs of doors, windows, eaves, bases, parapets, gates, cornices, all in a common "authorless" graphic style which would then serve as a shared studio resource. To the surprise of many students, Krier's methodology, so focused on "the syntax and grammar", produced an astonishing "fluency" with form and material that allowed even the most indecisive to confidently compose the various buildings expected of them. The prolonged experience with the "teacher" buildings had generated a critical acuity and a creative proficiency.

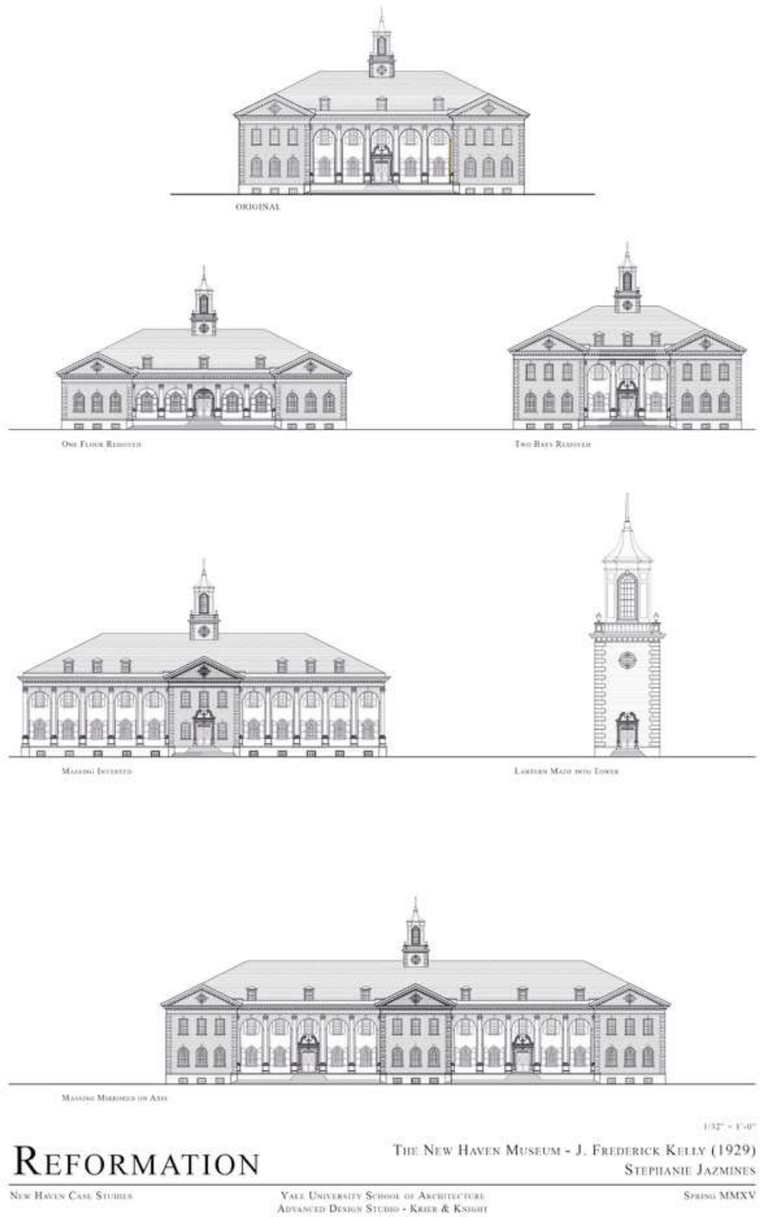


Student work by Sunhi Chung, Yale School of Architecture, 2015



Playful Drawing

As Krier was the inaugural winner of the Richard H. Driehaus Prize at the University of Notre Dame awarded annually to "a living architect whose work embodies the highest ideals of traditional and classical architecture," it is curious that his work and teaching resist being labeled "classical" in a conventional sense. I have heard more than one suspicious academe question Krier's fidelity to Vitruvian or Renaissance codes and recall Robert Stern once quipping that Krier was less a classicist than a "vernacularist". That said, Krier nonetheless believed in, and taught, a classical ideal—what he repeatedly identified as "the highest and best," which, if used in proper measure, would confer beauty, legibility, and lasting civic value to programs worthy of it.[4]



Student work by Stephanie Jazmines, Yale School of Architecture, 2015

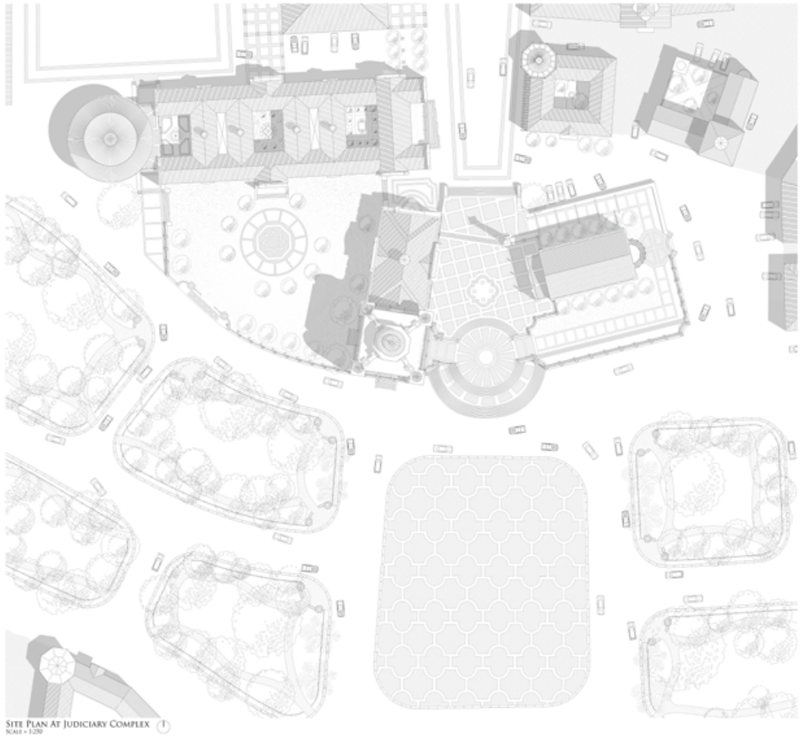
As illustrated in his didactic cartoons, Krier saw drawing as an essential tool in discovering and ratifying the classical ideal. Proportion, syntax, figuration, ornamentation, scales of detail, and more could all be affirmed in a carefully drawn sketch. Drawing has indeed long been a cornerstone of architectural education. The playful Krier posited an additional, inverse, possibility: that students should find the point at which a form or composition "loses" its classicality. He challenged them to consider such questions as: Could a classical building drift into banality, or even ugliness, if its components were deformed? How elastic are its proportions? How much classical form can be eliminated before a building can no longer be considered classical? Could a classical structure morph into a vernacular one while retaining a comparable integrity? Could a new classical building be created by rearranging components of an existing one?

I first encountered this methodology in Krier's *Roma Interrota* studio, in which he had tasked the students with documenting explicitly pre-Christian Roman architecture. To answer these questions, the students deconstructed their well-documented exemplars to test the limits of proportional harmony and Vitruvian eurythmia.[5] As illustrated in a suite of drawings of the Maison Carrée, Krier orchestrated an exercise of "distortion" whereby students tested age-old norms through creating drawings with discrepant roof pitches, eccentric inter-columniations, and columns ranging from the corpulent to the emaciated. Similarly, Krier asked his students to illustrate "omission", with elements being progressively left out. For example, they were asked to consider in a given facade how essential, or not, a modillion coursing might prove to be; a mutulary cornice; engaged pilasters; column entasis, and so forth. Going a step further, he challenged them to take a classical building and transform it into a vernacular one to illustrate how, for example, a temple and a *horreum*, remote in their functional and artistic programs, might nonetheless share a language of assembly and a structural logic. Finally, he invited his students to deploy their newfound fluency with form by recombining elements in their creations.

Student work by Stephanie Jazmines, Yale School of Architecture, 2015







Student work by Ryan Salvatore, Yale School of Architecture, 2013

Application – Student Work

Only upon completion of the battery of preparatory assignments, often lasting a half-semester, did Krier let his students design their projects. At minimum, the studio's brief would include a building design with a public program, buildings with residential programs, and frequently some civic art such as a fountain, plaza, or landscaping. Additionally, Krier usually required students to present an "analytique"—a single, multi-scalar drawing amalgamating components to illustrate the whole—of their primary design. Facing such a formidable list of deliverables under a short timeline, students had no choice but to draw upon their preparatory learning.

With few exceptions, the work flowed like water released from a dam. With Krier's masterplan guiding the layout, students showed a newfound fluency with form and material. They feverishly devised programs for building uses, developed plans, resolved structural approaches, and designed facades

and elevations. Krier played a supportive role in this, encouraging students not to shy away from the plan's civic aspirations and frequently urging boldness of form. For example, "It needs to be about 150% larger." He sketched economically with students, typically delineating larger, simpler forms, whose mass was suggested by varied weights of his felt-tipped pen. Drawing from his encyclopedic knowledge of architectural history, Krier emboldened students with inspirational citations for both design and representation.

In some studios students were challenged to engage artfully with the existing buildings that Krier's plan had spared. This would require corrective action. For example, one student sought to reinstate the unbuilt, arcuated portico in Cass Gilbert's design for Union Station in New Haven and to reorganize the interior of that landmark building as a gateway to new waterfront developments, while another transformed a banal industrial structure into a city mosque. In other studios, a wholly new character was to be created through buildings, landscapes, and civic amenities.

Krier's interest in local building patterns, climate, and design traditions was an axiomatic starting point for each studio. Nonetheless, ceding to his fertile imagination and irrepressible curiosity, Krier always kept some space in his studios for experimenting with non-native influences. He often asked individual students to take up the work of a selected "outside" architect or movement to inform their designs. One summoned Art Deco precedents featuring Mayan motifs to influence a series of buildings in a proposed quarter of the Guatemaya site. Others found guidance in the work of the Austrian architect Otto Wagner for designs in the same studio. It was often a surprise to them that Krier would include his own improbable muse, Le Corbusier, as an inspiration. Krier long held that this modern master's oeuvre could be "civilized" with a systematic application of his formal language and a reconsideration of his material vocabulary.

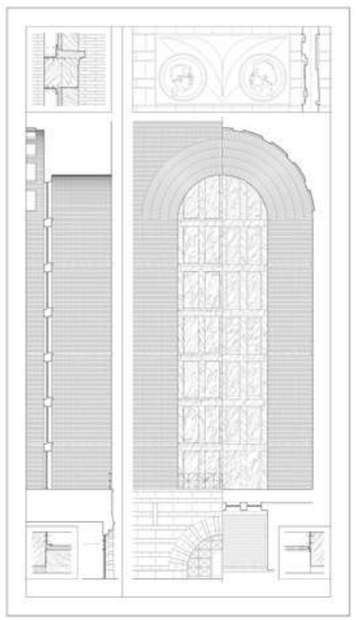
Whether working in a heroic masonry scale such as for a new Roman library, or in a uniquely hybrid regional language as for the justice palace in Guatemala, or in a neo-Federal spirit as for a public library in Washington, or in a dreamy monumentality as for a reinstated state capitol for Connecticut, many students achieved a level of expression and resolution uncommon at Yale. Facades supplanted mere schematic elevations, plans crystalized with a legible hierarchy of rooms, skylines sprouted elegant silhouettes, and landscapes gained organizational clarity through paving patterns and nicely distributed plantings.

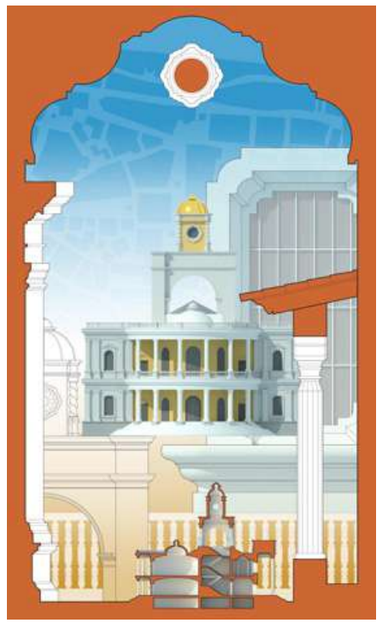
Upon graduation some, but not all, have gone on to work in traditional design languages and contexts. Yet all were enlightened by the example and teachings of a generational visionary who recognized that we must strive toward an enriched relationship with the earth and with one another. As he summarized in a fax to students at the end of a studio, "Beyond the issues we have visited in this project the most important one is that you discover the pleasure and privilege to work within an ecological and cultural context. A powerful and lasting artistic statement is dependent on your ability to tune your contribution to the enduring qualities of a given environment. Good luck and see you soon. Léon."



Fax from Léon Krier to the 2007 group







Student work by Michael McGrattan (2013), Aaron Taylor (2007), and Mengran Li (2013), Yale School of Architecture



Léon Krier and the author in Palma, Mallorca, 2016 (Meghan Knight)

Epilogue

I first encountered Léon's writing and philosophy as a graduate student in the early 1990s, and was immediately won over by his erudition and impactful drawing. Years later I had the unexpected good fortune to teach with him and, as anyone in such a position would recognize, learn from him. His dedication to his students matched his brilliance, originality, courage, and lucidity. His example continues to inspire me and the scores of Yale students lucky enough to have encountered him.

I am indebted to the following alumni for their work and their contribution to this appreciation:

2007 ***Rome***	*2009* ***Washington DC***	*2013* ***Guatemaya***	*2015* ***New Haven***
Aaron Taylor	Carmel Bonfigli	Adrienne Brown	Suhni Chung
Jamie Chan	Tomek Smierzchalski	John Farrace	Shuangjing Hu
Ireta Kraal	Chat Travieso	Neil Flanagan	Stephanie Jazmines
Maryjane Starks	Ian Mills	Mengran Li	Jason Kurzweil
Thomas DiNatale	Ty Velten	Jing Liu	Jingwen Li
Alex Butler	Andreea Cojocaru	Michael McGrattan	Jizhou Liu
Mark Van Brocklin	Carlos Zedillo	Noah Morganstern	Abdulgader Naseer
Elizabeth Baldwin	Scott O'Daniel	Altair Peterson	Alicia Pozniak
Andrew Steffen	Tala Gharagozlou	Ryan Salvatore	Ian Spencer
Gene Cartwright		Lang Wang	Mengshi Sun
			Boyuan Zhang

[1] In a flamboyantly irreverent advanced studio brief in 2003, Krier asked students to envision the demolition of the Art and Architecture Building along with Louis Kahn's Yale University Art Gallery and the Yale Center for British Art—three of Yale's most iconic modernist buildings—to make way for a new plaza and arts quarter.

[2] Boyuan Zhang, from an unpublished 2025 essay.

[3] Notably undiplomaed himself, Krier first taught at the Architectural Association in London in 1974 after leaving the offices of James Sterling.

[4] Krier insisted that this ideal was rooted in the experience of being human and was therefore a global, rather than a regional, phenomenon extending beyond the bounds of Greco-Roman classicism. For example, when asked if he would apply Western classical principles to, say, a Chinese program, he raised his expressive eyebrows in astonishment: "Of course not! I would have to design in a Chinese classical language."

5. An incomparable draftsman himself, Krier admired the precision and efficiency of the software platforms used by his students. He watched in awe over their shoulders as lines were effortlessly manipulated on their screens.

Biography | Biografía | Biografia

George Knight

George Knight is an architect and educator. He is the Principal of Knight Architecture LLC, an award-winning design practice in New Haven, Connecticut, and a Senior Critic at the Yale School of Architecture where he has taught since 2004 and served as the Robert A. M. Stern Visiting Professor in Classical Architecture. In 2015 he was given the Professor King-lui Wu Teaching Award, awarded after a vote by graduating students to a faculty member who combines architectural practice with outstanding teaching. He co-taught four advanced design studios with Léon Krier in 2007-2015.

Marie Andreé Soundy Escobar

Building Continuity in Central America: Architectural Practice Inspired by the Regional Vernacular

Construir la continuidad en Centroamérica: Una práctica arquitectónica inspirada en las tradiciones vernáculas de la región

A construção da continuidade na América Central: Uma prática arquitetónica inspirada no vernáculo regional

Abstract | Resumen | Resumo

This essay reviews 25 years of contemporary practice by the architect Marie Andreé Soundy Escobar, rooted in Central America's vernacular traditions. Drawing on personal and professional experience, she argues that the erosion of millennia-old building knowledge, replaced by standardized modernist models, has led to a loss of cultural identity, environmental responsiveness, and urban cohesion across the region. Through a series of projects built and proposed in Guatemala, Panama, and Costa Rica, her work demonstrates how traditional principles—such as climate-responsive design, use of local materials, and established urban types—can inform innovative architectural solutions. By reestablishing vernacular continuity, contemporary practice can foster sustainability, cultural identity, and resilient urbanism across Central America.

Este ensayo recorre 25 años de ejercicio profesional de la arquitecta Marie Andreé Soundy Escobar, arraigado en las tradiciones vernáculas de Centroamérica. A partir de su experiencia personal y profesional, la autora sostiene que la erosión de conocimientos constructivos milenarios, sustituidos por modelos modernos estandarizados, ha provocado en toda la región una pérdida de identidad cultural, adaptación al medio y cohesión urbana. A través de una serie de proyectos construidos y propuestos en Guatemala, Panamá y Costa Rica, su trabajo muestra cómo principios tradicionales –como el diseño adaptado al clima, el uso de materiales locales y los tipos urbanos consolidados– pueden servir de base para soluciones arquitectónicas innovadoras. Al restablecer la continuidad con lo vernáculo, la práctica contemporánea de la arquitectura puede favorecer la sostenibilidad, la identidad cultural y un urbanismo resiliente en Centroamérica.

Este artigo analisa 25 anos da prática contemporânea da arquiteta Marie Andreé Soundy Escobar, com raízes nas tradições vernáculas da América Central. Com base na sua experiência pessoal e profissional, a autora defende que a erosão do conhecimento milenar do domínio da construção, que foi substituído por modelos modernistas padronizados, conduziu a uma perda de identidade cultural, de sensibilidade ambiental e de coesão urbana em toda a região. Através de uma série de projetos propostos e construídos no Guatemala, no Panamá e na Costa Rica, o seu trabalho demonstra como os princípios tradicionais –tais como o design sensível ao clima, a utilização de materiais locais e as tipologias urbanas bem estabelecidas– podem inspirar soluções arquitetónicas inovadoras. Ao restabelecer a continuidade vernácula, a prática contemporânea pode promover a sustentabilidade, a identidade cultural e um urbanismo resiliente em toda a América Central.

Introduction: Contemporary Practice of Tradition

The streets of the colonial town of Antigua Guatemala (known as "Antigua"), lined with stone arches and baroque details, were the backdrop of my childhood. I grew up immersed in the region's volcanic landscape and the language of beauty in my town's vernacular architecture (Figs. 1-3), unaware that this would shape my calling as an architect, as my current practice is committed to preserving Central America's vernacular traditions.

Figure 1. Agua Volcano, Antigua, Guatemala

Figure 2. Arch at Santa Catarina Convent, Antigua, Guatemala

Figure 3. Typical window, Antigua, Guatemala



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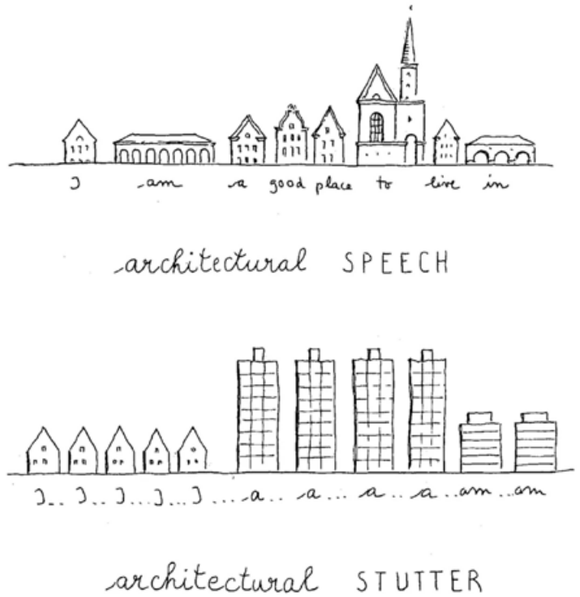


Figure 4. "Architectural Speech vs. Architectural Stutter" (Krier 2009)

After taking opportunities for international study and employment, I returned to Central America in 1999, aspiring to learn from and contribute to the tradition of our designers and artisans. I was distressed at the erosion I saw of age-old vernacular architecture and urbanism, being replaced by foreign, standardized modernistic practice with the consequent loss of a sense of place. The lack of urban design and the introduction of foreign suburban models have transformed Central American towns into inhospitable anti-cities, undermining communal living. This phenomenon, erroneously regarded as "progress," has fostered a soulless architecture devoid of regional identity that has eclipsed our traditions. In the transition to an "architecture of nowhere" (Kunstler 1993), new structures are disposable commodities for short-term gain rather than buildings with enduring value and local character.

How might new design proposals help reverse the erosion of our vernacular knowledge? The late Léon Krier argued that the traditional city (Fig. 4) is a timeless solution for human wellbeing and communal identity, with architecture that belongs to all time (Krier 2009). City-making should be a "craft culture which consists in the repetition of a limited number of types and in their adaptation to local climates, materials, and custom" (Krier 2025: 68-69). He concluded that "traditional" means not "obsolete" but "proven." Thus regional vernacular knowledge in architecture and urbanism is indispensable as a precedent for new design, as part of a continuum encompassing sense of place, regional identity, sustainability, and culture.

Knowledge of architectural details and building crafts characteristic of the region has inspired my work for 25 years. I have been able to explore and develop my heritage through a fruitful partnership with Ricardo Arosemena at our firm Arosemena & Soundy Arquitectos (2006—2018) and in my own practice, S Arquitectos (2019—present).

Ancestral and Colonial Vernacular Identity in Central America

Architectural identity in Central America is characterized by an amalgamation of Indigenous ancestral and Spanish colonial culture (Fig. 5), expressing millennial wisdom with a character rooted in tradition, a climate-responsive approach, and the use of local materials. These recurring themes and their manifestation in regional design are precedents in my practice, but before discussing my work we should mention some general aspects.

Cultural Practices and Traditions

The fusion of ancestral and colonial architectural and urban types reflects a unity of culture in practices and traditions. Towns and cities and their constituent buildings have traditionally been rooted in community, religious worship, and domestic and commercial agriculture, closely knit with the landscape. The region has long been known for its craftsmanship in textiles and weaving (Fig. 6), carpentry, welding, and stonemasonry. In architecture, these practices have historically been associated with intricate iconography of both Indigenous and Spanish character as well as vibrant color palettes (Fig. 7).



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Figure 5. Mayan temple, North Acropolis, Yaxhá, Petén, Guatemala

Figure 6. Typical woven textile, Chichicastenango, Guatemala

Figure 7. Capuchin Convent courtyard, Antigua, Guatemala



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Figure 8. Eave and bay window, Cacique, Panama

Figure 9. Eaves and bay window, Casa Sirena, Las Catalinas, Costa Rica

Figure 10. Vaults, Capuchin Convent, Antigua, Guatemala

Figure 11. Antiseismic buttressed wall, Antigua, Guatemala

Climate-Responsive Approach

The traditional vernacular approach to urban and architectural design is suited to the region's tropical, humid climate. Drawing on combined Mayan and Spanish legacies, its towns have historically been laid out as walkable, cohesive environments, with urban fabric integrated with adjoining farmland and countryside. Mayan cities employed sophisticated engineering methods expressed through urban space, such as vast paved urban reservoirs (*aguadas*) and canals.

Architecturally, buildings were traditionally constructed to withstand the elements. Conventional practices include protection from torrential rain and humidity in the form of wide eaves, bay windows (Figs. 8 and 9), and thick masonry walls rendered with lime, sealing interiors against mold and insects. The region also developed advanced climate-control techniques using adobe, clay, wood, and stone to attenuate temperature fluctuations. Structures typically achieve cross-ventilation through suitable fenestration, high ceilings, and the use of chimneys, cupolas, porches, and courtyards with fountains to enhance airflow (Fig. 12).



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Figure 12. Kitchen chimney, Antigua, Guatemala

Figure 13. Handmade clay roof tiles

As Central America is seismically exposed, communities over the centuries have developed advanced methods of seismic reinforcement. Elevated stone bases and thick, sturdy arches (Fig. 10) and masonry walls reinforced with buttresses are characteristic (Fig. 11). Antigua's 200-year-old walls of stone and brick attest to resilience in the face of multiple earthquakes. Adobe and rammed-earth systems with timber reinforcement are typical in rural areas and draw on both Mayan and Spanish traditions.

Local Materials

Central America is notable for its luxuriant flora and quarries of volcanic rock. Regional vernacular techniques rely on local materials: volcanic stone from the Pacific coast and limestone from the Atlantic lowlands as primary materials for foundations, walls, and renders in both Mayan and colonial architecture over the centuries. The region contains various clays—red, brown, and white—used to produce sun-dried adobe as well as oven-fired bricks and tiles (Fig. 13). Organic fibers from palm thatch (*palapa* or *rancho*) and bamboo shoots have been employed as wattle to reinforce adobe and rammed-earth structures (*quincha* in Panama, *bajareque* in Guatemala, Honduras, and El Salvador, and *taquezal* in Nicaragua). In ancestral traditions, palm thatch has been used to make waterproof, breathable, mud-resistant roofing. Local cotton has fostered a regional textile craft culture.

Tropical hardwood forests, including mahogany and cedar, have supplied timber for structural framing, fine carpentry, sculpture, and decorative elements over the centuries. Welders have shaped iron and other metals to reinforce walls and roofs and craft details such as railings, balconies, hardware, and lamps.

It was within this cultural and natural heritage that my architectural practice took root and flourished. My design proposals have consistently been considered controversial. They do not conform to the prevailing modernist approaches and often diverge from the trends and fashions associated with the misconception of "progress" mentioned earlier. I remain committed to architecture and urbanism that belong to the continuum of our heritage and have been fortunate to collaborate with clients and patrons who understand the importance of preserving our architectural identity. The following are examples of projects I have undertaken, each the result of precedent studies of remarkable vernacular traditions.

Central American Urbanism: Masterplans for New Communities

Historic Center Renovation Charrette, Pesé, Panama

Founded in 1558, Pesé is a town in Herrera province on the Azuero Peninsula (Fig. 14), a center of sugarcane plantations and rum-making. Civic and governmental buildings, the Church of San José de Pesé, shops, and single-family homes flank its central square/park.

Although it still houses the headquarters of the rum producer Varela Hermanos, it is in dire need of urban revitalization. My firm was commissioned jointly by the municipality and Varela Hermanos to organize a design charrette and propose a masterplan that would transform the central square with new development and provide a roadmap for the future (Fig. 16). Rather than the usual gated communities of residential pods and modernist blocks along the square, our charrette aimed to reconnect Pesé with its vernacular character, restore the old church, and recover the historic center's vitality.

Our team first conducted a study of the existing types of squares/parks in Pesé and elsewhere in Panama and the region. We examined urban configurations and documented the siting of civic and religious buildings, typically adjacent to a central square, along with the local architectural vernacular, combining load-bearing masonry, mud, clay, and the local construction technique with wood and vines known as *quincha*, as well as light timber-frame post-and-beam systems (Fig. 15).

Residential and commercial buildings are slightly elevated above grade. Single-story dwellings have ceilings of about 12 feet and clay-tiled roofs that allow passive cooling. They face the street or square with long front porches for shelter from the tropical sun and rain. Windows are typically casement-style, with wide-opening wooden shutters, while eaves over 1 meter long also protect from the elements.

Our charrette proposal consisted of a masterplan for the central square/park, with new paving and enhanced landscaping (Figs. 17 and 18). We proposed restoring the interior of the Church of San José and adding a loggia on the side facing the square (Fig. 19), along with a community center with a courtyard and a long shady loggia also toward the square (Fig. 21). Also included were a two-story 20-room corner hotel with views over the square from its balconies (Fig. 22) and a courtyard corner house to serve as rectory and archbishop's residence, completing and enclosing the square while drawing on the local vernacular (Fig. 20).

Figure 14. Existing urban plan, charrette intervention area, Pesé, Panama (Google Earth)

Figure 15. Typical vernacular wood-frame house, Pesé, Panama



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Figure 16. Proposed renovation and masterplan, Pesé, Panama



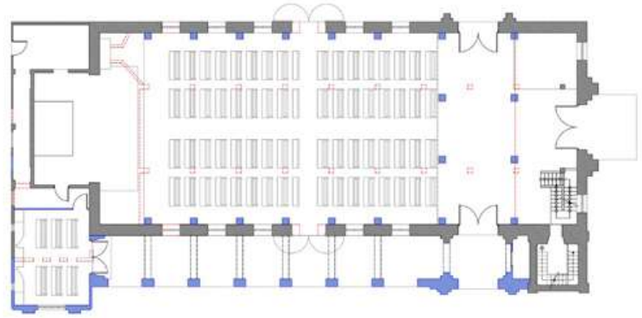
Figure 17. Proposed masterplan, Pesé, Panama

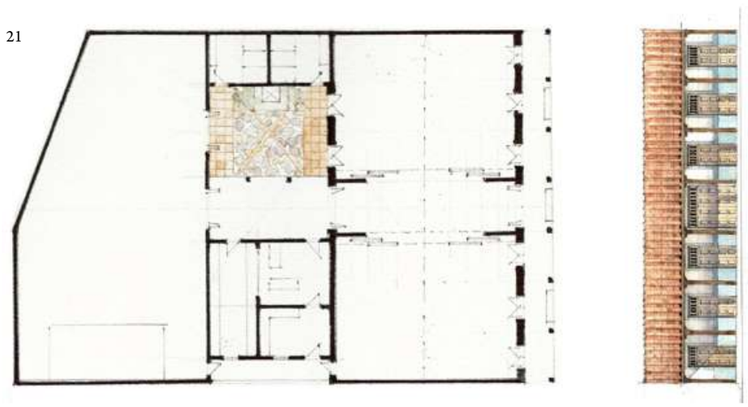


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Figure 18. Renovation proposal for Aristides Arjona park, Pesé, Panama

Figure 19. Proposed renovation of San José de Pesé Church, Pesé, Panama

Figure 21. Proposed community center, Pesé, Panama (plan and front elevation)

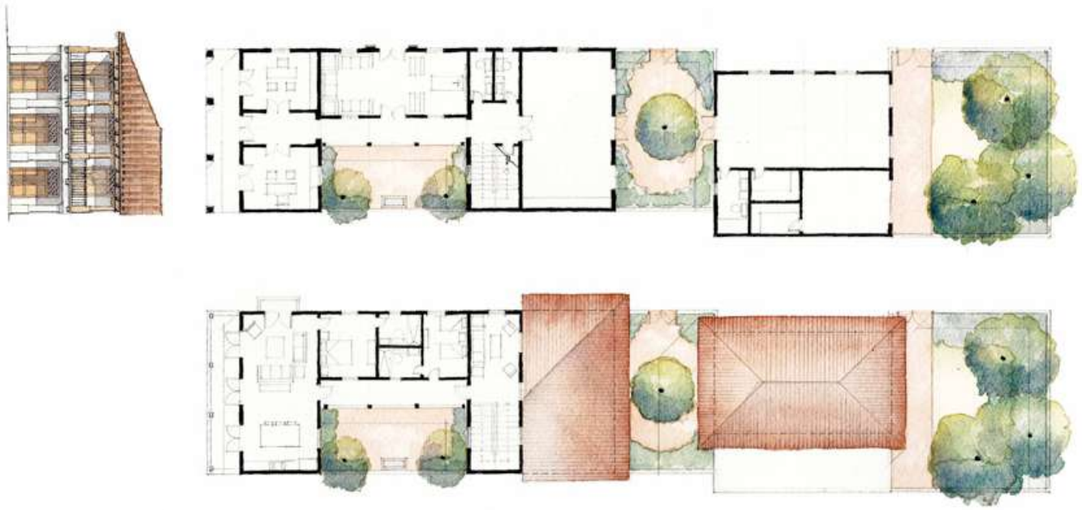


Figure 20. Proposed rectory, Pesé, Panama (plans and street elevation)

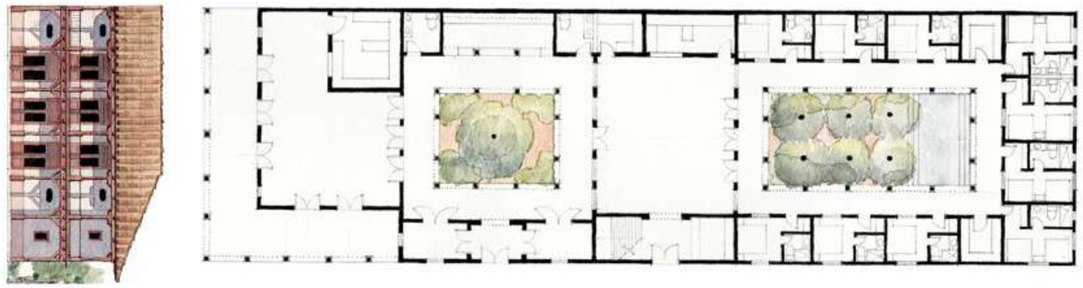
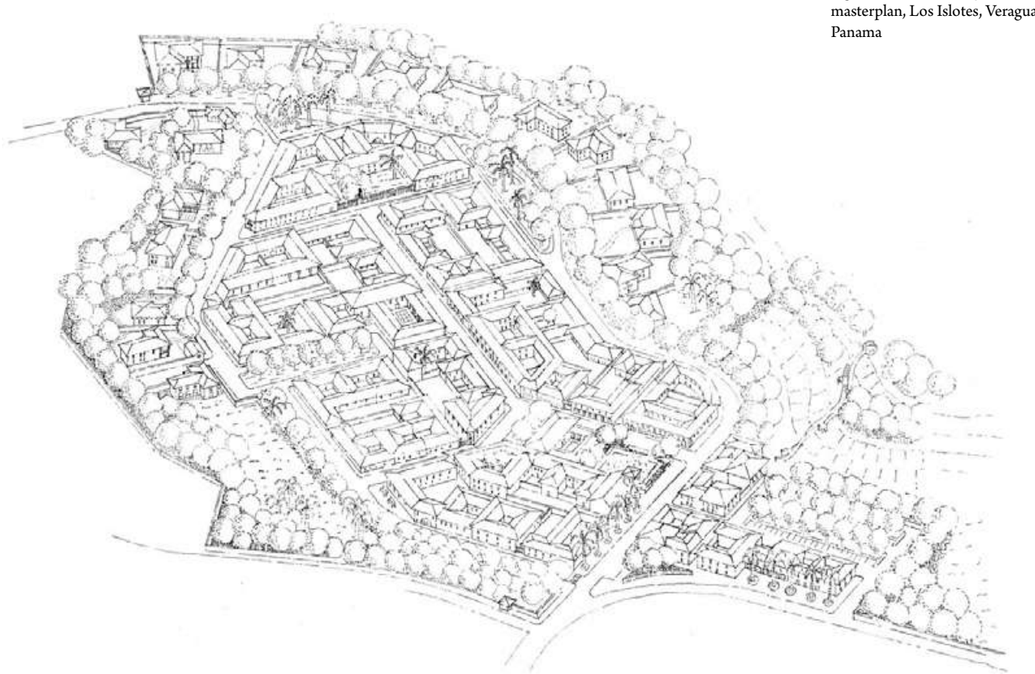


Figure 22. Proposed hotel, Pesé, Panama (plan and front elevation)





Figures 23 and 24. Proposed masterplan, Los Islotes, Veraguas, Panama

Los Islotes Charrette, Veraguas, Panama

Another charrette commission took us to the hilly terrain of the Veraguas Peninsula on Panama's Pacific coast. We were to design a traditional town masterplan to be developed in phases over decades (Figs. 23 and 24). Following a study of towns in the wider region (Fig. 25), we prepared a proposal for the center, the founder's house, and a series of peripheral villas.

Most new residential projects in the area follow the unfortunate trend of gated cul-de-sac developments with no true center. In contrast, Los Islotes was planned as a compact town pursuant to the "10-minute neighborhood" concept, drawing on Léon Krier's principles for walkable city-making. His thinking in *Choice or Fate* was essential in shaping the plan, alongside precedents from dozens of regional towns such as Antigua.



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Figure 25. Central square and palace of the Captaincy General, Antigua, Guatemala



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Figure 27. Street in Antigua, Guatemala

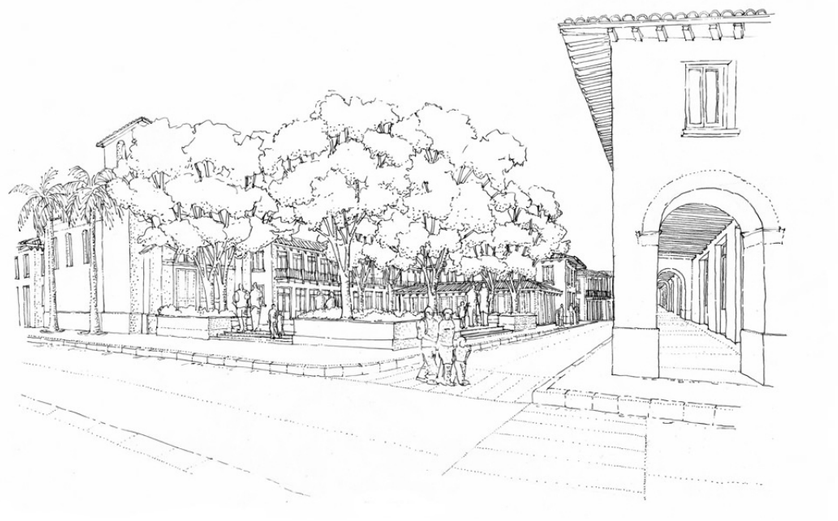


Figure 26. Main plaza, Los Islotes, Veraguas Panama

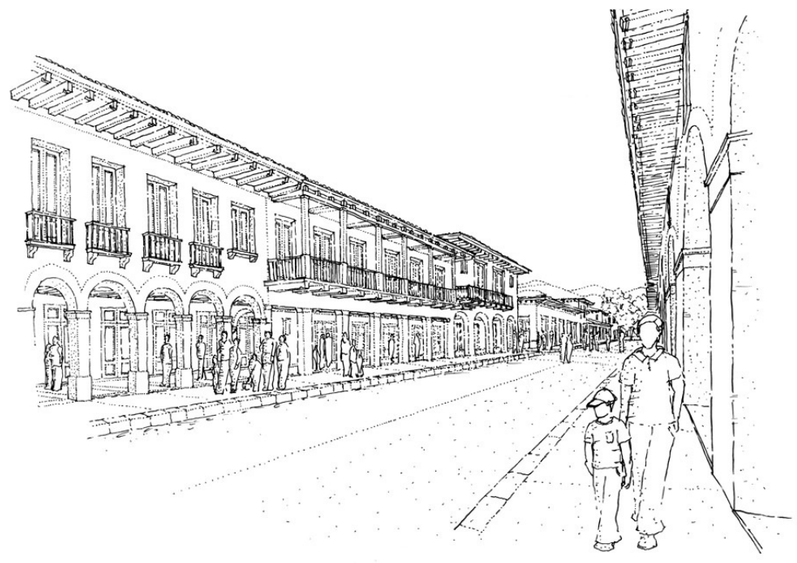


Figure 28. Main street, Los Islotes, Veraguas, Panama



Figure 29. Model house, Los Islotes, Veraguas, Panama

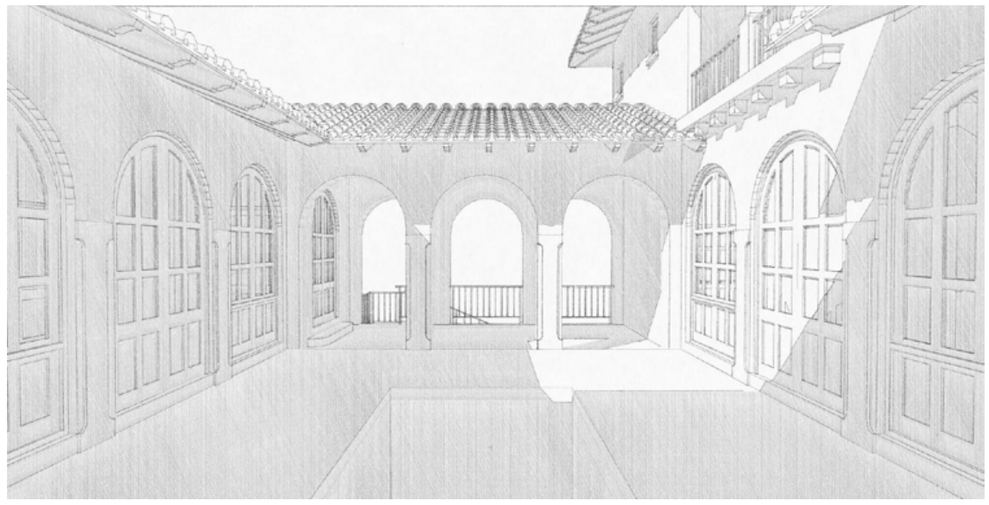


Figure 30. Model house courtyard, Los Islotes, Veraguas, Panama

The newly designed center, with its leafy square and mixed-use streets and avenues, structured the town as a whole (Fig. 26). Inspired by Antigua's human scale and walkability (Fig. 27), the main shopping streets, lined with two-story mixed-use buildings, were designed with arcades, loggias, and deep eaves as shelter from the elements (Fig. 28).

The founder's house, a traditional courtyard residence, was conceived as a model of appropriate design practice for future villas and other peripheral buildings (Figs. 29 and 30). Thus the charrette proposal established urban and architectural guidelines for continuing development in this new traditional Panamanian town.

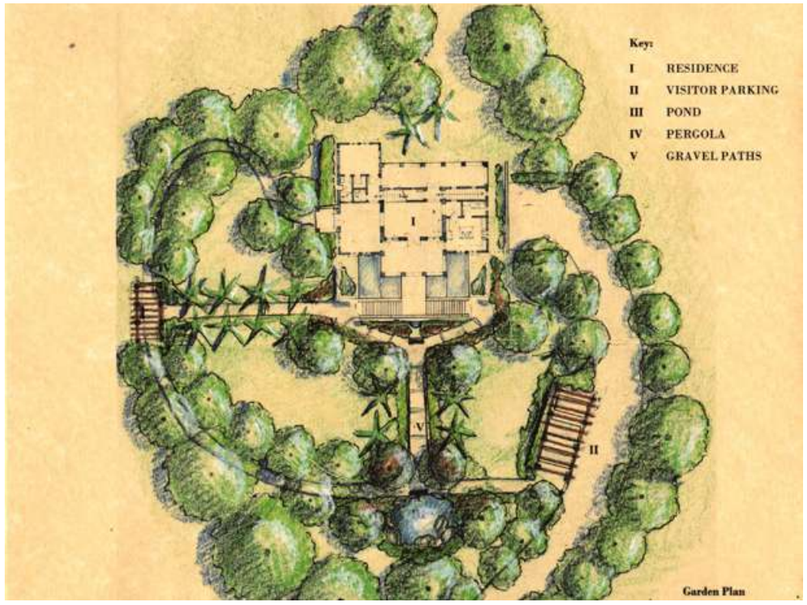


Figure 31. Site plan, Villa Caimitillo, Panama

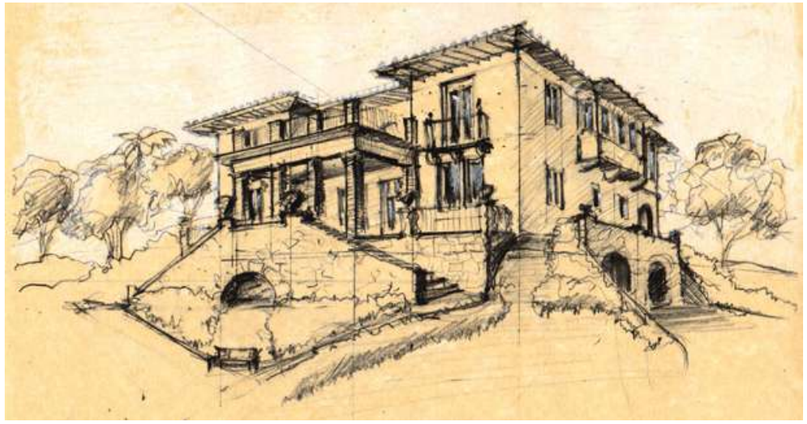


Figure 32. Front view, Villa Caimitillo, Panama



Figure 33. Back view, Villa Caimitillo, Panama

An Intelligent Tradition of Materials: Artisanal Brick, Stone, and Fine Woods

Villa Caimitillo, Caimitillo, Panama

A commission for a luxury villa in the gentle hills of Caimitillo became a journey of innovation with a revival of local brickwork traditions and a quest for a timeless aesthetic (Figs. 31-35).

Pale clay dug and fired on-site informed the villa's design and details (Fig. 36) and the environs supplied a pale volcanic stone used for retaining walls and rustic architectural accents, making the project notable for its environmental responsiveness. The client, passionate about Panamanian vernacular architecture and seeking a design with traditional character, assisted in molding and firing the bricks as the house went up.



Figure 34. Front panoramic view, Villa Caimitillo, Panama

Figure 35. Back panoramic view, Villa Caimitillo, Panama

Figure 36. Loggia, Villa Caimitillo, Panama





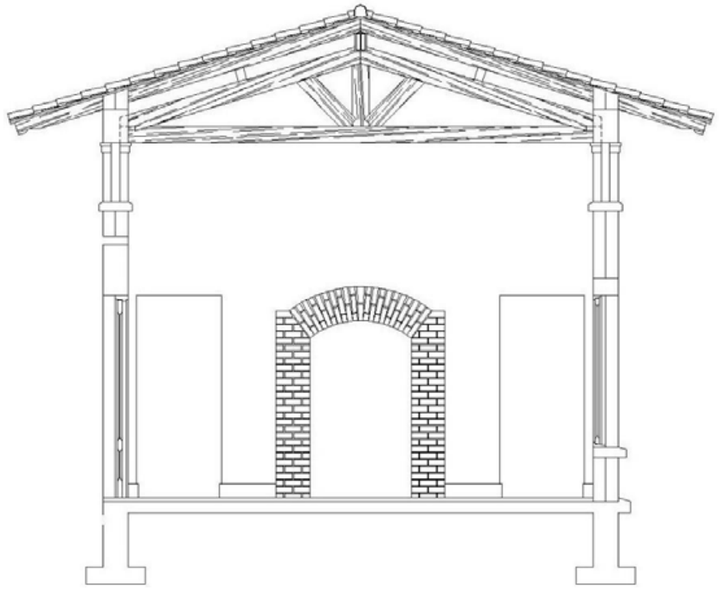


Figure 37. Main living room section, Villa Caimitillo, Panama



Figure 38. Artisanal brick arches in construction, Villa Caimitillo, Panama

The design for Villa Caimitillo became an interpretation and expression of local character and traditional load-bearing construction, drawing on the intelligence of local material culture. The handmade fired-clay bricks were laid radially over wooden centering defining each arch (Fig. 37) and bonded with lime mortar mixed on-site, until the final keystone locked the arch in compression.

Walls entirely of brickwork were erected for primary, secondary, and tertiary volumes, as well as garden pavilions. Details such as friezes, cornices, and floor patterns were finished with tiles of the same local clay (Fig. 38). The result was a contemporary hilltop villa complex grounded both in its site and in Panamanian vernacular architecture.

Villa San Isidro, Guatemala City, Guatemala

This villa in San Isidro, Guatemala City, commissioned in 2009 by a local family, is a U-shaped house with walls clad in local stone and fine-wood detailing characterized by longstanding regional construction methods (Fig. 39). Drawing on Antigua's traditions of thick concrete-and-stone masonry, clay roof tiles, brickwork, and structural carpentry, the residence's traditional yet contemporary design is rooted in regional character (Fig. 40). The two-story four-bedroom home was built by talented stonemasons and carpenters (Figs. 41-43) with exterior stone walls, retaining walls, and details intended to express strength and permanence. The interiors have mahogany paneling and fine carpentry executed in the tradition of Guatemalan woodworking (Fig. 44). Some exterior wooden details were stained green to enhance the character of the facades and add color and contrast to the massive stone walls.

Along with reinforced concrete core walls as the main structure, the stone-clad facades enable the building to rely on a passive heating and cooling system, keeping the interior warm in winter and cooling it on hot days. Deep eaves, with wood detailing beneath the clay-tile roof, shield the building from the region's torrential rains.



Figure 39. Front view, Villa San Isidro, Guatemala City



Figure 40. Handmade clay bricks and roof tiles, El Tear, Guatemala



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Figure 41. Central pergola, Villa San Isidro, Guatemala City

Figure 42. Bay window, Villa San Isidro, Guatemala City

Figure 43. Wooden column and beam, Villa San Isidro, Guatemala City

Figure 44. Interior paneling, Villa San Isidro, Guatemala City

Climate-Sensitive Space: A New Courtyard House

Casa de Patio, Contadora Island, Las Perlas, Panama

In contrast to the modernistic, poorly climate-adapted towers being built on the island of Contadora off Panama's Pacific coast, for this residential commission we proposed a single-story traditional courtyard house (Fig. 45). Atop the island's volcanic cliffs, the site has a tropical climate with cool breezes and sweeping views of the ocean (Fig. 46). The courtyard house type, rooted in the colonial vernacular, was a natural precedent, as it readily allows for intimate open spaces and shaded gardens with natural lighting and ventilation.

The five-bedroom house is organized around a lushly vegetated courtyard visible from all the primary interior spaces (Fig. 47). Fronting the street as part of the island's low-density urban fabric, the dwelling is entered from the side through a gate and stair ascending to cliff-top level (Fig. 48). It is sheltered by clay-tiled roofs with wide eaves and loggias, ensuring cool shady interiors.

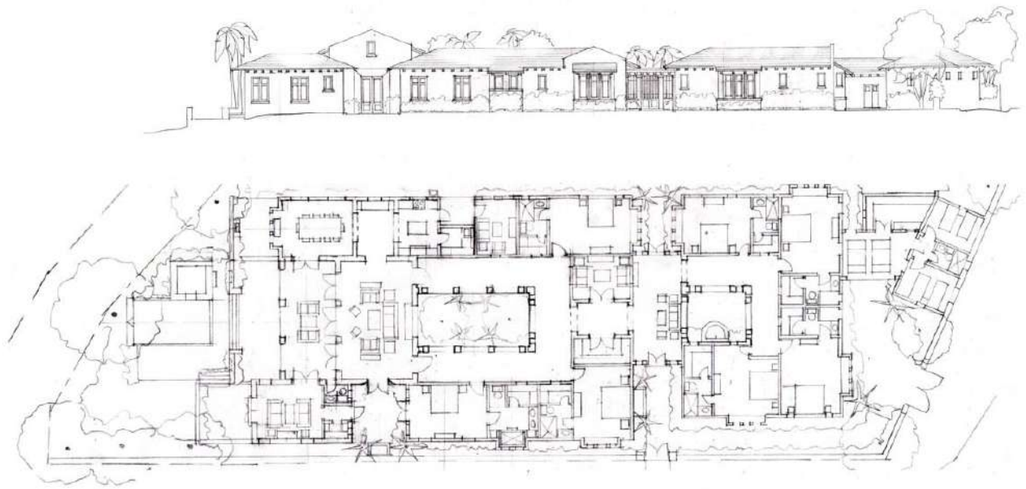


Figure 45. Plan and elevation, Casa de Patio, Contadora Island, Las Perlas, Panama



Figure 46. View from offshore, Casa de Patio, Contadora Island, Las Perlas, Panama



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Figure 47. Central courtyard, Casa de Patio, Contadora Island, Las Perlas, Panama

Figure 48. Street entrance, Casa de Patio, Contadora Island, Las Perlas, Panama


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Figure 49. Casa Los Balcones, El Chorrillo, Panama

Figure 50. Casa Nauplion, Casco Antiguo, Panama

Transformation of a Building Type: Low-Cost Multifamily Housing

Casa Los Balcones, El Chorrillo, Panama; and Casa Nauplion, Casco Viejo, Panama

After this work on luxury single-family homes, our firm was commissioned to design an innovative low-cost multifamily house in El Chorrillo, a run-down red-zone neighborhood in Panama City.

Residing in the adjacent historic neighborhood of Casco Viejo, we naturally referred to its century-old courtyard dwellings. A significant precedent was Casa Nauplion, a 120-year-old corner courtyard family house with characteristic covered balconies protruding over the narrow streets, enlarging the interiors (Fig. 49). The central courtyard, overlooked by balconies, offers shade, cool breezes, and a quiet refuge from the bustle of the street.

In contrast to Casa Nauplion, the new Casa Los Balcones needed to accommodate four stories of efficient low-cost units. The project involved transforming the traditional courtyard house type into a home for as many families as possible (Fig. 50). The design for Casa Los Balcones drew on a study of courtyard layouts and local vernacular character in Casa Nauplion and other Casco Viejo villas, although it was a challenge to provide affordable yet comfortable dwellings with comparable dignity and elegance.

The design ultimately accommodated 38 space-efficient units, each with a balcony and access to a breezy shared courtyard. Built swiftly due to its anticipated popularity, Casa Los Balcones set a precedent for urban revitalization and low-cost housing in disadvantaged neighborhoods, giving hope to El Chorrillo.

A Monumental Hotel Inspired by the Regional Vernacular

Hotel Santarena, Las Catalinas, Guanacaste, Costa Rica

We designed the beachside Hotel Santarena for the new town of Las Catalinas in Guanacaste, Costa Rica (Fig. 51). The main precedents were Palacio O'Farrill and Hotel Florida, four-story courtyard buildings in Havana, Cuba. An L-shaped courtyard building in a square, Plaza Almendros (Fig. 52), with a rooftop pool overlooking the Pacific, Hotel Santarena was conceived as an urban anchor. Its facades' ground-floor arches allow permeability between the square and the hotel's public areas. The upper-floor windows open onto bracketed balconies overlooking the beach. An interplay of white lime-rendered walls and dark green windows and doors gives the facades a tropical yet stylish

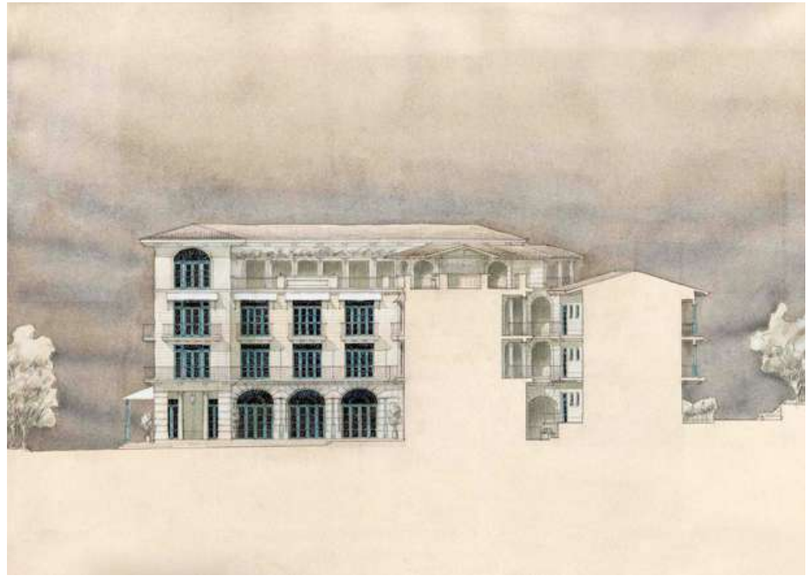


Figure 51. Section of Hotel Santarena, Las Catalinas, Guanacaste, Costa Rica



Figure 52. Square and facades, Hotel Santarena, Las Catalinas, Guanacaste, Costa Rica

character. The street facades along the back are more vernacular, featuring wooden loggias and covered terraces inspired by the colonial style of Antigua (Fig. 55).

The interiors, a collaboration with the designer Andrina Fonseca, were conceived with a vibrant palette of deep greens, yellows, and light blues, along with fine interior details to create flexible spaces for events. Inspired by the colorful cement tiles of Granada, Nicaragua, and Havana, Cuba,



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Figures 53 and 54. Courtyard at Hotel Santarena, Las Catalinas, Guanacaste, Costa Rica

we designed a flooring pattern to accentuate certain interiors and add color and character. A multi-story octagonal interior courtyard at the angle of the L-shape was included for light and ventilation and as an attractive space for dining and gathering (Figs.53 and 54).

The 45 guest rooms and suites were designed to be cozy but chic. The tower (Figs. 56 and 57) and rooftop ocean terrace with a gabled canopy were detailed with traditional post-and-beam woodwork. Hotel Santarena, facing Playa Danta on the Pacific coast, thus draws on the region's timeless vernacular heritage (Fig. 58).



Figure 55. Back view of Hotel Santarena, Las Catalinas, Guanacaste, Costa Rica



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Figure 56. Tower at Hotel Santarena, Las Catalinas, Guanacaste, Costa Rica

Figure 57. Roof columns, Hotel Santarena, Las Catalinas, Guanacaste, Costa Rica

Conclusion

By reestablishing continuity with vernacular heritage, contemporary practice can foster sustainability, cultural identity, and resilient urban environments in Central America. Learning from this knowledge and then emulating and innovating upon it allows us to maintain a continuum in sense of place, strengthen community identity, and support sustainability and resilient architecture and urbanism. My practice remains committed to work that favors a renewed architectural ethos engaging with regional traditions to produce enduring, place-based design.

Figure 58. Playa Santa, Las Catalinas, Guanacaste, Costa Rica



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Biography | Biografía | Biografia

Marie Andreé Soundy

Marie Andreé Soundy is an architect, urban designer, and artist with a Bachelor's Degree (1998) and a Master of Architecture (2005) from the University of Notre Dame, with more than 25 years of professional and academic experience. Over her career she has worked with numerous architectural firms in Latin America and the United States, including Robert A. M. Stern Architects (RAMSA) (1998-1999) in New York City, Seis Arquitectos (1999-2001) in Guatemala City, and as Partner and Principal Architect in her own firm Arosemena & Soundy Arquitectos (2006-2018) in Panama City. She has taught as Visiting Professor of Architectural Design Studio, Drawing, and Watercolor in the University of Notre Dame School of Architecture's Rome Studies Program in Rome, Italy (2005-2006), and as Professor of Architectural Design at Universidad Francisco Marroquín, Guatemala City (2020-2022). She is Principal Professor of Drawing, Painting, and Sculpture at the Classical Art School (Academia de las Artes) in Guatemala City (2018-present). She is currently Principal Architect of her own firm, S Arquitectos, with architectural projects in Guatemala, Honduras, and Costa Rica (2019-present). She teaches as Associate Professor of Architectural Design Studio and Graphics at the University of Notre Dame School of Architecture's main campus.

Rene Salas

Stewardship of Lines: Drawing as a Humanistic Tradition in Architecture

La custodia del significado: El dibujo como tradición humanística en la arquitectura

Guardiões do significado: O desenho como tradição humanista na arquitetura

Abstract | Resumen | Resumo

Drawing has long been a foundational practice within the humanistic tradition of architecture. Beyond its role as a means of representation, drawing is a medium through which architects cultivate judgment, intuition, and empathy. Through the act of tracing lines, architects engage in a form of thinking that unfolds over time, allowing ideas to be explored, questioned, and refined. This process parallels traditions of architectural craft, where knowledge emerges through attentive making rather than instantaneous production. As digital tools and artificial intelligence generate architectural imagery with increasing speed and precision, the culture of drawing risks being displaced by less reflective processes of selection. This article examines drawing as a discipline that shapes architectural cognition, preserves cultural memory, and supports meaningful dialogue between architect, craftsperson, and client.

El dibujo ha sido durante mucho tiempo una práctica fundamental dentro de la tradición humanística de la arquitectura. Más allá de su función como medio de representación, constituye un instrumento a través del cual los arquitectos desarrollan el juicio, la intuición y la empatía. Al trazar líneas, el arquitecto participa en una forma de pensamiento que se despliega en el tiempo y permite explorar, cuestionar y depurar las ideas. Este proceso guarda relación con las tradiciones de los oficios de la construcción, en las que el conocimiento surge de una práctica atenta, más que de una producción instantánea. A medida que las herramientas digitales y la inteligencia artificial generan imágenes arquitectónicas con una rapidez y una precisión cada vez mayores, la cultura del dibujo corre el riesgo de verse desplazada por procesos de selección menos reflexivos. Este artículo revisa el dibujo como una disciplina que configura el pensamiento arquitectónico, preserva la memoria cultural y favorece un diálogo significativo entre arquitectos, artesanos y clientes.

Há muito tempo que o desenho tem sido uma prática fundamental no âmbito da tradição humanista da arquitetura. Para além do seu papel como meio de representação, o desenho é um meio através do qual os arquitetos cultivam o discernimento, a intuição e a empatia. Através do ato de traçar linhas, os arquitetos envolvem-se numa forma de pensamento que se desenvolve ao longo do tempo, permitindo que as ideias sejam exploradas, questionadas e aperfeiçoadas. Este processo está em consonância com os saberes tradicionais das práticas arquitetónicas, onde o conhecimento surge através da criação atenta, em vez da produção instantânea. À medida que as ferramentas digitais e a inteligência artificial geram imagens arquitetónicas com velocidade e precisão crescentes, a cultura do desenho corre o risco de ser substituída por processos de seleção menos reflexivos. Este artigo examina o desenho como uma disciplina que molda a cognição arquitetónica, preserva a memória cultural e apoia um diálogo significativo entre o arquiteto, o artesão e o cliente.

Drawing and Meaning in Architecture

Architecture has traditionally depended upon drawing as the means through which buildings come into being, as it still does at Michael Imber Architects. Drawing is often misunderstood as a mere tool of representation, a way to depict ideas already conceived. In reality, it is a discipline through which architects think and feel their way toward the realization of architecture. Through drawing, we cultivate intuitions and shape spaces that resonate with place, culture, and memory.

Today this humanistic practice faces uncertainty. The advent of digital modeling and artificial intelligence has made it possible to generate architectural images with remarkable speed and sophistication. In many cases, these technologies produce visualizations that appear complete before an architect has fully reflected on what is involved. The issue is not technological progress itself, as architecture has always evolved with new tools, but what may be lost if drawing as a culture disappears from our practice, of which it has long been an intellectual and emotional mainstay.

Drawing in the Humanistic Tradition

The relationship between drawing and architectural thinking goes far back. In the writings of Vitruvius and of Renaissance thinkers such as Leon Battista Alberti, architecture was seen not merely as design for construction but as an intellectual art grounded in proportion, judgment, and reflection.

Alberti described architecture as existing first in the realm of *lineamenta*—lines conceived in the mind prior to materiality. These lines, more than diagrams of future buildings, were the medium through which architects explored form, proportion, and order. Drawing was therefore not mere illustration but the arena in which architecture emerged.

In this tradition, drawing had ethical significance. Before any erection of stone or timber, the architect was responsible for thinking through the consequences of design. Drawing forced architects to deliberate and reconsider. The lines on paper made imagination accountable, and drawing was a discipline of thought.



Line, Plane, Form, Memory, Reflection. St. Pauls II (Alexander Ford)

A precise yet soft elevation stimulating the imagination (Michael Imber)



Drawing as Thinking

When architects draw, the process often reveals new ideas. One line leads to another, a proportion invites adjustment, a form begins to suggest a spatial experience not initially intended. The hand moves, the eye evaluates, the mind responds.

For practicing architects, the feedback loop between hand, eye, and mind shapes a special form of cognition. Drawing slows thought just enough to allow reflection. Hesitations appear in the line, erasures reveal doubts, and variations accumulate until an idea takes form. The drawing becomes a field of inquiry rather than a statement.

Unlike digital commands that produce immediate output, drawing allows a productive delay between intention and outcome in which architectural thinking thrives. The architect may ask: Is this proportion too heavy? Does this opening feel generous, or too restrained? Is this gesture necessary, or merely decorative?

Through drawing, architects learn to recognize subtle differences in scale, rhythm, and spatial tension. Such distinctions cannot easily be reduced to formulas, and emerge from repeated observation and correction. Drawing trains perception, not just recording but also cultivating thought, while facilitating self-discovery.



Materials and form existing and imagined (Michael Imber)

Time and Judgment

Drawing allows time to architectural thinking, as a sketch unfolds gradually, requiring care and patience. As it evolves, the architect revisits earlier decisions in the light of new insights, which prompts revision.

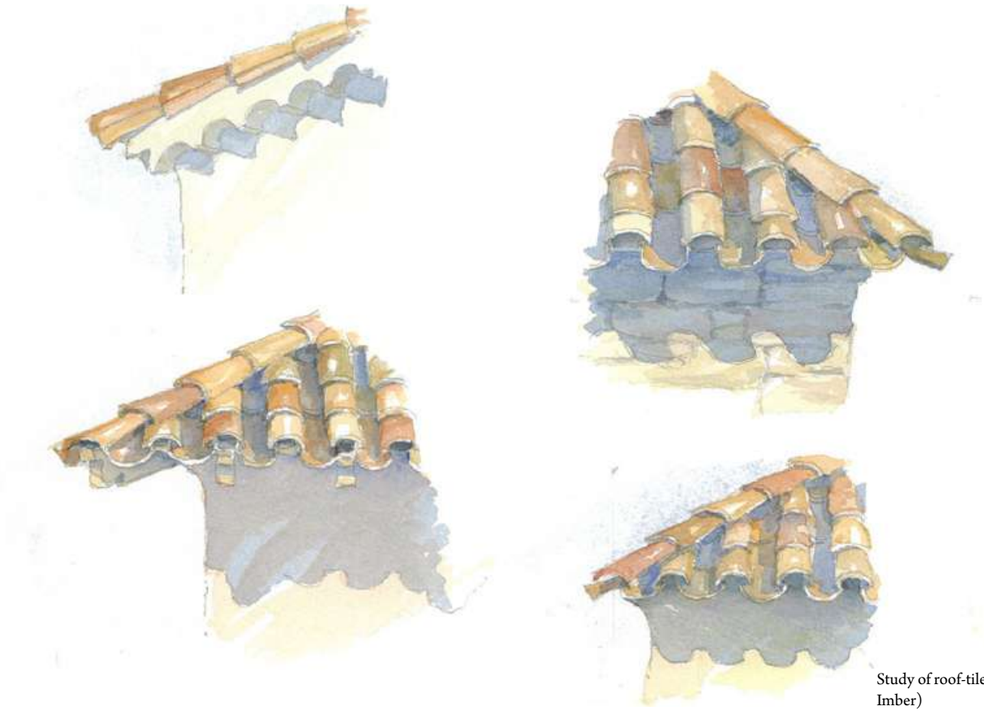
This slowness is not a limitation; it is a source of intellectual discipline. Architectural judgment develops through repetition, through the continual adjustment of lines, proportions, and spatial relationships, with each drawing being an opportunity to judge better.

Contemporary technologies often prioritize speed. Images can be produced instantly, in endless variations and with minimal effort. While this can be useful, it may compress the reflective moments that drawing naturally involves. When ideas appear fully formed without the time required to think them through, we lose opportunities to develop judgment. So the value of drawing lies precisely in its resistance to immediacy, setting a gentle pace of thinking that allows ideas to mature.

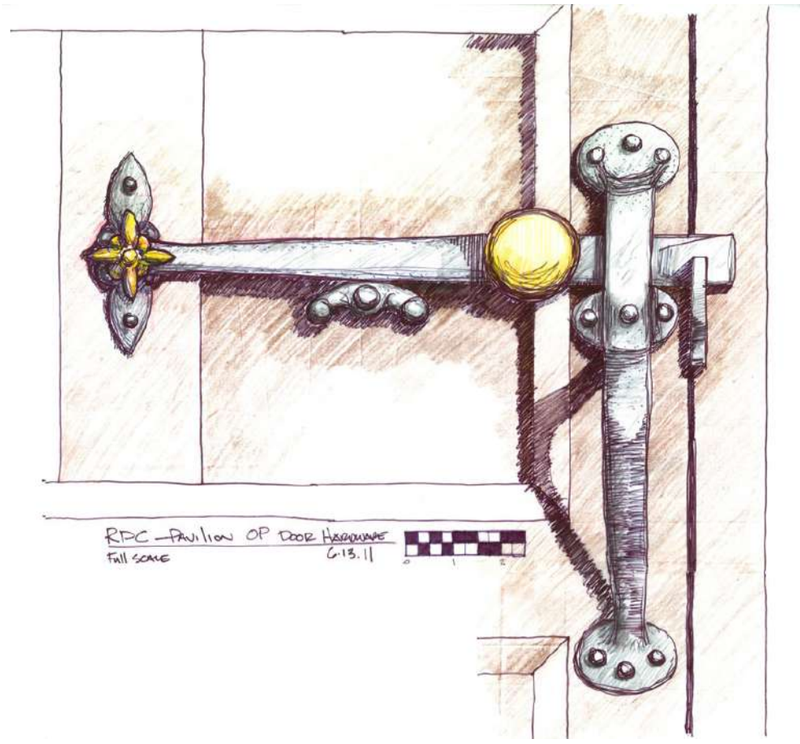
Drawing and Craft

The pace of drawing parallels that of another architectural tradition: craft. Craftspeople shaping stone or carving wood do not so much execute specifications as engage in a conversation with materials, as tools meet resistance, surfaces reveal unexpected qualities, and gestures require adjustment. A carpenter learns the behavior of wood by cutting it, as skill develops through experience.

Drawing operates in a similar way. Paper, scale, and lines offer their own resistance. The hand presses firmly or gently, crosses the page quickly or slowly, and pauses. A thick pen requires thinking at a different scale than a fine one, and watercolors and charcoal evoke different qualities of space than a fountain pen. The small decisions involved cultivate know-how.



Study of roof-tile corners (Michael Imber)



Door hardware (Brandan Moss)

Thus drawing is the craft of architectural thought, shaping ideas like materials. And while drawings guide construction, they do not eliminate the need for interpretation. The most meaningful architecture often emerges when drawings and craft (and craftspeople also draw) engage in dialogue.

Ambiguity and Interpretation

A line on paper can carry multiple meanings. It might represent a wall, the edge of a shadow, or simply a possibility not yet defined. These ambiguities allow drawings to remain open in the early stages of design.

Craft traditions similarly rely on interpretation. A craftsman reading a drawing translates lines into actions; the drawing guides the work but does not dictate every detail. In this space of interpretation, knowledge and experience shape the final realization.

If drawings are excessively precise, they risk suppressing this productive dialogue, in which a degree of ambiguity allows architecture to develop through collaboration between designer and builder. Thus drawing and craft have a common philosophy, allowing humanistic architecture to emerge through collaborative discovery.

Drawing as Cultural Memory

Beyond its role in design processes, drawing also functions as a repository of architectural knowledge. Sketchbooks, studies, and working drawings preserve traces of how architects have thought through problems across generations.

These drawings show the hesitations, corrections, and experimentation in the intellectual journeys behind works of architecture. A sketch by Michelangelo or Le Corbusier does not merely depict a building; it reveals a mind grappling with proportion, structure, and space.

This accumulation of drawings forms a cultural memory for the discipline. Students learn by studying them. Architects revisit them to see how others have approached similar challenges. The tradition of drawing is a shared language that connects architects across time.

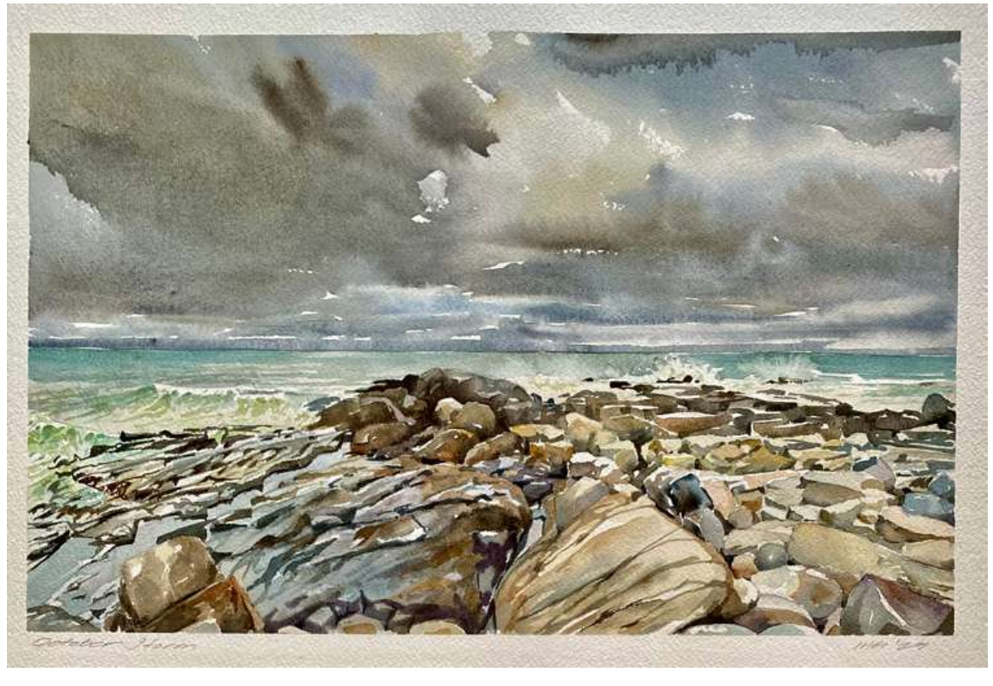
Without this tradition, architectural culture risks becoming detached from its intellectual history. Images may proliferate, but the traces of thought that once accompanied them may disappear into a chaotic plurality.



Gestural forms allowing for ambiguity (Drew Gander)



Sketch expressing memory and natural rhythms (Alexander Ford)



Capturing natural texture, rhythm, and mood. Maine (Michael Imber)



Design for a bench at Alys Beach (Mac White)

Intuition and Experience

Over time, repeated drawing cultivates an intuition that is not mystical but a product of accumulated experiences of buildings visited, spaces remembered, or lessons learned through trial and error.

Each sketch carries fragments of this memory. A proportion may feel correct because it echoes a cathedral nave seen years earlier. A window placement may feel excessive because the architect recalls a space where too much light dissolved the sense of enclosure. A basement vault may emulate the massiveness of a cave. A bracket may branch upward in the way of a plant.

Through drawing, such memories are internalized. Architects develop a sensitivity that allows them to sense if a design is balanced or needs restraint, and the hand moves with confidence founded on judgment formed through years of observation.

Intuition, in this sense, is the sediment of experience. Drawing is the medium through which it settles into architectural thought.

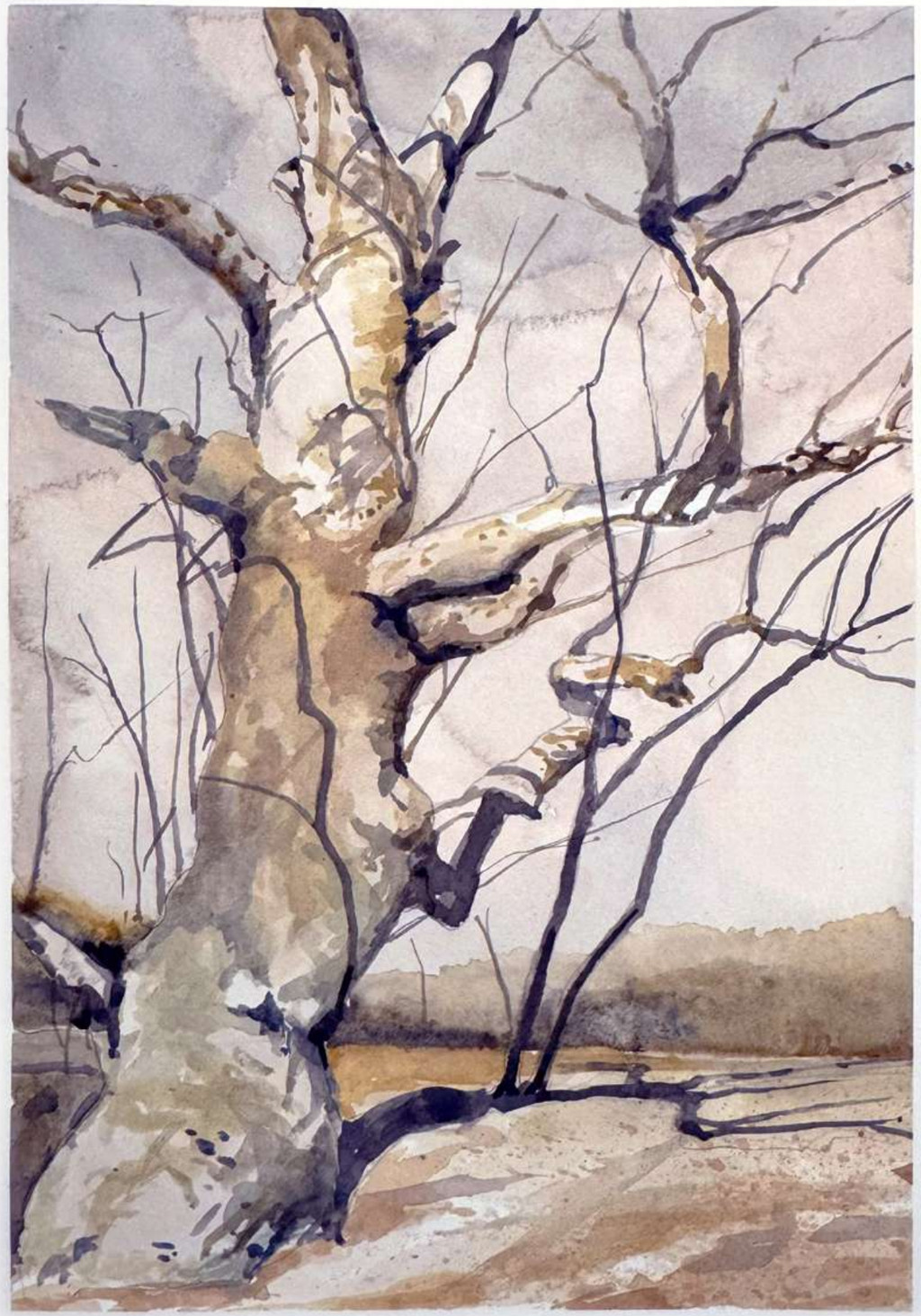
Emotional Inquiry

As well as being experienced rationally, architecture elicits emotions. Buildings create atmospheres of coziness, tension, openness, intimacy, etc., and before we think critically about a space we respond to its feel.

Drawing is a way to explore emotional qualities. A soft pencil line may suggest a gentle enclosure. A bold stroke may imply monumentality. Through sketching, one explores the emotional character of the space under design.

This requires empathy. To draw a space is to imagine inhabiting it, to anticipate how light may enter a room, how movement may flow through a corridor, or how a threshold will mark the transition between public and private.

While digital tools can simulate lighting conditions and spatial configurations, they often yield results that appear fully resolved. Drawing, by contrast, invites reflection. It leaves room for doubt and adjustment, as architects feel their way through a design, engaging in emotional inquiry.



Study in spatial occupation after Wyeth (Michael Imber)



Form and light at Santa Elena Canyon (Mac White)

Drawing and Clients

The humanity of drawing also influences the relationship between architects and clients. When architects share sketches, they show not only ideas but also a process. The unfinished nature of a sketch signals openness and humility, inviting conversation.

Clients often respond to sketches in ways that differ from their reactions to polished renderings. A sketch suggests a possibility, allowing clients to imagine themselves participating in the evolving design. This shared exploration can foster trust. The drawing becomes a meeting ground where architect and client negotiate aspirations, constraints, and even values.

By contrast, highly resolved images can close the conversation. When a design appears complete, clients may feel their role is limited to approval, editing, or rejection, with the collaborative nature of architectural creation being inhibited. Drawing therefore plays a part not only in design but also in the associated human relationships.

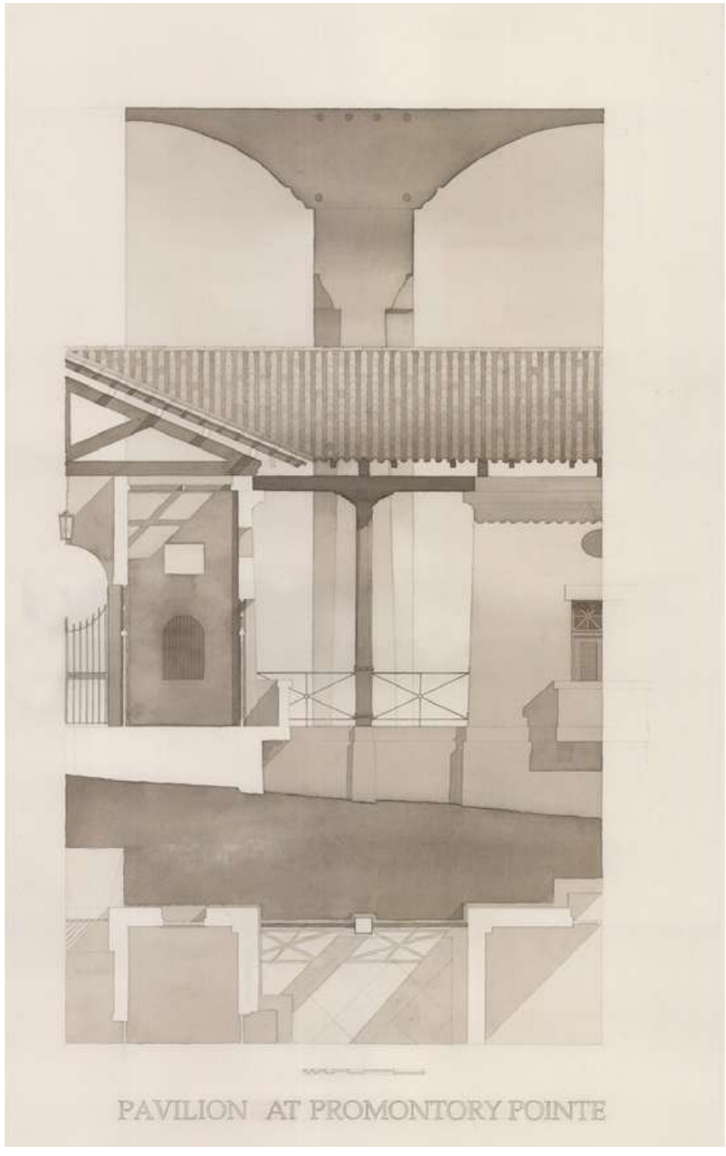


Scale and softness of form leaving room for imagination. Boathouse (Nathan Walz)

Technology and Drawing

The emergence of artificial intelligence introduces new possibilities for architectural visualization and exploration. Algorithms generate compelling images in seconds, producing vast libraries of formal variations. These tools may be valuable for experimentation, yet they alter the nature of creative work. When images are generated instantly, the architect's role becomes one of selecting, and creativity is replaced by curation.

This trend raises questions. If architects spend less time drawing and more time choosing between options, will this impair their judgment? Might intuition, empathy, and reflection, cultivated through drawing, be displaced from architectural practice?



Analytic sketch expressing coordination, study, and reflection (Mac White)



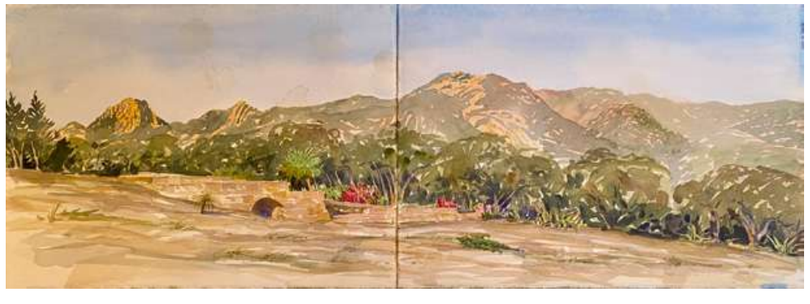
Architecture of place, memory, and meaning (Michael Imber)

The issue is not whether architects should use new technologies, as innovation has always shaped our work. The challenge is to ensure that the humanistic disciplines that have long grounded architecture are not thereby supplanted. Drawing remains a powerful medium for thinking, and preserving the practice may be essential to maintaining architecture's character as an art. The office of Michael Imber Architects, for one, seeks to steward this practice.

Stewardship of Meaning

Architecture is a cultural act that shapes how we inhabit the world. Buildings frame rituals, anchor communities, and carry memories, and drawing can be a thread in this, as designs become part of our shared landscape. Michael Imber Architects sees itself as embedded in this cultural effort. To create architecture of significance requires care, judgment, and empathy, and in drawing all of these are cultivated.

Technologies will continue to evolve and architecture will undoubtedly adapt. Yet our task remains: to create buildings that speak across time and culture. Architecture may continue without drawing, but it is drawing that preserves the patient conversation between imagination, memory, and the lived experience of those who inhabit its realizations.



Plein-air watercolor of a Montecito landscape (Michael Imber)





Sketch Club pencil drawing (Alexander Ford)

Through drawing architects slow their thinking, test their intuitions, and engage in dialogue with craft, culture, and clients. With this instrument of reflection, architects examine not only what they are building but why it matters. In this sense, the act of drawing is one of stewardship. Each line carries the possibility of meaning, an opportunity to shape spaces that resonate with our life.

Biography | Biografía | Biografia

Rene Salas

Rene Salas is an architectural designer at Michael Imber Architects whose work explores the continuity of architectural culture through drawing, craft, and the study of enduring buildings and places. Informed by an interest in architectural history and traditional building practice, his approach views architecture as a living body of knowledge that connects people to place, memory, and the cultural legacy of our built environment. Through drawing, travel, and observation, Salas engages with the humanistic traditions of architecture and urbanism, exploring how time-tested principles can inform the design of meaningful and enduring places today.





Plein-air watercolor of Piazza del Popolo (Michael Imber)

Sketch and watercolor of Piazza del Popolo (Michael Imber)

Anders Moen Hagalisletto

The Lost Art of Teaching Ornament

El arte perdido de la enseñanza del ornamento

A arte perdida do ensino da ornamentação

Abstract | Resumen | Resumo

The teaching practices of premodernist architectural education have been lost, with a few exceptions. An example of this is the teaching of ornament. But by chance the author stumbled upon a handwritten notebook from 1905 by a long-forgotten Norwegian teacher at the old school of architecture in Oslo, the Christiania Drawing School. The ensuing investigation uncovered some lost facts about former North European architectural education: 1) Ornament made up 25% of the curriculum and of students' practical exercises. 2) Teaching of ornament had a threefold purpose: to teach drawing skills, to cultivate students' sense of beauty from day one, and to educate students in the history of architecture and architectural styles. The results presented here may be used in restoring the teaching of ornament as a discipline in schools of art, architecture, and craft.

Las prácticas docentes de la enseñanza de la arquitectura anterior al Movimiento Moderno se han perdido, salvo algunas excepciones. Un ejemplo de ello es la enseñanza del ornamento. Sin embargo, por casualidad, el autor encontró un cuaderno manuscrito de 1905, obra de un profesor noruego hace tiempo olvidado que impartía clases en la antigua escuela de arquitectura de Oslo, la Escuela de Dibujo de Christiania. La investigación posterior permitió recuperar algunos datos olvidados sobre la antigua enseñanza de la arquitectura en el norte de Europa: 1) El ornamento constituía el 25 % del programa de estudios y de los ejercicios prácticos de los alumnos; 2) Su enseñanza tenía un triple propósito: enseñar a dibujar, cultivar desde el primer día el sentido de la belleza de los alumnos y formarlos en la historia de la arquitectura y de los estilos arquitectónicos. Los resultados que aquí se presentan pueden contribuir a recuperar la enseñanza del ornamento como disciplina en las escuelas de arte, arquitectura y artesanía.

As práticas pedagógicas do ensino da arquitetura pré-modernista perderam-se, com algumas exceções. Um exemplo disso é o ensino da ornamentação. Porém, por acaso, o autor deparou-se com um caderno manuscrito de 1905, da autoria de um professor Norueguês há muito esquecido da antiga escola de arquitetura de Oslo, a Escola de Desenho de Christiania. A investigação que se seguiu revelou alguns factos que tinham sido perdidos sobre o antigo ensino da arquitetura no Norte da Europa: 1) A ornamentação representava 25% do currículo e dos exercícios práticos dos alunos. 2) O ensino da ornamentação tinha um triplo objetivo: ensinar competências de desenho, cultivar o sentido de beleza dos alunos desde o primeiro dia ,e formar os alunos na história da arquitetura e dos estilos arquitetónicos. Os resultados aqui apresentados podem ser utilizados para restabelecer o ensino da ornamentação como disciplina nas escolas de arte, arquitetura e artesanato.

Preamble

New traditional architecture involves learning from the past, yet the widespread destruction of educational materials[1] due to the modernist paradigm of *tabula rasa* for architecture and architectural education[2] has made this difficult. The chain of transmission of knowledge from teacher to student, prevalent in the tradition of the École des Beaux-Arts, is broken in traditional practice.3 Currently there is a multi-generation gap between the traditionally trained architect of the past and the contemporary student of architecture. Many primary sources recount how premodernist teachers' and students' work has been burned,[4] destroyed,[5] or lost.[6] This makes it hard to understand what the practical education of architects in premodernist Europe was like, especially in the North European tradition of the Bauakademie. The Christiania Drawing School was much influenced by that German tradition, as many Norwegian students of architecture and art studied in Berlin, Hannover, or Karlsruhe. In the other direction, German architects migrated to Norway in the nineteenth century to work and teach. German education was different to the French tradition, with a focus on classroom lectures, technical competence, and materials science. Premodernist teaching of ornament was no exception to this.

Surprisingly little is known about teaching methods in premodernist architecture schools. Although three excellent Norwegian PhD theses[7] have surveyed such schools from 1760 to 1910, their authors do not "enter" the nineteenth-century classroom, metaphorically speaking. Writings about education in premodern architecture schools typically take a distant view of teaching practice, giving the impression that the premodernist mindset may be incomprehensible to us today. Architectural historians typically have a fine-arts perspective and focus on the most prominent architects and architectural theorists, relating their discussions and disagreements. This leaves us with many questions: What work did students do in the classroom and at home? What expectations did their teachers have of them? Which books did they read and what use was made of the international literature, including collections of plates? Historical research gives us little insight into the nitty-gritty of premodernist pedagogy.

Although it is impossible to travel in time and experience the world as it was then, we can reconstruct it. After a search for drawings and examples of what it was like to be a student of art or architecture in Oslo before 1910, in 2024 some fortuitous events opened a new research path.

Four Recent Discoveries

By pure chance the author stumbled upon fragments of a student's lecture notes in a small Norwegian museum[8]. The last page was inscribed: "Kristiania 1909. After Lectures by Aa Stray." The teacher and student are long forgotten. Aasmund Stray (1860–1924) was an artist rather than an architect and served as principal teacher in elementary ornamentation classes from 1899 to 1924.[9] The notes found in the museum, in Telemark, were those of Ragnvald Kittilsen (1885–1911).

Fortuitously, another Aasmund Stray manuscript, *Lectures on Elementary Ornament*, was referred to by Mathilde Sprovin in her PhD thesis. And the author was notified of a further discovery of drawings by a female architecture student at the Christiania Drawing School, Jacobine Marie Selmer (1878–1953). These drawings from her time at the school, both coursework stamped in approval and casual sketches, give us an insight into what it was like to study architecture in Norway 120 years ago—what courses were followed and what students learned and did as assignments. By mapping Marie Selmer's drawings into a timeline we may get an idea of the pace of classwork, though questions remain about how the course was organized, how much was done at school and how much as homework, and how the teacher and students interacted. And after the author presented these findings at the conference Beauty and Ugliness in Architecture 2025, an attendee—Liv Rehn Berger, a lively 91-year-old lady from Raufoss—supplied further material from her MA thesis in Art History.

Samples of written and drawn material by Marie Selmer, Ragnvald Kittilsen, and Aasmund Stray are shown in figure 1.



Figure 1

Top left: Plate dated 12 November 1902 from the Marie Selmer collection (Øystein H. Nilsen & Simen D. Taraldsen).

Top right: Drawings from the sketchbook of Hakon Hansen, school year 1903–1904, page 35.

Bottom left: Page 3 of Aasmund Stray's lecture on Elementary Ornament (1904–1905).

Bottom right: first page of Ragnvald Kittilsen's lecture notes on Elementary Ornament, from 1909 (Mariken Eek, Telemark Museum).

In Christiania (now Oslo) the subject of ornament was considered important already at the inception of architectural and artistic education in 1818, and more so from the late 1890s to the 1920s. Mathilde Sprovin thoroughly documents the role of ornament in her thesis through administrative sources: reports, regulations, annual reports, etc. (Sprovin 2017: 82). Some 20% of the school's teaching was devoted to aspects of ornamentation, though with an apparent pause in organized teaching from 1869 to 1884. Another surprising source emerged in January 2024: a collection of Jacobine Marie Selmer's work as a student at the same drawing school—primarily drawings from 1901 to 1904.

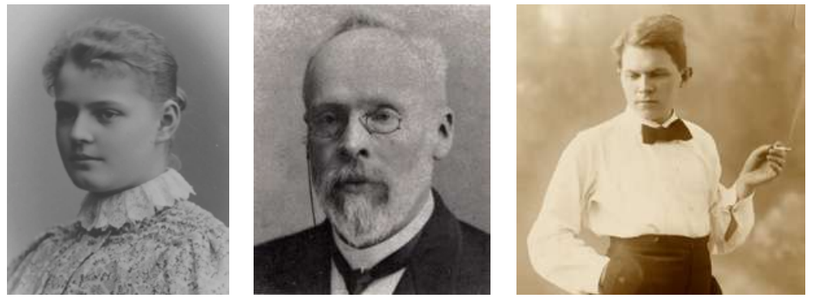


Figure 2

Left: Jacobine Marie Selmer, before entering the school in 1900 (Jacob M. G. Aune)

Middle: Aasmund Stray, probably between 1905 and 1910 (Unknown).

Right: The only known photo of the short-lived student Ragnvald Kittilsen, taken between 1907 and 1911 (Unknown).

There is no known photo of Haken Hansen.

Ornaments in the Marie Selmer collection make up over 30% of her drawings for all subjects. The collection gives us an insight into what the students produced and how significant ornamentation was in that. By reverse-engineering, we may reconstruct what was taught in the classroom and how it was taught.

Aasmund Stray was aware of the best international literature on ornament and decoration: sourcebooks on practical drawing skills (Meyer 1886 and Crane 1900),[10] style and ornament,[11] and classical architecture (Bühlmann 1913 and Durm 1881), and surveys of the history of fine arts and vernacular crafts (Nicolaisen 1881–1891 and Rygh 1885). He was careful to give credit to most artists and authors and his lecture notes are a window into a vast knowledge base of sources now forgotten. Many of these old books have recently been digitized, so we can recreate the library available when the lectures were written. See examples in figure 3: sourcebooks prior to 1850; and figure 4: sourcebooks published after 1850.



Figure 3. Sample of plates from the early works on ornament available at the drawing school in the 1830s and '40s. From left to right, top row and then bottom row:

1) Giocondo Albertolli (1782), plate V: 13;

2) Wilhelm Zahn (1829): 85;

3) Carl Bötticher (1836), plate 4: 13;

4) Louis Zoellner (1839), plate 42: 91;

5) Hessemer (1842), plate 38, 117;

6) Owen Jones (1844), plate XXXVII: 251.



Figure 4. Sample of plates from works on ornament published after 1850 and available at the school, frequently referred to by Stray in his lecture notes or by his Christiania students between 1901 and 1909. From left to right, top row and then bottom row: 1) Owen Jones (1856); 2) Fausto and Felice Niccolini (1854–1896); 3) Auguste Racinet (1869–1876); 4) Johann Eduard Jacobsthal (1874); 5) Heinrich Dolmetsch (1887).

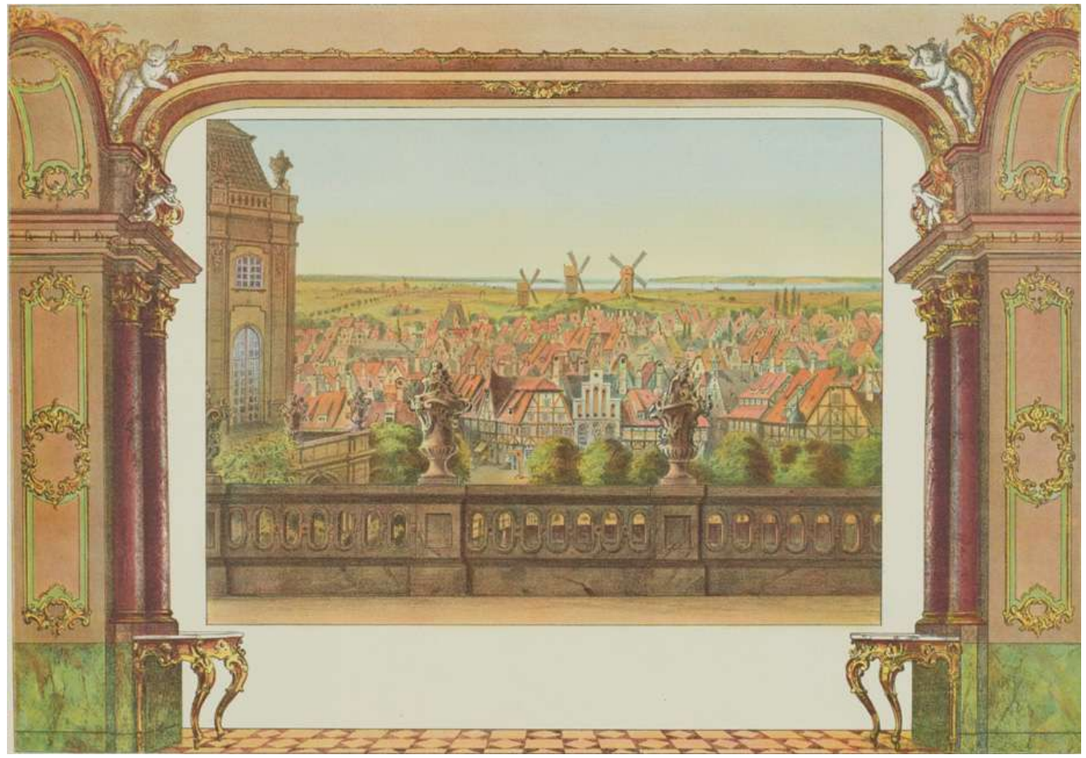


Figure 5. Stray trained and worked as a decorative painter, which included set design for puppet and paper theaters. This drawing probably from 1906 was produced for the Danish lithographer Alfred Jacobsen: "Hall in Rococo style. Middle curtain. View of an old town with mills. Set piece." (Royal Danish Library).

Thus four main sources are used here to shed light on Stray's teaching practices: his own lecture notes, the fine drawings of his student Marie Selmer, Ragnvald Kittilsen's carefully written notebook, and the literature on ornament and decoration available at the school between 1818 and 1910.

Importance of Ornament in Education

Ornament played a threefold role in premodernist art and architectural education: improving students' drawing skills, cultivating an appreciation of beauty from the start of their studies, and introducing them to style and history.

1. Drawing ornaments greatly developed draftsmanship skills. Easily drawn ornaments were covered in elementary classes, followed by more advanced subjects.[12] Ornament was an integral part of preparatory education at the drawing school from at least 1844,[13] with an emphasis on freehand drawing and simple downscaled elements.

2. Teaching of ornament was the simplest way to introduce students to beauty, which they were encouraged to become familiar with through observation and drawing.[14] Beauty was mastered not by designing classical palaces but on a small scale, through drawing basic ornaments and then more complex ones as skills were honed. In Oslo several students, particularly female ones, took classes in ornament continuously up to their graduation.

3. The courses gave students insights into cultural history and ornamental styles. Late nineteenth-century lectures and sourcebooks explored Egyptian, Moorish, Arabian, Japanese, Chinese, and Indian styles of decoration as well as the Greco-Roman tradition. Books of the time typically contained introductions to style and expositions of art history. More comprehensive ones also

surveyed the medieval, Renaissance, and Baroque styles as manifested in different European traditions.[15] In the 1880s there were no courses explicitly on architectural history, as Norwegian schools of architecture integrated this into practical design and drawing courses, most notably on ornament.

A look at the teaching material used in the Christiania Drawing School library shows that as much as 27% of the collections of plates registered between 1719 and 1908[16] were devoted to ornament, decoration, and general figuration (natural ornaments). In the catalog of drawings by Marie Selmer, ornamental design accounts for 33% of her output at the school from 1901 to 1904,[17] increasing to almost 60% in her final year.

An example of the significance of ornament in the school's courses around 1900 is Marie Selmer's five first drawings stamped in approval from the preparatory course for all students: "Freehand class I," spring 1901 (Fig. 6).



Figure 6. Selmer's first work stamped in approval, winter and spring 1901:

Top left: Her first drawing at the school, dated January 25.

Top center: Fragments of spirals and curved ornaments, dated February 5.

Top right: Greek panel in a coffer of the Propylaea ceiling by the Acropolis, dated March 23, 1901.

Bottom right: Greek spiral wave ornament dated February 15.

Bottom left: Greek anthemion band dated February 26.

Aasmund Stray's Lecture Notes

Aasmund Stray was firmly rooted in a North European, Danish/German educational tradition through his early training in Norway and his advanced studies in Denmark and later Austria. Formal courses typically involved weekly lectures to a large class along with practical exercises supervised individually. Stray's lecture notes include 79 pages of explanatory text with 310 drawings, in two parts: a toolbox of basic concepts, exercises, and insights, and subsequently more advanced subjects, exploring styles and periods by culture.

Initially, Stray taught the first part of Elementary Ornament using colors, as seen in Marie Selmer's exercises stamped in approval from autumn 1902 (Fig. 8). But after reorganizing the course for the academic year 1904–05, he left colors for the more advanced second part, except for one lecture on color theory (Fig. 9).

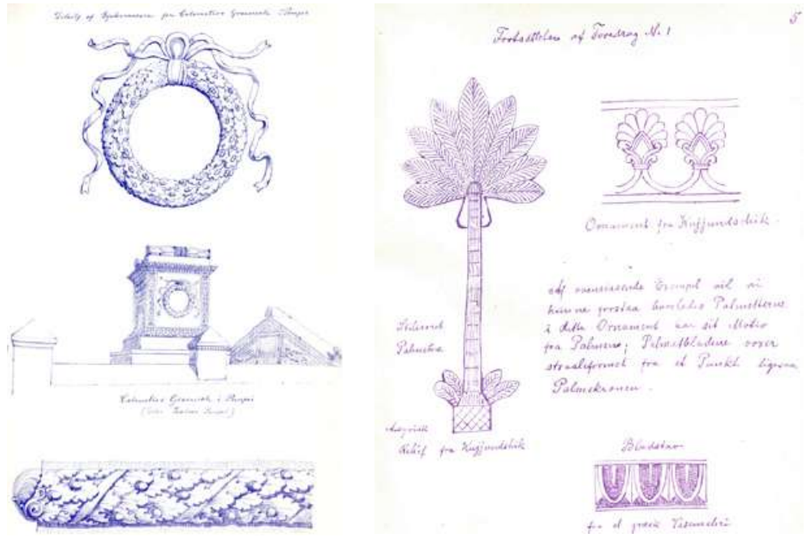


Figure 7. Drawings for the first Elementary Ornament lecture.

Left: Plate from page 66 showing a detail of an oak wreath from the tomb of Calventius in Pompeii (centre) and a sculpted round column from the Temple of Jupiter Tonans in Rome.

Right: Stylized Assyrian palm tree, ornaments from Kujjundschik, and Greek ornament with stylized leaves.



Figure 8. Polychrome ornaments by Marie Selmer, autumn 1902, prior to Stray reorganizing the course.

Left: Coffered ceiling panel from the Propylaea in Athens.

Right: Final drawing with Stray's approval stamp from autumn 1902, dated December 8, 1902.



Figure 9 Colors were permitted in the first part of Elementary Ornament only in lecture 9, Elementary Theory of Colors. Sheet from Ragnvald Kittilsen's notebook.

The first part contains ten numbered lectures. In Table 1 we have added subtitles in italics according to the subject.

First part	Lecture content
Lecture 1: *Rationale and overview*	Stray accounts for the importance of ornaments with reference to nature and history as sources of inspiration. Simple and intermediate compositions from ancient Egyptian and Assyrian decorative design are introduced.
Lecture 2: *Curved lines and circles*	Stray presents basic curved molding profiles and easily drawn band ornaments. The lecture ends with ancient Scandinavian bronze ornamentation, mostly from Iron Age bands.
Lecture 3: *Skeleton of ornament*	The concept of a skeleton in ornamentation is expounded with reference to nature: a skeleton is a trunk or stem as of a tree or plant. The Athenian Monument of Lysicrates is used for illustration.
Lecture 4: *Ornaments deployed on objects*	Ornaments are employed in such everyday objects as furniture, door handles, vases, cutlery, or candelabra. Stray notes that motifs should be suited to the characteristic form of objects and designed not to snag clothes with large protrusions.
Lecture 5: *Proportion and taste*	An extensive lecture full of examples of good and bad taste, pointing to good and bad proportions in objects and ending with a focus on Greco-Roman ceiling ornamentation.
Lecture 6: *Enclosed ornaments*	Stray sets out three principles of enclosed or bounded ornaments: centered around one line, structured over several lines, or designed over a freely curving line. This is illustrated with drawings of intricate medieval Scandinavian bronze ornamentation.
Lecture 7: *Band ornaments*	Stray describes friezes and borders as belts or bands that may be continued indefinitely, presenting seven design options along with the example of a Scandinavian baptismal font in Roman style.
Lecture 8: *Unenclosed ornaments*	Patterns are presented as ornaments potentially infinite in every direction. Unenclosed ornament might contain repetitions of enclosed ornament, with or without growth, organized linearly (vertically and horizontally) or obliquely. The illustrations borrow from Walter Crane's *Line and Form* (1900).
Lecture 9: *Color*	Color is presented through the old and new color circles, with monochrome drawings. Stray says coloring should enhance ornamentation and that one must study historical examples of color in decoration and nature.
Lecture 10: *Composition*	This lecture contains no drawings, probably because it is too specific for any choice of examples. There is a broad practical exercise in which students are to create their own complex drawing. Stray says the designer should consider the various observer distances and strive to draw in a single plane.

Table 1. Structure of the first part of Elementary Ornament

The first lecture gives a thorough account of the importance of domestic ornament, highlighting nature and history as the main sources for the ornamentist: "Since the Art of Ornament has been exercised by many different people at different times and under varying conditions, and since ornamental motifs are taken from Nature and built over the Principles of Nature, then there are two sources that we should use for our study, namely History and Nature; we must study the Book of History and the Book of Nature. It is therefore necessary to familiarize ourselves with what has been handed down in previous Ornaments, including Form, Color and Content, as well as technical execution, at the same time as we study Nature for an Understanding of Precedent and as a source of renewal."18 After his introductory rationale, Stray develops the basic toolbox of design concepts for ornamentation; the notions of "repetition," "variation," and "contrast," giving first simple drawn examples (Fig. 7, left), and then stylized examples from ancient Egyptian and Assyrian precedent (Fig. 7, right).

Second part of Elementary Ornament

The remaining lecture notes are devoted to eight topics explored in more depth. This part is called "Natural Forms and their Decorative and Ornamental Application". Here there is no obvious division into lectures but rather an exploration and exposition of broader topics, with numerous drawings.

One drawing stamped in approval in the sketchbook of the student Hakon Hansen from spring 1904 shows the standard of polychrome compositions that students were able to copy and design (Fig. 12). Some of the topics Stray covers in the second part include content that probably spanned several lectures, like a mini-course lasting weeks. Outlines of the topics in the advanced part of the course are given in Table 2.

Second part	Lecture content
Egyptian style	Stray discusses ancient Egypt and its dynasties, highlighting its cultural contributions through large-scale drawings of ornamental compositions, capitals at Luxor, and band ornaments of stylized flowers.
Assyrian style	After a description of ancient Mesopotamian civilization, comparing Assyrian and Egyptian culture with reference to anatomical depiction and use of color, there are three pages of plates with complex Assyrian ornaments of ribbon windings, carpet-like doorsteps, and lion friezes from Susa and Nimrud.
Mycenaean style	Stray presents this precursor to ancient Greek art and architecture with reference to the works of the historians J. M. Secher and H. Schliemann, explaining how tribal movements in the first millennium B.C. gave rise to the Dorian and Ionian orders and offering seven examples of ornament from Mycenaean pottery.
Greek style and ornament	Greek style is a major topic, including many drawings with meander ornaments typical of nineteenth-century sourcebooks, a collection of Greek ribbon windings and wave patterns, and several advanced antefixes and sima designs.
Rosettes & natural forms	This section is confined to comments on drawings by Stray executed in the style of the contemporary sourcebooks on ornament, with detailed naturalistic representations of laurel, oak, vine shoots, and olive branches, and illustrating the use of stylized plant motifs in Greco-Roman decorative art such as in column bases, posts, vases, candelabra, or wreaths.
Moldings (ancient)	Stray surveys various styles of moldings, depicting simple cyma designs as well as Greek ones, with examples of Doric and Ionic ante-capitals of increasing complexity.
Acanthus	This section focuses on the acanthus leaf and its historical embellishing role in Greek art and architecture and thereafter, describing its form and use in decorative art. Naturalistic depictions of the plant and guidelines for the novice drawer are followed by four beautiful stylized acanthus ornaments.
Humans, animals, fantastic creatures	Stray discusses the use of human figures, animals, and fantastic creatures in ancient Greek art, with a focus on the associations and mythological connotations of species such as the lion and eagle before looking at fantastic beasts such as the Egyptian sphinx or the Greek griffin and centaur. He ends with drawings of the terracotta lion's head at Metaponto, a bronze candelabra with animal legs, and two chimeric winged lions and a lyre.

Table 2: Structure of the second part of Elementary Ornament



Figure 10

Bottom left: Aa. Stray: text reads "Capital from Luxor 1200 before Christ. Drawn after Ornamentenschatz. Papyrus is often used as a motif for Egyptian pilasters. Of 10 pilasters, there are 8-9 with papyrus motifs. The capital presented depicts a blossoming papyrus flower. The upper part is embellished with lilies and papyrus flowers." Elementary Ornament, page 38.

Top Left: Aa. Stray: "The winged sun disk with the Uræus snake," Elementary Ornament, page 41.

Right: From Dolmetsch Ornamentenschatz, Plate 2, Aegyptish Architektur und Malerei, page 16. Figure 2 in Plate 2 clearly inspired Stray in his rendering of "Hauptgesims am grossen Tempel zu Philä. Skulptur und Malerei."

Thus the second lecture sequence examines ancient Egyptian history (Fig. 10) and ornament, surveys Assyrian and Mycenaean decoration, and delves into Greek style and ornamentation (Fig. 11) as well as cornices and other building ornaments, with detailed monochrome drawings copied from the foremost ornamental sourcebooks (Fig. 10).



Figure 11. The second part of Elementary Ornament explored ancient styles with examples.

Left: Greek meanders. Ragnvald Kittilsen made his own plate in his notebook, recreating and reorganizing Stray's version, page 33.

Right: Stray's notes from 1905, page 53.

Concluding Remarks

The teaching of ornament is today a lost practice, like so many other premodernist aspects of architectural education. Lectures on its importance by academics and practicing architects have shown great historical knowledge of architecture but not addressed the role of ornament in past architectural teaching practice. We hope this paper may assist in filling the gap, although our case study focuses only on Norwegian teaching practices, rooted in a Danish-German tradition. We hope other architecture historians may explore the pedagogy of ornament in their own countries, where there are relevant sources in public or private archives. Other fields of architecture in which knowledge about past teaching methods is lost could also benefit from research, including traditional building and furniture design.

One reason that the teaching of ornament went out of fashion is modernist ideology.[19] In Norway, tradition, history, and beauty were gradually displaced by the rise of modernism, and the art of teaching was also slowly lost as the last drawing school teachers disappeared or moved on. What was lost was not just the skills concerning how to best teach and learn the craft but also the rationale. The contrast with other aesthetic fields, such as education in performing arts like music and ballet or in visual arts like sculpture and painting, is striking. Architecture was integrated into visual arts education, and craft students also shared in arts courses. Craftsmen and women were the largest group when the drawing school was established and remained a large part of its student body until its closure in 1910. So in Christiania, students of craft and architecture shared the same teachers between 1818 and 1910, and in a potential revival of the teaching of ornament might do so again.

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[1] A good online overview is provided by Hanssen (2024).

[2] James Stevens Curl has documented the failure of modernist architecture and architectural education in *Making Dystopia: The Strange Rise and Survival of Architectural Barbarism* (Curl 2019) and the article "In Architecture, Hold Fast to History" (Curl 2015).

[3] Among many articles and books on pedagogy at the École des Beaux-Arts, Madlen Simon examines the transfer of French teaching principles to American schools of architecture in "Professional Education in the Beaux-Arts Atelier" (Simon 2002), while Alexander Griffin's *The Rise of Academic Architectural Education: The Origins and Enduring Influence of the Académie d'Architecture* (2020) examines, among other aspects, the relationship between students and teachers. One of the earliest and most authoritative sources is John F. Harbeson's *The Study of Architectural Design: With Special Reference to the Program of the Beaux-Arts Institute of Design* (1926).

[4] The modernist book-burnings of premodern literature and drawings are poorly documented, probably due to the associations of book-burning after the Second World War, when the Nazi bonfires of the 1930s and '40s were fresh in people's memory. The quiet disappearance of books and teaching materials from the past avoided provoking those interested in history. In Oslo there was a discreet book-burning in 1948, when many of the old premodernist teaching resources, including sourcebooks, teachers' lecture notes, student work, and collections of architectural plates, vanished. This took place in the yard of the Norwegian National School of Art and Design (SHKS) and was overseen by the school janitor, although the materials to be burned must have been chosen by faculty members. The art historian Truls Aslaksby learned of this Oslo book-burning incident from first-hand witnesses.

[5] In Spain, huge amounts of educational material in architecture, including student drawings and teaching books, were destroyed during the Civil War, according to Pablo Alvares Funes. Almost all student work from between 1848 and 1936 was destroyed in fires following the bombing of the main school, and also due to soldiers burning student work to keep warm in the cold winter of 1936. German schools of architecture suffered even more in the Second World War. Many school buildings were destroyed in bombing raids, including the Berlin Bauakademie. Huge amounts of teaching material went up in smoke.

[6] Professor Emeritus Elisabeth Seip, the pioneering founder of the Norwegian Architecture Museum (1975–1980), described in a phone call with the author on September 8, 2025 how carelessly source material was handled after 1945. Up to 1975, some drawings, notes and models were saved by a few dedicated individuals, such as Harald Hals, but previously there was no system in place to protect significant older material.

[7] Elisabeth Seip, Mathilde Sprovin, and Bente Aass Solbakken have all written PhD theses on historical architectural education. Professor Seip originated research into early Norwegian architectural education at the Kristiania Drawing School with her thesis of 2007 on the background to its foundation in 1818.

[8] Telemark Museum digital library: Kittilsen's notebook. In October the rest of the book was digitized by Mariken Eek, allowing the author to transcribe the handwritten notes.

[9] Mathilde Sprovin mentions the lecture book in her PhD thesis, which also includes a photo of Stray's acanthus drawings (Sprovin 2017: 137).

[10] Meyer's book *Die Liebhaberkünste* (1890) was available in Norwegian translation as early as 1892.

[11] The sourcebook most frequently referred to by Stray, in addition to that of Franz Sales Meyer and of the authors mentioned in figure 4, was Wilhelm Zahn's *Die schönsten Ornamente und merkwürdigsten Gemälde aus Pompeji, Herculaneum und Stabiae: nebst einigen Grundrissen und Ansichten nach den an Ort und Stelle gemachten Originalzeichnungen*, vol. 1 (1828–1829).

[12] Ornamental design in the elementary stage comprised 25% of Marie Selmer's catalog, and five out of the 19 drawings in Elementary Class B were ornaments—her first drawing exercises at the school.

[13] In Hetsch's 1844 book the first elementary drawing courses included basic fret ornaments. In Elementary Class B in 1901, the first five drawings by Selmer were all exercises in ornament, i.e., about a quarter of the preparatory course.

[14] Stray comments on beauty and how ornaments can beautify an object, such as at the start of lecture 1: "[…] the important Role that Ornament plays in daily life, by beautifying and refining ordinary utilitarian objects and our buildings and homes, makes it necessary for pupils to thoroughly familiarize themselves with how it is created, executed, and applied […]"

[15] In the first lecture students are presented with practical examples of ornament from the Scandinavian Iron Age along with ancient Egyptian, Assyrian, and Greek ornaments.

[16] The collection of sourcebooks containing drawing plates is meticulously catalogued by Mathilde Sprovin in her thesis (2017: 291–305).

[17] Marie Selmer's drawings of ornamentation over her time at the school account for varying proportions of the total: First year 26%, second year 11%, third year 47%, final year 59%.

[18] Stray (1905), Lecture 1, page 1, and Kittilsen (1909), Lecture 1, page 1.

[19] Adolf Loos: *Ornament und Verbrechen* is the most famous critique of ornamentation, written in 1908 and delivered as a lecture in 1910.

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Biography | Biografía | Biografia

Anders Moen Hagalisletto

Anders Hagalisletto is a Norwegian research scientist, entrepreneur, and computer scientist with MAs in philosophy and theoretical computer science and a PhD in cybersecurity from the University of Oslo (2007). He established the Beauty and Ugliness Conference in Oslo and has organized it since 2023 in order to share with the International Architecture Uprising community and modern architects the proven benefits of traditional architecture, including its premodernist educational foundations. While reconstructing lost or forgotten teaching practices in architecture, he came across rich materials on formal education in the field of ornament in Norway before 1910. Since 2022, Hagalisletto has published articles on urban development, aesthetics, high-rise buildings, and architectural history, mainly in Norwegian journals.

Delfina Apaolaza, Flavia Rinaldi

Chapel of Our Lady of the Rosary of Guanacache Lagoons, Mendoza: Restoration, Community, and Continuance in the Desert

Capilla de Nuestra Señora del Rosario de las Lagunas de Guanacache, Mendoza: Restauración, comunidad y permanencia en el desierto

Capela de Nossa Senhora do Rosário das Lagoas de Guanacache, Mendoza: Restauro, comunidade e permanência no deserto

Abstract | Resumen | Resumo

The Chapel of our Lady of the Rosary of Guanacache Lagoons is a valuable exemplar of architectural and cultural heritage in the desert of Cuyo, reflecting the close-knit relationship between land, community, and building practice. The current chapel, the product of several reconstructions, embodies traditional raw-earth techniques, such as adobe or mud, which define its materiality and its adaptation to this arid environment. The recent restoration gave priority to participation by the Huarpe community, a repository of building knowledge handed down from generation to generation. The process reaffirmed the value of this heritage from an inclusive perspective in which material preservation is inseparably bound up with the continuity of this knowledge and with cultural identity.

La Capilla de Nuestra Señora del Rosario de las Lagunas de Guanacache constituye un valioso ejemplo del patrimonio arquitectónico y cultural del desierto cuyano. Refleja la estrecha relación entre territorio, comunidad y prácticas constructivas. El edificio actual, resultado de sucesivas reconstrucciones, conserva técnicas tradicionales de tierra cruda, como el adobe y la torta de barro, que definen su identidad material y su adaptación al entorno árido. La reciente intervención priorizó la participación de la comunidad huarpe, depositaria de saberes constructivos transmitidos de generación en generación. Este proceso reafirma el valor del patrimonio desde una perspectiva integral, en la que la conservación material se vincula inseparablemente con la continuidad de estos conocimientos y con la identidad cultural.

A Capela de Nossa Senhora do Rosário das Lagoas de Guanacache constitui um valioso exemplo do património arquitetónico e cultural do deserto de Cuyo. Reflete a estreita relação entre o território, a comunidade e as práticas construtivas. O edifício atual, resultante de sucessivas reconstruções, conserva técnicas tradicionais de terra crua, como o adobe e as coberturas em terra e palha, que definem a sua identidade material e a sua adaptação ao ambiente árido. A recente intervenção deu prioridade à participação da comunidade Huarpe, detentora de conhecimentos construtivos transmitidos de geração em geração. Este processo reafirma o valor do património numa perspetiva integral, em que a conservação material está indissociavelmente ligada à continuidade desses conhecimentos e à identidade cultural.

Contexto histórico y territorial

Ubicada en el distrito Lagunas del Rosario, departamento de Lavalle, al norte de la provincia de Mendoza (Argentina), la Capilla de Nuestra Señora del Rosario de Guanacache constituye un testimonio significativo del patrimonio arquitectónico y cultural del desierto cuyano. Integrada en un conjunto de edificios públicos y en una comunidad reconocida como pueblo originario, forma parte de las denominadas “Catedrales del Desierto de Lavalle”.

El origen de la capilla se remonta a comienzos del siglo XVII, en el contexto del proceso de evangelización impulsado por los jesuitas en territorios habitados por comunidades originarias. La construcción inicial, realizada con palos y ramas, formó parte del sistema de parroquias establecido en torno a las lagunas de Guanacache y al río Mendoza.

La región de Guanacache, históricamente compartida entre las provincias de Mendoza y San Juan (Fig. 1), estaba conformada por un sistema de lagunas interconectadas que favoreció durante siglos un entorno fértil y densamente poblado. La economía local se basaba principalmente en la pesca y en una estrecha relación con el medio natural. A partir del siglo XIX, factores como los cambios en el clima, la explotación de los recursos hídricos aguas arriba y las transformaciones geomorfológicas provocaron el progresivo desecamiento del sistema lagunar. Este proceso transformó el paisaje en un territorio árido y dio lugar a cambios en las actividades productivas y a un sostenido proceso de despoblación.

Transformaciones arquitectónicas

El edificio actual es el resultado de sucesivas reconstrucciones. Tras el terremoto de 1861, gran parte de la estructura original colapsó y solo permanecieron en pie algunos muros de entre dos y tres metros de altura. La reconstrucción posterior reutilizó estos restos e introdujo una modificación sustancial: la inversión del acceso principal, originalmente situado en la fachada sur, que pasó a abrirse hacia el norte.

Figura 1. Situación de la Capilla de Nuestra Señora del Rosario de Guanacache



La capilla presenta una nave única de planta rectangular (Fig. 2), de aproximadamente 7 metros de ancho por 30 metros de largo, construida con muros de adobe y cubierta por una estructura a dos aguas de caña y madera, con torta de barro. La cabecera se caracteriza por la presencia de dos cúpulas laterales y una torre campanario de mayor altura. El acceso principal se articula mediante un pórtico con arco de medio punto, flanqueado por arcos laterales y coronado por un balcón de madera cubierto.

En el lateral derecho, una galería articula el acceso a la nave con dependencias anexas, como la sacristía y el depósito. El interior conserva elementos litúrgicos significativos, entre ellos el altar mayor, el púlpito y dos coros elevados: uno sobre el lateral y otro sobre el acceso principal.

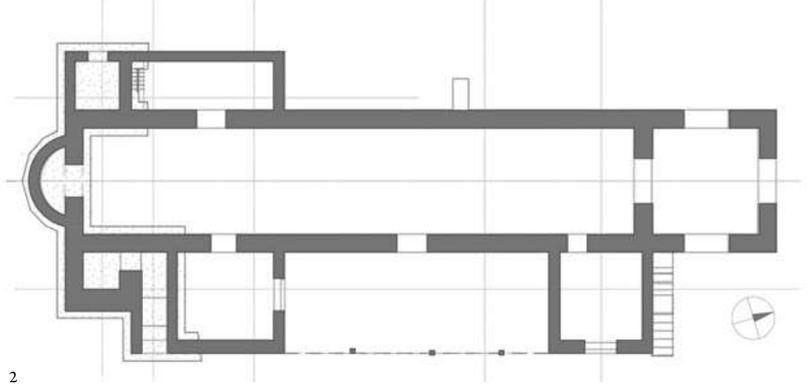


Figura 2. Planta de la Capilla



Figura 3. Contrafuertes de apuntalamiento del ábside durante los trabajos iniciales



Figura 4. Apuntalamiento y tareas de consolidación y restauración en la torre del campanario

Estado de conservación y estudios preliminares

A lo largo del tiempo, la capilla ha sido objeto de intervenciones periódicas de mantenimiento, en su mayoría realizadas por la propia comunidad. Estas incluyeron la renovación de los revoques, la reparación de la cubierta y la restauración de las carpinterías.

No obstante, los estudios preliminares realizados antes de la última intervención pusieron de manifiesto la existencia de importantes lesiones estructurales. En particular, el muro del ábside presentaba desprendimientos y signos de inestabilidad (Fig. 3). Esta situación se agravó tras el sismo de 2021, que comprometió aún más el sector sur del edificio y la torre del campanario.

Los sondeos realizados en los cimientos revelaron la presencia de humedad en algunos sectores, así como la degradación de los materiales constitutivos y una baja integridad estructural. También se identificaron desplomes en los muros y diversos daños en el interior. A partir de este diagnóstico, un equipo multidisciplinar, integrado por organismos nacionales y provinciales y por representantes de la comunidad, definió los criterios de intervención.

Criterios y proceso de intervención

El proyecto de consolidación se desarrolló siguiendo las recomendaciones de los principales documentos internacionales sobre conservación del patrimonio, priorizando estrategias sostenibles y un conocimiento profundo del edificio. Los principales objetivos fueron estabilizar la cabecera del edificio y mejorar la resistencia sísmica del conjunto, respetando sus características constructivas tradicionales.

La intervención se organizó en distintas líneas de acción:

- Refuerzo de cimientos. Se realizaron trabajos de consolidación en los sectores degradados y se ejecutaron bases independientes en el área de la torre (Fig. 4), destinadas a incorporar un nuevo sistema de soporte estructural.

- Consolidación de muros. Se ejecutaron uniones mediante piezas de madera talladas in situ (Figs. 5–6), con el objetivo de mejorar el comportamiento estructural conjunto de los muros. Asimismo, se incorporó una platabanda metálica de contención, posteriormente recubierta con revoques compatibles.

Figura 5. Preparación de los troncos

Figura 6. Atado de un muro con madera





- Revoques. Se retiraron los revoques deteriorados y se ejecutaron otros nuevos de composición y características similares a las originales, con el fin de asegurar la compatibilidad material y un adecuado comportamiento higrotérmico. (Figs. 7–10).
- Cubierta. Se corrigieron las pendientes, se restauraron las capas de terminación y se reconstruyeron los aleros, con el fin de asegurar la correcta evacuación del agua y la protección de los muros (Figs. 11-12).
- Tratamiento del entorno. Se ejecutaron veredas perimetrales con pendientes adecuadas y se niveló el terreno circundante para reducir la acumulación de agua en la base de los muros (Figs. 13-14).

Figura 7. Preparación de mezcla para revoques tradicionales con barro, paja, guano y agua

Figura 8. Preparación del muro

Figura 9. Aplicación de revoque tradicional en el interior de una cúpula

Figura 10. Ejecución de revoque tradicional con llana


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Figura 11. Formación de un alero con cañas, costuras y doblados de varillas

Figura 12. Galería con la cubierta restaurada

Técnicas constructivas, transmisión del saber y patrimonio

Un aspecto central de la intervención fue la participación activa de la comunidad Huarpe de Lagunas del Rosario, cuyos integrantes ejecutaron la totalidad de los trabajos de restauración. Esta decisión respondió a un criterio patrimonial: reconocer y fortalecer el saber constructivo local como una parte indisociable del patrimonio que se pretendía conservar.

Figura 13. Elaboración de baldosas de adobe para las veredas perimetrales

Figura 14. Secado de las baldosas de adobe


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Figura 15. Obra vista desde el sureste

La construcción con tierra cruda, y en particular la técnica del adobe (Figs. 13-14), forma parte de una tradición arraigada en amplias regiones de Argentina. Su valor trasciende lo material, ya que implica conocimientos específicos sobre el territorio, los ciclos ambientales y la gestión de los recursos locales. En este sentido, iniciativas como la Ruta del Adobe, en el noroeste argentino, han contribuido a reconocer y difundir esta arquitectura como una parte fundamental del patrimonio cultural del país.

Figura 16. Obra terminada vista desde el sureste

Figura 17. Obra terminada vista desde el oeste



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Figura 18. Obra terminada vista desde el noreste

En Guanacache, este saber no constituye un vestigio del pasado, sino una práctica viva. La transmisión intergeneracional de estas técnicas –desde la selección de los suelos hasta la preparación de los morteros y la ejecución de los revoques– permitió no solo garantizar la autenticidad material de la intervención, sino también reactivar procesos comunitarios de aprendizaje y trabajo colectivo.

La materia prima necesaria para la elaboración de adobes y revoques fue recolectada por la propia comunidad en las inmediaciones del sitio, aunque en algunos casos fue necesario recorrer distancias de hasta siete kilómetros. Entre los materiales empleados se encontraban tierras con alto contenido de arcilla y limo, paja, guano de caballo, tabaco de hormiga, pencas y cañas. Su preparación incluyó el cernido de las tierras, el acondicionamiento de las fibras vegetales, la obtención de agua de penca y la preparación de los aglutinantes naturales.

A partir de estos materiales se elaboraron distintos tipos de adobe, adaptados a la fabricación de bloques, revoques y capas de terminación (Fig. 16). Más allá de su dimensión técnica, este proceso favoreció la transmisión de conocimientos entre generaciones y convirtió la práctica constructiva en un medio para preservar la continuidad cultural.

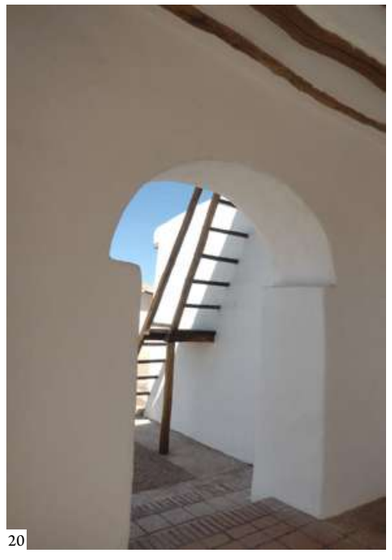
Resultados y proyección

La intervención permitió estabilizar estructuralmente el edificio, mejorar su comportamiento frente a acciones sísmicas y recuperar sus condiciones materiales y espaciales, respetando su identidad arquitectónica. Sin embargo, su principal aportación trasciende la conservación material. El proceso consolidó un modelo de intervención en el que la comunidad no es únicamente la destinataria de las actuaciones, sino también la depositaria del conocimiento necesario para la conservación del patrimonio.

La Capilla reafirma así su condición de espacio de valor histórico, simbólico y social. Su permanencia en un entorno ambientalmente adverso da cuenta de la resiliencia tanto de la arquitectura de tierra como de la comunidad que la ha preservado.



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Figuras 19 y 20. Detalles de revestimientos, solados y carpinterías

En conjunto con las demás capillas de la región, constituye un sistema patrimonial singular que testimonia la relación entre territorio, técnica y cultura. La reciente intervención no solo asegura su conservación material, sino que también contribuye a preservar los saberes que la hicieron posible y a transmitirlos a las generaciones futuras como una parte esencial de este patrimonio vivo.

Biographies | Biografías | Biografias

Delfina Apaolaza

Delfina Apaolaza es arquitecta y especialista en conservación del patrimonio arquitectónico. Su actividad profesional se ha centrado en la intervención y la gestión del patrimonio construido, para lo que ha desempeñado diferentes funciones, entre las que destacan la inspección y la supervisión de obras declaradas Monumento Histórico Nacional en Argentina. También ha trabajado para organismos públicos nacionales y municipales en proyectos vinculados al patrimonio y a la arquitectura escolar. En el ámbito académico ha participado en jornadas de reflexión sobre arquitectura moderna y arquitectura y arte litúrgico. Actualmente cursa la Maestría en Gestión e Intervención del Patrimonio Arquitectónico Urbano en la Facultad de Arquitectura, Urbanismo y Diseño de la Universidad Nacional de Mar del Plata.

Flavia Rinaldi

Flavia Rinaldi es arquitecta y especialista en conservación del patrimonio arquitectónico. Es máster en Economía Urbana y ha desempeñado diversos cargos en la administración pública argentina, entre ellos el de coordinadora de Obras de Conservación y Patrimonio del Ministerio de Obras Públicas de la Nación, además de participar en proyectos y obras del Gobierno de la Ciudad de Buenos Aires. Su actividad profesional se centra en la conservación del patrimonio construido, y varios de los proyectos que ha dirigido han recibido reconocimientos nacionales e internacionales. Actualmente reside en Barcelona, donde desarrolla una investigación sobre patrimonio "negativo", el integrado por bienes culturales, monumentos o lugares que generan rechazo o controversia.

Nadia Samir Rincón

Remembering Cuauhnáhuac: Traditional Urbanism and Reconstruction of Civic Life in Cuernavaca, Mexico

Recordar Cuauhnáhuac: Urbanismo tradicional y reconstrucción de la vida cívica en Cuernavaca, México

Recordar Cuauhnáhuac: Urbanismo tradicional e reconstrução da vida cívica em Cuernavaca, México

Abstract | Resumen | Resumo

This article examines the historic urban structure of Cuauhnáhuac, the pre-Columbian settlement that gave rise to the present-day city of Cuernavaca, as a starting point for reconsidering the role for traditional urbanism in rebuilding civic life in the face of contemporary urban challenges. Over the twentieth century the city experienced rapid peripheral growth, fragmentation of its urban fabric, and growing car dependency—processes which weakened the cohesion of the historic center and undermined the role of public space as a venue for meeting and social interaction. Setting out from a masterplan for the vicinity of the Adolfo López Mateos market, the article proposes that principles of traditional urbanism be recovered and that the memory of Cuauhnáhuac may become an instrument for contemporary urban regeneration.

Este artículo examina la estructura urbana histórica de Cuauhnáhuac, el asentamiento prehispánico que dio origen a la actual ciudad de Cuernavaca, como punto de partida para reconsiderar el papel del urbanismo tradicional en la reconstrucción de la vida cívica frente a los desafíos urbanos contemporáneos. Durante el siglo XX, la ciudad experimentó un rápido crecimiento de su periferia, la fragmentación de su tejido urbano y una creciente dependencia del automóvil, procesos que debilitaron la cohesión del centro histórico y redujeron el papel del espacio público como lugar de encuentro e interacción social. A partir de un plan maestro para el entorno del Mercado Adolfo López Mateos, el artículo propone recuperar principios del urbanismo tradicional y plantea que la memoria de Cuauhnáhuac puede convertirse en una herramienta para la regeneración urbana contemporánea.

Este artigo analisa a estrutura urbana histórica de Cuauhnáhuac, a povoação pré-hispânica que deu origem à atual cidade de Cuernavaca, como ponto de partida para repensar o papel do urbanismo tradicional na reconstrução da vida cívica face aos desafios urbanos contemporâneos. Durante o século XX, a cidade registou um rápido crescimento da sua periferia, a fragmentação do seu tecido urbano e uma crescente dependência do automóvel, processos que enfraqueceram a coesão do centro histórico e reduziram o papel do espaço público como local de encontro e interação social. A partir de um plano diretor para a zona circundante do Mercado Adolfo López Mateos, o artigo propõe recuperar os princípios do urbanismo tradicional e defende que a memória de Cuauhnáhuac pode tornar-se uma ferramenta para a regeneração urbana contemporânea.

Introducción

En muchas ciudades históricas de América Latina, el acelerado crecimiento urbano del siglo XX transformó profundamente paisajes urbanos que durante siglos habían sustentado formas coherentes de vida cívica. Calles concebidas para el tránsito peatonal se adaptaron al tráfico de vehículos, las plazas públicas perdieron su importancia como espacios de encuentro y los tejidos urbanos tradicionales se fragmentaron debido a nuevas infraestructuras y a la expansión hacia la periferia. Como consecuencia, surgieron entornos urbanos menos legibles, menos caminables y, en muchos casos, menos propicios para la interacción comunitaria y más inseguros.

Cuernavaca constituye un caso significativo de estas transformaciones. Antes de su desarrollo moderno, el asentamiento conocido como Cuauhnáhuac presentaba una organización espacial profundamente vinculada al paisaje natural y a las prácticas sociales de sus habitantes. Su nombre, en náhuatl, suele traducirse como “entre los árboles”, lo que refleja la estrecha relación entre el asentamiento y su entorno natural.

A lo largo de los siglos, la ciudad experimentó múltiples transformaciones, primero durante el periodo colonial y después a lo largo de los siglos XIX y XX. Durante el siglo XX, la expansión urbana se intensificó debido al crecimiento demográfico, la construcción de nuevas infraestructuras y la mejora de las conexiones con el resto de la región. Estos procesos provocaron la fragmentación del tejido urbano, la pérdida de continuidad espacial y la progresiva reducción del papel del espacio público como núcleo de la vida cívica.

Frente a problemas similares en otras ciudades históricas, diversos teóricos y urbanistas han recuperado los principios del urbanismo tradicional como una alternativa para restablecer la coherencia urbana y fortalecer la vida cívica. En este contexto, el artículo sostiene que recuperar la lógica espacial de Cuauhnáhuac ofrece una oportunidad para reconsiderar el papel del urbanismo tradicional en la regeneración urbana contemporánea.

El Plan Maestro propone reconectar el corazón de la ciudad con el centro histórico mediante una intervención que se extiende hasta el entorno del Mercado Adolfo López Mateos y recupera espacios cívicos de uso mixto donde la población pueda encontrarse, convivir y reforzar su sentido de pertenencia. Al igual que en el pasado, Cuauhnáhuac puede servir de inspiración para que Cuernavaca recupere su condición de Ciudad de la Eterna Primavera.

Ubicación de Cuernavaca dentro de su contexto geográfico y regional (Google)





Imágenes históricas de la ciudad colonial que ilustran su evolución urbana (México en fotos)

Principios del urbanismo tradicional

El urbanismo tradicional engloba formas de organización urbana que evolucionaron gradualmente a lo largo del tiempo mediante procesos culturales, sociales y ambientales. A diferencia de muchos modelos contemporáneos, que priorizan la eficiencia técnica, la zonificación funcional o la movilidad rodada, las ciudades tradicionales se desarrollaron de forma incremental, mediante la progresiva adaptación a las necesidades cotidianas de sus habitantes.

La arquitectura no solo proporciona refugio, sino que también configura las relaciones sociales, fomenta la confianza y fortalece el sentido de comunidad. Los barrios tradicionales de uso mixto favorecen la seguridad, la diversidad de usos y la vitalidad urbana. A partir de estos principios, la propuesta para Cuauhnáhuac se articula en torno a cuatro estrategias: utilizar los equipamientos y espacios culturales como elementos estructurantes; diseñar espacios públicos centrados en las personas; reutilizar las estructuras existentes; e integrar vivienda, comercio y equipamientos cívicos.

“Cuando la arquitectura escucha, se convierte en una herramienta de paz”. El urbanista Léon Krier defendió la recuperación de las formas urbanas tradicionales como alternativa a la fragmentación derivada del desarrollo urbano contemporáneo. Según Krier, las ciudades tradicionales se caracterizan por la compacidad de sus tejidos urbanos, la mezcla de usos, una jerarquía clara de calles y plazas y una relación coherente entre la arquitectura y el espacio público.

Las ideas del urbanismo tradicional contemporáneo también han sido desarrolladas por autores vinculados al Nuevo Urbanismo, entre ellos Andrés Duany, Douglas Duany, Elizabeth Plater-Zyberk, Elizabeth Moule y Dhiru A. Thadani. Este enfoque promueve barrios caminables, la mezcla de usos residenciales y comerciales y la recuperación del espacio público como eje de la vida urbana.

De igual modo, organizaciones internacionales como la International Network for Traditional Building, Architecture & Urbanism (INTBAU), la Fundación Culturas Constructivas Tradicionales y el Institute of Classical Architecture & Art (ICAA) han impulsado la investigación y la práctica del urbanismo tradicional como un modelo viable para la regeneración urbana. Estas iniciativas destacan la importancia de la escala humana, la continuidad histórica y la relación entre la arquitectura, el paisaje y la vida social.

Desarrollo histórico y geográfico de Cuauhnáhuac

El asentamiento prehispánico de Cuauhnáhuac se desarrolló en una región con abundantes recursos naturales, un clima favorable y una topografía propicia para la agricultura y el establecimiento humano. Su organización espacial reflejaba la estrecha relación entre el paisaje y las estructuras construidas.

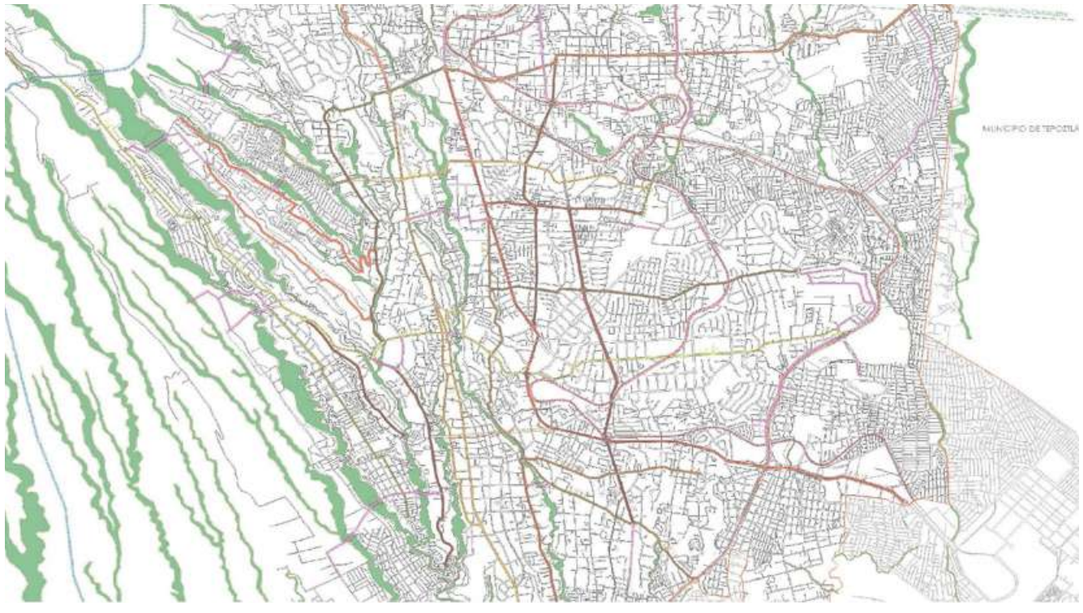
Cuernavaca se ubica en el valle de Cuernavaca, rodeado por las sierras del Chichinautzin y Madre. Desde la época prehispánica ha constituido un importante centro político y económico, con mercados y recintos ceremoniales organizados mediante una estructura urbana claramente definida.

La ciudad está definida por siete profundas barrancas que atraviesan el valle de norte a sur. Estos accidentes geográficos han modelado la configuración de barrios y calles adaptadas a la topografía, contribuyen a mantener un microclima templado, con temperaturas medias de entre 28 y 30 °C, y ofrecen una protección natural frente a los vientos y las inundaciones.

Durante la conquista, estas barrancas constituyeron importantes barreras naturales. Según la tradición, Hernán Cortés sólo pudo acceder al centro de la ciudad tras cruzar la barranca de Amanalco sobre un árbol caído, en el lugar conocido hoy como Callejón del Diablo. En la actualidad, estas barrancas representan también una oportunidad para articular corredores verdes, espacios públicos y conexiones entre los distintos barrios y el centro histórico. Gracias a su clima templado durante todo el año, Cuernavaca es conocida como la Ciudad de la Eterna Primavera.

Desafíos urbanos contemporáneos

Cuernavaca refleja siglos de desarrollo urbano superpuesto, adaptado a las barrancas, la topografía y las principales vías de comunicación. Su centro histórico conserva el damero colonial, combinado con trazados orgánicos de origen prehispánico y desarrollos posteriores en la periferia. Durante el siglo XX, la ciudad experimentó un rápido crecimiento. La expansión residencial hacia la periferia, la construcción de nuevas infraestructuras viarias y la creciente dependencia del automóvil modificaron profundamente su estructura urbana.



Relación entre la topografía, el paisaje natural y la red de transporte (Gobierno de Cuernavaca)





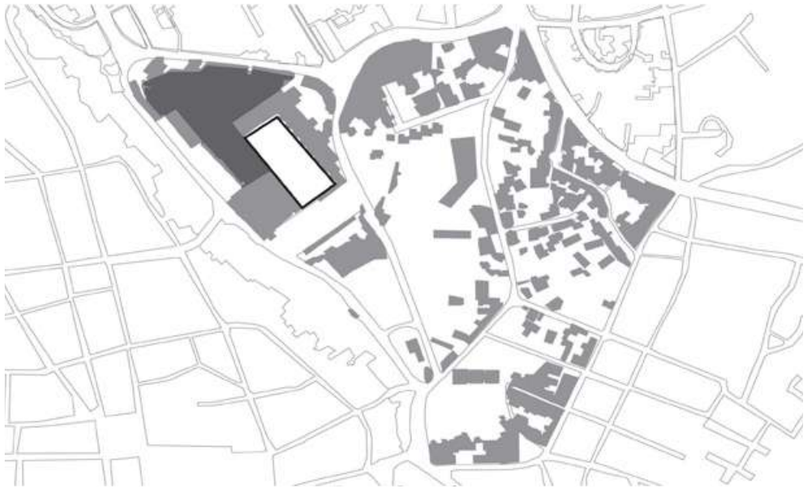
Localización y estado actual del Mercado Adolfo López Mateos y de las colonias circundantes en el área de estudio (Google)

Uno de los principales efectos de este proceso fue la fragmentación del tejido urbano. Nuevos desarrollos residenciales surgieron en áreas periféricas sin una integración clara con la ciudad existente, lo que redujo la continuidad espacial entre los barrios y limitó la creación de espacios públicos activos.

Reconstrucción de la vida cívica a través del urbanismo tradicional

Frente a estos desafíos, los principios del urbanismo tradicional ofrecen un marco para reconsiderar el desarrollo urbano contemporáneo. La recuperación de espacios públicos significativos constituye uno de los pilares de este enfoque. Las plazas, los parques y las calles peatonales han desempeñado históricamente un papel fundamental en la vida social de las ciudades. Estos espacios no solo facilitan la movilidad y la interacción, sino que también constituyen escenarios donde se construye la identidad colectiva.

El Mercado Adolfo López Mateos ocupa un megabloque de más de 8.000 m², dividido por la barranca de Amanalco. Su entorno inmediato comprende los barrios de Amatitlán, Acapantzingo, Quintas Martha, Santa Veracruz, El Vergel, Patios de la Estación y Gualupita. En la actualidad, el conjunto presenta importantes problemas de funcionamiento, entre ellos un acceso limitado a través de solo dos calles, una escasa conectividad peatonal y la saturación de la actividad comercial, con entre 570 y 1.500 comerciantes.



Plano de situación actual. Lotes vacíos con potencial de integración al tejido urbano existente.

Otra estrategia consiste en reconstruir la continuidad del tejido urbano mediante bloques compactos y una red de calles bien definida. Este tipo de estructura favorece la caminabilidad y la mezcla de usos residenciales, comerciales y culturales. En el ámbito del proyecto, ello supone desfragmentar el megabloque del mercado, integrar plazas, corredores peatonales y espacios verdes, y recuperar la barranca como corredor ecológico y cultural.

La arquitectura también desempeña un papel fundamental en este proceso. Los edificios que mantienen una relación clara con la calle, mediante accesos, soportales, comercios y otros usos abiertos al espacio público, contribuyen a crear entornos urbanos más acogedores y dinámicos.

El caso de Cuauhnáhuac ofrece enseñanzas relevantes para muchas ciudades de América Latina que afrontan desafíos similares. La rápida urbanización, la expansión periférica y la fragmentación del tejido urbano son procesos comunes en toda la región.

La recuperación de los principios del urbanismo tradicional puede contribuir a reforzar la identidad urbana y mejorar la calidad del espacio público. Además, este enfoque permite integrar el patrimonio histórico, la sostenibilidad ambiental y la vida comunitaria en un modelo coherente de planificación urbana.



Primera propuesta del Plan Maestro basada en criterios de continuidad y orden urbano.

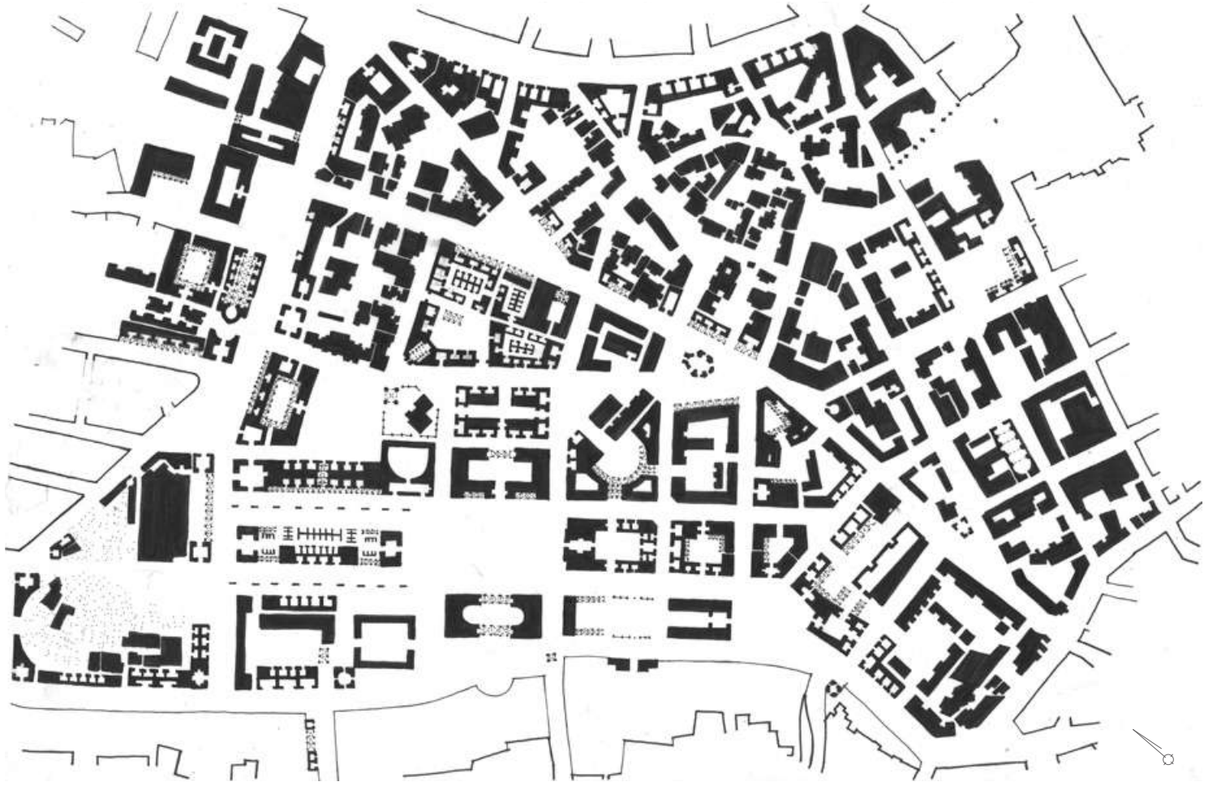
Propuesta de intervención

El Plan Maestro propone transformar el espacio urbano de Cuauhnáhuac para hacerlo más seguro, accesible y dinámico. La intervención plantea crear calles transitables y puentes peatonales que conecten barrios y plazas, con el fin de favorecer la movilidad a pie y la interacción social. Los edificios contribuirán a activar el espacio público mediante comercios, equipamientos culturales y usos cívicos en contacto directo con la calle, para facilitar con ello los encuentros cotidianos entre los habitantes. Asimismo, el proyecto recupera espacios públicos y corredores ecológicos para revitalizar el mercado y su entorno.

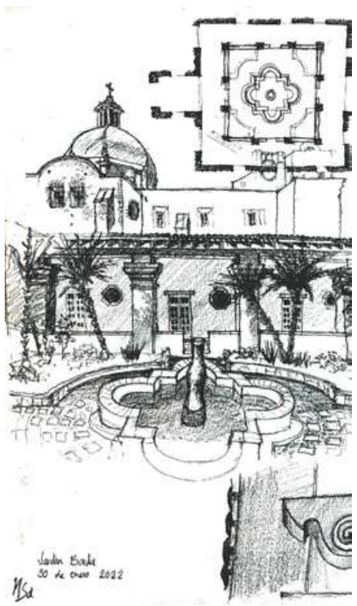
La propuesta persigue beneficios en los ámbitos social, económico y ambiental. Desde el punto de vista social, pretende mejorar la seguridad y fortalecer la integración comunitaria. En el plano económico, busca impulsar el comercio local y el turismo. En el ámbito ambiental, propone recuperar corredores ecológicos e incrementar la presencia de espacios verdes.

El Plan Maestro integra algunos de los principales hitos históricos de la ciudad, entre ellos el Palacio de Cortés, la Catedral, el Jardín Borda y el Mercado Adolfo López Mateos, mientras que las nuevas intervenciones contribuyen a mejorar la conectividad, reforzar la escala humana y favorecer la mezcla de usos.

El plano tipo Nolli realizado constituye una herramienta de análisis para comprender la relación entre los espacios públicos y privados, identificar áreas de congestión y detectar oportunidades de intervención en el tejido urbano, los espacios construidos y los solares vacíos.



Análisis figura-fondo de la relación entre el espacio construido y el espacio abierto en la propuesta.





Izquierda: Precedente urbano en Cuernavaca con criterios aplicables al proyecto.

Derecha: Precedente urbano en Granada como referencia de integración entre forma urbana y territorio.

Reestructuración interna del mercado

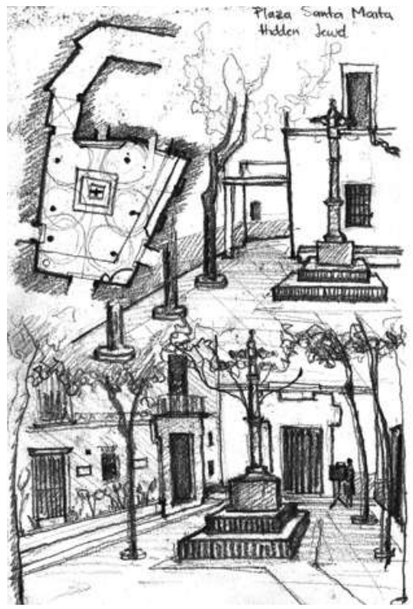
La propuesta reorganiza los puestos y los accesos al transporte para crear plazas, patios, corredores peatonales y espacios verdes que conecten el mercado con los barrios circundantes y la barranca. Entre los principales ámbitos de intervención destacan la Plaza de Museos, la Plaza Escolar, la Puerta del Sol, el Mercado revitalizado y el corredor ecológico. En conjunto, estas actuaciones buscan favorecer un flujo continuo de personas y reforzar la actividad urbana.

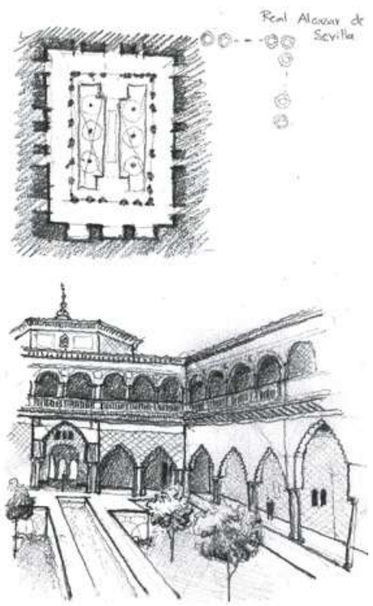
Se propone el uso de materiales locales, como adobe, piedra, madera y palma, junto con patios centrales y espacios abiertos. La propuesta recupera principios de la tradición prehispánica, como la orientación solar, los jardines, los huertos y los corredores verdes, con el fin de preservar la identidad cultural y ecológica, adaptar las viviendas al clima y reforzar la cohesión social.

La intervención busca revitalizar el mercado y los barrios circundantes mediante una red continua de plazas, jardines y recorridos peatonales que refuerce la continuidad del espacio público. Las plazas vinculadas a usos comerciales favorecen la interacción social y dinamizan la economía local, mientras que la reorganización de calles y manzanas mejora la visibilidad, la seguridad y la claridad de los recorridos. La propuesta combina la recuperación de edificios existentes con nuevas construcciones adaptadas al contexto histórico, topográfico y urbano, que respeten la memoria de Cuauhnáhuac.

Armazón urbano

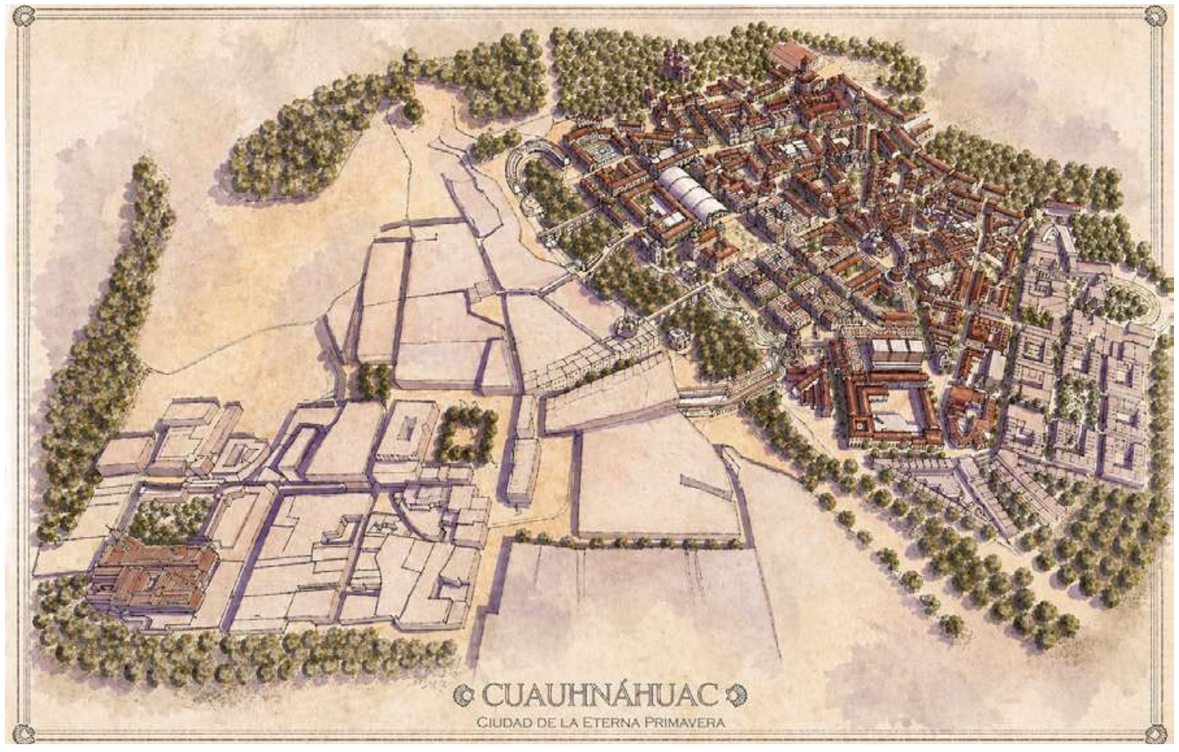
En el corazón de Cuauhnáhuac, el Tianquiztlan, el mercado tradicional, constituye el eje articulador de la propuesta. A su alrededor, los barrios se conectan mediante una red continua de calles, caminos y plazas, mientras que la barranca de Amanalco se recupera como un corredor verde y cultural que estructura el territorio y refuerza su identidad. Las calles principales enlazan el mercado, los barrios y el centro histórico, mientras que la red viaria secundaria garantiza una movilidad local segura y accesible.





Izquierda: Precedente urbano en Sevilla basado en la continuidad de su estructura histórica.

Derecha: Alcázar de Sevilla como referente de integración entre arquitectura y paisaje.



Vista aérea del Plan Maestro de Cuauhnáhuac y de su organización general.

Los edificios cívicos y los parques enriquecen el tejido urbano. El ayuntamiento, los centros culturales, las bibliotecas, las escuelas y el Parque Ecológico San Miguel Acapatzingo no solo prestan servicios a la comunidad, sino que también favorecen la caminabilidad, refuerzan la cohesión social y promueven la vida cultural, al quedar integrados de forma armónica en la red de calles, plazas y mercados.

El Plan del Zoco, inspirado en los mercados árabes, opera a dos escalas. A escala urbana, conecta plazas, calles principales y corredores peatonales, lo que permite integrar el mercado, los barrios y el centro histórico. A escala del bloque, una red de calles interiores, patios y pasajes cubiertos genera recorridos continuos y favorece el encuentro entre los ciudadanos, combinando la actividad comercial con espacios públicos seguros y agradables. Todo ello respeta la topografía y la estructura urbana de Cuernavaca.

Dentro del zoco, las calles y los pasajes cubiertos ofrecen protección frente al sol y la lluvia, mientras que los patios y las plazas interiores se convierten en espacios de descanso y encuentro. La diversidad de puestos comerciales favorece un uso continuo del espacio y aporta vitalidad al conjunto, mientras que la arquitectura y los elementos tradicionales refuerzan la identidad histórica del lugar y su integración con el entorno.

El acceso al mercado y a los edificios cívicos se plantea amplio y claramente visible, conectando las calles, las plazas y el transporte público. Los edificios de uso mixto integran comercios, oficinas y espacios comunitarios, mientras que plazas y patios de transición articulan la relación entre la calle, el mercado y los bloques interiores. El diseño abierto favorece la vigilancia natural del espacio público, en línea con el principio de los "ojos en la calle" formulado por Jane Jacobs, así como una circulación segura, lo que promueve la apropiación del espacio por parte de la comunidad.

"Transecto urbano"

Para organizar la intervención y adaptar cada ámbito a su densidad, sus usos y su relación con el espacio público, los bloques se clasificaron siguiendo un "transecto urbano", conforme a la terminología popularizada por DPZ, entendido como una secuencia gradual de ámbitos con distintas densidades, usos y características espaciales. Este método permite identificar gradientes de densidad, movilidad y actividad urbana, desde el entorno más denso del mercado hasta los bordes residenciales. A partir de esta clasificación se definen distintos tipos de bloques, que orientan las intervenciones de acuerdo con las características de cada sector y favorecen la conectividad, la cohesión social y la regeneración urbana.

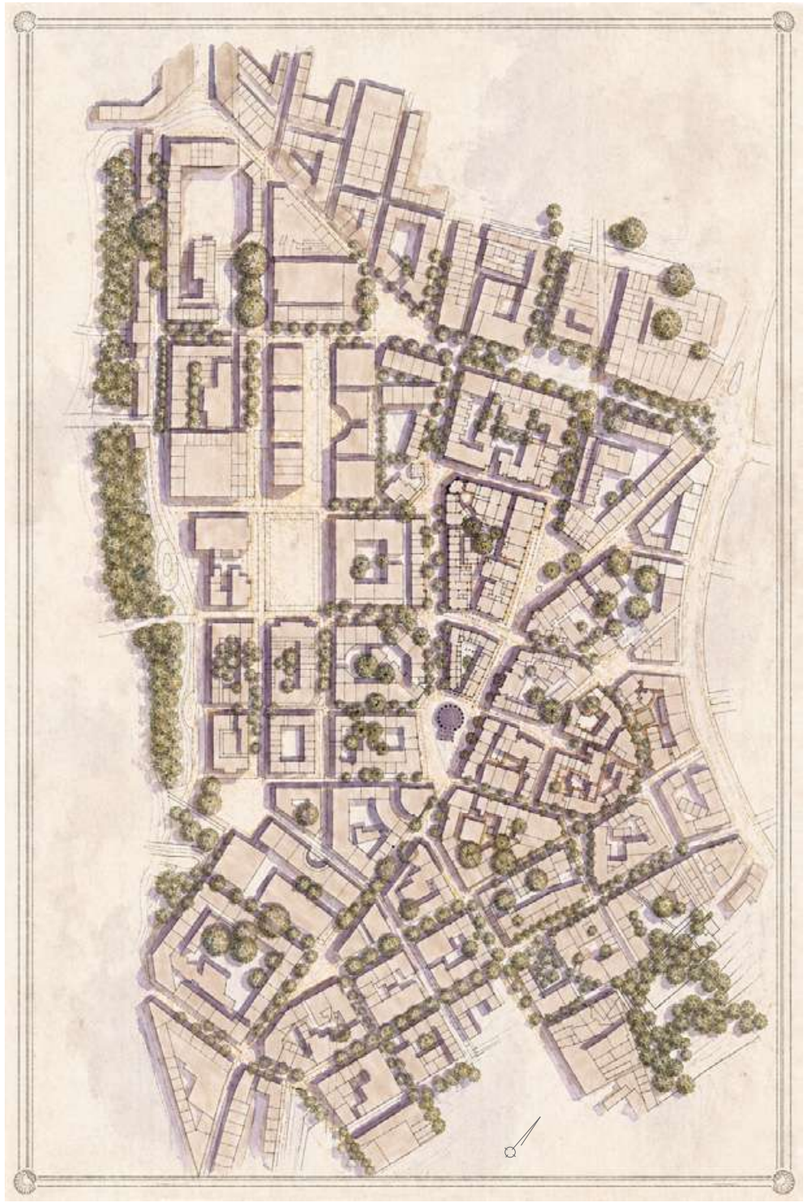
Los bloques se clasifican según ese "transecto urbano" en cuatro categorías:

- T6 – Armazón de la ciudad: bloques de mercado de alta densidad, destinados principalmente a usos comerciales.
- T5 – Armazón del pueblo: bloques de uso mixto que integran comercio, vivienda y equipamientos cívicos.
- T4 – Vecindario: agrupaciones de bloques residenciales orientadas a reforzar la conectividad y la cohesión social.
- T3 – Urbano: bloques preexistentes y espacios verdes donde las intervenciones priorizan la restauración ecológica y la mejora del espacio público.

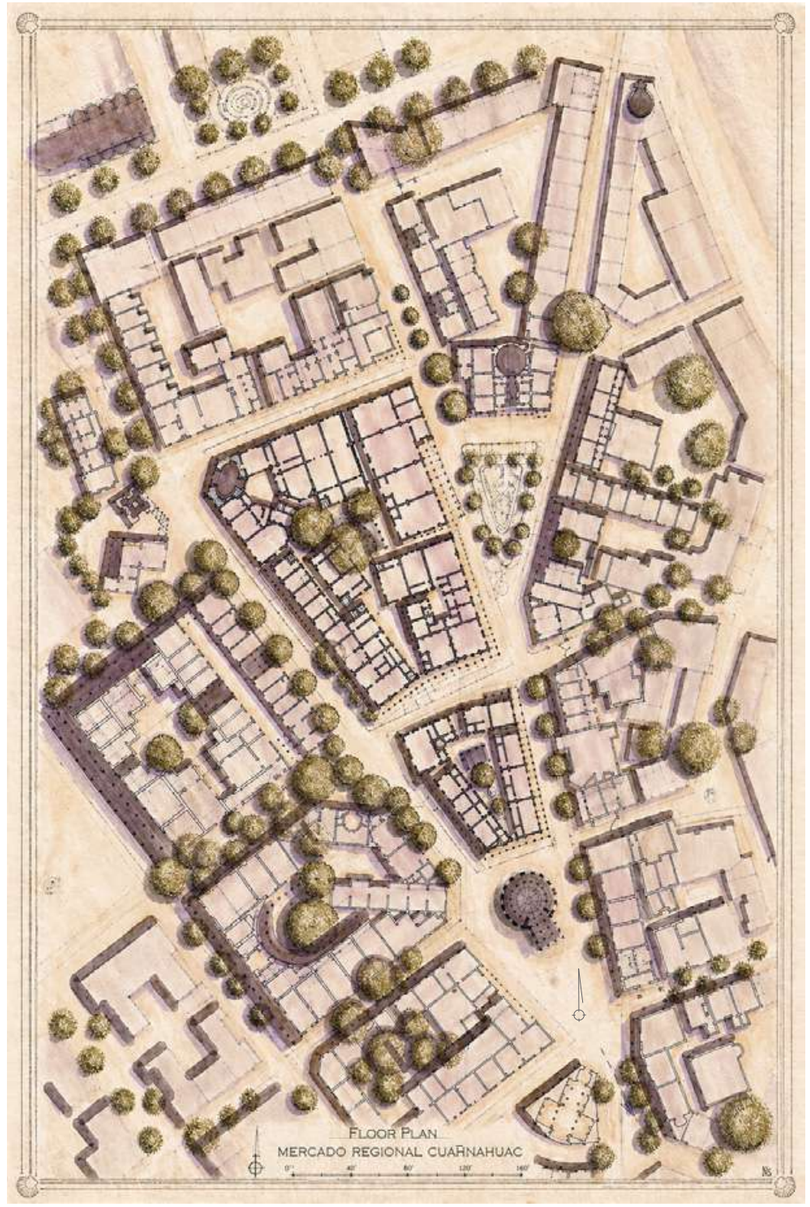
Desde el centro más denso, en torno al mercado, hasta los bordes residenciales, el transecto permite identificar las áreas de mayor intensidad urbana y equilibrar la densidad, la movilidad y la vida cívica.

Plan Maestro de Cuauhnáhuac como síntesis de la propuesta urbana.





Plan Maestro del entorno del Mercado Adolfo López Mateos con el desarrollo detallado del área de intervención.



Plan Maestro de la propuesta para el zócalo como principal espacio cívico.

Tipología de bloques

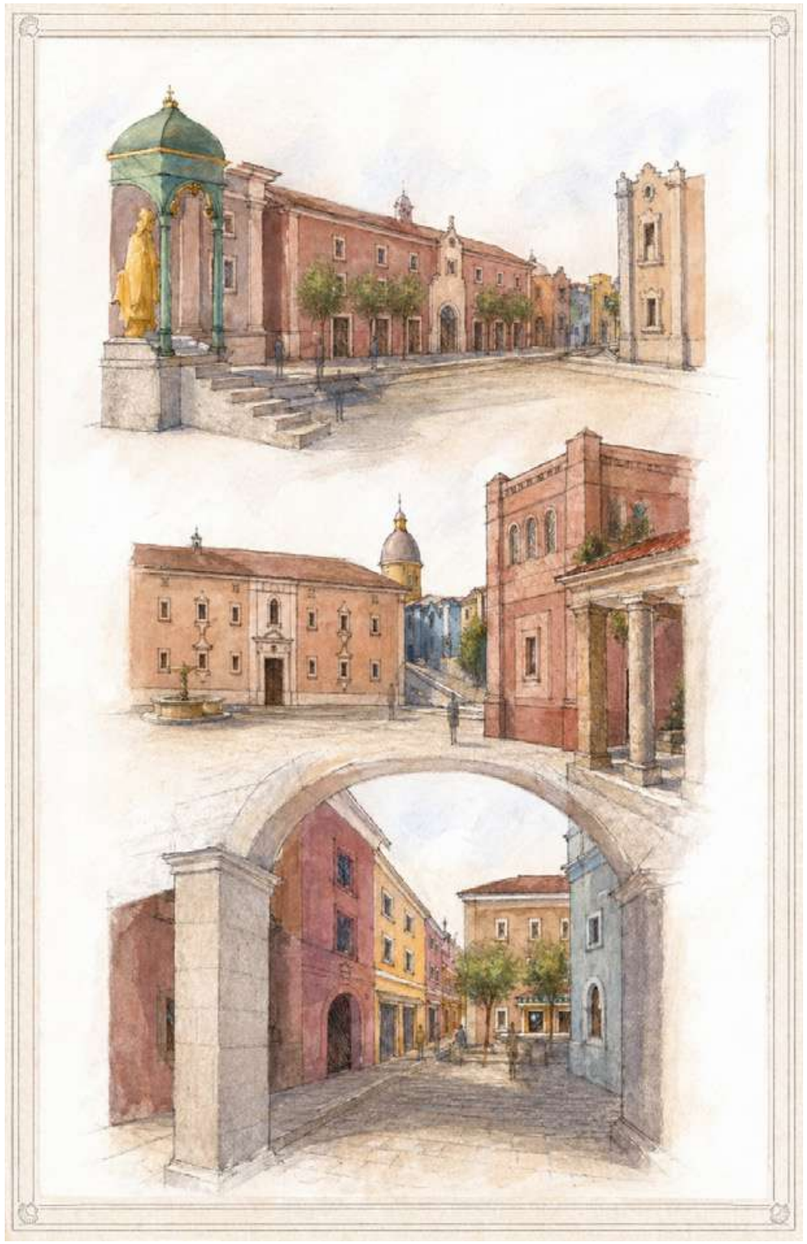
- T6 – Bloques de densificación (*infill*) del mercado: bloques de alta densidad situados en el entorno del mercado, cuya intervención prioriza la reorganización de los usos y la mejora de la circulación.

- T5 – Bloques compuestos: bloques de uso mixto que combinan vivienda, comercio y equipamientos cívicos.

- T5 – Bloques de mercado: bloques con una intensa actividad comercial, concebidos para mejorar el funcionamiento del mercado y la movilidad peatonal.

- T4 – Agrupaciones de bloques: conjuntos de bloques de menor tamaño organizados en torno a espacios compartidos.

- T4 – Bloques tipológicos: bloques que responden a una tipología urbana común y contribuyen a mejorar la legibilidad y la conectividad del tejido urbano.



Viñetas que ilustran la experiencia cotidiana propuesta para el nuevo espacio urbano.

- T3 – Bloques complejos preexistentes: tejidos residenciales históricos de trazado orgánico, adaptados a la topografía y a la evolución del asentamiento.
- T3 – Superbloques subdivididos: grandes manzanas reorganizadas para mejorar la circulación y la permeabilidad interior.
- T3 – Bloques verdes: bloques que integran patios, jardines y otros espacios verdes.

Características del proyecto

Los edificios y las calles se adaptan a la pendiente natural del terreno, mientras que rampas, escaleras y puentes garantizan recorridos continuos y accesibles. El comercio se concentra en las plantas bajas, mientras que los espacios cívicos y culturales se sitúan en los niveles superiores, lo que establece una relación visual y funcional entre las plazas, los corredores, los patios y el mercado. Esta organización contribuye a reforzar la seguridad, favorecer la interacción social y consolidar la continuidad del espacio público.

Calles cubiertas y patios interiores crean microclimas confortables, mientras que la distribución de los locales favorece un uso continuo del espacio y refuerza la identidad cultural del conjunto. La conexión del zoco con el mercado y los barrios circundantes mejora la integración urbana y convierte el recorrido cotidiano en una experiencia más segura y atractiva.

Las conexiones peatonales enlazan la Catedral con otros edificios religiosos y plazas, lo que permite articular los mercados, los patios y los espacios públicos en una red continua. Esta estructura pone de manifiesto la relación entre la topografía, las barrancas, las calles y el patrimonio histórico, reforzando la identidad urbana, mejorando la accesibilidad y aumentando la seguridad. De este modo, la propuesta aspira a recuperar los valores que hicieron de Cuernavaca la Ciudad de la Eterna Primavera.

Conclusión

El Plan Maestro para Cuauhnáhuac trasciende el ámbito del diseño urbano y plantea una estrategia para recuperar la vida cívica, reforzar la identidad urbana y favorecer la cohesión social. La propuesta reivindica el papel de las plazas, los mercados, los corredores peatonales y los espacios verdes como lugares de encuentro, donde la población pueda caminar, relacionarse y desarrollar la vida cotidiana en condiciones de seguridad.

Secciones transversales que muestran la relación entre el espacio público y la edificación.





Secciones longitudinales que ilustran la continuidad espacial de los principales ejes urbanos y secciones del zoco para el estudio de sus proporciones y límites espaciales

Cada intervención, desde la reestructuración del mercado hasta la reorganización de los bloques residenciales y el zoco, busca recuperar la memoria histórica, revitalizar la vida urbana y mejorar las condiciones de seguridad y cohesión social. Mediante la colaboración entre las instituciones públicas, el sector privado y la comunidad, este plan demuestra que los principios del urbanismo tradicional pueden contribuir a que Cuernavaca recupere los valores que hicieron de ella la Ciudad de la Eterna Primavera, y así integrar el patrimonio, el espacio público y la vida cívica en una visión compartida de futuro.

Recordar Cuauhnáhuac significa reconocer que las ciudades históricas contienen un conocimiento espacial acumulado a lo largo de los siglos. Este legado se refleja en la forma en que calles, plazas y edificios se organizan para dar soporte a la vida social y cultural de la comunidad.

La experiencia de Cuernavaca demuestra que el urbanismo tradicional no constituye una expresión de nostalgia por el pasado, sino una fuente de principios capaces de responder a los desafíos urbanos contemporáneos. Recuperar la lógica espacial de Cuauhnáhuac permite reconstruir espacios cívicos significativos y fortalecer la cohesión social, lo que permite ofrecer un marco valioso para repensar el futuro de las ciudades latinoamericanas. Desde esta perspectiva, la historia, la cultura y la vida pública vuelven a integrarse en un modelo urbano más humano y sostenible.

Biography | Biografía | Biografia

Nadia Samir Rincón

Nadia Samir Rincón es arquitecta y urbanista mexicana, especializada en arquitectura clásica y urbanismo tradicional. Es presidenta de INTBAU México y ha colaborado con Fairfax & Sammons Architects y Hamady Architects, además de participar en iniciativas de CSCA Cambridge y la Fundación Culturas Constructivas Tradicionales. Obtuvo un Máster en Diseño Urbano por la Universidad de Notre Dame, donde recibió el Dean's Award for Excellence in Urbanism, y es licenciada en Arquitectura y Arquitectura del Paisaje por la Universidad La Salle Cuernavaca. Es autora del proyecto *Cuauhnáhuac: Ciudad de la Eterna Primavera*, una propuesta de regeneración urbana basada en los principios del urbanismo tradicional. Este proyecto ha sido presentado en el Congreso Mundial de INTBAU, el Foro Otlichno de Moscú, el Congreso Internacional organizado por la Fundación Culturas Constructivas Tradicionales en Écija y ante la comunidad local. También ha sido seleccionado para su presentación en el Congreso para el Nuevo Urbanismo celebrado en Arkansas.

Karim Hayat

Reading the Campus: Leslie-Jones House and Architectural Continuity at Aitchison College in Lahore

Leer el campus: La Leslie-Jones House y la continuidad arquitectónica en el Aitchison College de Lahore

Análise do campus: A Leslie-Jones House e a continuidade arquitetónica no Aitchison College em Lahore

Abstract | Resumen | Resumo

Through a study of Leslie-Jones House, one of the historic boarding houses at Aitchison College in Lahore, this essay examines the relationship between architecture, campus planning, and institutional identity. Referring to measured drawings, site observation, and historical research, it argues that the college's character emerges not just from individual buildings but from continuity in architectural language, campus landscape, and social spaces. It reflects on the role of traditional architecture in contemporary campus development and considers how future interventions might build upon Aitchison's inherited character while accommodating changing needs.

Mediante el estudio de la Leslie-Jones House, una de las residencias históricas del Aitchison College, en Lahore, este artículo estudia la relación entre la arquitectura, la planificación del campus y la identidad institucional. A partir de levantamientos arquitectónicos, observaciones realizadas in situ e investigación histórica, sostiene que el carácter del colegio no deriva únicamente de sus edificios, sino también de la continuidad de su lenguaje arquitectónico, la configuración del campus y sus espacios de convivencia. Se reflexiona sobre el papel de la arquitectura tradicional en el desarrollo contemporáneo del campus y sobre cómo las futuras intervenciones pueden apoyarse en el carácter heredado del Aitchison College y, al mismo tiempo, responder a nuevas necesidades.

Através de um estudo da Casa Leslie-Jones, uma das residências históricas do Aitchison College, em Lahore, este artigo analisa a relação entre a arquitetura, o planeamento do campus e a identidade institucional. Com base em levantamentos arquitetónicos, observação no local e investigação histórica, defende que o caráter da faculdade emerge não apenas dos edifícios individuais, mas da continuidade da linguagem arquitetónica, da paisagem do campus e dos espaços sociais. Reflete sobre o papel da arquitetura tradicional no desenvolvimento contemporâneo do campus e analisa como futuras intervenções poderão valorizar o caráter herdado do Aitchison, ao mesmo tempo que se adaptam às necessidades em constante mudança.

The character of an institution is rarely contained in a single building. It emerges through decades of construction, occupation, adaptation, and memory. Buildings are added, landscapes mature, traditions take root, and before long an array of structures becomes something more than the sum of its parts. This process is often so gradual that it passes unnoticed, yet over time it produces that most elusive of architectural qualities: a sense of place.

Aitchison College in Lahore is one such institution. Its character resides in the relations between the old house buildings and their settings, in the scale of its avenues, the rhythm of verandahs and facade features, and the generous spaces between buildings. Like musicians in an orchestra, each component plays a part and together they produce a recognizable harmony.

While preparing a measured drawing of Leslie-Jones House (Fig. 1), I found myself returning to a broader question: what is it that makes Aitchison feel like Aitchison? Is it the architecture of the houses themselves, their scale and materiality, or something less tangible that emerges from their arrangement in the campus-scape?

Reading the Campus

Measured drawing is often seen as a method of documentation, a record of structures "as found," yet it also says much about traditions and circumstances. To measure a building is to observe its proportions, its composition, and its relation to its surroundings, allowing one to infer the decisions that shaped it and the architectural culture from which it emerged.

While institutional buildings attract most attention, it is often domestic architecture, such as Leslie-Jones House, that says most about campus life. The old Aitchison house buildings were conceived as residences for study, recreation, and community, and remain the heart of collegiate life.

The boarding house is a prominent type in collegiate architecture. On studying a house's plan, one perceives patterns of habitation, social relationships, and former standards of comfort. And at a time when universities continue to expand and the demand for residential accommodation is pressing, these buildings offer lessons for today.

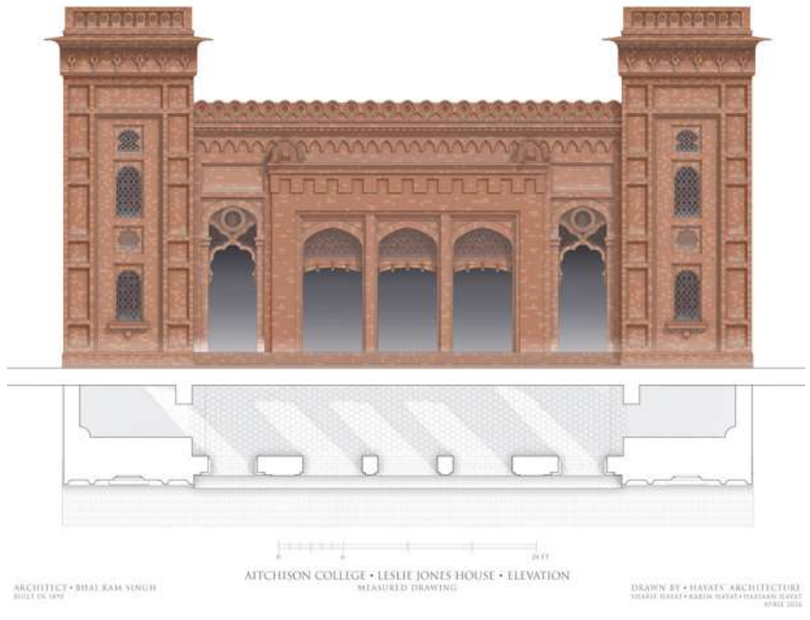


Figure 1. Measured drawing of Leslie-Jones House as part of a study of the architectural history of Aitchison College, 2026 (HARCH)



Figure 2. Forecourt of Leslie-Jones House, showing its U-shaped arrangement, 2026 (Sharif Hayat)

Constructed in the college's formative years, Leslie-Jones House is a piece of Lahori architectural heritage. The building is commonly attributed to Bhai Ram Singh, one of the most accomplished architects working in the Punjab at the turn of the twentieth century, and the bricks used in it are thought to have been supplied by Sir Ganga Ram. Together, these figures shaped much of the architectural landscape of colonial Lahore, and their influence endures.

The house is organized around a neatly composed central block flanked by wings, creating a forecourt that mediates between architecture and landscape. This arrangement has a long lineage. Variations of the forecourt plan appear in Parisian *hôtels particuliers*, country houses, and institutional buildings, where it establishes order and hierarchy. At Aitchison, the principle is adapted to a collegiate setting, producing an environment that is at once formal and convivial (Fig. 2).



Figure 3. Collaborative on-site measurement and sketching (Sharif Hayat)



Figure 4. Arrangement of courtyards on the campus (Sharif Hayat)

Measurement Process

Measurement revealed a design that is simple yet orderly. The rhythm of the facade, the spacing of columns, the depth of verandahs, the proportions of openings, and even the size of the bricks contribute to a coherent architectural composition. Moreover, drawing and measurement highlight features that can go unnoticed (Fig. 3).

There is discipline behind the facade's apparent informality, with strictly ordered bays, verandahs proportioned for ample shade, and openings in an elevation grid that is instantly recognizable. The small bricks, detailed latticework, and restrained ornamentation all speak of a period in which craftsmanship remained inseparable from architecture. These are not decorative additions to an otherwise complete building but elements of architectural language.





Figure 5. The former boxing ring and canteen (left), a social node connecting residential and academic life, 2019, and the site following the construction of Shirazi House (right)

Many of these characteristics belong to the Indo-Saracenic tradition that flourished in British India in the late nineteenth century. In the hands of architects such as Bhai Ram Singh, local building traditions, craft practices, climatic considerations, and principles of architectural composition were ably combined. Without rejecting classical order or replicating indigenous precedent, the style was a synthesis capable of responding to the realities of the subcontinent while retaining architectural discipline.

Character of the Campus

Our measured study of Leslie-Jones House could not overlook that the boarding house precinct was never conceived as a series of isolated structures. Arranged along a campus thoroughfare, the houses form a sequence connected by avenues, courtyards, playing fields, and shared spaces (Fig. 4). The road itself is a social artery, linking boarding houses with classrooms, dining halls, and informal gathering places.

Equally important are the spaces between buildings. These were intended not as plots awaiting development or ornamental landscapes but as part of campus life, providing opportunities for interaction and in many respects as significant as the buildings themselves.



Figure 6. Vanderbilt University Residential College Master Plan, 2003–2024. New collegiate buildings designed as continuations of the Vanderbilt Gothic tradition while accommodating contemporary requirements (Steve Hall and David M. Schwarz Architects)

A memorable example is the former boxing ring situated between Leslie-Jones House and Godley House by the academic blocks (Fig. 5). Originally a venue for athletics and competition, the structure was later adapted as a canteen. Architecturally, it lacked interest. Its significance lay in its position and use. At the intersection of residential and academic life, it became a natural point of convergence as students passed through it, gathered there between lessons or after sports, and hung out in it. Over time it acquired a social value that cannot be designed, emerging through patterns of use.

Thus future development on historic campuses should add buildings that continue a tradition. The finest collegiate environments have grown up through continuity rather than rupture, as each generation inherits an architectural language, adapts it to contemporary needs, and in turn passes it on. The result is a campus that evolves over time with a coherent identity (Fig. 6).

This principle should apply in places such as Aitchison College, where architectural character has accumulated over more than a century. The task of our generation is not to invent a new language for the campus but to understand the existing one and contribute to it with conviction. The best additions to a historic institution are often those that appear as new chapters of an existing story.

Building Upon What Exists

Aitchison College and its campus will continue to evolve as new boarding houses are required and new academic facilities needed, and future generations leave their mark. The question is how.

Good examples can be found in collegiate developments of recent decades, where universities under pressure to expand have demonstrated that architectural continuity and institutional growth need not be at variance. At Yale, Vanderbilt, Notre Dame, and elsewhere, architects have shown that contemporary educational requirements need not be met at the expense of architectural continuity (Fig. 7). In collegiate work by architects such as Robert A. M. Stern, residential colleges, academic buildings, and campus extensions have been unmistakably contemporary in construction, infrastructure, and performance, while remaining rooted in architectural context, continuing an existing conversation.

This is the lesson of traditional architecture. It is not a style but a language, developed through use, inheritance, and adaptation. Each generation receives a vocabulary from those who came before and adds something of its own before passing it on. The resulting environment acquires a continuity that cannot be manufactured as new.

The great collegiate campuses were thus created not by singular acts of inspiration but gradually by successive architects working within a tradition. One often struggles to determine where one architect's work ends and another's begins, even with buildings separated by decades or centuries.



Figure 7. Yale Residential Colleges, Pauli Murray College & Benjamin Franklin College, 2017. These facilities expand Yale's undergraduate capacity by 15% and are the first new residential colleges built on campus since 1962 (Robert A.M. Stern Architects)

Robert A.M. Stern, former dean of the Yale School of Architecture, agrees that urban coherence relies on continuity rather than disruption:

> *I do believe that architecture is a conversation across time. While every young architect and every young generation of architects thinks they have to break the mold, you cannot really create coherent cities, or campuses for that matter like Yale, if every building is the representative of its own unique moment and its own self-invented set of principles and language* (Chaban 2007).

The significance of these projects lies in their stylistic unity and their acceptance of architectural continuity as a cultural responsibility. Their success demonstrates that continuity provides the precedent through which meaningful and enduring additions can be made.

Measured against this standard, recent development at Aitchison raises questions regarding architectural continuity and campus planning. Several additions, though serviceable, are difficult to reconcile with the language and logic that shaped this precinct. Their scale, massing, materiality, and relation to surrounding buildings often suggest an architecture conceived in isolation rather than as part of a larger composition. The result is visual discontinuity and a weakening of the spatial relationships that give the campus its coherence and identity (Fig. 8).

The issue is not simply one of design. More significant are the planning decisions that precede these interventions. The removal of long-established social spaces, leaving residual landscapes with little discernible purpose, can weaken the connections between residential, academic, and social life. In the case of Shirazi House, the precedence given to the new building led to the removal of the former boxing ring and canteen, erstwhile social venues, replacing a center of student life with a largely lifeless forecourt expanse. The former structure, whatever its architectural limitations, possessed something that cannot easily be replaced: its role as a haunt of generations of students. Its significance emerged through use and tradition. Such places are cultural infrastructure no less than campus buildings, with value residing not in architectural distinction but in the life they sustain. Collegiate life depends upon a network of formal and informal spaces, and historic campuses derive much of their character from these patterns of use, where architecture provides a setting and generations of users give it meaning.

The challenge for future development is therefore not merely architectural but institutional. Aitchison boasts a remarkable inheritance: a coherent campus, a recognizable architectural identity, and a tradition of collegiate planning. Our generation's task is to develop that inheritance with ongoing care and conviction (Fig. 9).



Figure 8. Shirazi House, Aitchison College. A recent addition to the house precinct, illustrating the challenges of introducing new development in a historically coherent campus, 2026 (Sharif Hayat)





Figure 9. Architectural details on the historic campus: the college gurdwara and ribbed brickwork with a cornice, 2026 (Sharif Hayat)

Felicitous additions to Aitchison will not be those that seek distinction through novelty or that reinvent the campus but those that allow for the language already present, draw upon precedent, reinforce urban relationships, and extend existing character. Like the finest collegiate developments of recent decades, they will feel less like interventions than accretions, not imported but inevitable, not interruptions but continuations of a story.

> *We are only trustees for those that come after us* (Morris 1889).

Figure 10. Speculative infill proposal exploring how future development in the house precinct might reaffirm the existing architectural language, urban relationships, and social life, 2026 (HARCH)





Figure 10. Speculative infill proposal exploring how future development in the house precinct might reaffirm the existing architectural language, urban relationships, and social life, 2026 (HARCH)

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Biography | Biografía | Biografia

Karim Hayat

Karim Hayat is an architectural designer and co-founder of HARCH|Hayats' Architecture, a Lahore-based practice with a classical focus. He received his Bachelor of Architecture from the National College of Arts, Lahore, attended by several generations of his family. He comes from a lineage of furniture makers, craftsmen, and interior designers whose work has engaged with the traditions of regional craft and European classical art. His professional and research interests center on classical architecture and the continuity of architectural knowledge in contemporary practice. His recent research has examined the architectural heritage of Lahore, including Lawrence Gardens and Donald Town. Alongside practice, he pursues interests in traditional woodworking and historical manufacturing.

Miguel Sobrino González

Iron and Stone: Sculptural Structures on the Puerta de Alcalá Gate in Madrid

Hierro y piedra: Estructuras escultóricas en la Puerta de Alcalá de Madrid

O Ferro e a Pedra: Estruturas escultóricas na Porta de Alcalá, em Madrid

Abstract | Resumen | Resumo

The restoration of the Puerta de Alcalá gate in 2023 allowed a detailed study of the structural systems employed in its monumental sculptural ensembles, executed in limestone and containing numerous iron elements. The analysis revealed various metal cramps, clamps, ties, and brackets forming part of the original solutions designed to stabilize the ensembles, some consisting of large blocks and considerably cantilevered. The article describes these systems, especially complex in the warriors' panoply and the figure of Fame, and details the criteria followed in their restoration. It also outlines the shoring devised during the works and highlights the relevancy of traditional techniques and materials in suitably apprehending, preserving, and restoring such monumental sculptural heritage.

La restauración de la Puerta de Alcalá realizada en 2023 permitió estudiar con detalle los sistemas constructivos de sus grandes conjuntos escultóricos, realizados en piedra caliza y dotados de numerosos elementos de hierro. El análisis reveló que muchas grapas, tirantes, abrazaderas y soportes metálicos formaban parte de las soluciones originales concebidas para garantizar la estabilidad de las esculturas, algunas compuestas por grandes bloques y con importantes voladizos. El artículo describe estos sistemas, especialmente complejos en las panoplias y en la figura de la Fama, y explica los criterios seguidos durante su restauración. Asimismo, aborda los apeos provisionales diseñados durante los trabajos y destaca la vigencia de técnicas y materiales tradicionales para comprender, conservar e intervenir adecuadamente en este patrimonio escultórico monumental.

A restauração da Porta de Alcalá, realizada em 2023, permitiu estudar em pormenor os sistemas construtivos dos seus grandes conjuntos escultóricos, executados em calcário e dotados de numerosos elementos de ferro. A análise revelou que muitos grampos, tirantes, braçadeiras e suportes metálicos faziam parte das soluções originais concebidas para garantir a estabilidade das esculturas, algumas das quais compostas por grandes blocos e com beirais significativos. O artigo descreve estes sistemas, especialmente complexos nas panóplias e na representação da Fama, e explica os critérios seguidos durante a sua restauração. Aborda ainda os sistemas de escoramento provisórios concebidos durante os trabalhos e destaca a relevância das técnicas e materiais tradicionais para compreender, conservar e intervir adequadamente neste património escultórico monumental.



Figura 1. Puerta de Alcalá, frente oriental (Ayuntamiento de Madrid)

A lo largo de 2023 se llevó a cabo la restauración de la Puerta de Alcalá (Fig. 1), erigida en Madrid entre 1764 y 1766 por el arquitecto palermitano Francesco Sabatini y definida por Fernando Chueca Goitia como "el mejor arco de triunfo de la Europa moderna" (Chueca Goitia 2001: 566). Dentro del programa dieciochesco de renovación de las entradas a la ciudad, la Puerta de Alcalá servía como acceso monumental por el este y sucedía, en el mismo emplazamiento, a otras puertas más antiguas y de menor empaque. Antes de que el casco urbano creciese en esa dirección y dejase la Puerta en una posición central y ya puramente simbólica, su papel como hito del frente urbano resultaba evidente para quien llegaba a Madrid desde Aragón (Fig. 2). Su denominación proviene de Alcalá de Henares, el núcleo de importancia más próximo a Madrid en esa dirección.[1] Aunque son algo anteriores a la construcción de la actual Puerta, las *Memorias* de Giacomo Casanova describen bien el papel de aduana o portazgo que tenía este punto de la ciudad para los viajeros que llegaban a ella (Casanova 1986: 18).



Figura 2. *Madrid desde el noroeste,* Alfred Guesdon, 1854

La Puerta de Alcalá había sido restaurada anteriormente en varias ocasiones, en las que las tendencias de cada momento aconsejaron incorporar materiales y soluciones de nuevo cuño que sirvieron como remedios provisionales, pero a costa de aumentar la degradación del monumento a largo plazo. Aparte del uso de cemento Portland, presente en estas intervenciones, la decisión de impermeabilizar la cubierta con fibra de vidrio impedía la transpiración del monumento y convertía las esculturas –de piedra caliza y únicos elementos de la coronación no sellados– en auténticas "chimeneas" para la evaporación de la humedad acumulada en el interior de la construcción.

Estos materiales –adoptados con la mejor intención y de acuerdo con las pautas de cada época, pero que con el tiempo se han demostrado perjudiciales– se sumaban a las condiciones adversas impuestas por el entorno, como la contaminación, las vibraciones provocadas por el tránsito de vehículos y el paso por el subsuelo del túnel de la línea 2 del Metro de Madrid, y contribuían a empeorar el estado de conservación de las esculturas. De hecho, la caída de un fragmento pétreo de una de ellas fue lo que condujo, con carácter de urgencia, a acometer una restauración completa y ambiciosa del monumento. El fragmento, perteneciente al ala derecha de la figura de la Fama, resultó ser parte de una reposición llevada a cabo, probablemente, a mediados del siglo XX. Así, la intervención de 2023, reconocida posteriormente con un Premio Europa Nostra, se basó sobre todo en la voluntad de recuperar, en la medida de lo posible, los sistemas y las técnicas originales, que, al fin y al cabo, son los que han demostrado una mayor compatibilidad y perdurabilidad.[2]

En esta última intervención, tuve la fortuna de participar como escultor dentro del amplio equipo de restauración de Petra S. Coop. –liderado por Mercedes Sagredo, Dolores Sanz e Isabel Cubillas y responsable de restauraciones tan señaladas como la del Pórtico de la Gloria de la catedral de Santiago de Compostela–, encargado de restaurar los grandes grupos escultóricos de la parte superior de la Puerta. Si bien la construcción fue levantada en su mayor parte con granito, los elementos que exigían mayor finura de labra (esculturas, relieves, capiteles…) fueron realizados en caliza de Colmenar de Oreja, una combinación de materiales que produce un bicromatismo muy reconocible y que llegó a ser característico de la arquitectura monumental madrileña. Esta combinación es frecuente en los grandes edificios del Setecientos en Madrid (Palacio Real, Museo del Prado…), pero su origen es anterior: aunque con una piedra distinta de la de Colmenar, la combinación de caliza y granito puede encontrarse en ejemplos tan antiguos como la portada de la casa de los Lujanes o la del hospital de La Latina (Sobrino 202: 94-107).

Primera exploración

Mi cometido dentro del equipo restaurador era, en principio, diseñar los apeos provisionales de los conjuntos escultóricos y llevar a cabo las piezas e injertos en piedra natural que se considerasen necesarios, así como estudiar dichos conjuntos para contribuir a su mejor conocimiento. Fue esta última tarea la que terminó cobrando mayor relieve, dado que las esculturas de la Puerta resultaban fascinantes desde el punto de vista artístico, pero también –aunque esto último apenas había sido advertido– por sus recursos técnicos.

Al iniciarse la exploración de las esculturas, ya con los andamios montados, nos sorprendió la cantidad de elementos metálicos que poseían. Aunque cada vez hay más estudios sobre el antiguo uso del hierro estructural (Zaragozá y Marín 2017), el primer impulso llevaba a pensar que tales elementos se debían en buena parte a remiendos y reparaciones posteriores, postizos que habían podido solventar en su día problemas sobrevenidos, pero que debían ser retirados siempre que fuese posible. Así lo expresaba el texto del informe previo ("Se retirarán todos aquellos elementos [metálicos] que se consideren"; "Durante la intervención se deberá valorar la idoneidad o no de retirar estos elementos en función del daño que ocasionan al material pétreo y su funcionalidad"), documento que sirvió de base para la redacción del proyecto de restauración de la Puerta (VV. AA. 2022: 221). Sin embargo, si bien era evidente que algunas grapas y vástagos metálicos habían sido añadidos en fechas recientes, un examen atento revelaba que otros eran tan antiguos como la propia Puerta y respondían, en fin, a los planes tanto del arquitecto como de los escultores –Francisco Gutiérrez y Roberto Michel– que en la segunda mitad del siglo XVIII lo acompañaron en la empresa.[3] Por eso, en la adjudicación de las obras, en 1769, se incluyen "grapas y gatillos de fierro" entre los materiales que habría de aportar el contratista (Rodríguez 1993: 414).

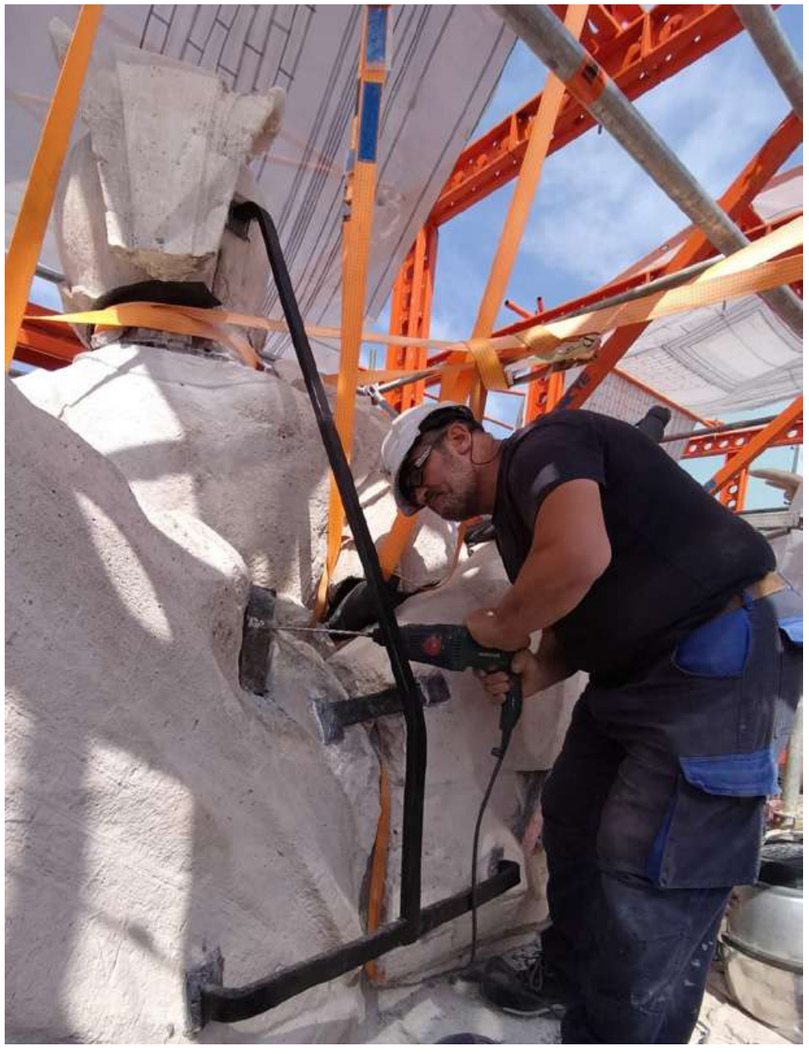


Figura 3. Chago Martínez repasa los refuerzos de hierro fijados con plomo (Petra S. Coop.)

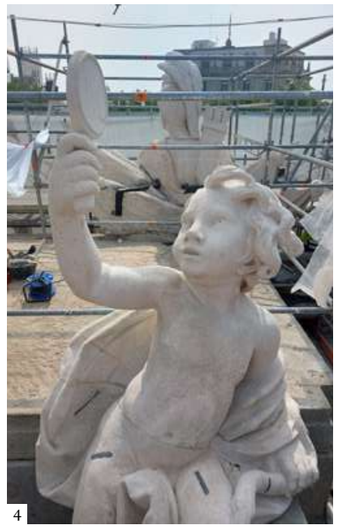
La abundante presencia de hierro en la Puerta de Alcalá hizo que el papel de los herreros fuese, en esta última restauración, de la máxima importancia. El trabajo de los tres excepcionales artesanos encargados de estas labores (Chago Martínez Otero, Thomas Mink y Miguel Ángel Martínez Luque) fue de gran complejidad y hubo de resolverse caso por caso: si en unas esculturas bastaba con dar el tratamiento adecuado a los hierros existentes, en otras debían sustituirse las piezas degradadas o suplementarse con otras nuevas; en estos casos, Chago Martínez utilizó hierro forjado antiguo para garantizar su compatibilidad. En todos los casos se limpiaron y renovaron los encuentros entre las piezas férreas y la piedra mediante la solución tradicional: plomo que evita el contacto directo entre ambos materiales y sirve de amortiguador frente a las vibraciones y los movimientos producidos por los cambios de temperatura (Fig. 3). Durante los trabajos, estos profesionales montaron hornos para fundir *in situ* el plomo y verterlo mediante bebederos, un proceso que debe realizarse en caliente, para después repasarlo y batirlo.

Un principio fue asentándose a medida que avanzábamos en el conocimiento de los grupos escultóricos de la Puerta de Alcalá: "cuando no se trata de un monolito, sino que está conformada por un conjunto de piezas (algunas de gran peso y tamaño), una escultura es, también, una estructura" (Sobrino en Fominaya, Mora y Sandstede 2025: 230) y, como tal, debe ser analizada y consolidada (Aroca 2025). En los conjuntos que coronan la Puerta –la figura de la Fama, seis grandes panoplias (cuatro erguidas y dos recostadas) y cuatro virtudes encarnadas en figuras infantiles–, algunas piezas forman además voladizos y otros volúmenes que comprometen la estabilidad del conjunto.

Figura 4. Alegoría de la Prudencia (Alejandro García Hermida)

Figura 5. Dorso de la panoplia número 11

Figura 6. Croquis del despiece de las panoplias 10 y 11



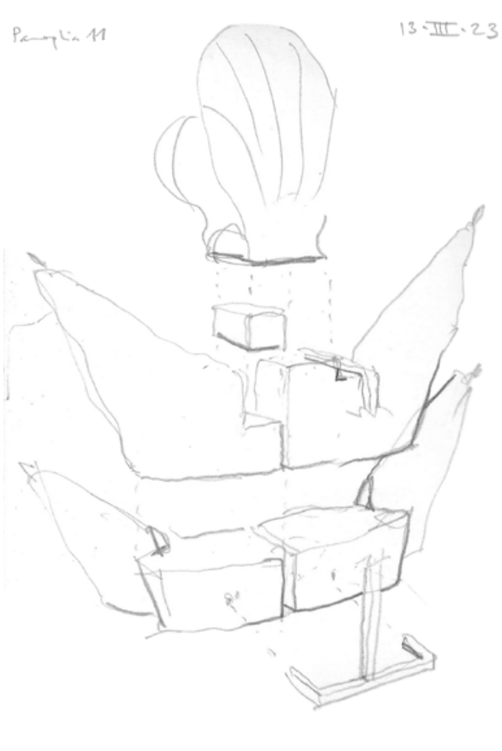
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El presente artículo pretende describir brevemente los sistemas, algunos muy ingeniosos, empleados en la constitución de esas sorprendentes estructuras que se yerguen, a modo de ornatos escultóricos, en la coronación de la Puerta. El texto termina con algunas apreciaciones de carácter técnico que acaso puedan servir a quienes tengan la ocasión de afrontar obras de restauración semejantes a esta.

Virtudes y panoplias

El ático de la Puerta está coronado por ocho grupos escultóricos. Los cuatro que miran hacia oriente son figuras infantiles que representan virtudes (Fig. 4); desde el punto de vista técnico, son las piezas menos interesantes, ya que en todos los casos están compuestas por dos grandes bloques superpuestos, con el lecho intermedio situado a la altura del abdomen. Lo más singular es que este lecho no es horizontal, sino que está inclinado hacia el interior de la Puerta, quizá para evitar vuelcos hacia la calle. Parece reforzar esta idea el hecho de que dos de los *putti* (los más cercanos al cuerpo central) estuviesen anclados por la espalda mediante grandes grapas de hierro. El brazo derecho y la cabeza de la figura situada más al sur son reposiciones decimonónicas, aunque desconocemos la razón por la que se perdieron esas partes de la escultura original. Algunas personas del equipo atribuían estas pérdidas a los efectos de una explosión durante las guerras napoleónicas, pero resultaría extraño que una explosión hubiese arrancado un brazo y la cabeza de una estatua sin causar daños en su entorno. Como ejemplo de una puerta del Setecientos afectada por las armas de fuego durante ese mismo conflicto, puede observarse el estado en que quedó, y en el que todavía se conserva, la Puerta del Carmen de Zaragoza.

Figura 7. Dorso de la panoplia número 10



Mucho más complejas son las cuatro enormes panoplias que miran intramuros, hacia el frente occidental, y que representan, según el modelo clásico, conjuntos de armas arrebatadas al enemigo y sostenidas por un mástil o tronco para su exposición y subasta (la palabra "subasta" viene de esa antigua costumbre, por la que las armas eran colocadas bajo un palo o asta para ser repartidas entre los miembros del ejército vencedor). Aunque el motivo procede de la antigua Roma, es curioso comprobar que algunos elementos lo actualizan, como el sable y el turbante, que señalan todavía la vigencia, desde el otro extremo del Mediterráneo, de la amenaza otomana. Para no crear confusión respecto a la documentación manejada durante las obras, nombraré estas panoplias según la numeración asignada dentro del conjunto escultórico de la Puerta: de norte a sur, serán las número 10, 11, 12 y 13.

Lo más sorprendente de las cuatro panoplias del ático es que, pese a ser relativamente similares, presentan soluciones muy diferentes entre sí en su despiece, pues su enorme tamaño obliga a que estén compuestas por cierto número de bloques. Esto se evidencia al comparar las panoplias número 10 y 11: en la primera, el conjunto del abdomen y los estandartes está constituido en forma de abanico; en la segunda, los bloques se superponen mediante simples lechos horizontales, como los sillares de un muro megalítico (Fig. 6). En la número 10, la disposición de las piezas y el voladizo que estas forman comprometen su equilibrio, ya que por naturaleza tienden a abrirse: están concebidas como las dovelas de un arco, pero, al encontrarse tumbadas, no trabajan por compresión, como lo harían si estuviesen dispuestas en vertical, sino que tienden a separarse, favorecidas por el voladizo de los estandartes. La solución para este "arco yacente" consiste en añadir elementos que absorban los esfuerzos de tracción: esto se logra mediante tirantes diagonales de hierro que consiguen que las distintas piezas trabajen de manera solidaria. El peso del torso y el casco, asentados sobre la principal de estas "dovelas", contribuye a la estabilidad del conjunto (Fig. 7).

En la panoplia número 12, compuesta por piezas superpuestas de singular estereotomía, llama la atención sobre todo el largo tirante que la fija a la cubierta. La forma en que el extremo superior del tirante se encastra en la escultura es singular: tras formar un ángulo, se abre para dejar pasar el vástago vertical que se introduce en la base del yelmo y finalmente se bifurca para convertirse en una grapa que une los dos bloques parejos del nivel intermedio. Bajo el ángulo encontramos el único elemento de granito empleado en las esculturas de la Puerta, una pieza invisible destinada, a la manera de una almohadilla, a resistir posibles presiones. Bajo ella, una nueva grapa sirve para que las piezas de la base trabajen entre sí de manera solidaria (Fig. 8).

Conviene destacar también la circunstancia particular de la panoplia número 13, cuya parte superior –el enorme tórax y el yelmo– se encontraba aparentemente "en el aire", con un lecho horizontal sin apoyo visible. Este caso sirvió para comprobar la eficacia de los elementos férreos, ya que los bloques superiores de la escultura se encontraban fijados únicamente mediante una especie de columna vertebral de hierro, tras haberse perdido el apoyo natural entre las caras planas de los bloques superpuestos. Esta situación me recordaba a la torre Castelar, uno de los edificios contemporáneos más singulares de Madrid, con su volumen sostenido por una estructura vertical descentrada.

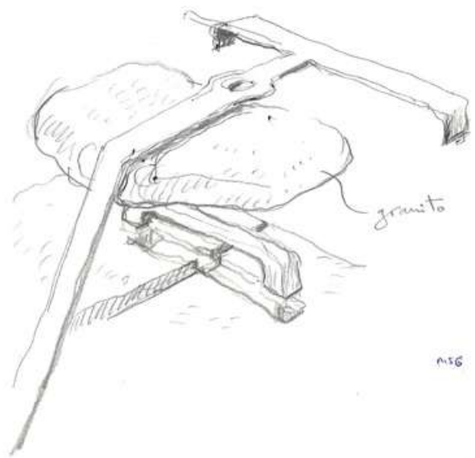


Figura 8. Detalle del tirante y de las grapas de la panoplia 12

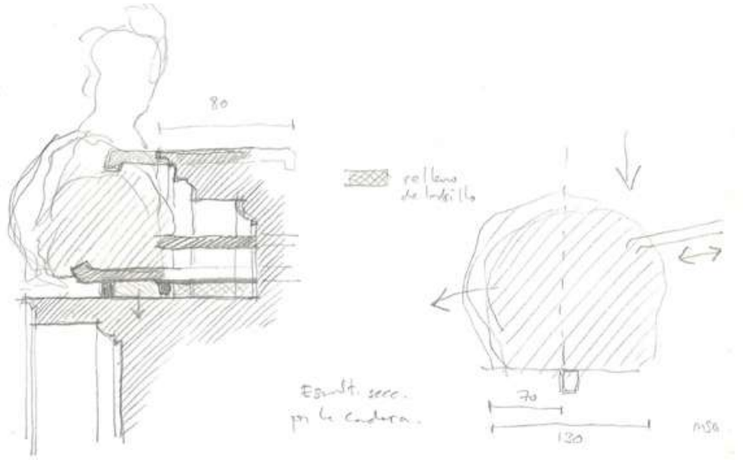


Figura 9. Croquis de la sección estructural de las panoplias superiores

Las panoplias del frontón

Las dos panoplias colocadas en el hastial de la Puerta, que la coronan por su cara occidental, son con diferencia las esculturas más llamativas y originales del conjunto, y las de mayor interés desde el punto de vista técnico. Estas inmensas figuras recostadas, una mirando hacia el exterior y la otra volviéndole la espalda, son por sí mismas obras maestras, epítomes tardíos del Miguel Ángel de la capilla Médici, y encierran además una complejidad material que ahora ha podido descubrirse.

Figura 10. Panoplias del frontón occidental (Diego Delso, Wikimedia Commons)



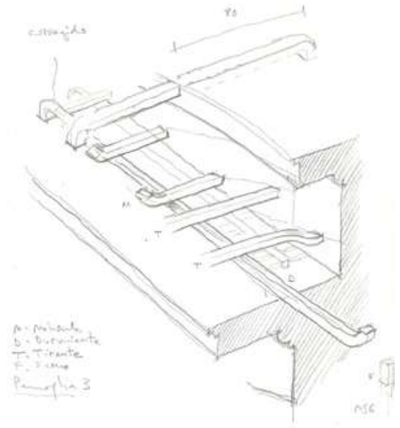




Figura 11. Croquis del sistema férreo de sujección de las panoplias superiores

Figura 12. Estructura férrea al dorso de una de las panoplias superiores (Alejandro García Hermida)



Figura 13. Puntos de sujección al tímpano de la panoplia superior derecha

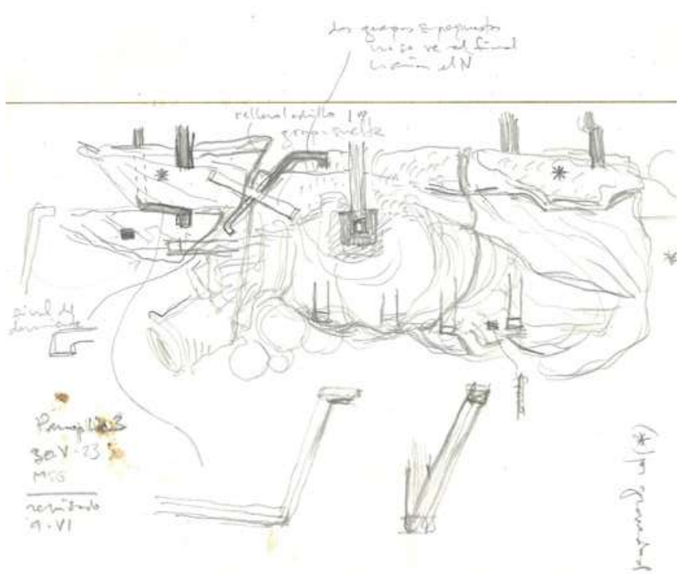


Figura 14. Esquema estructural de la panoplia superior derecha

La clave de estas dos estatuas es su colocación. Aparentemente, se encuentran apoyadas en las vertientes de un frontón triangular, mientras otro frontón curvo, algo más grande, les sirve de fondo. Pero los bloques de ese primer frontón que supuestamente hacen de base son extraordinariamente esbeltos (21 cm de canto por 98 de vuelo), por lo que serían incapaces de soportar su peso; por otra parte, las esculturas necesitan situarse al borde para poder ser vistas adecuadamente desde la calle.

En realidad, las dos colosales panoplias no cargan sobre el frontón, del cual las separa una franja hueca: ambas están soportadas por inmensas ménsulas de hierro, apoyadas a su vez en durmientes metálicos que transmiten la carga allí donde la molduración del tímpano puede asumirla adecuadamente. Este sistema se complementa con tirantes y abrazaderas que evitan el vuelco, así como con frenos, hincados en la parte inferior de la base, que impiden el deslizamiento por la pendiente del frontón (Figs. 9 a 17). Durante el estudio dibujé diferentes esquemas de este complejo entramado, que no era fácil de explicar mediante una sola imagen. En el caso de la panoplia izquierda, al estar asomada al vacío, la estabilidad quedaba aún más comprometida, lo que se refleja en todo un sistema de tirantes, anclajes y abrazaderas. A este sistema debimos añadir una nueva grapa de latón en el pecho de la coraza, ya que la gruesa espiga que ancla el yelmo al tórax había provocado en este último una peligrosa grieta vertical.

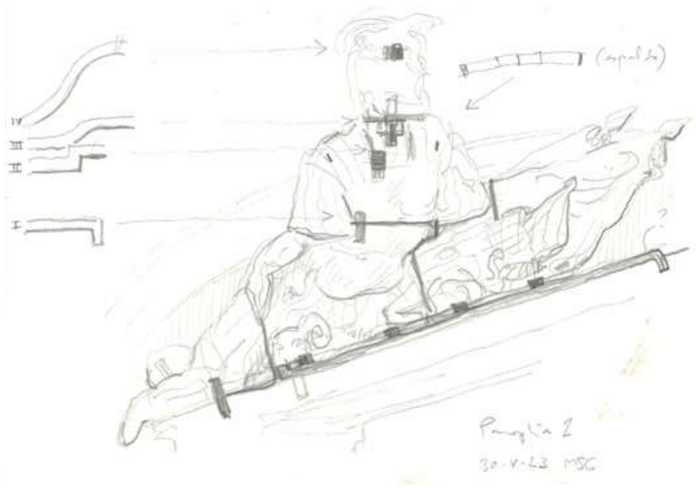


Figura 15. Puntos de sujección al tímpano de la panoplia superior izquierda

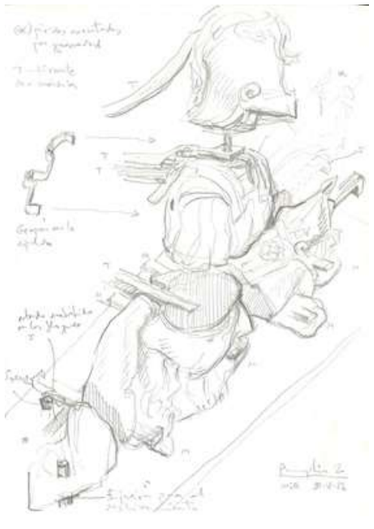




Figura 16. Despiece y fijaciones de la panoplia superior izquierda

Figura 17. Tirantes y abrazadera de sujección de la panoplia superior izquierda

La Fama

La alegoría de la Fama preside la Puerta por su lado este, el que estaba orientado hacia el exterior del casco urbano (ver Fig. 1). Acompañada de un angelote que debió de ser bastante rehecho en antiguas restauraciones, es una escultura colosal, que alcanzaría una altura de unos cuatro metros y medio si se encontrase erguida. Técnicamente, posee una parte en altorrelieve y otra, la que rebasa la altura del hastial de la Puerta, en bulto redondo. Es en esta última zona, con grandes elementos proyectados al vacío, donde se concentran los problemas que aquejan a la figura.

La estatua ha perdido, desde el codo, el brazo derecho, con el que sujetaba la tuba (no confundir con el instrumento homónimo de época posterior), atributo habitual de la Fama. El ala derecha, cuyo desprendimiento parcial fue el que provocó la alarma, era una reposición moderna mal dimensionada y de muy baja calidad escultórica. La decisión última de la Dirección Facultativa fue dejar la estatua sin esos miembros perdidos, que en un principio se pensaba reponer. El ala estaba sustentada por un complejo pliegue del ropaje de la figura, convenientemente fijado y atirantado, en el que, tal como había llegado hasta nosotros, era necesario distinguir entre las juntas de unión y las fisuras (Fig. 16).

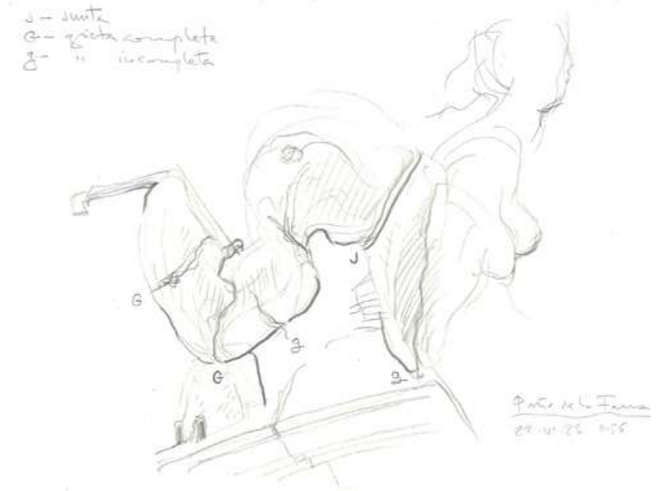


Figura 16. Estudio del paño que sustentaba el ala derecha de la Fama

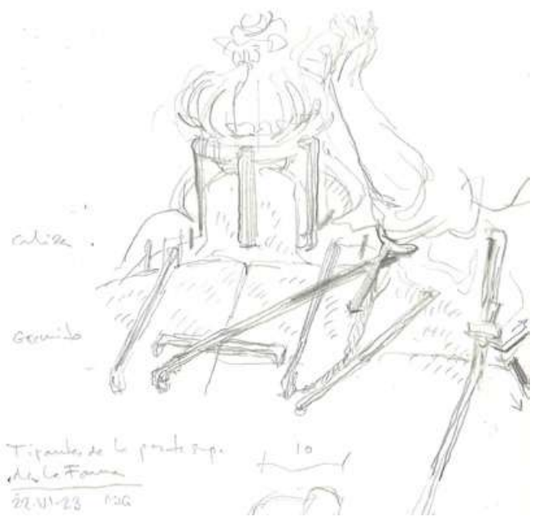


Figura 17. Sujeción férrea de la parte superior de la Fama

En todo caso, las partes emergentes (restos del ala derecha, cabeza, brazo izquierdo y corona) son en realidad una tramoya cuya estabilidad depende en gran medida de las grapas, tirantes y abrazaderas de hierro. El conjunto férreo es tan complejo que sólo puede describirse mediante dibujos (Fig. 17). Uno de los apoyos hoy visibles –la barra que apea el antiguo refuerzo de la inexistente ala derecha– es nuevo y fue colocado en contra de la opinión de quien esto escribe. Los descuidos técnicos de origen se hacen patentes en esta zona, al igual que en otras esculturas de la Puerta, por la existencia de "bañeras": relieves horizontales y cóncavos cuya disposición a la intemperie hace que acumulen agua de lluvia sin posibilidad de evacuación. En estos casos, y siempre que no afectase al aspecto de las obras, se optó por enrasar esas concavidades con mortero de cal.

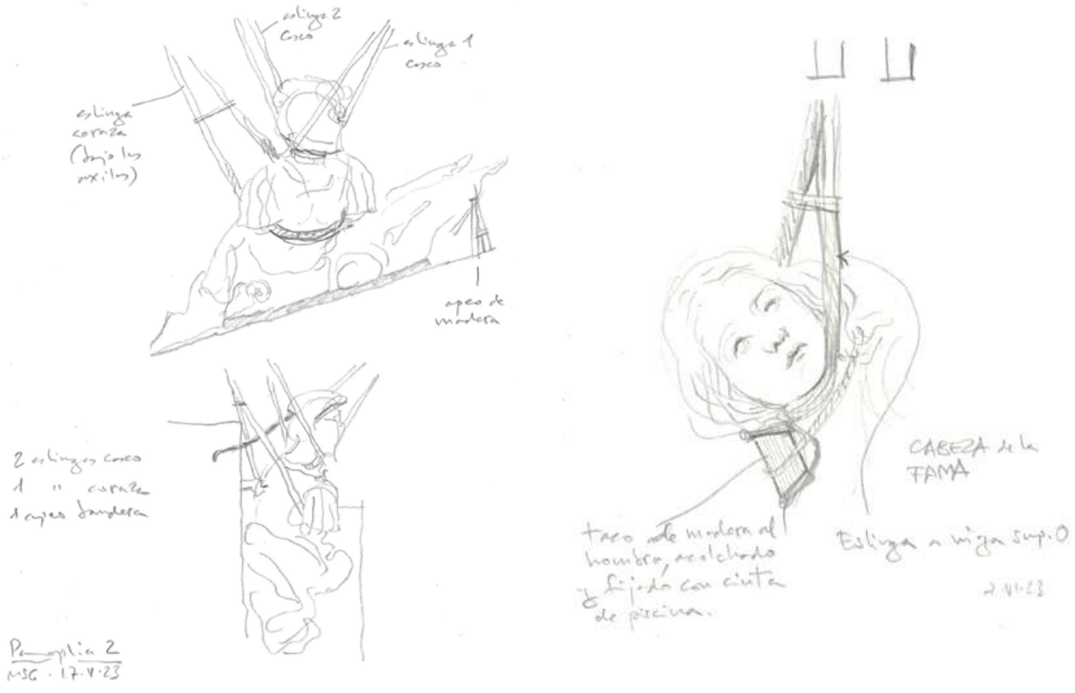
Para el Toisón que cuelga del escudo de la Fama tuve que realizar dos pequeñas reintegraciones en piedra labrada: un enlace para el collar y, en el Vellocino que pende de él, la reposición de las patas delanteras. Todo el cuarto trasero del Vellocino era una desafortunada reposición moderna, pero no se consideró oportuno aprovechar la intervención para devolverle una forma más coherente.

Algunos apuntes técnicos

En el transcurso de la restauración fui desarrollando una idea que, con tono algo jocoso, terminó por servirme para explicar algunos aspectos singulares de la Puerta. Me parecía advertir el origen italiano del arquitecto –más allá de la corrección y la originalidad de las trazas de un barroco clasicista o de la inspiración miguelangelesca de los capiteles (Ponz 1988: 27)– en dos aspectos menos evidentes. Uno es la ya descrita abundancia de hierro en la construcción, no solo en las esculturas, como pudo comprobarse al explorar las cámaras interiores de ladrillo, atirantadas, y descubrir las grapas que recogen toda la cornisa o los capiteles. Como es sabido, la presencia de elementos metálicos es habitual en la arquitectura italiana, mientras que en la española estos han sido tradicionalmente rechazados u ocultados. El otro rasgo italianizante es la inexistencia de accesos a la parte superior de la Puerta. El proyecto de Sabatini, en el que primaron las consideraciones formales y compositivas,

Figura 20. Eslingas para el apeo provisional de la panoplia superior izquierda

Figura 21. Eslinga para el apeo provisional de la cabeza de la Fama



parece haber dejado en segundo plano la necesidad de acceder a la parte superior del monumento para garantizar su mantenimiento. Un maestro español nunca hubiese dejado de incorporar –incluso a costa de introducir elementos que perturbasen la imagen clasicista de la Puerta– husillos en el grosor de los pilares principales, perfectamente capaces de alojarlos. Puertas conmemorativas mucho más pequeñas, como la de Santa Ana en Durango o la de Larrazuría en Labastida, poseen en su interior escaleras que permiten un ascenso razonable a su parte alta.

No querría acabar el artículo sin describir brevemente otro de los cometidos que se me encomendaron en las obras: el apeo provisional de los conjuntos escultóricos, necesario para garantizar su estabilidad –y también la seguridad de los operarios– mientras durasen las tareas de restauración y conservación. En el mencionado informe previo se indicaba que para estos apeos deberían emplearse "madera y puntales telescópicos" (VV. AA. 2022: 217). Esta solución me parecía desacertada, pues confiaba la estabilidad a elementos rígidos (tablones y puntales) apoyados en el suelo, que impedían los posibles movimientos y desplazamientos de las propias piezas, inevitables en unas esculturas sometidas a una intervención estructural profunda. Además, estos elementos perderían su función en el momento en que uno de ellos fallase y constituirían obstáculos para el normal movimiento de los operarios por las plataformas y andamios.

En cambio, y aprovechando que ante el monumento se habían dispuesto grandes torres metálicas para garantizar la operatividad, propuse invertir el modelo: en vez de apuntalar las zonas más comprometidas de las esculturas, se trataba de suspenderlas mediante eslingas ancladas a las citadas torres y dispuestas de manera que formasen triangulaciones. Llevé a cabo personalmente esta tarea con la inestimable ayuda de Borja Sagredo, miembro del equipo de Petra S. Coop. Estos anclajes por suspensión, adecuadamente acolchados en las zonas de contacto con las esculturas, amortiguarían hipotéticos impactos y evitarían una posible caída en caso de desprendimiento, sin impedir cierta flexibilidad y holgura, necesarias para manipular y fijar los elementos pétreos. Todo ello, además, sin obstaculizar la circulación de los restauradores alrededor de las obras (Figs. 20 y 21).

Supuso una reconfortante confirmación de la validez y vigencia de los sistemas tradicionales comprobar que los croquis para estos apeos, dibujados a lápiz, fueron inicialmente trasladados por medios informáticos a las ortofotos existentes, hasta que se abandonó este procedimiento: se había constatado que los dibujos hechos a mano resultaban, para técnicos y operarios, más claros y descriptivos que sus versiones digitales.

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[1] En correspondencia, en Alcalá de Henares se erigió, en la salida occidental de la ciudad, la Puerta de Madrid, coetánea pero mucho más sencilla.

[2] La restauración fue adjudicada a la empresa Fernández Molina Obras y Servicios S.A. y coordinada por Carmen Gutiérrez Martí. La ficha técnica, aunque incompleta –pues faltan los nombres de buena parte de los restauradores–, puede consultarse en Domingo, Mora y Sandstede 2025. En el equipo de restauración trabajaron también Yolanda Saiz, Estíbaliz Pérez, Marta Zaragoza, Borja Sagredo y Xavier Bernárdez.

[3] En Madrid se conserva una interesante y poco conocida colección de bocetos, modelos y dibujos de Roberto Michel en el Museo Casa de la Moneda.

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Figura 22. El autor con la panoplia número 13 (Petra S. Coop)

Biography | Biografía | Biografia

Miguel Sobrino González

Escultor y dibujante, desarrolla también una labor de investigación y divulgación de la historia del arte y de la arquitectura. Desde 2004 trabaja en la Escuela Técnica Superior de Arquitectura de Madrid (UPM). Como escultor, ha labrado obras y elementos escultóricos para diferentes enclaves históricos y ha participado como escultor y cantero en diversas restauraciones. En 2016 se inauguró en Madrid su monumento a Amós Acero, alcalde de Vallecas durante la II República, y en 2024 realizó cuatro grandes esculturas para la fachada de la Merced, en Panamá. Como dibujante, se ha especializado en la ilustración de la arquitectura y el urbanismo históricos para publicaciones y museos. Es autor de numerosos artículos y de varios libros, y participa habitualmente en congresos, cursos, jornadas y conferencias. En la actualidad es también Coordinador del Traditional Stone Building Techniques Apprenticeship Programme que la Fundación Culturas Constructivas Tradicionales imparte en Abha (Arabia Saudí), en colaboración con el Real Instituto de Artes Tradicionales (Wrth).

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Keywords | Palabras clave | Palavras chave

Urban reconstruction, New traditional architecture, Public space, Fortifications, Urban heritage

Reconstrucción urbana, Nueva arquitectura tradicional, Espacio público, Fortificaciones, Patrimonio urbano

Reconstrução urbana, Nova arquitetura tradicional, Espaço público, Fortificações, Património urbano

Abstract | Resumen | Resumo

The work of the architect Manuel Manzano-Monís in the reconstruction of the walled town of Hondarribia is widely recognized for the square he designed, but his contribution was more extensive, reaching well beyond the rebuilding of uninhabited areas. He created spaces of remarkable harmony and beauty while also identifying the value of places previously overlooked. He also showed insight into the role of traditional craftsmanship in preserving the material integrity of architecture at a time when construction was becoming industrialized. Many of this town's most attractive and lively squares, streets, and corners bear his subtle imprint, for in just over a decade he transformed the declining historic center by combining a rigorous understanding of its urban history with a careful integration of restoration and new construction, giving renewed significance to its dilapidated fabric. This article analyzes Manzano-Monís's work in Hondarribia, discussing the broader vision underlying his work and surveying both what was ultimately built and what remained unrealized.

La labor del arquitecto Manuel Manzano-Monís en la reconstrucción del recinto amurallado de Fuenterrabía es ampliamente reconocida por la plaza que proyectó, pero su contribución fue mucho más extensa y trascendió con creces la reconstrucción de las áreas deshabitadas. Creó espacios de notable armonía y belleza, al tiempo que supo reconocer el valor de lugares hasta entonces desatendidos. Mostró además una especial sensibilidad hacia el papel de los oficios tradicionales en la conservación de la integridad material de la arquitectura, en un momento en que la construcción avanzaba hacia su industrialización. Muchas de las plazas, las calles y los rincones más atractivos y animados de la ciudad llevan su discreta impronta. En poco más de una década, transformó un centro histórico en declive mediante la combinación de un conocimiento riguroso de su historia urbana con una cuidadosa integración de proyectos de restauración y de nueva construcción, y devolvió así su significado a un tejido urbano deteriorado. Este artículo analiza la obra de Manzano-Monís en Fuenterrabía, aborda la visión más amplia que sustentó su trabajo y examina tanto aquello que finalmente llegó a construirse como los proyectos que quedaron sin realizar.

O trabalho do arquiteto Manuel Manzano-Monís na reconstrução da cidade fortificada de Hondarribia é amplamente reconhecido devido à praça que concebeu, mas a sua contribuição foi mais abrangente, indo muito além da reconstrução de áreas desabitadas. Criou espaços de notável harmonia e beleza, realçando também o valor de locais anteriormente ignorados. Revelou ainda uma visão inspirada sobre o papel do artesanato tradicional na preservação da integridade material da arquitetura, numa época em que a construção se estava a tornar industrializada. Muitas das praças, ruas e recantos mais atraentes e animados desta cidade ostentam a sua marca subtil, pois, em pouco mais de uma década, transformou o centro histórico em declínio, combinando uma compreensão rigorosa da sua história urbana com uma integração cuidadosa da restauração e da nova construção, conferindo um significado renovado ao seu tecido urbano degradado. Este artigo analisa o trabalho de Manzano-Monís em Hondarribia, discutindo a visão mais ampla subjacente à sua obra e examinando tanto o que acabou por ser construído como o que ficou por concretizar.

Manuel Manzano-Monís's contribution to Hondarribia in the Basque Country is chiefly associated with the creation of a new square in the historic walled town, yet his role in the reconstruction of the old quarter went much further. Between 1959 and 1974 he planned and directed virtually all the works undertaken in the walled precinct, restoring much of the extant urban fabric and projecting the redevelopment of dilapidated areas. To give an idea of the scale of his work, the spaces and buildings restored or rebuilt by Manzano-Monís over just a decade and a half accounted for a quarter of the total available area in the walled precinct and almost half of the area already occupied.[1]

His work in rebuilding the historic town center earned him the first Philippe Rotthier European Architecture Prize (1982) and this accolade certainly contributed to the project's critical acclaim, particularly at international level. This stemmed from a visit by Léon Krier and Maurice Culot with a group of architects from the San Sebastián School of Architecture, who introduced them to Manzano-Monís's work.[2] His project was first covered in *Archives d'architecture moderne* (Barey 1982) and has been studied in detail by Ana Azpiri, to whom we owe much of the context expounded here concerning twentieth-century urbanism and architecture in Hondarribia.[3]

Despite this recognition, the Hondarribia project has been diversely appraised. On the one hand, it has been praised for its success in regenerating the fabric of the walled town, creating new spaces of undeniable harmony and architectural quality which remain among the favored spots of both townspeople and visitors. On the other hand, the project has been criticized for its antagonism toward the axioms of contemporary architecture, which are moreover challenged by its very success. At local level, the exceptional nature of the regeneration is contrasted with memories of administrative abuses during its execution (Barey 1982: 38).

Our aim is to analyze the scope of Manzano-Monís's urbanism and architecture in the old town of Hondarribia based on a study of the streets and squares that he designed and rebuilt and an analysis of the ample documentation preserved in the Hondarribia municipal archive, largely unpublished. We seek to show the architect's broader vision through his various built projects as well as those not built but captured on paper.

Background

Hondarribia is located on the Cantabrian coast on a hill overlooking the mouth of the river Bidasoa, whose waters mark the line at which the Iberian Peninsula meets the rest of Europe. This strategic position made it suited for fortification and by the sixteenth century it had become a key site in the border defenses of the Kingdom of Castile. During this period of military significance, the town was enclosed within fortified walls (Fig. 1). The inhabited area was concentrated on the south side of the hill, with a regular layout of parallel streets along the slope, indicating its medieval origins (Arizaga 1978). Outside the walls a humble fishermen's quarter coeval with town stretched around the bay (Díez Oronoz et.al. 2024).



Figure 1: View of Hondarribia from the Marqués de Heliche Atlas. To the left of the walled town is the fishermen's quarter (Ferrarys 1655)

But by the twentieth century, the walled town had fallen into disrepair and near-abandon following its loss of value as a defensive stronghold as of the late eighteenth century, along with the havoc wreaked by sieges during the wars of the Quadruple Alliance (1719) and of the Convention (1794).[4] This state of neglect persisted through the early twentieth century, when the town council prioritized development outside the walls over conservation of the old town (Susperregui 1996: 152). The creation of new neighborhoods around the fishermen's quarter contributed to the depopulation of the center and made this outer district a focus of population growth with the emerging tourist industry (Azpiri 2003).

As the town grew around that district, the walled precinct languished. A plan for the renovation of the old town drawn up by Gutiérrez Soto and Cánovas del Castillo in 1927 remained largely on paper as the walled quarter declined (Azpiri 2003: 110–115). The only notable development of this period was the restoration by Pedro Muguruza, municipal architect until his death in 1952, of Plaza del Obispo (1943) and a few other sites (Susperregui 1996: 45–57).

This inaction had to do with the opposition of the council, embodied in the figure of Mayor Sagarzazu, to any external oversight of planning. Thus the council blocked the designation of the walled town as a heritage site, which would have driven redevelopment and introduced a legal framework for oversight of future projects, thereby removing the mayor's control over development (Azpiri 2003: 167-168; and Susperregui 1996: 152).[5]

The departure of Mayor Sagarzazu in 1958 and the death of Pedro Muguruza paved the way for the advent of Manuel Manzano-Monís. He took over from Muguruza in drafting the municipal development plan and was appointed technical adviser in 1958.[6] The new council's planning policy included a regeneration of the historic center, and Manzano-Monís was asked to draw up a plan for the walled precinct.[7]

He showed from the start that he had a distinct vision for the town, devising a planning framework that enabled him to dominate its architectural scene for almost fifteen years. Beyond his virtues as an architect, he showed skill in turning the administrative machinery established by Mayor Sagarzazu to his advantage, thereby taking control over old-town developments from the council, which eventually complained of his monopoly to the provincial authority and had him removed.[8]

His early work, such as a 1959 development plan for the civic center, was as commissioned by the council. But the transgression of his guidelines in early projects processed before his plan's adoption, along with a council's proposal to build a sports complex by the walls led him to appeal to higher authorities and to draft a framework to harmonize criteria and bring any development in the walled center under his aegis (Barey 1982: 34). Beyond any personal interests that may have been involved, it seems clear that Manzano-Monís's determination to oversee all the work done in the center was motivated by concerns about the council's poor practices and the risk of his plan being implemented arbitrarily, undermining his unified vision for the town.

His new legal framework was surprisingly adopted by the local authorities, hitherto reluctant to accept interference. The application for heritage site status for the walled town, submitted by the council itself in 1962, stipulated that all work should be overseen by the Directorate-General for Fine Arts of Spain, of which Manzano-Monís was part. The application was accompanied by a development plan for the old town precisely defining guidelines for the whole historic center.[9] This was followed by several special development plans, such as for the realignment and restoration of Calle Pampinot (1962),[10] for the restoration of facades on Calle Carnicería (1966), and for a new square (1968),[11] in which the architect defined not only overall guidelines but also composition and details. Under these plans, he had housing built which, as mentioned, occupied almost the same built area as existed prior to his tenure.[12]

It is not hard to imagine the displeasure of architects, developers, and local authorities who found themselves obliged to hire Manzano-Monís for any project within the historic center. Yet his control over development was decisive in ensuring that reconstruction was carried out coherently and harmoniously (Azpiri 2003:183).



Figure 2: Early twentieth-century view of the high street, still relatively well preserved in Manzano-Monís's time (Deutsches Dokumentationszentrum für Kunstgeschichte)

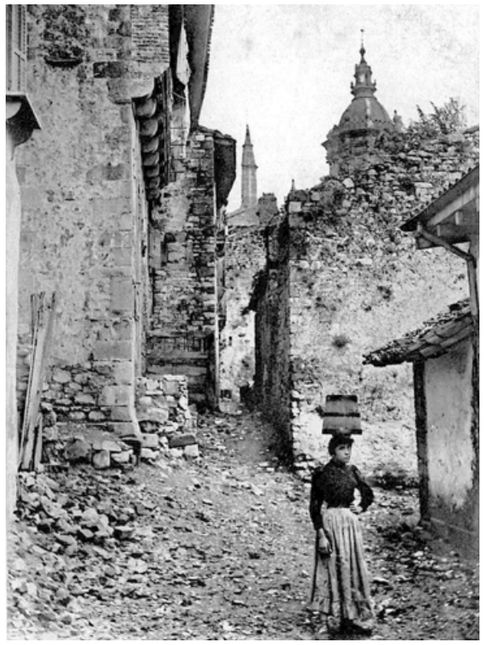


Figure 3: Alley with ruined houses on the west side of the walled town in the early twentieth century (Deutsches Dokumentationszentrum für Kunstgeschichte)

The Manzano-Monís Masterplan

Manzano-Monís's masterplan was preceded by an exhaustive historical and architectural study, essential to understanding the plan and its approach. He visited archives and museums, studied historic army maps, and scoured libraries, print collections and antique stores with the aim of gathering together historical and graphic information (Barey 1982: 34).[13] He analyzed the town's architecture and made detailed surveys of streets and buildings, producing extensive graphic and planimetric documentation in which the existing fabric was interwoven with outlines of lost elements recovered through his research (Fig. 4).[14]

He saw research as an exercise that would not "leave the entire project to more or less lengthy descriptions and more or less detailed plans."[15] It was about understanding the town's past urbanism, using every means at his disposal to collate it with the present reality, interpret it, and work accordingly. His idea was to piece together the fragments of a lost past to conjure up, amid its remains, a new town, adapted and updated. He likened urban reconstruction to reconstituting a fragmented vase, joining the remaining pieces and evoking a town's memory with new fabric, as an opaque coating "carefully covers the wounds" and, by joining fragments, recovers the unique form of an antique vessel.[16]

Rather than restore Hondarribia as it had been, he built a new town, heir to the previous one, with a structure consistent with the extant fabric but transformed, and with new public spaces meeting the needs of his time. Rather than seeking to recover an idealized past—a widespread view of his enterprise—he acknowledged the limits of reconstruction: "We can never restore to the present, in all its purity, what once was, with the force of life."[17]

He spoke of a mental process: "To bring another time, another era, back to life is not to draw back a curtain completely, for that is impossible. […] The past comes to our minds through conjecture, through deduction, through memory and the association of ideas, through diligent study, through casual reading, and through comparison with the present, sometimes for better, sometimes for worse."[18] These reflections from his masterplan, whose value has not been sufficiently highlighted, show how far an exploratory approach shaped his project for Hondarribia.

The old town, as seen through his eyes, consisted of two realms: on the one hand, the walls defining its boundary, much of which had been destroyed in the last French occupation and which he proposed to rebuild. On the other hand was the town *intra muros*, which had retained part of its structure but was largely depopulated, particularly in the east and north, where vegetable gardens coexisted with the remains of ancient walls, barracks, and the occasional building.



Figure 4: Areas built on and town walls destroyed or ruined since the early seventeenth century

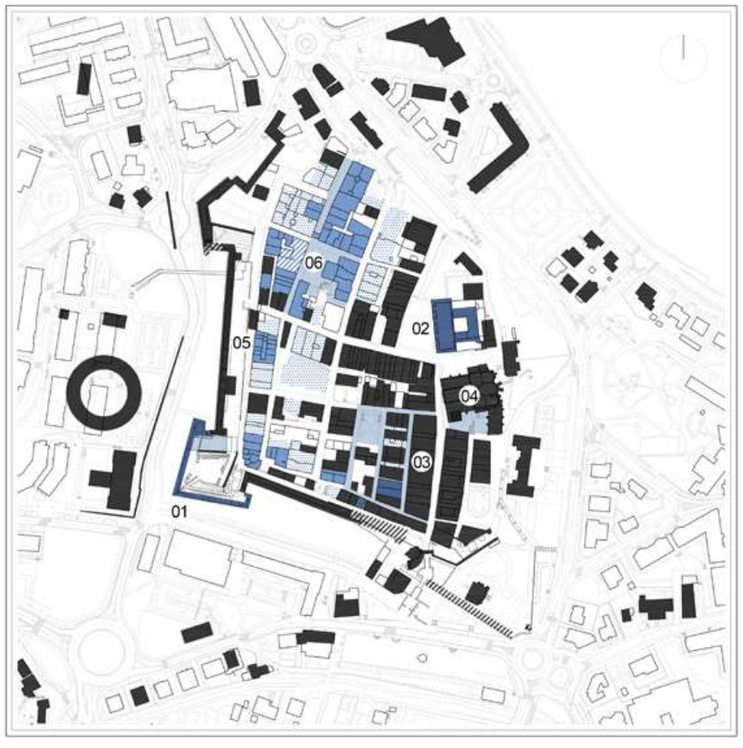


Figure 5: Buildings and spaces developed by Manzano-Monís. Shaded: built under his direction in 1959–1972; hatched: built by other architects in the same period; dotted: areas proposed for development in his plan

Legend: 1) Queen's Bastion, 2) Castle of Charles V, 3) Pampinot street, 4) Vicar's Square, 5) New urban façade, 6) Gipuzkoa Plaza

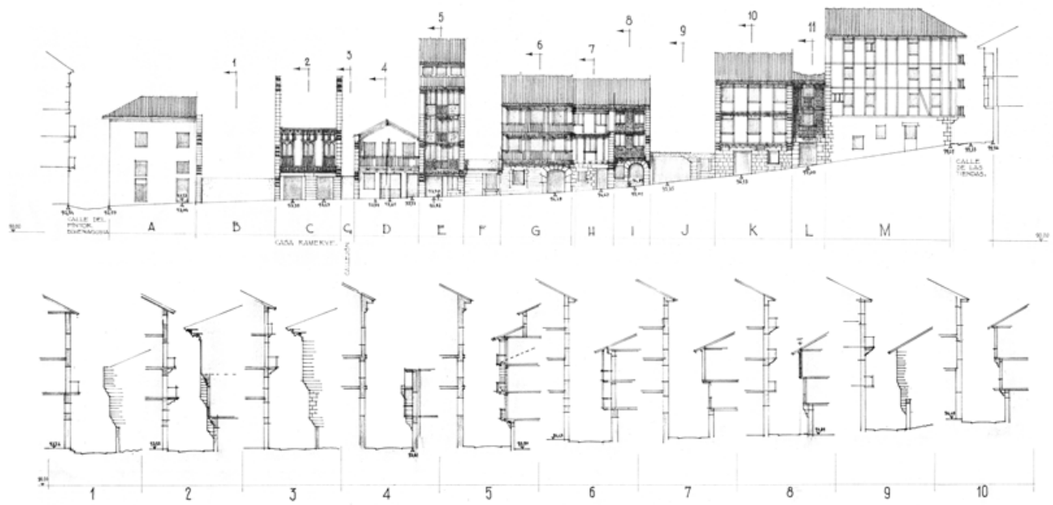


Figure 6: Survey of Calle Pampinot (1962) with elevations and cross-sections assembled by the authors (HUA, U-177-I-1)

Manzano-Monís's plan for Hondarribia set out three strategies for intervention, all with the idea of restoring the unity of the walled quarter: first, reconstruction of the fortified enclosure, seen as essential to the town's image; second, restoration of the extant urban fabric, regenerating its streets and squares and promoting restorations; and third, creation of a new center to complement the extant fabric and create a hub linked with the town's expansion beyond its walls.

Reconstruction of the Town Walls

Manzano-Monís proposed rebuilding almost all of the walls that had once protected the town, demolishing the buildings attached to them. Once the geometry of this fortified base had been restored, "the military dihedrals and edges" of the walls "through which the town conversed with the water" would once again "define the urban profile" (Fig. 7).[19]

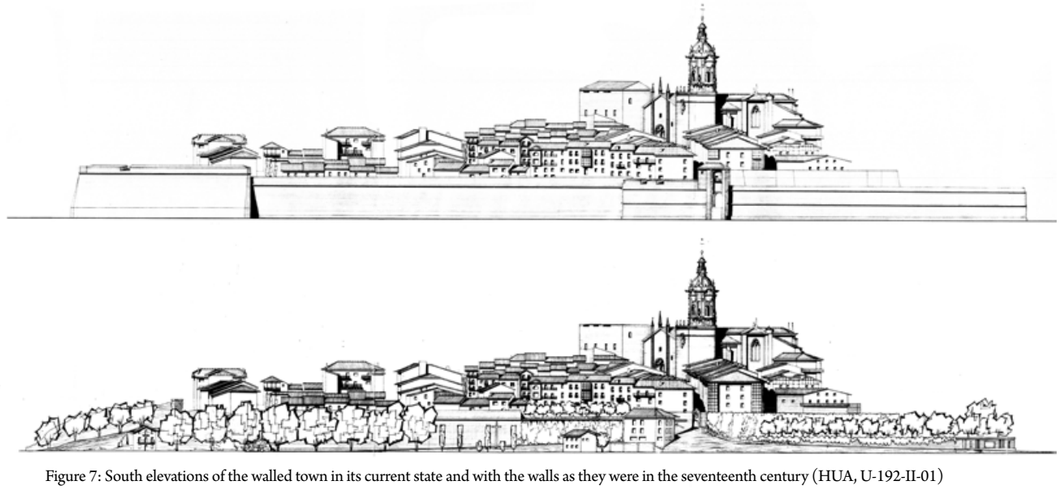


Figure 7: South elevations of the walled town in its current state and with the walls as they were in the seventeenth century (HUA, U-192-II-01)

The ambitious reconstruction program involved a reorganization of access routes to the historic center to preserve vehicular access to the walled area, as many such routes ran through breaches opened by the French army during its last occupation and which the reconstruction work required to be closed. Manzano-Monís proposed that the main historic approach from the south be restored and vehicular access from the north opened up. The new layout of streets and squares would thus be directly linked with the outer district, which had become Hondarribia's new center.

As for the reconstruction approach, the masterplan outlined guidelines to be refined as work progressed. As can be seen from the limited reconstruction of the walls that was carried out, the structures as drawn in the outline plans gave way to a more sensitive treatment in which the austere form of the restored walls is articulated with the town's extant fabric.

Reconstruction of the Queen's Bastion

Of the ambitious program to rebuild the ramparts, the Queen's Bastion was the only part to be carried out. The project involved rebuilding the two outer faces, blown up by the French in 1795, and demolishing the large fronton court that had obscured the south wall.[20]

The primary aim was to restore the geometry of the pointed corner, where the two widest surviving wall sections—west and south—had been breached. Manzano-Monís clad the exposed remains in two heavy, steeply sloping walls of sandstone ashlars following the plan of the old bastion. The large quantity of materials required for this came from demolitions during expansion work in San Sebastián and the adjacent fronton court. The angle between the two faces was crowned with a handsome protruding sandstone sentry turret, with the historic walls unfolding on either side and forming a now iconic landmark.

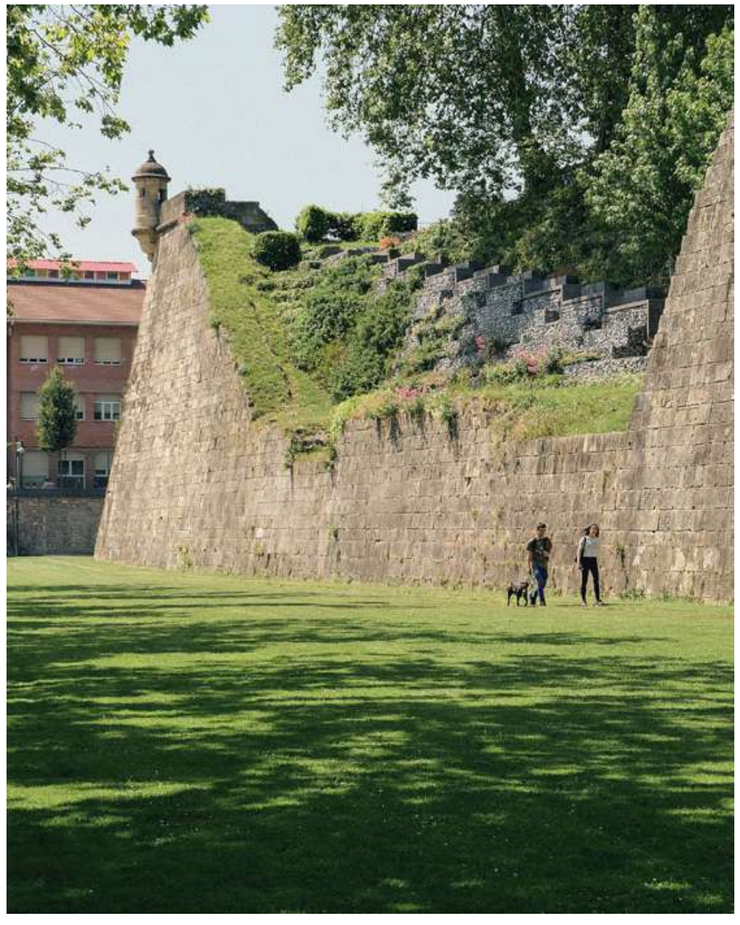


Figure 8: Current view of the Queen's Bastion, with sandstone outer walls by Manzano-Monís and gabions filling the breaches by Iñiguez & Ustarroz

Despite the workmanship of this restoration, the walls built by Manzano-Monís could hardly match the massiveness of the defensive structures they clad, up to eight meters thick. His project was accordingly supplemented in 2006 by the architects Iñiguez & Ustarroz, who had been present during that visit by Léon Krier and Maurice Culot. They dug out and reformed the heart of the bastion, tying Manzano-Monís's cladding to the inner structure using gabions to close gaps and restore the original massiveness (Díez Oronoz et.al. 2017: 325-331).

Restoration of the Extant Urban Fabric

For the south slope of the walled town, Manzano-Monís devised a comprehensive program to regenerate the streets and squares. First was the restoration of Calle Pampinot, which had been in the council's sights for years, along with other spots which he identified and assessed with insight and sensitivity. Beyond the grander spaces and buildings, he appreciated the variety and value of vernacular architecture, recognizing the diversity that its mix created in the townscape, as meticulously described in his proposal.

Although most of the layout remained intact, he proposed adjustments where accessibility needed improving or a particular building was to be highlighted, such as his alteration of the alignment of Calle San Nicolás to draw attention to the medieval gate and a fine pre-existing house. He also proposed restoring historic urban spaces such as the *paseadero*, now Plaza del Vicario, and consolidating others, such as the former marketplace.

Restoration of the Castle of Charles V

Manzano-Monís's first project in the town center was a partial restoration of the Castle of Charles V, for a 1959 exhibition commemorating the Peace of the Pyrenees (1659).[21] For centuries the residence of the fortified town's governor and garrison, this is a medieval castle with a sixteenth-century artillery platform—a prism of sandstone masonry overlooking a parade ground, whose presence, "the purity of its cubic volume," was so evocative for our protagonist.[22]

By the 1950s the castle was in ruins. All its staterooms had been burnt out during the last French occupation and subsequent neglect had reduced what remained. Only the thick medieval walls around the courtyard were still standing, along with the monumental artillery platform, beneath whose barrel vaults the floor structures that once housed the garrison barracks were much dilapidated.

Manzano-Monís restored the artillery platform interiors and reinforced the remains of the courtyard, thereby preserving the romantic air of this often photographed site. For the platform he designed a sequence of floor plans, creating double- and triple-height spaces highlighting the sweeping barrel vaults. These were later converted into the rooms of the current Parador hotel.

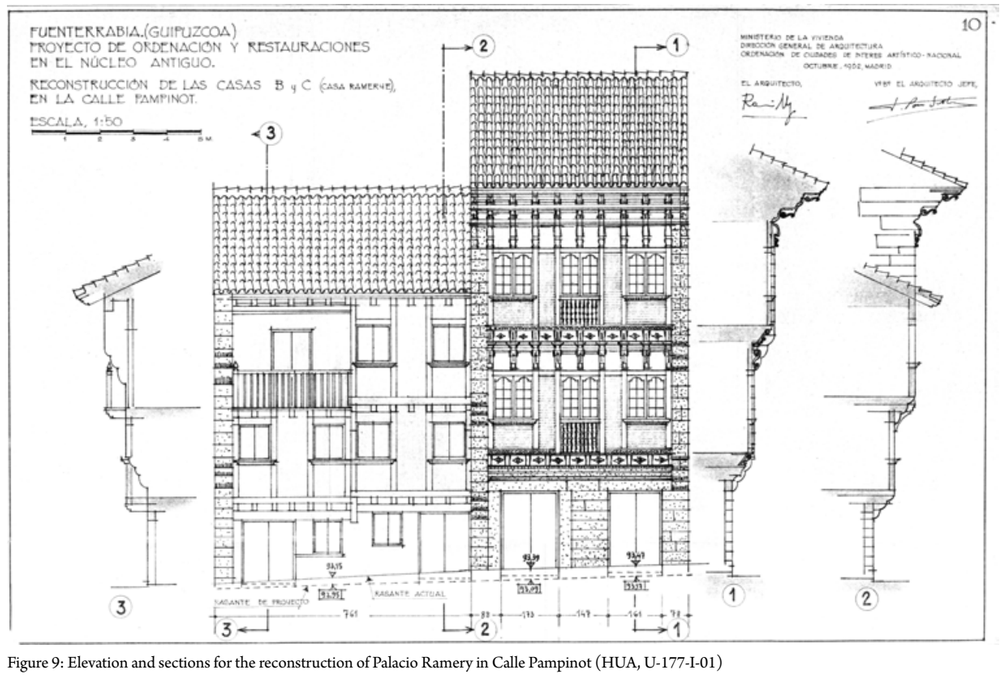


Figure 9: Elevation and sections for the reconstruction of Palacio Ramery in Calle Pampinot (HUA, U-177-I-01)

Rebuilding of Calle Pampinot

Calle Pampinot's distinctive appeal stems from the contrast between the grandeur of the high street, to which it runs parallel, and its own more vernacular character. The rear facades of the town's mansions, austere and varied, seem at odds with the domestic scale of this streetscape, with timber-framed facades and balconies between jutting party walls. Among these more modest houses, a few dwellings of greater stature and antiquity stand out, such as Palacio Ramery.

The project encompassed the grading of slopes and resurfacing of nearby streets as well as the redevelopment of Plaza del Mercado, a void left by the demolition of the covered market and slaughterhouse a few years before Manzano-Monís's time. Two residential buildings to form a new elevation by the square were proposed but never built.[23]

The facades on Calle Pampinot were partially restored by the Directorate-General for Architecture at no cost to the owners.[24] The work in the quarter culminated with the reconstruction of the house known as Palacio Ramery (Fig. 9), of which only the stone walls and some timber beams subsisted. Manzano-Monís restored the fine timberwork with slightly projecting overlapping panels and double eaves featuring Baroque corbels like those to be seen along the high street.

Plaza del Vicario

Manzano-Monís's last urban regeneration project was probably one of his finest, involving the reorganization of the space to the south of the parish church, formerly a cemetery and referred to in documents as *paseadero* (promenade), connecting the high street with the east walls and giving onto the estuary. The site had been disfigured by the construction of a rectory, occupying much of the space and privatizing the remainder as well as blocking the thoroughfare.[25]

Although no project documents survive, we know the square was developed following the rectory's demolition in 1974.[26] Its inclusion within Manzano-Monís's overall plan and its consistency in approach and materials with his other work leave no doubt as to authorship.

He reorganized the space through a sequence of terraces structuring circulation and restoring the old promenade between the high street and the eastern town walls. The series of levels is defined by low sandstone walls that lend dynamism to the space, unified by pebble paving laid in circular patterns. This material unity helps stitch together the facades delimiting the square, grouping the walls of the church, the sacristy, and the adjacent houses around an intimate space at the foot of the Baroque bell tower by Francisco de Ibero, making a focal point (Figs. 10-12).

Figures 10-12: Plaza del Vicario, with the steps and cobblestone paving characterizing the space by the church





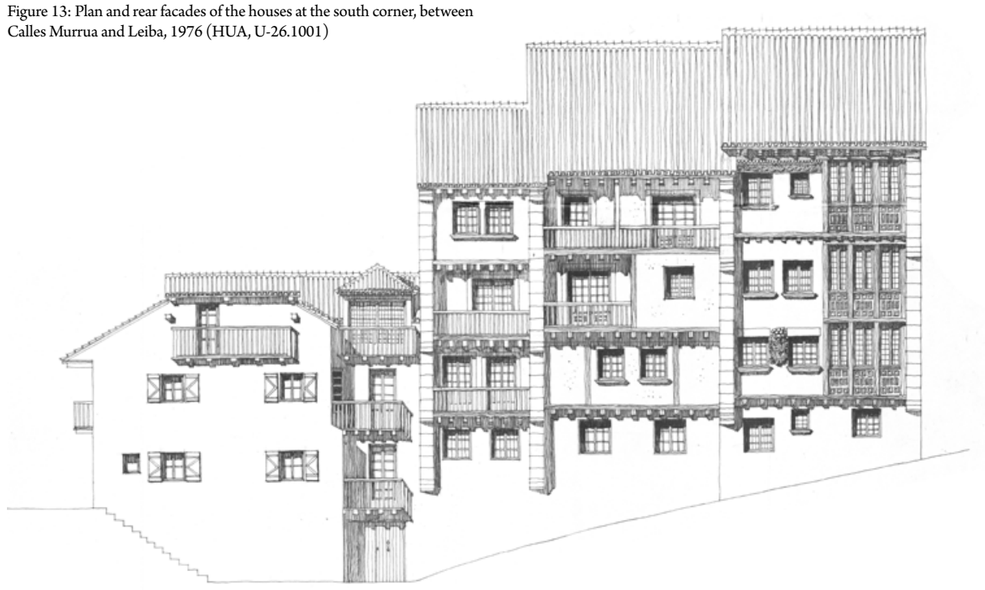


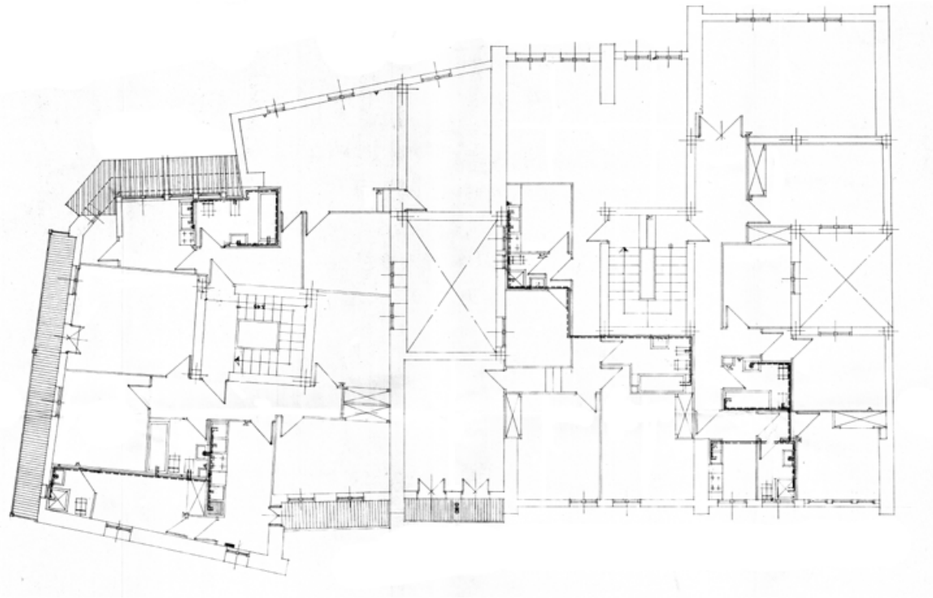
Access from the high street is via the facade of the Baroque Palacio Zuloaga, framed by the bell-tower walls, the party wall of the adjoining house, and the square's cobblestone paving. The approach from Calle Fraxkueneko Murrua has the church's central stairway and south facade as a backdrop. Side access to the church is via a sequence of zigzagging steps flanked by low stone walls. With the rectory adjoining the sacristy having been demolished, the square opens out onto the adjacent streets, incorporating the bell tower's monumental presence into the east of the walled precinct.

New Urban Fabric

The regeneration plan involved the development and consolidation of the depopulated areas of the historic center, which at that time accounted for much of the walled town. In the western part, market gardens coexisted with ruined walls and vacant lots resulting from war damage and neglect. The northern half had never had a continuous urban fabric and was largely uninhabited with vegetable gardens, shacks, and a few isolated buildings. Manzano-Monís reorganized

Figure 13: Plan and rear facades of the houses at the south corner, between Calles Murrua and Leiba, 1976 (HUA, U-26.1001)





all this, redeveloping vacant plots on the west side and creating a new urban center to the north. This revolved around a large square with shops designed to be a hub within the walled precinct and a link between the existing streets, the new layout, and the exterior.

The project paid particular attention to urban scale, taking massing as a basis for relationships between monumental buildings and residential units. This gave rise to meticulously designed facades defining the streets and squares. Their composition was based on a toolkit[27] derived from vernacular characteristics such as dimensions, materials and finishes, reflecting the local way of life. The exceptional sequence of facades created by Manzano-Monís thus followed a logic in which the balance of the urban whole took precedence over the individual form of each house, with every facade, corner, portico, or bay window playing a role in the townscape.

Accordingly he designed new buildings in the walled town with close attention to construction quality and materials, in keeping with his sensitive approach to urban fabric. In the face of the dominance of industrial construction, he championed traditional crafts as a guarantee of architectural dignity.[28] Working with a network of craftsmen, he realized an architecture rich in detail: stonework, timber framing, carved eaves, bay windows, ironwork, corbels, and capitals. These elements reflect the workmanship of stonemasons, carpenters, and plasterers, still apparent throughout.

New Frontage Facing the Town Walls

For the west side of the town, Manzano-Monís devised a new facade sequence to face the west walls, where the houses, formerly built right on the medieval walls, had disappeared through war and neglect. He regenerated this quarter with new residential buildings on the abandoned plots, doing much of the work himself, though it was later completed by other architects.[29]

The new sequence comprised four-story buildings rising above the parapet of the Renaissance walls. Although the flats are grouped around stairwells and form larger blocks, the Gothic character is retained with narrow facades. What appears is thus a series of facades enclosed between projecting ashlar party walls resting on corbels, characteristic of the town. The rhythmic succession of facades is enriched with a variety of dimensions and compositions in the elevations: timber-framed or smooth-plastered fronts, openings with shutters, balconies, bay windows, and wooden galleries are distributed harmoniously below wide wooden eaves and staggered rooftops (Fig. 14).

One of Manzano-Monís's strategies within the walled precinct was to create new frontage to reorganize the urban fabric, seeking integration and connection between streets and interiors. Interior layouts were designed to be consistent with exterior volumes and their relationship with their surroundings. In addition to consolidating the old town's western aspect, the new buildings remodeled the space to the rear, linking different levels and creating a dynamic sequence, with streets that break off and open into small squares and recesses.



Figure 14: Wooden enclosed balconies and eaves giving onto Calle Leiba

Plaza de Gipuzkoa: A New Center in the Old Town

Manzano-Monís's most notable and best-known project was a newly created square in a depopulated part of the walled town, extending the existing street layout to the north and connecting the walled precinct with the old fishermen's quarter and outlying districts. Although the masterplan had provided for this square, he modified its shape and size to suit the scale of its surroundings and to integrate recent buildings,[30] such as a residential block taller than planned and an unplanned street.[31] These circumstances necessitated a rethink of the initial more regular design toward greater spatial complexity.

With these constraints, the new square was organized with contrasting frontage that makes the space dynamic. Two straight elevations with ground-floor porticos are aligned with Calle Carnicería, which crosses the square toward the outer districts. From this axis, the square opens out to the south, where the facades form a more articulated series, advancing and receding. This results in a contained space that expands at the edges, broadening perspectives and facilitating connectivity (Fig. 15).[32]

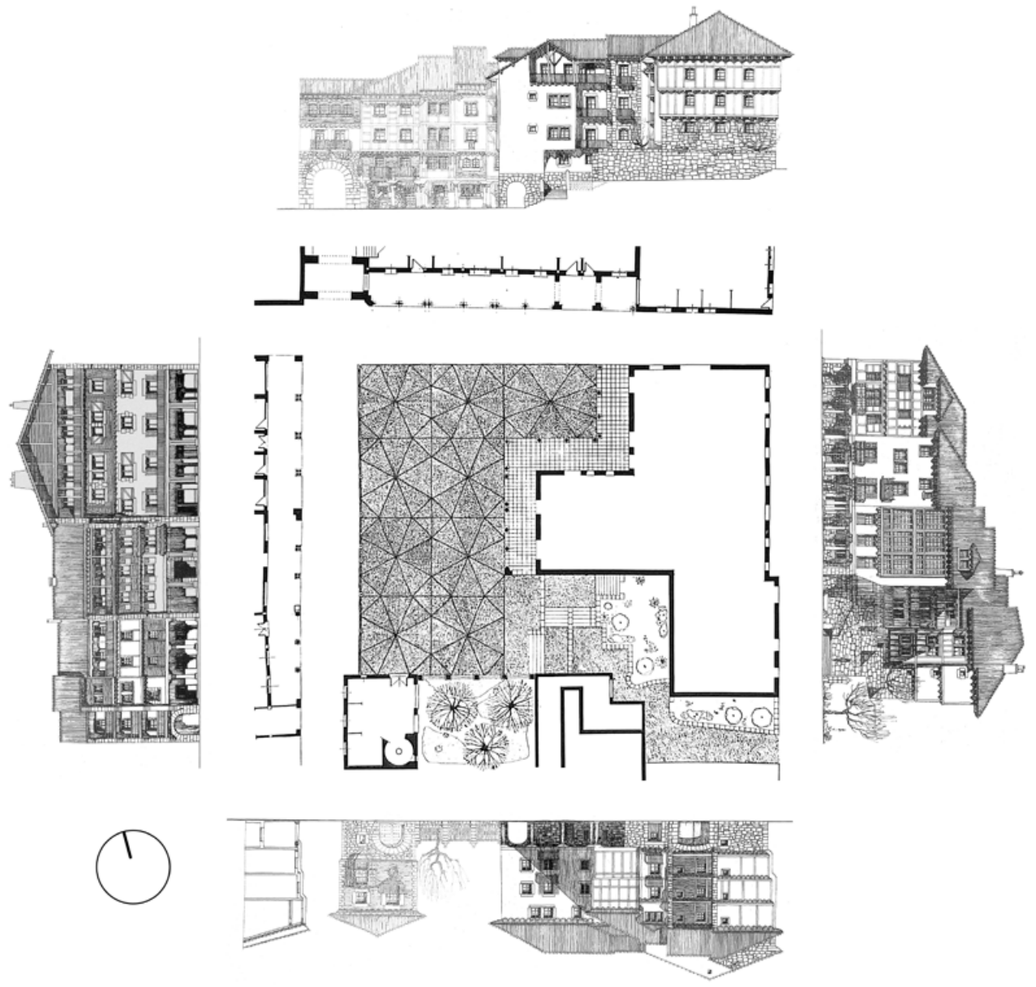
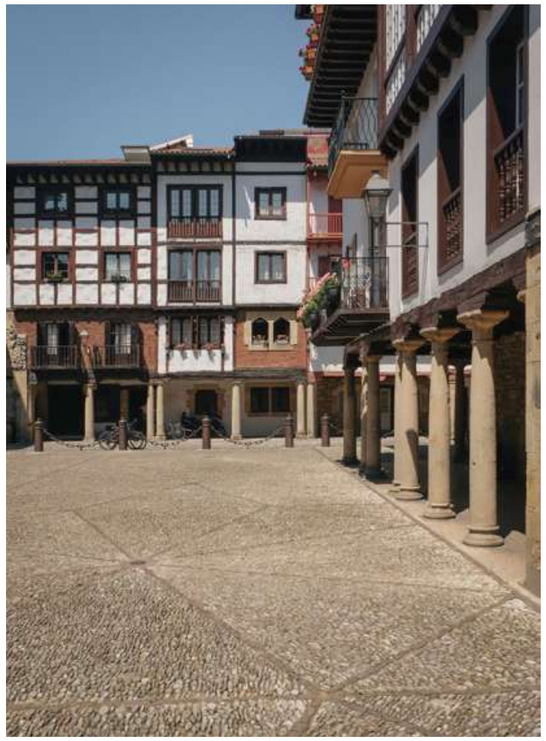


Figure 15: Plan, sections, and elevations of the new square, with two buildings shaded in grey built a few years before Manzano-Monís's time. Photomontage based on plans published in *Archives d'architecture moderne* (Barey 1982)









To the north, the street entering the square from the east widens into a plaza flanked by porticos and opening onto the central space. The eye is thus drawn toward the larger-scale house built a few years earlier on this street. Its presence, accentuated by a high gable, is integrated into the square's space as just another element. To the south, the square's corner opens onto the rear walls and volumes of Calle San Nikolas, which contribute to a second void featuring a succession of steps and platforms simulating a ruined garden. As in the smaller Plaza del Vicario, the low walls flanking these tiers resolve the marked difference in level in this approach, forming a zigzagging path climbing away through the greenery.

To one side, a smaller house closes the south frontage and flanks the approach from Calle Carnicería, where the new rectory stands with its vegetable garden, bordering the main garden. Finally, the corner of more regular frontage is reinforced by an arch that frames the view of Calle Carnicería and serves as a landmark for the outer neighborhoods (Figs. 16-19).

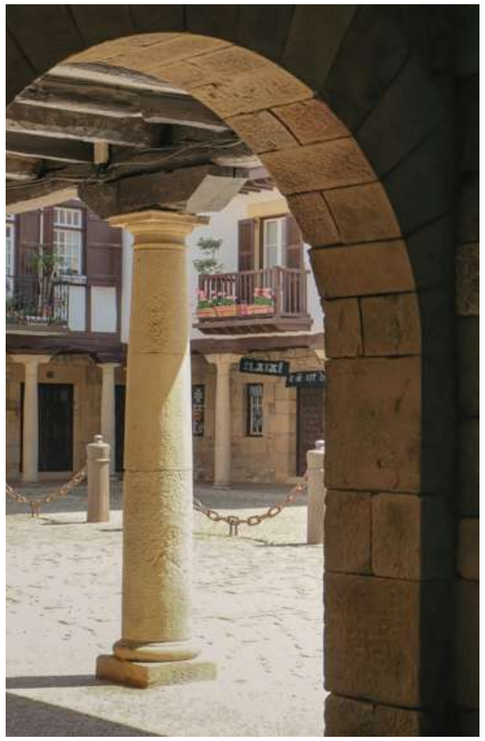
The masses of the buildings unfold across the landscape of the square with a sense of material unity, enlivened by a varied composition of elevations and integrating the facades of pre-existing fabric. The rhythm of the ground-floor porticos is varied with the succession of single and paired pillars, of stone or timber. The rhythm of facades is sequenced by their projecting party walls or eaves, interrupted and overlapping. The interplay of volumes and linkage of buildings on the south side help balance the austerity of the two more regular sides, letting light through all day thanks to the setback alignment and the open corners. On all four sides, timber-framed facades alternate with brick or stucco fronts, dotted with windows of varying compositions.

Here the quality of construction and creative freedom in the details conceived by Manzano-Monís reach their zenith. It is also worth noting the fine pebble paving across the middle of the square, contained between bands of cobblestone defining the axes of the streets and the portico flooring.

< Figures 16-19: Views of the square from the corners, showing the variety of frontage.

> Figures 20-21: Details showing the quality of work.





Conclusions

Fifty years on, the success of the urban spaces created by Manzano-Monís in Hondarribia and their effectiveness in revitalizing the old walled town are beyond question. With the passage of time, the opposition met by Manzano-Monís's reconstructions has given way to a positive view. The "undeniable architectural quality" of his work may be said to have been unanimously acknowledged. This is evident when compared with later interventions, with far less architectural and even landscape quality, generally executed with imitation materials, as rightly noted by the drafters of the latest special development plan for the old town (Lasa 2021: 44).

In just over a decade, Manzano-Monís transformed a declining and partially depopulated historic center into a legible and habitable townscape. He did so with rigor in his understanding of the site, after analyzing the town's history of urbanism and architecture. His project went beyond mere recovery of the past, involving a painstaking reassembly of extant fabric, a restoration of degraded spaces, and the building of new ones where needed. Through the design of new fabric and frontage, he gave renewed significance to an incomplete and dilapidated yet historic town.

Many of the town's most handsome and vibrant squares, streets, and corners bear his discreet imprint. The pre-existing fabric was enhanced by the regeneration he led, giving it continuity, context, and scale. If today the walled town of Hondarribia throbs with vitality, it is thanks to the unity and coherence which he imparted to its reconstruction (Azpiri 2003: 183), to the quality of his architectural designs and renewed urban fabric, creating spaces of harmony and beauty, to his sensitivity in seeing the value of neglected sites and regenerating them, and to his understanding of the contribution of traditional crafts to our architecture's material dignity.

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*The abbreviation HUA refers to documents held in the Hondarribia Municipal Archive (Hondarribiko Udal Artxiboa) and is followed by the corresponding archival reference.

[1] The floor area of the buildings constructed under Manzano-Monís's masterplan almost doubled that of the houses then extant (40%). Of this increase, half of the buildings (53%) were designed and built by Manzano-Monís himself, accounting for 21% of the current area

[2] These were Migel Garai, Manuel Iñiguez, José Ignacio Linazasoro, and Alberto Ustarroz.

[3] For a comprehensive account of architecture and urbanism in twentieth-century Hondarribia, see the research of Ana Azpiri published by Hondarribia town council (Azpiri 2003). For a summary, see Azpiri's paper presented a year earlier at the University of Navarra (Azpiri 2002). Regarding the extremes between which criticism has swung, see her article in the journal *Akobe* (2005).

[4] Some of the town's most significant architectural works—the Town Hall (1731), the Alameda (c. 1738), and Francisco de Ibero's Baroque bell tower (1764)—are from this period. This suggests that public works were undertaken in an attempt, through civic architecture, to resist the town's seemingly inevitable military decline. Regarding the fortification projects proposed over the eighteenth century to restore the town's strategic importance, see Aritz Díez Oronoz (2014).

[5] Mayor Sagarzazu said, "Heritage site designation imposes restrictions on the town that significantly hamper the freedom of action for any urban development initiative" (HUA), Minutes of 15 September 1951).

[6] Manzano-Monís's involvement in the general development plan was intermittent. He replaced Pedro Muguruza in 1952, but Félix Llanos took over in 1957 until Manzano-Monís took charge in 1959, up to its completion (HUA, U-384-01).

[7] HUA, Minutes, 1/12/1958.

[8] In the document submitted in 1972, the council complained of the architect's "repeated and blatant interference" in "municipal affairs," which, in its view, amounted to a "clear disregard for the nature and authority of the Council." They pointed out that Manzano-Monís acted as both judge and jury. It also included a list of the buildings he had built: 168 dwellings in the old town and a further 149 outside it (Azpiri 2005: 87). By this point, the council had become aware of the oversight implications of Manzano-Monís's regulatory strategy, and when a second process was begun in 1970 to have the historic outlying district declared a heritage site, the council opposed it categorically (Azpiri 2002: 69).

[9] Both documents—the historical study and the development plan—formed part of his approach from the outset. Whilst the plan brief is dated July 1962, Manzano-Monís had informed the mayor the year before that he had begun work on the project. "Although what I have is still very preliminary," he noted, "I have more or less sketched out the general outline" (HUA, U-192-II-01).

[10] HUA, U-177-I-1.

[11] HUA, U-192-03.

[12] The full account of housing projects in the municipal archive is as follows: 12 dwellings on Calle Pintor Etxenagusia (1963), 16 dwellings for S. Tellechea (1963), 3 dwellings on Calle Juan Laborda (1964), 12 on Calle Carnicería (1965), a project for dwellings between Calles Ubilla and Eguzki (1966), 20 dwellings between Calles Carnicería and Leiba (1966), 8 dwellings on Calle Ubilla (1966), 12 dwellings on Calle Juan Laborda (1966), a project for the reconstruction of a dwelling on Calle Murrua (1967), more dwellings on Calle Leiba (1967), a project for the Kerizpe house (1969), 8 dwellings on Calle Ubilla (1970), more dwellings on Calle Carnicería (1970), and a final set of dwellings on Calle Pampinot (1971).

[13] Although this research suffers from the defects of its time—a somewhat grandiose tone and a nationalistic view of history—it is the first comprehensive study of the walled town.

[14] His findings were presented at an exhibition organized by himself. In an interview in *Diario Vasco*, he spoke of his fascination with the town's fortifications, which were to be central to his plan (Seisdedos 1962).

[15] HUA, U-192-II-01: 51.

[16] This likening of urban regeneration to the reassembly of a fragmented Greek vase appears in the concluding statement of Manzano-Monís's project brief (HUA, U-192-II-01: 51-52).

[17] HUA, U-192-II-01: 20-21.

[18] HUA, U-192-II-01: 21.

[19] HUA, U-192-II-0115.

[20] The file in the municipal archive contains no plans or project briefs, but the works were carried out from 1964 to 1972, the date of the earliest photos of the project (HUA, U-192-I-06).

[21] HUA, U-100-II.

[22] HUA: 48.

[23] HUA, U-177-1 and HUA, U-09-1002.

[24] HUA, U-177-I-1.

[25] This house was built in 1905 and extended three years later to include a large terrace (HUA, D-6-I-1).

[26] AHPG-GPAH, 3/0385, p. 25.

[27] In the French text by André Barey this term is given as *module d'accompagnement* (Barey 1982: 37).

[28] Manzano-Monís's interest in arts and crafts dates back to at least 1943, when he organized several exhibitions on the subject in Albacete. His commitment to traditional crafts enabled him to build up a network of craftspeople across the country, which proved invaluable in Hondarribia (Barey 1982: 37).

[29] The first two blocks of flats in the central area date from 1965 (HUA, U-75-2 and HUA, U-82-5); the northern part was built in 1966, as part of the new square (HUA, U-902), and the southern section was designed in 1967 (HUA, U-26-7).

[30] In his first site plan, dated 1959, Manzano-Monís followed the masterplan layout to the letter, but this was substantially modified in the second draft; the original design was more rectangular, wider, and with porticos on all sides (HUA, U-192-02).

[31] In the surviving plans, as reported by Manzano Monís, the outline envisaged is drawn in red pencil on the main elevation, showing a height almost one and a half stories lower (HUA, U-80-1.1001.12).

[32] In his brief Manzano Monís speaks of his "concern [that] the new square should not be excessively high, so as not to detract in any way from the characteristic skyline of the old town" (HUA, U-192-03).

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Biographies | Biografías | Biografias

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Cristina Carrillo Fernández

Lux Populi: Edicole Sacre *as Vernacular Lighting Infrastructure in Pre-Electric Rome*

Lux Populi: *Las* edicole sacre *como infraestructura de iluminación vernácula en la Roma pre-eléctrica*

Lux Populi: *As* edicole sacre *como infraestrutura de iluminação vernácula na Roma pré-elétrica*

Keywords | Palabras clave | Palavras chave

Wayfinding, Urban heritage, Visual anthropology, Preservation, Madonnelle

Wayfinding, Patrimonio urbano, Antropología visual, Conservación, Madonnelle

Wayfinding, Património urbano, Antropologia visual, Conservação, Madonnelle

Abstract | Resumen | Resumo

This article proposes an analytical paradigm shift by regarding Roman *edicole sacre* shrines not just as devotional elements but also as early pre-electric urban infrastructure. With a methodology of five vectors, the role of this network is evaluated holistically within Rome's historic fabric. The results show that these vernacular light sources served as a wayfinding system and had a deterrent function with regard to community safety. Their placement strategically resolved morphological street conflicts and generated micro-squares by means of focused lighting. The analysis also documents an alarming deterioration of this heritage: over half of the network has disappeared or is normally unlit. The article concludes that safeguarding these traces of the past requires reinstating their original lighting function so as to restore the night to the city inhabitants.

Este artículo propone un cambio de paradigma analítico al concebir las *edicole sacre* romanas no sólo como elementos devocionales, sino también como una primigenia infraestructura urbana pre-eléctrica. Mediante una metodología estructurada en cinco vectores, se evalúa el rendimiento integral de esta red en el tejido histórico romano. Los resultados muestran que estas luminarias vernáculas actuaban como un sistema táctico de orientación espacial (*wayfinding*) y como un mecanismo disuasorio de seguridad comunitaria. Su inserción resolvía estratégicamente los conflictos morfológicos del viario y generaba microplazas mediante una iluminación focalizada. Sin embargo, el análisis documenta una alarmante degradación patrimonial: más de la mitad de la red ha desaparecido o permanece crónicamente apagada. Se concluye que la salvaguarda de estos vestigios exige restituir su función lumínica originaria para devolver la noche a la ciudadanía.

Este artigo propõe uma mudança de paradigma, ao conceber as *edicole sacre* romanas não só como elementos devocionais, mas também como uma infraestrutura urbana pré-elétrica. Através de uma metodologia estruturada em cinco vetores, avalia-se o desempenho integral desta rede no tecido histórico Romano. Os resultados mostram que estas iluminações vernáculas funcionavam como um sistema tático de orientação espacial (*wayfinding*) e como um mecanismo dissuasor de segurança comunitária. A sua introdução resolvia estrategicamente os conflitos morfológicos da rede viária e criava micro-praças através de uma iluminação focada. No entanto, a análise revela uma degradação patrimonial alarmante: mais de metade da rede desapareceu ou permanece cronicamente apagada. Conclui-se que a salvaguarda destes vestígios exige a restauração da sua função luminosa original, a fim de devolver a noite aos cidadãos.

Introducción

Con anterioridad a la implantación de las redes de alumbrado público a gas, a mediados del siglo XIX, el tejido urbano de Roma se caracterizaba por una acusada inhospitalidad nocturna. La intrincada morfología viaria, heredera de las estratificaciones medievales y renacentistas, presentaba secciones angostas y trazados orgánicos que, en ausencia de una iluminación nocturna suficiente, hacían que en la noche el espacio público tuviera una deficiente legibilidad visual, dificultaban el tránsito y propiciaban una mayor inseguridad. En este contexto de carestía de infraestructuras[1] emerge la relevancia de uno de los componentes más singulares y omnipresentes del paisaje histórico romano: la red de templetes devocionales o *edicole sacre* (popularmente denominadas *madonnelle*) (Fig. 1). Estas microarquitecturas, incrustadas en los paramentos urbanos, presentan una notable variedad de formas y materiales. No obstante, todas comparten una estructura básica común: la integración de una imagen sacra dentro de un marco mural –ejecutado en estuco, fábrica de ladrillo o cantería– y de un sistema de iluminación anexo, materializado mediante un farol o luminaria de forja (Fig. 2).

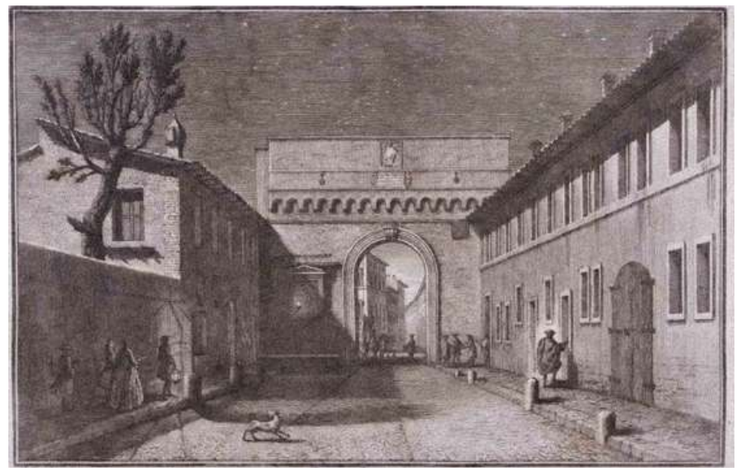
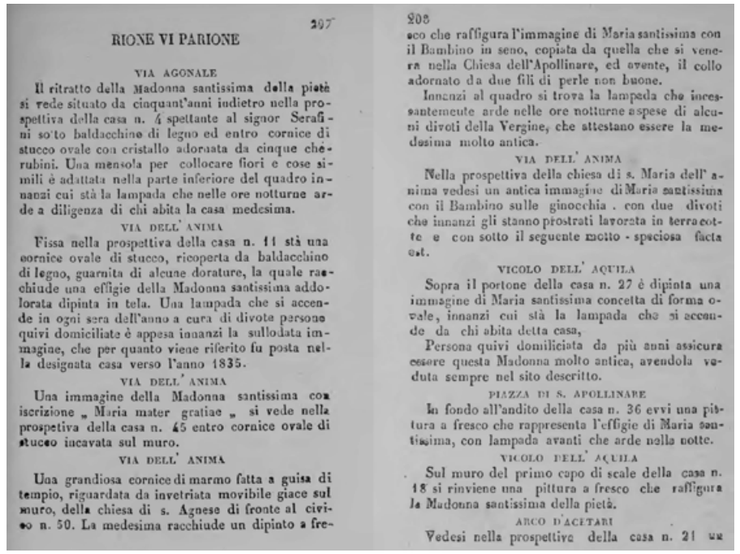


Figura 1. Vista nocturna de la Porta Settimiana, con una *edicola* iluminada en el paramento izquierdo. Roma, finales del siglo XVIII. Grabado de Giuseppe Vasi (1stDibs)



Figura 2. *Edicola* de la *Madonna dell'Archetto*, en Piazza di Trevi. El farol actúa como baliza de *wayfinding* y como atractor focal que activa el espacio público nocturno.



RIONE VI PARIONE

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VIA AGONALE

Il ritratto della Madonna santissima della pietà si vede situato da cinquant'anni indietro nella prospettiva della casa n. 4 spettante al signor Serafini sotto baldacchino di legno ed entro cornice di stucco ovale con cristallo adornata da cinque cherubini. Una mensola per collocare fiori e cose simili è adattata nella parte inferiore del quadro innanzi cui stà la lampada che nelle ore notturne arde a diligenza di chi abita la casa medesima.

VIA DELL' ANIMA

Fissa nella prospettiva della casa n. 11 stà una cornice ovale di stucco, ricoperta da baldacchino di legno, guarnita di alcune dorature, la quale racchiude una effigie della Madonna santissima addolorata dipinta in tela. Una lampada che si accende in ogni sera dell'anno a cura di divote persone quivi domiciliate è appesa innanzi la sullodata immagine, che per quanto viene riferito fu posta nella designata casa verso l'anno 1835.

VIA DELL' ANIMA

Una immagine della Madonna santissima con iscrizione „ Maria mater gratiae „ si vede nella prospettiva della casa n. 45 entro cornice ovale di stucco incavata sul muro.

VIA DELL' ANIMA

Una grandiosa cornice di marmo fatta a guisa di tempio, riguardata da invetriata movibile giace sul muro, della chiesa di s. Agnese di fronte al civico n. 50. La medesima racchiude un dipinto a fre-

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sco che raffigura l'immagine di Maria santissima con il Bambino in seno, copiata da quella che si venera nella Chiesa dell'Apollinare, ed avente, il collo adornato da due fili di perle non buone.

Innanzi al quadro si trova la lampada che incessantemente arde nelle ore notturne aspese di alcuni divoti della Vergine, che attestano essere la medesima molto antica.

VIA DELL' ANIMA

Nella prospettiva della chiesa di s. Maria dell' anima vedesi un antica immagine di Maria santissima con il Bambino sulle ginocchia . con due divoti che innanzi gli stanno prostrati lavorata in terracotte e con sotto il seguente motto - speciosa facta est.

VICOLO DELL' AQUILA

Sopra il portone della casa n. 27 è dipinta una immagine di Maria santissima concetta di forma ovale, innanzi cui stà la lampada che si accende da chi abita detta casa.

Persona quivi domiciliata da più anni assicura essere questa Madonna molto antica, avendola veduta sempre nel sito descritto.

PIAZZA DI S. APOLLINARE

In fondo all'andito della casa n. 36 evvi una pittura a fresco che rappresenta l'effigie di Maria santissima, con lampada avanti che arde nella notte.

VICOLO DELL' AQUILA

Sul muro del primo capo di scale della casa n. 18 si rinviene una pittura a fresco che raffigura la Madonna santissima della pietà.

ARCO D'ACETARI

Vedesi nella prospettive della casa n. 21 un

Figura 3. Extracto del inventario *Indicazione delle immagini di Maria Santissima collocate sulle mura esterne dell'alma città di Roma*, 1853 (Alessandro Rufini / Wikimedia Commons)



Figura 4. *Edicola* de la *Madonna Immacolata*, en Piazza della Rotonda. Ejemplo de su función dentro de la red vernácula de alumbrado y *wayfinding* urbano.

Frente a la gran arquitectura monumental y los trazados oficiales, estas piezas conforman una auténtica red vernácula; es decir, un patrimonio arquitectónico y devocional de carácter popular y anónimo, arraigado en la tradición constructiva local y desarrollado al margen de los circuitos cultos de la traza urbana. Esta condición vernácula no sólo define sus modestos recursos materiales y su inserción orgánica en los paramentos, sino también su arraigo en la vida cotidiana de los vecinos, que las convierte en verdaderos hitos de proximidad y referentes de la memoria colectiva de la ciudad histórica.

Hasta la fecha, la aproximación historiográfica al fenómeno de las *edicole* se ha circunscrito casi exclusivamente a los ámbitos de la historia del arte, el análisis iconográfico y la antropología de la devoción popular. Desde el primer inventario metódico llevado a cabo por Alessandro Rufini en 1853 (Fig. 3) hasta los exhaustivos catálogos del siglo XX, como el redactado por John S. Grioni (1975), la literatura académica se ha centrado preferentemente en la autoría de los lienzos, la sintaxis estilística de las embocaduras y el anecdotario inmaterial.

Frente al tradicional sesgo contemplativo, este artículo propone un cambio de paradigma analítico que concibe las *edicole sacre* como una infraestructura urbana: una red vernácula de alumbrado y orientación espacial (*wayfinding*) (Fig. 4).

Metodología

Para demostrar esta hipótesis y garantizar una evaluación integral del fenómeno, la presente investigación articula una metodología estructurada en cinco vectores de análisis: urbano, visual, lumínico, material y social. El desarrollo empírico de estos ejes se sustenta en una triangulación metodológica que toma como principal laboratorio urbano el Rione Parione y sus áreas circundantes (Fig. 5). Se ha seleccionado este caso de estudio por su compacidad morfológica y la alta densidad de flujos históricos que presenta, que hacen de este ámbito un entorno idóneo para descifrar esta red cívico-religiosa y extrapolar sus lógicas al conjunto de la Roma pre-eléctrica.

En una primera fase, la investigación ha requerido un levantamiento fotográfico y un riguroso trabajo de campo para catalogar las preexistencias físicas y evaluar sus tipos de inserción estructural en los paramentos. Simultáneamente, a escala urbana, se ha llevado a cabo un análisis planimétrico de isovistas sobre cartografía histórica2 para cuantificar y demostrar empíricamente la continuidad visual de la red topológica. Finalmente, este análisis de campo se ha complementado con simulaciones fotométricas del comportamiento del fuego y con la revisión sistemática de fuentes documentales y censos históricos, desde los catálogos decimonónicos de Alessandro Rufini (1853) hasta los registros municipales contemporáneos (1999). Todo ello ha permitido evaluar también cuantitativamente la evolución del deterioro patrimonial de la red.

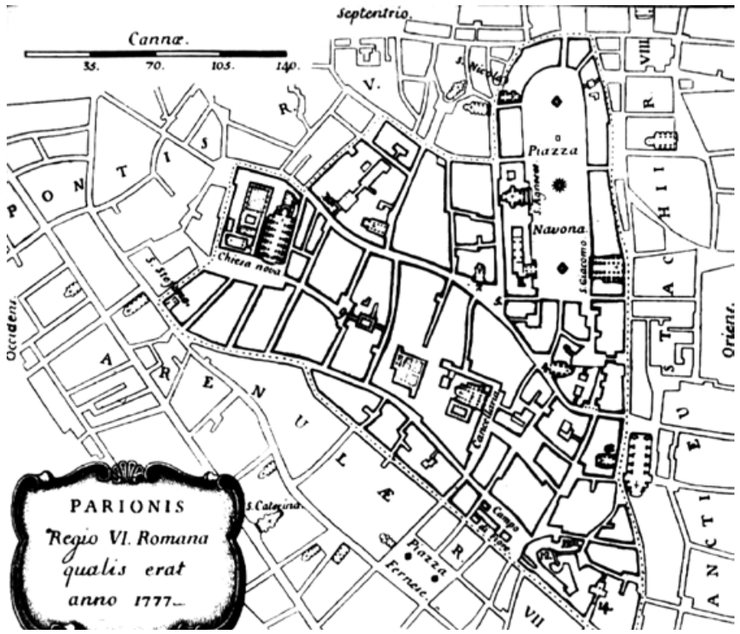


Figura 5. Cartografía histórica del Rione Parione (romeartlover.it, elaboración basada en Giuseppe Vasi y Giambattista Nolli)

Contexto histórico: De la devoción a la infraestructura urbana

Desde el punto de vista genealógico, el origen tipológico de estas preexistencias remite a la Antigüedad clásica[3], concretamente al culto de los Lares Compitales (Fig. 6). En la planimetría de la Roma pagana, los *compita* o encrucijadas viarias constituían umbrales de transición dotados de un carácter apotropaico, lo que justificaba la erección de pequeños altares destinados a sacralizar el cruce y velar por el transeúnte. Durante la Edad Media, las instituciones eclesiásticas asimilaron y cristianizaron esta pauta de territorialización: sustituyeron el panteón pagano por advocaciones marianas y de santos, pero conservaron su propósito protector.

Sin embargo, la verdadera cristalización urbana de las *edicole* tuvo lugar durante los siglos XVI y XVII. Al amparo de los postulados del Concilio de Trento y del impulso pastoral de la Contrarreforma, las imágenes de culto trascendieron el interior de los recintos eclesiásticos para extenderse por la escena urbana. Su proliferación no obedeció a un planeamiento urbanístico centralizado, sino a iniciativas de carácter vernáculo y popular (*bottom-up*), sufragadas por cofradías (*confraternite*) y agrupaciones vecinales con el propósito de reafirmar el dogma católico y monumentalizar el espacio público a escala doméstica.

Si bien en su génesis la vocación de la *edicola* era estrictamente espiritual, la paulatina densificación del tejido barroco y las crecientes exigencias de habitabilidad propiciaron una transformación funcional. La iluminación votiva, inicialmente resuelta mediante exiguos cirios como símbolo de fe perenne, adquirió una nueva función ante la penumbra de las vías públicas. Tanto las autoridades papales como la propia sociedad civil reconocieron el potencial cívico latente en estas infraestructuras dispersas.

Se procedió a la instalación sistemática de faroles de aceite suspendidos de soportes de forja, cuya provisión y mantenimiento recaían en la vecindad. Esto instituyó una suerte de servidumbre cívico-religiosa[4]. Con esta transición, el componente lumínico superó su condición de mera ofrenda para convertirse en un primitivo sistema de balizamiento peatonal y en un mecanismo disuasorio frente a la criminalidad nocturna. Estratégicamente emplazadas en esquinas, bifurcaciones y plazuelas, las *edicole* proyectaban una tenue luz que, reflejada en sus estucos, favorecía la lectura del trazado y dotaba al viario de seguridad pasiva. Estas estructuras se consolidaron así como hitos indispensables para el *wayfinding* de la urbe.



Figura 6. *Lararium* de la Casa de los Vettii, antecedente romano de la tipología de las *madonnelle*. Pompeya, siglo I d. C. (Steve Chappell)

Análisis urbano: Sintaxis espacial y control de la encrucijada

La distribución de las *edicole* en el tejido histórico romano no obedece al azar ni a la simple disponibilidad de fachadas, sino a una lectura profunda de la sintaxis urbana. Estas microarquitecturas actuaban como elementos de articulación urbana destinados a resolver los conflictos geométricos de una trama de herencia medieval. Es fundamental subrayar que, en su inmensa mayoría, constituían injertos añadidos *a posteriori* a la arquitectura preexistente. Esta condición las define como una temprana estrategia de actualización de infraestructuras, promovida por la comunidad para dotar de alumbrado y seguridad a los puntos críticos de la ciudad sin alterar la estructura del tejido construido.

Su implantación demuestra una clara preferencia por los nodos de alta fricción peatonal. En estos enclaves, la *edicola* trascendía su función devocional para actuar como una baliza direccional activa, que anticipaba al viandante los cambios de trayectoria. Desde una perspectiva operativa, su posicionamiento altimétrico resultaba igualmente metódico: al situarse en el estrato superior de la planta baja, generalmente a una cota de entre 3,5 y 4,5 metros, el volumen del baldaquino y su farol dominaban el espacio aéreo. Concebida para irradiar luz, esta luminaria –cuya conservación, como se ha mencionado, imponía una exigente servidumbre de mantenimiento a la vecindad– se disponía a una altura que evitaba entorpecer el tránsito de carruajes y liberaba la angosta sección peatonal útil a cota cero[5] (Fig. 7).



Figura 7. *Edicola* en la Via degli Uffici del Vicario, situada en el estrato superior del paramento para mantener libre la sección peatonal.

El análisis espacial de las ubicaciones conservadas en el área de estudio evidencia que la cultura constructiva tradicional desarrolló una taxonomía adaptativa, que ajustaba la posición geométrica del templete a la morfología específica de cada conflicto viario. Esto confirma la existencia de una planificación comunitaria orientada a optimizar el rendimiento visual del sistema. La solución topológica más eficiente se encuentra en los nodos de convergencia, localizados en las intersecciones viarias. Dentro de esta categoría, la cultura constructiva desarrolló dos estrategias fundamentales de adaptación tectónica.

La primera de ellas consiste en el control panorámico envolvente, que resuelve cruces complejos al abrazar la arista curva o el chaflán del inmueble para irradiar luz simultáneamente hacia múltiples ejes viarios. El catálogo ofrece ejemplos paradigmáticos de este tipo, como la *Madonna col Bambino* de la Piazza dell'Orologio (Fig. 8), cuya posición le permite dominar visualmente la confluencia con la Via del Governo Vecchio. Esta misma lógica de control multidireccional se reproduce en el Vicolo della Chiesa Nuova, donde el templete de los *Santi Filippo Neri e Borromeo* (Fig. 9) cabalga sobre la esquina del bloque. Otros ejemplos en los que la infraestructura se ciñe a la arista para maximizar su cuenca visual son la *Madonna della pietà* de la intrincada Via della Posta Vecchia, la *Madonna col Bambino* del Largo Pallaro y la *Edicola dell'abside*, encastrada en la geometría irregular de la Piazza dei Massimi.

Figura 8. *Edicola* de la *Madonna col Bambino*, en Piazza dell'Orologio. Su disposición en chaflán permite un control visual panorámico del espacio circundante.

Figura 9. *Edicola* de la *Madonna col Bambino e Santi Filippo Neri e Borromeo*, situada en un nodo de convergencia en chaflán entre Via del Governo Vecchio y Vicolo della Chiesa Nuova.



Figura 10. *Edicola* en Piazza Farnese, con una inserción en diagonal, a 45°, orientada hacia el acceso de la Chiesa di Santa Maria dell'Orazione e Morte.



La segunda estrategia, empleada para resolver intersecciones estrictamente ortogonales, se materializa mediante una disposición diagonal en esquina. En esta variante, el templete biseca el vértice del edificio a 45 grados y actúa como una rótula visual que proyecta su luz equitativamente hacia los ejes divergentes. En esta variante tectónica, el templete biseca el vértice del edificio a 45 grados y actúa como una rótula visual que proyecta su luz equitativamente hacia los ejes divergentes. La efectividad geométrica de esta solución se evidencia con especial claridad en la *Immacolata concezione*, situada en la confluencia del Corso del Rinascimento y la Via dei Canestrari, así como en la *Edicola de Santo Stefano*, que resuelve el quiebro del Vicolo Cellini. Esta misma disposición rotular se constata en la Via del Pellegrino, donde la Madonna col Bambino e San Filippo Neri, situada en la arista, anticipa al viandante el giro hacia un callejón; en la *Madonna di Palazzo Orsini Capponi*, en la Piazza dell'Orologio; y en la *Madonna col Bambino* de la Via del Plebiscito. Idéntica efectividad topológica se comprueba en vías de sección más estrecha, como atestiguan las *madonnelle* que articulan las esquinas de la Piazza Pollarola, la *Madonna col Bambino* de la Via della Posta Vecchia o la *Madonna* situada en la esquina de la Via di Monserrato y la Via dei Farnesi (Fig. 10).

Para tejer una red continua, el sistema requería también nodos de relevo que garantizaran el balizamiento en vías rectilíneas excepcionalmente largas o de trazado levemente curvo. Adosadas a lienzos de fachada completamente planos, estas inserciones tenían como función principal evitar la rotura de la isovista y actuaban como repetidores lumínicos que mantenían la conexión visual ininterrumpida hasta el siguiente nodo direccional. Esta estrategia lineal articula grandes arterias del distrito, como atestiguan la *Madonna col Bambino* de la Via dei Pettinari (Fig. 11) o la irrupción de la *Madonna della lettera* en la monotonía del muro ciego de la Via dei Leutari. De igual forma, la *Madonna delle arpie* ejerce de faro intermedio en la Via di Tor Millina y se complementa con los repetidores localizados en la Via dei Baullari, la Via di Santa Maria dell'Anima –con su célebre *Madonna in maestà*– y los lienzos de ensanchamientos como la Piazza Navona o la Piazza Madama.

Asimismo, la red de *edicole* demostró su capacidad para adaptarse a algunas de las condiciones topológicas más desfavorables del tejido: los nodos de umbral en arcos y pasajes peatonales cubiertos. Insertadas en el intradós de estos túneles que perforan los bloques edificados, las imágenes garantizaban una iluminación permanente en zonas de sombra diurna y potencial inseguridad, y operaban como un "faro en la caverna". Ejemplos de este tipo son la célebre *Madonna dell'Arco*, empotrada en el umbral pasante del Arco della Chiesa Nuova, y la *Madonna dell'Arco dei Banchi* (Fig. 12).



Figura 11. *Edicola* de la *Madonna col Bambino*, situada sobre un balcón en Via dei Pettinari y configurada como nodo de relevo en una fachada plana.



Figura 12. *Edicola* de la *Madonna dell'Arco dei Banchi*, insertada en el intradós del pasaje cubierto y configurada como nodo de umbral.



Figura 13. *Edicole* enfrentadas en Via dei Coronari, cuya disposición redundante permite dar continuidad al alumbrado y evitar vacíos lumínicos.

Más allá de la resolución de fricciones geométricas individuales, la red operaba como un sistema interconectado capaz de responder a las vulnerabilidades del entorno. Se identifica una estrategia de acoplamiento espacial por redundancia en ensanchamientos viarios donde la sección superaba el alcance de un único farol de aceite. En estos casos, se recurría a la implantación de templetes enfrentados, que conformaban verdaderas "puertas de luz" para evitar la aparición de zonas de sombra en el centro del espacio público, como se observa con especial claridad en la Piazza dell'Orologio o en la Via dei Coronari (Fig. 13). Igualmente revelador resulta el balizamiento de accesos institucionales, caracterizado por la ubicación sistemática de templetes que flanqueaban las entradas de grandes equipamientos o se disponían frente a ellas, al tratarse de áreas tradicionalmente propensas a la criminalidad nocturna. El catálogo muestra varios ejemplos: la *edicola* del Vicolo della Chiesa Nuova vigila directamente la entrada lateral del templo; la de la Via di Santa Maria dell'Anima se adosa a la trasera de la iglesia y controla sus accesos secundarios; y lógicas idénticas se observan en el Vicolo Cellini o frente a la parroquia de la Via dei Baullari. En estas situaciones, el farol asume una función de seguridad perimetral: proyecta su halo sobre los umbrales y combina la disuasión panóptica del icono con la vigilancia física del espacio.



Figura 14. El faro urbano como atractor social. *Pifferari*, de Bartolomeo Pinelli (Donación de Eleanor y Sarah Hewitt, Cooper Hewitt, Smithsonian Design Museum)

Análisis visual y perceptivo: La secuencia cinética y el efecto de revelación

Superado el análisis topológico, la eficacia de la red exige una lectura desde la experiencia del transeúnte. Frente a la vocación isotrópica del alumbrado contemporáneo –diseñado para generar un barrido lumínico continuo–, el sistema vernáculo de las *edicole* operaba mediante la gestión táctica del contraste y la iluminación "punto a punto". Inmerso en la profunda oscuridad del tejido serpenteante del centro histórico romano, el peatón experimentaba una adaptación fisiológica escotópica[6]. Esta elevada sensibilidad retiniana convertía el farol de aceite en un poderoso atractor focal que, mediante un marcado claroscuro cenital, inducía la elevación de la mirada hacia la iconografía sagrada y relegaba la calle a la penumbra (Fig. 14).

Lejos de ofrecer perspectivas monumentales o estáticas, la organicidad del tejido urbano imponía una aprehensión cinética del espacio. La percepción del templete se acompasaba al ritmo del caminar y se caracterizaba por una secuencia continua de contracción y expansión visual. Durante el tránsito por los tramos ciegos, el foco lumínico permanecía oculto tras la geometría de los paramentos; era en el instante preciso de la rotación, al rebasar una arista o irrumpir en una encrucijada, cuando la infraestructura se revelaba súbitamente (Fig. 15). Este efecto de paralaje y revelación escenográfica, heredero de la cultura visual del Barroco, operaba en un doble frente: maximizaba el impacto psicológico al hacer irrumpir lo sagrado en la inhospitalidad de la noche y, simultáneamente, transformaba la fisicidad tectónica del hito diurno en una baliza nocturna ingrávida.

Bajo esta lógica dinámica, la calibración empírica de las distancias entre estos nodos garantizaba la continuidad visual, tal y como demuestra la cartografía analítica de isovistas (Fig. 16). La red estaba concebida para que, al abandonar la cuenca lumínica de una *edicola*, el campo visual del ciudadano ya registrara el resplandor de la siguiente baliza al fondo de la perspectiva o en el siguiente quiebro viario, lo que confirmaba su orientación. Considerando la desaparición documentada de numerosas unidades a lo largo de los siglos, cabe inferir que la densidad de la red vernácula original era sustancialmente mayor, lo que habría aumentado la redundancia lumínica y reforzado la continuidad del sistema de *wayfinding* cívico.



Figura 15. *Edicola* de la *Madonna col Bambino e San Filippo Neri*, en la intersección de Via del Pellegrino con el Arco di Santa Margherita.

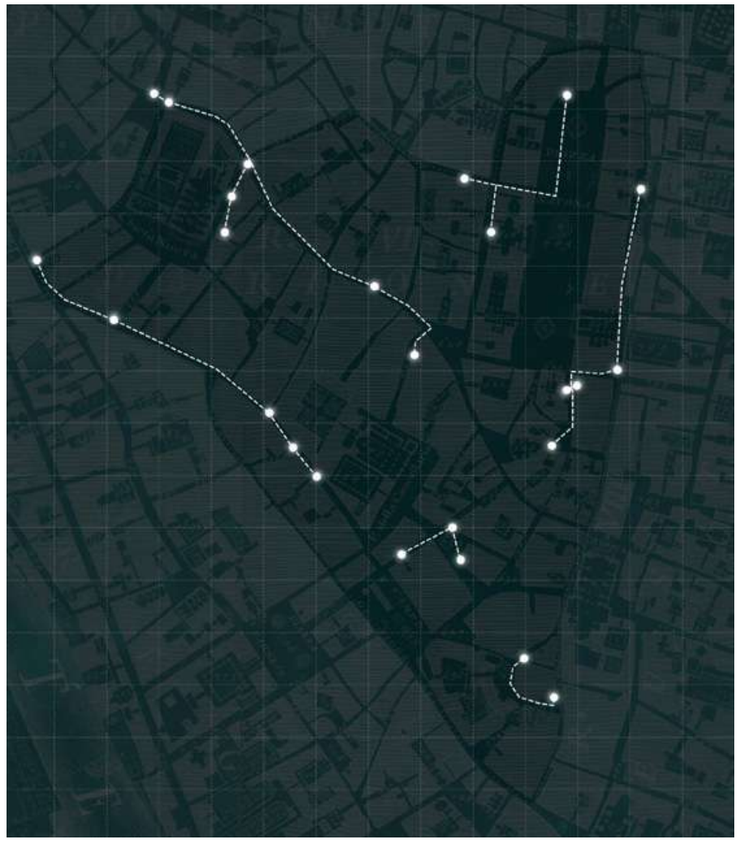


Figura 16. Análisis planimétrico de isovistas en el Rione Parione. La continuidad visual entre los nodos lumínicos evidencia su funcionamiento como red de orientación espacial pre-eléctrica (Elaboración propia sobre la base de Giambattista Nolli, 1748)



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Figura 17. Simulación lumínica de la *edicola* de la *Madonna col Bambino,* en Piazza dell'Orologio.

Figura 18. *Edicola* de la *Madonna orante*, en la intersección de Via dei Cappellari con Vicolo del Gallo. Los acabados áureos actúan como reflectores pasivos.

Figura 19. Detalle de la acumulación de hollín en la *edicola* situada en la esquina de Via della Dogana Vecchia y Via Giustiniani.

Análisis lumínico: Radiación cálida, reflectancia pasiva y física óptica del refugio

Para comprender el rendimiento de este sistema, resulta necesario trasladar el análisis desde la escala perceptiva urbana hasta la física de la fuente emisora. Desde una perspectiva fotométrica, el motor lumínico de la *edicola* operaba bajo condiciones de extrema precariedad. La combustión de una mecha sumergida en aceite producía un flujo lumínico exiguo, con una intensidad de apenas una o dos candelas. Sin embargo, la eficacia del sistema no dependía únicamente de la cantidad absoluta de luz emitida, sino también de sus características espectrales. La llama presentaba una temperatura de color extremadamente cálida, de entre 1800 y 2000 K, que generaba un marcado contraste perceptivo en el entorno nocturno del valle del Tíber. Fenomenológicamente, este espectro podía percibirse como un foco de calor y refugio frente a la fría inhospitalidad de la vía pública (Fig. 17).

Dada la debilidad de la fuente, su posicionamiento espacial requería una notable precisión y demuestra un conocimiento empírico de los principios de la iluminación. En primer lugar, el gálibo altimétrico –situado generalmente entre los 2,5 y 3,5 metros– respondía a un equilibrio entre el alcance de la fuente lumínica y la necesidad de mantenerla protegida frente al vandalismo y el tránsito. De acuerdo con la ley de la inversa del cuadrado de la distancia, la iluminancia disminuye rápidamente a medida que aumenta la distancia respecto a la fuente, por lo que su altura condicionaba directamente la huella lumínica útil sobre el pavimento. En segundo lugar, el soporte material funcionaba como un sistema óptico sencillo pero eficaz: el brazo de forja generaba un voladizo (*offset*) de entre 30 y 60 centímetros respecto a la fachada. Esta separación evitaba que las propias volumetrías del templete arrojaran sombras acusadas y permitía que el fanal irradiara su escaso flujo con una distribución casi omnidireccional.

Simultáneamente, la embocadura de la imagen actuaba como un reflector pasivo. Los estucos y las láminas de pan de oro contribuían a reflejar y dirigir la luz hacia el espacio público (Fig. 18), mientras que la excelente reproducción cromática de la luz del fuego permitía apreciar con gran fidelidad los pigmentos de las imágenes devocionales. A este rendimiento cromático se sumaba el factor cinético del parpadeo (*flicker*): las microcorrientes térmicas en el interior del farol generaban un juego dinámico de sombras oscilantes que dotaba a la imagen de un aura teatral y reforzaba su impacto escenográfico.

Finalmente, la viabilidad de esta infraestructura estaba condicionada por las características materiales de su combustible. El "aceite lampante" generaba emisiones de hollín que, al adherirse a las caras internas de los cristales, actuaban como un filtro opaco y reducían progresivamente la transmitancia del vidrio (Fig. 19). Esta pérdida de rendimiento convertía la red en un sistema altamente dependiente del mantenimiento y exigía un protocolo continuado: la limpieza de los cristales y la recarga del depósito constituían tareas comunitarias indispensables para garantizar el funcionamiento del balizamiento urbano.

Análisis constructivo y tectónico

Más allá de su rendimiento fotométrico, la materialización de la *edicola* exigía una rigurosa inserción tectónica en la fábrica preexistente, con distintas estrategias en función de la capacidad estructural del paramento y de los recursos económicos del promotor. Por un lado, la *edicola* encastrada requería la ejecución de un vaciado o roza en el muro portante para alojar la hornacina. Los paramentos interiores de esta oquedad se regularizaban con sucesivas capas de morteros de cal, cuya elevada permeabilidad al vapor favorecía la evacuación de la humedad y reducía el riesgo de eflorescencias salinas que pudieran deteriorar la capa pictórica.

Por otro lado, cuando la necesidad de preservar la capacidad portante impedía sustraer material del muro, se recurría a la *edicola* adosada. Esta solución, de mínima intrusión, se delimitaba mediante un marco perimetral superpuesto (Fig.

20). Para garantizar su fijación a la fachada, los artesanos clavaban una armadura de pernos de hierro forjado en las juntas del ladrillo, sobre la cual aplicaban las capas de cal y polvo de mármol[7]. En este tipo, la imagen solía ejecutarse al fresco sobre el revoco (*intonaco*); durante el proceso de carbonatación, los pigmentos quedaban integrados en la capa de mortero. Esta estrecha unión con el soporte, sin embargo, exponía la pintura a los efectos de la humedad por capilaridad procedente del núcleo murario (Fig. 21).

Esta vulnerabilidad material explica la decisión de separar estructuralmente algunas piezas del paramento. Cuando la imagen era una pintura de caballete, los artesanos recurrían a una fijación exenta: mediante pernos que trabajaban a tracción y ménsulas que soportaban el peso, lograban mantener la obra suspendida y romper así el puente de humedad con la porosa toba romana. A escala urbana, este sistema de superposición alcanza su máxima sofisticación en la *edicola* cantonera (Fig. 22). Visualmente, estas piezas parecen levitar sobre la arista viva del edificio. Esta aparente ingravidez oculta un ingenioso sistema de anclaje: la pieza, cortada en diedro a 90 grados, se fijaba al núcleo del muro mediante grapas de hierro dulce recibidas con plomo fundido en perforaciones diagonales, que permitían ocultar por completo la junta.

En íntima relación con la fábrica se resolvía el anclaje de la luminaria. Como se analizó en el apartado fotométrico, el brazo de forja requería un voladizo exento, lo que generaba un momento flector que tendía a arrancar el herraje del paramento. Para resistir este esfuerzo de palanca en fábricas de sillería, se recurría al emplomado: se practicaba una perforación en cola de milano, se introducía la espiga dentada y se vertía plomo fundido que, al rellenar los huecos y adaptarse a las irregularidades de la perforación, fijaba firmemente la pieza.

Finalmente, la protección del estrato pictórico se confiaba a menudo a un tejadillo metálico exento. Constructivamente, estas marquesinas exigían un cuidadoso control de las infiltraciones: el pliegue superior de la chapa (babero) se embutía en una incisión horizontal practicada en la fábrica (regata) y se sellaba con mortero. Su perímetro inferior, troquelado en forma de lambrequines, multiplicaba los puntos de goteo y alejaba la escorrentía de la vertical del farol, creando un ámbito protegido para la imagen y la luminaria (Fig. 23).

Figura 20. *Edicola* adosada de la *Madonna col Bambino*, en Piazza Navona.



Figura 21. *Edicola* de la *Madonna col Bambino*, en Piazza Pollarola. Ejecución pictórica sobre *intonaco* fresco con patologías visibles.





Figura 22. *Edicola* cantonera de la *Madonna col Bambino,* en la intersección de Via del Mascherone con Vicolo dei Venti.



Figura 23. Detalle del tejadillo metálico exento, con el perímetro inferior troquelado en forma de lambrequines, de la *edicola* de la *Madonna col Bambino*, en Piazza dell'Orologio.

Dimensión social y urbana: la *edicola* como catalizador del espacio público

Si la materialización de la *edicola* exigía una compleja integración en la fábrica muraria, su presencia transformaba también el uso y la percepción del espacio público. En la Roma preindustrial, antes de la estandarización del alumbrado público y de la nomenclatura vial, el tejido urbano se tornaba un entorno inhóspito y profundamente oscuro tras el ocaso. En este contexto, la red de *edicole* operaba simultáneamente como un sistema de orientación espacial y una infraestructura de seguridad pasiva. Ante la carencia de señalética, estas luminarias devocionales funcionaban como hitos topológicos dentro de la intrincada morfología romana; los ciudadanos construían su cartografía mental y se orientaban por la ciudad utilizando estas intervenciones puntuales como referencias espaciales.

Paralelamente, la iluminación proyectada por el farol ejercía un efecto disuasorio frente a la criminalidad y convertía a la *edicola* en un mecanismo informal de vigilancia del espacio público. Sin embargo, su eficacia no radicaba exclusivamente en la visibilidad, sino también en su dimensión psicológica. Estratégicamente emplazadas en encrucijadas y nodos de tránsito, estas imágenes operaban como un panóptico devocional[8]: el potencial infractor no solo temía quedar expuesto ante los vecinos dentro del halo lumínico, sino que podía percibirse también bajo el escrutinio de la autoridad divina (Fig. 24). La presencia escultórica o pictórica en puntos estratégicos del tejido urbano reforzaba así el control social y moral de la vía pública.

Paradójicamente, esta dimensión de vigilancia celestial convivía con una vibrante sociabilidad nocturna a pie de calle, a menudo de carácter profano. El farol no se limitaba a bañar la fachada, sino que proyectaba un cono de luz sobre el pavimento y configuraba una "microplaza" efímera (Fig. 25) en medio de la oscuridad. La luz congregaba la actividad urbana y transformaba este espacio iluminado en un reducto de seguridad que favorecía la interacción vecinal.

Más allá de su función lumínica, la *edicola* transformaba la opacidad del muro en un paramento interactivo (Fig. 26). Era un elemento de la fachada que se transformaba constantemente gracias a la participación ciudadana. Los vecinos se apropiaban del espacio y colgaban exvotos de plata, flores frescas o pequeñas promesas en torno al marco (Fig. 27). Esta función adquiría especial relevancia durante las grandes epidemias de peste: cuando las iglesias cerraban sus puertas por cuarentena, estas luminarias callejeras se convertían en altares de proximidad[9] y hacían de la arista del edificio un soporte de la memoria colectiva del barrio.



Figura 24. *Edicola* de la *Madonna col Bambino*, en Piazza Farnese. Su emplazamiento constituye un enclave estratégico de control visual.



Figura 25. La *edicola* como generadora de espacio público. *Ave María en Tivoli*, de Bartolomeo Pinelli (Donación de Eleanor y Sarah Hewitt, Cooper Hewitt, Smithsonian Design Museum)

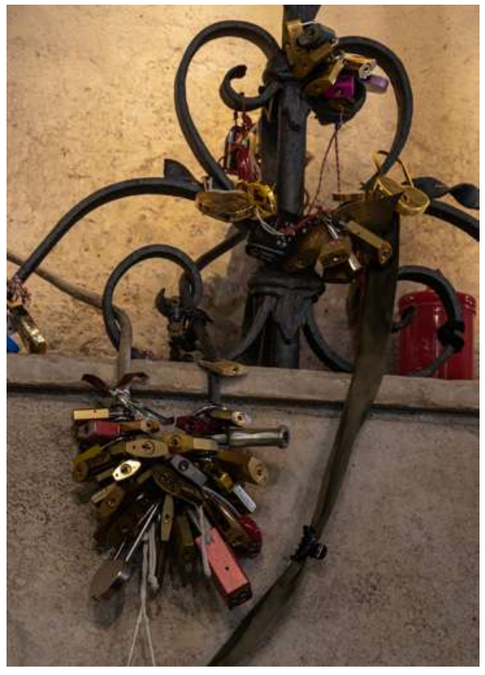


Figura 26. Detalle de la *edicola* de la *Madonna dell'Archetto*, en Piazza di Trevi, donde se observa la apropiación ciudadana del espacio mediante promesas contemporáneas.



Figura 27. Fenomenología votiva y apropiación ciudadana en la *edicola* de la *Madonna del Divino Amore*, en Vicolo dell'Aquila.

Finalmente, la supervivencia de este sistema dependía de una rigurosa gestión y mantenimiento que desdibujaba las fronteras entre lo privado y lo público. Aunque la instalación original y el marco solían ser financiados por la nobleza local o por un gremio como acto de devoción –y, en ocasiones, de exhibición de estatus–, el mantenimiento cotidiano recaía en el tejido vecinal. La tarea de reponer el aceite del farol, limpiar el hollín del vidrio y proteger la llama del viento reforzaba el sentido de pertenencia y corresponsabilidad de la comunidad. Este modelo de cuidado comunitario anticipó, *de facto*, las bases cívicas para la posterior asimilación del alumbrado público.

Conclusión: El ocaso de una infraestructura vernácula

En definitiva, la *edicola* romana exige ser leída mucho más allá de su evidente valor pintoresco o devocional. Más allá de su dimensión física, se revela como una auténtica infraestructura lumínica vernácula, una red fundamental para la vertebración de la ciudad preindustrial. Lo que germinó del fervor religioso evolucionó orgánicamente hasta conformar un sistema integrado de alumbrado y seguridad pasiva en Roma, capaz de disuadir la criminalidad mediante su "panóptico moral" y de generar microplazas que favorecían la sociabilidad nocturna bajo un modelo de corresponsabilidad vecinal.

Sin embargo, el panorama contemporáneo plantea un reto patrimonial urgente. Conocidas popularmente como *madonnelle*, estas *edicole* constituyen documentos históricos esenciales, integrados en la profunda estratificación urbana (Fig. 28), pero las cifras evidencian una drástica merma patrimonial. Mientras que en 1853 el erudito Alessandro Rufini llegó a catalogar aproximadamente 1.100 luminarias operativas, el censo realizado en 1999 por el Ayuntamiento de Roma registró apenas 522 ejemplares supervivientes en el centro histórico[10]. La pérdida, no obstante, trasciende la mera desaparición física: al recorrer el tejido urbano actual, resulta evidente que una gran parte de las *edicole* conservadas permanece apagada (Fig. 29). La ciudad no solo ha perdido más de la mitad de su red vernácula documentada, sino también la función lumínica de buena parte de las piezas supervivientes.

Este paisaje visual de faroles inoperantes se agrava ante los restos fosilizados de este sistema: estucos desmoronados en los que la desaparición de las luminarias ha dejado intrincados brazos de forja suspendidos y vacíos. Sin su fuente



Figura 28. *Edicola* en el entorno de Campo de' Fiori, como testigo devocional integrado en la compleja estratificación urbana y ante los retos patrimoniales del espacio público contemporáneo.



Figura 29. *Edicola* en Via della Scrofa, muestra de la pervivencia material y del letargo lumínico de una red devocional crónicamente apagada en la ciudad contemporánea.



Figura 30. *Edicola* en Via di Panico. El vacío iconográfico dentro del marco devocional constituye un testimonio tangible de la pérdida patrimonial en el tejido histórico.

lumínica, la *edicola* pierde su capacidad de articular el espacio público. En estadios de degradación aún más severos, la propia imagen sagrada ha sido expoliada (Fig. 30), dejando una auténtica cicatriz arquitectónica en el paramento contemporáneo.

Este retroceso cuantitativo obliga a replantear los criterios de catalogación y de conservación urbana. La salvaguarda de estos vestigios vernáculos no debería limitarse a su consolidación material o a la simple limpieza de los nichos supervivientes, sino que debería aspirar también a la restitución de su función original. Proteger las *edicole* significa entenderlas y rehabilitarlas como lo que históricamente fueron: una infraestructura social y lumínica primigenia que hizo posible una nueva apropiación colectiva del espacio público nocturno y que hoy, mediante la recuperación de su función, podría devolver la noche a la ciudadanía.

[1] A diferencia del modelo de París bajo Luis XIV, donde la iluminación urbana se impuso por decreto real y se financió mediante una tasa específica (*taxe des boues et lanternes*), el sistema romano destaca por su carácter orgánico y descentralizado. Mientras que en París la luz constituía una expresión del control estatal, en Roma la *edicola* reflejaba el cuidado y la gestión de la comunidad parroquial sobre su propio fragmento de ciudad.

[2] El concepto de isovista, formalizado teóricamente por Michael Benedikt a finales de la década de 1970, define el conjunto del espacio visible desde un punto de observación específico. Posteriormente incorporado a los estudios de sintaxis espacial (*Space Syntax*), constituye una herramienta de análisis de las relaciones de visibilidad en el espacio arquitectónico y urbano. Aplicado al urbanismo histórico, permite revelar las lógicas geométricas de control visual y orientación espacial (*wayfinding*) anteriores a la estandarización del viario moderno.

[3] Cabe recordar que el emperador Augusto reorganizó administrativamente la ciudad de Roma en 14 distritos (*regiones*) y 265 barrios (*vici*). En las encrucijadas (*compita*) de estos barrios se erigían santuarios dedicados a los Lares Compitales, que estableció un temprano precedente de articulación administrativa, territorial y devocional del espacio público a escala vecinal.

[4] La provisión de aceite para las luminarias generaba una economía de mantenimiento a escala vecinal. En muchos casos, los testamentos de vecinos acaudalados incluían legados específicos de determinadas cantidades de aceitunas o aceite destinadas al mantenimiento de la llama de la *madonnella* de su calle, que permitía garantizar así la continuidad de su funcionamiento más allá de la vida del donante.

[5] La regulación de los voladizos y elementos salientes de las fachadas romanas fue objeto de diversos edictos papales, especialmente a partir de las reformas urbanas impulsadas por Sixto V a finales del siglo XVI. En este contexto, el gálibo altimétrico de las *edicole* permitía mantener libre la sección de paso y facilitar la circulación del creciente tráfico de carruajes por las principales arterias del tejido renacentista y barroco.

[6] En condiciones de muy baja luminancia (visión escotópica), el ojo humano pierde gran parte de su capacidad para percibir el color debido a la reducida actividad de los conos y maximiza su sensibilidad a la luz mediante los bastones. Este fenómeno fisiológico acentuaba el contraste lumínico entre la llama cálida del aceite y la profunda oscuridad de los paramentos urbanos.

[7] El uso de polvo de mármol en la última capa del revoco (*stucco lustro*) no respondía únicamente a una función estética. Esta técnica proporcionaba una superficie compacta y de baja porosidad que favorecía la reflexión de la luz del farol y protegía la fábrica de ladrillo frente al deterioro provocado por los subproductos de la combustión del aceite lampante.

8 A diferencia del panóptico arquitectónico teorizado por Jeremy Bentham y posteriormente analizado por Michel Foucault –que requiere la presencia de un vigilante físico centralizado e institucional–, el "panóptico devocional" delega el mecanismo de vigilancia en la introyección de la mirada divina. Este sistema favorecía así una forma de control social autorregulado que no requería la presencia permanente de agentes de vigilancia por parte de las autoridades papales.

[9] Las crónicas de epidemias históricas, como la devastadora peste de 1656 en Roma, documentan cómo, ante la estricta prohibición de reuniones en espacios cerrados, la red de *madonnelle* permitió mantener la cohesión espiritual y comunitaria de los *rioni* mediante el traslado de determinadas prácticas devocionales al espacio público.

[10] La drástica reducción documentada no responde únicamente a la degradación material causada por la intemperie o al abandono. Una parte significativa de estas pérdidas debe atribuirse a los derribos masivos –los llamados *sventramenti*– ejecutados tras la unificación de Italia y durante el periodo fascista para la apertura de grandes arterias viarias, que alteraron profundamente la topología menor de la ciudad histórica.

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Biographies | Biografías | Biografias

Cristina Carrillo Fernández

Es arquitecta por la Universidad de Granada y máster en BIM Management por la Universidad Isabel I. Su trabajo persigue una arquitectura consciente y arraigada al lugar, en la que tanto las nuevas construcciones como las intervenciones sobre el tejido preexistente se conciben con una profunda sensibilidad hacia la memoria patrimonial y un diálogo íntimo con el paisaje. Ha colaborado con estudios como Ácrono Arquitectura y Amura Arquitectos, y su labor destaca por la adaptación de tipologías tradicionales a estándares contemporáneos. Varios de los proyectos en los que ha participado han recibido reconocimientos como el Primer Premio de Rehabilitación Leopoldo Torres Balbás por la obra "Cueva Don Pablo" y una Mención Especial a la Trayectoria Emergente en los Premios Andalucía de Arquitectura 2022. Actualmente, desarrolla su labor como investigadora independiente y compagina la práctica arquitectónica con sus estudios de Historia del Arte en la Universidad Nacional de Educación a Distancia (UNED).

Mulham Alkharboutli

Adobe Barn Typology in La Mesilla and La Mesa, New Mexico: Emergence and Transformation

Tipología de graneros de adobe en La Mesilla y La Mesa, Nuevo México: Surgimiento y transformación

A tipologia dos celeiros de adobe em La Mesilla e La Mesa, Novo México: Origem e transformação

Keywords | Palabras clave | Palavras chave

Earthen architecture, Agricultural infrastructure, Vernacular transformation, Hybrid construction, Mesilla Valley

Arquitectura en tierra, Infraestructuras agrícolas, Transformación vernácula, Construcción híbrida, Valle de Mesilla

Arquitetura de terra, Infraestruturas agrícolas, Transformação vernácula, Construção híbrida, Vale de Mesilla

Abstract | Resumen | Resumo

This research explores the emergence of hybrid adobe barn types in the Mesilla Valley of southern New Mexico between the 1880s and 1930s with the aim of understanding how changes in agricultural practices and material availability reshaped vernacular storage architecture. Our study documents five historic adobe barns in La Mesilla and La Mesa, employing typological analysis and comparative architectural reading to identify recurring spatial and construction patterns. It traces a typological transition from compact, subsistence-oriented adobe storage buildings toward larger-span, hybrid forms incorporating milled-timber trusses and metal roofing. It concludes that these adobe barn hybrids constitute distinct, under-recognized architectural types situated between inherited earthen building cultures and industrial-era construction, offering insight into landscape transformation and rural modernization in the Mesilla Valley.

Esta investigación estudia la aparición de tipos híbridos de graneros de adobe en el valle de Mesilla, en el sur de Nuevo México, entre las décadas de 1880 y 1930, con el objetivo de comprender cómo los cambios en las prácticas agrícolas y en la disponibilidad de materiales transformaron la arquitectura vernácula destinada al almacenamiento. El estudio documenta cinco graneros históricos de adobe en La Mesilla y La Mesa y emplea el análisis tipológico y la lectura arquitectónica comparada para identificar patrones espaciales y constructivos recurrentes. Se analiza la transición desde construcciones compactas de adobe destinadas al almacenamiento y vinculadas a una agricultura de subsistencia hacia formas híbridas y de mayor luz, que incorporan cerchas de madera aserrada y cubiertas metálicas. Se concluye que estos graneros híbridos de adobe constituyen tipos arquitectónicos diferenciados y poco reconocidos, situados entre las culturas constructivas tradicionales en tierra y la construcción de la era industrial, y que permiten comprender mejor la transformación del paisaje y la modernización rural del valle de Mesilla.

Este artigo explora o surgimento de tipos híbridos de celeiros de adobe no Vale de Mesilla, no sul do Novo México, entre as décadas de 1880 e 1930, com o objetivo de compreender como as mudanças nas práticas agrícolas e na disponibilidade de materiais remodelaram a arquitetura vernácula de armazenamento. O nosso estudo documenta cinco celeiros históricos de adobe em La Mesilla e La Mesa, recorrendo à análise tipológica e à leitura arquitetónica comparativa para identificar padrões espaciais e construtivos recorrentes. Analisa a transição tipológica dos edifícios, de edifícios compactos de armazenamento em adobe que são orientados para a subsistência, para formas híbridas com vãos mais amplos, que incorporam treliças de madeira serrada e coberturas metálicas. Conclui-se que estes celeiros híbridos em adobe constituem tipos arquitetónicos distintos e subvalorizados, situados entre as culturas herdadas de construção em terra e a construção da era industrial, oferecendo inspiração sobre a transformação da paisagem e a modernização rural no Vale de Mesilla.

Introduction

Adobe construction in New Mexico belongs to a tradition of Indigenous earthen building extending far back before European colonization, subsequently transformed through interaction with Spanish Colonial, Mexican, and Anglo-American building practices (Bunting 1976: 8-12). The incorporation of new materials into adobe construction was part of a broader architectural transformation. Documentation of La Mesilla Historic District describes the Territorial period as one in which adobe construction increasingly incorporated Anglo-American influences and newly available materials and technologies (National Park Service 1982), yet adobe barns and their significance within rural architecture remain comparatively under-recognized. This study examines how the expansion of irrigation infrastructure, the advent of railroads, and shifts in land tenure during the late nineteenth and early twentieth centuries contributed to the emergence of large hybrid barn forms, representing a distinctive intersection of inherited earthen building traditions and industrial evolution.

Methodology

This research is based on field documentation of five buildings selected for their typological diversity, accessibility, and variation in architectural and construction characteristics. Documentation included measured drawings, photographic surveys, and material observation, with a focus on wall massing, roof systems, openings, and wall-to-roof interfaces. Typological analysis was employed to compare spatial organization, construction logic, and degrees of material hybridization across the case studies, identifying recurring architectural patterns.

Literature Review

I referred to Jerry R. Davis's *Barns from the Land of Enchantment* for a survey of New Mexican rural building traditions. Through personal observation rather than academic typology, Davis reveals a surprising diversity of forms and materials, from log and stone to *terrón* (sod blocks) and modern hybrids. Among them appear a few adobe barns, typically gabled with corrugated metal sheeting over thick plastered walls (Davis 2012: 38–39). Although Davis does not focus on adobe barns or look closely at structural behavior, his survey points to regional material adaptations and recurring spatial patterns. In particular, his description of the gambrel-roofed Los Poblanos Feeding Barn near Albuquerque helped connect one of the barns I surveyed (Glover, in La Mesa) to broader trends. Davis attributes the infrequency of gambrel roofs in New Mexico to regional agricultural practices, arguing that the Southwest generally required less enclosed hay storage than the Midwest, where gambrel roofs became widespread, as barn forms reflected changing agricultural needs as much as building traditions (Davis 2012: 4–5). On this point, Myrtie Stedman, in *Rural Architecture in Northern New Mexico and Southern Colorado*, notes that gambrel roofs were occasionally introduced through Midwestern

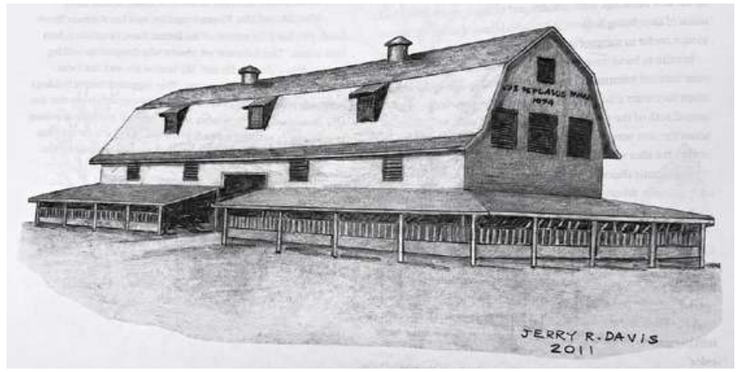


Figure 1. Feeding barn at Los Poblanos ranch (Davis 2012: 38–39)



Figure. 2. Adobe and lumber barn in Villanueva, (Bunting 1976: 58)

influence, often via pattern books or pre-cut lumber kits shipped by rail (Stedman 1981: 67–69).

John Michael Vlach's *Barns* (2003) provides an overview including barns in Watrous, Peñasco, and Mora. His visual archive shows that adobe agricultural architecture persisted well into the twentieth century and that southern New Mexican examples are part of a larger continuum (Vlach 2003: 271–280).

For insights into adobe as a construction system, I turned to Bainbridge Bunting's *Of Earth and Timbers Made* and *Early Architecture in New Mexico* (Bunting 1974 and 1976). Bunting includes detailed field observation albeit omitting the Mesilla Valley and saying little of how traditional adobe practices intersected with such imported roof systems as scissor and gambrel trusses. Building on this literature, below I examine five adobe barns in Mesilla and La Mesa with a view to articulating an emergent hybrid storage typology specific to southern New Mexico.

Despite their lacunae, the combined insights of Davis, Vlach, and Bunting allowed me to situate barns such as Guerra, Glover, Rigney, Miller, and Garcia within a vernacular continuum of adobe masonry hybridized with milled lumber and light industrial roofing materials following the arrival of the railroad in the Mesilla Valley in the 1880s. The scarcity of detailed structural analysis on these adobe-truss hybrids shaped my direction of research. In an interview, preservation specialist Mike Taylor noted that the primary historic building survey of the Mesilla Valley dates from the late 1970s and early '80s and has not been systematically updated. He said no formal inventory of adobe barns or other rural structures south of Socorro currently exists. The documentation and condition assessments below thus contribute to typological understanding and also to filling a gap in regional heritage records and informing future preservation planning.

Adobe Barn Types in the Mesilla Valley

La Mesa: Agricultural Context

The urban fabric of La Mesa has changed greatly over the past century. Many older structures show signs of deterioration, while modern development in the town has resulted in a mixture of new and old. In the late nineteenth and early twentieth centuries, growth in La Mesa was chiefly driven by agriculture, as the fertile Mesilla Valley allowed extensive farming, particularly of chili peppers, pecans, and cotton, which remain central to the local economy (La Mesa Historical Society 2025).

- Rigney Barn (La Mesa): Transitional Hybrid with Cement-Bound Masonry

Rigney Barn lies between two pieces of irrigation infrastructure: the Chamberino Main Lateral, which supplies water to nearby fields, and the Chamberino Drain, which collects irrigation runoff and groundwater. These laterals and drains form part of the network associated with the early twenti-

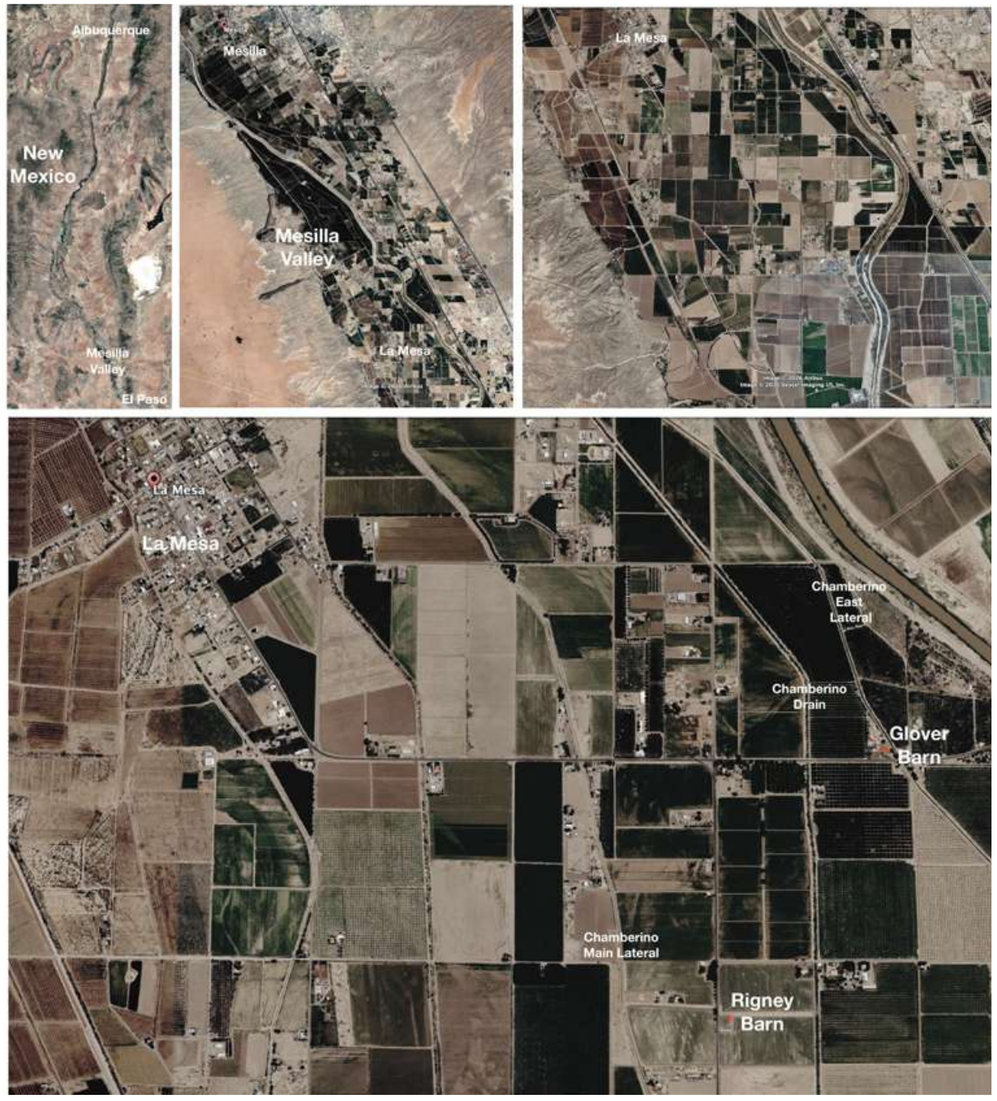


Figure 3. Mesilla Valley, Mesilla, and La Mesa study areas, and the adobe barns documented in La Mesa (Google Earth; author's annotations and composition)



Figure 4. Aerial view showing Rigney Barn in La Mesa and its proximity to the Chamberino Main Lateral and Chamberino Drain (Google Earth)



Figure 5. Rigney Barn



Figure 6. Rigney barn interior and wooden truss system

eth-century transformation of the valley with the Elephant Butte Dam project. The barn's position suggests that its siting was connected to the organization of irrigated farmland, taking advantage of the new infrastructure.

Rigney Barn maintains a compact, rectilinear vernacular form, integrating cement mortar in its adobe masonry and with a gabled roof of milled lumber trusses and corrugated metal sheeting. This selective adoption of industrial materials

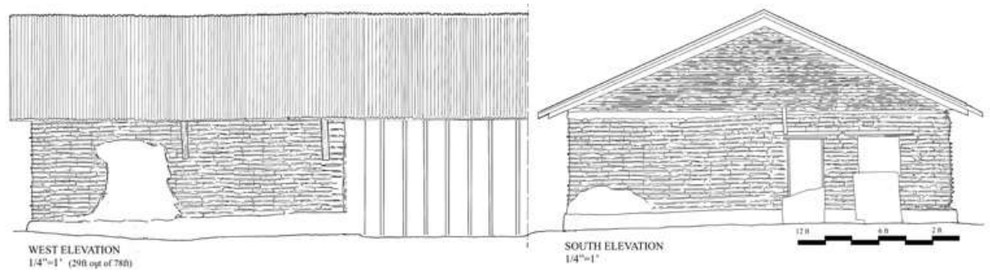


Figure 7. West and south elevations of Rigney Barn

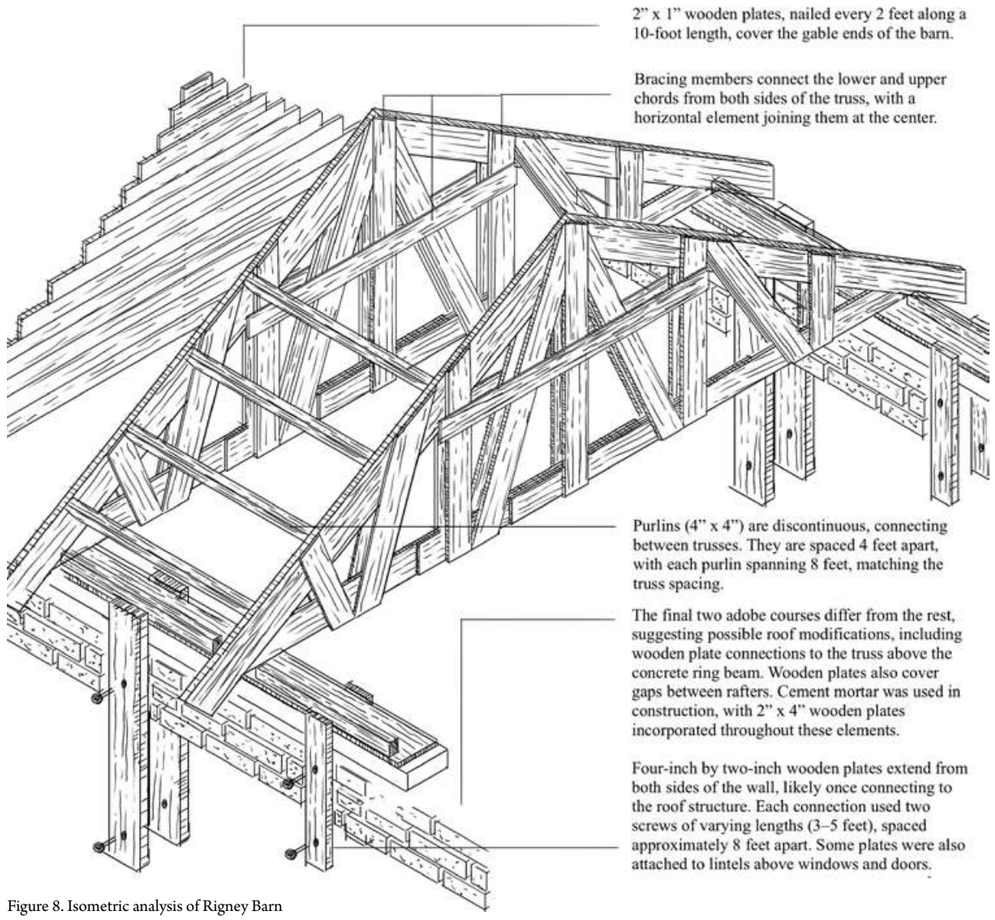


Figure 8. Isometric analysis of Rigney Barn

bespeaks an experimental phase in which traditional earthen construction was adapted to accommodate larger spans and storage requirements. Typologically, Rigney Barn exemplifies a pragmatic hybridization of adobe building culture on its encounter with industrial-era materiality.

- Glover Barn (La Mesa): Large-Span Hybridization

The barn stands by the Chamberino East Lateral, watering the local fields, and also the Chamberino Drain, collecting runoff as mentioned above. According to the current owner, the barn has always been associated with dairy use, dependent on irrigated fields for forage and feed crops. It can therefore be seen as part of an agricultural system of irrigation infrastructure, cultivated fields, livestock, and attendant buildings.

Glover Barn is at the most spatially ambitious end of our emergent adobe barn typology. Its long open interior span and gambrel roof profile reflect a departure from compact vernacular forms toward the larger spatial requirements of specialized agriculture. The roof, of milled lumber trusses and metal sheeting, sits atop adobe walls, with a pronounced material hybridization at the interface showing how construction was adapted to accommodate larger spans with the primary load-bearing system remaining earthen.



Figure 9. Aerial view showing Glover Barn and its proximity to the Chamberino East Lateral and Chamberino Drain (Google Earth)



Figure 10. Glover Barn



Figure 11. Timber addition to Glover Barn



Figure 12. Glover Barn with its roof collapsed

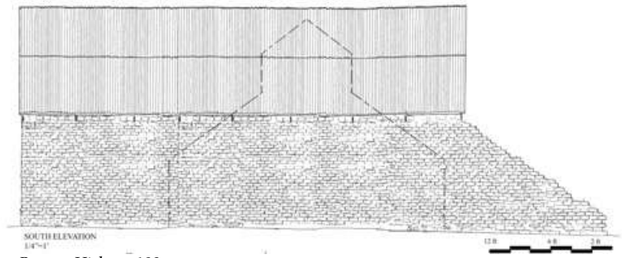


Figure 13. South elevation of Glover Barn on Highway 189

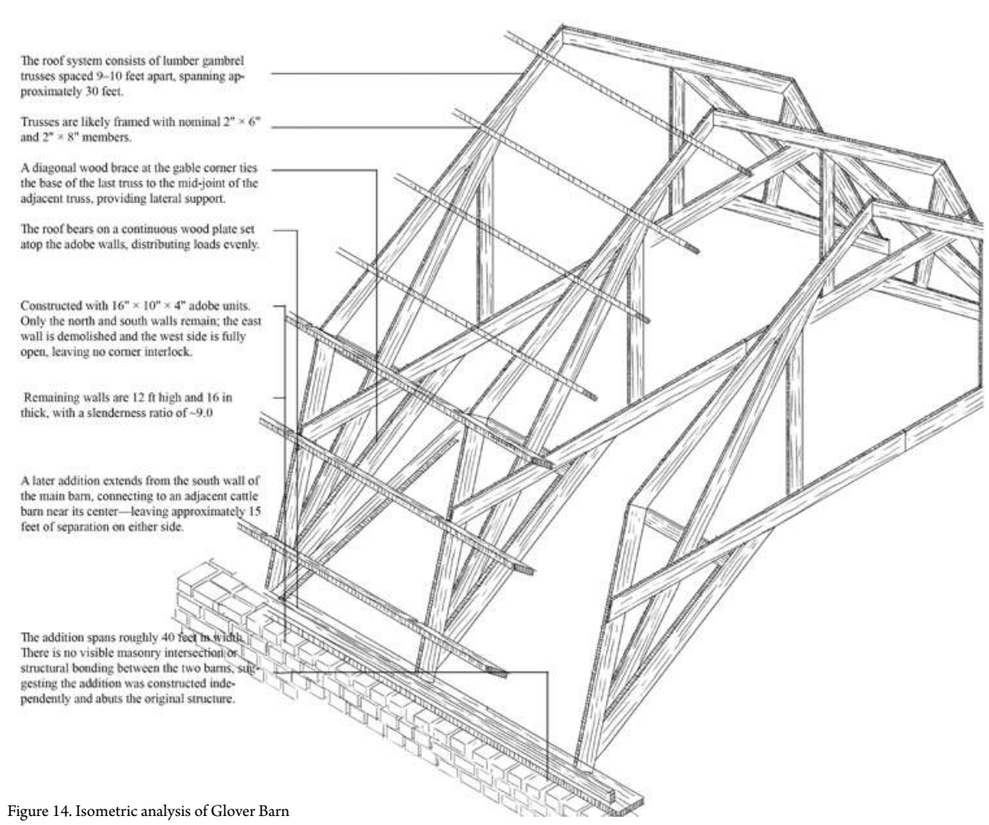


Figure 14. Isometric analysis of Glover Barn

Mesillan Agricultural Context

Founded in 1848, Mesilla developed within a landscape of irrigated fields and acequia ditch systems along the Rio Grande. Agriculture around the compact town relied on communal irrigation infrastructure (National Park Service 2020). By the late nineteenth and early twentieth centuries, this landscape was increasingly shaped by changes in water management, transportation, land tenure, and access to regional markets. Unlike the Rigney and Glover barns in La Mesa, situated directly in fields, the Miller, Garcia, and Guerra barns are embedded in the historic settlement of Mesilla, reflecting different relationships between settlement and infrastructure and particularly Mesilla's older acequia network.

- Miller Barn

The location of Miller Barn, bounded by both the Mesilla Drain and the Mesilla Lateral, suggests a functional relationship with the landscape. In an interview, Mesilla resident Emily Guerra recalled an older acequia that historically connected the vicinity of Miller Barn with Guerra Barn, evoking a shared irrigation landscape, although the former course and extent of the acequia require documentary verification. The barn has good access, with its longest elevation parallel to Calle de Picacho.

Miller Barn preserves a vernacular core in its compact massing and thick adobe walls, yet it has accrued hybrid layers through roof replacement and accretion. The original structure appears to have been covered by a traditional flat earthen roof on cottonwood viga beams. This was later replaced by a pitched roof of milled-lumber rafters and metal sheets, retrofitted to meet evolving needs. Typologically, the barn demonstrates continuity with pre-industrial spatial patterns.

Its relatively small scale, evidence of an earlier viga-supported roof, and substantial buttressing indicating successive structural interventions distinguish Miller Barn from the larger hybrid barns documented here and suggest that it may be the earliest of the five.



Figure 15. Mesilla Valley, La Mesilla, and La Mesa study areas, and the adobe barns documented in Mesilla (Google Earth; author's annotations and composition)



Figure 16. Miller Barn (Lori Miller)



Figure 17. Main entrance of Miller Barn (Lori Miller)

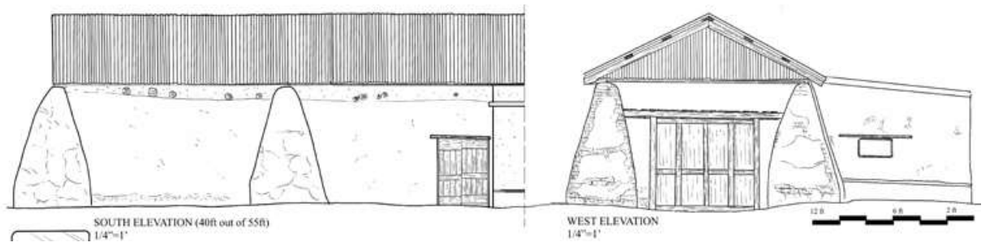


Figure 18. South and west elevations of Miller Barn

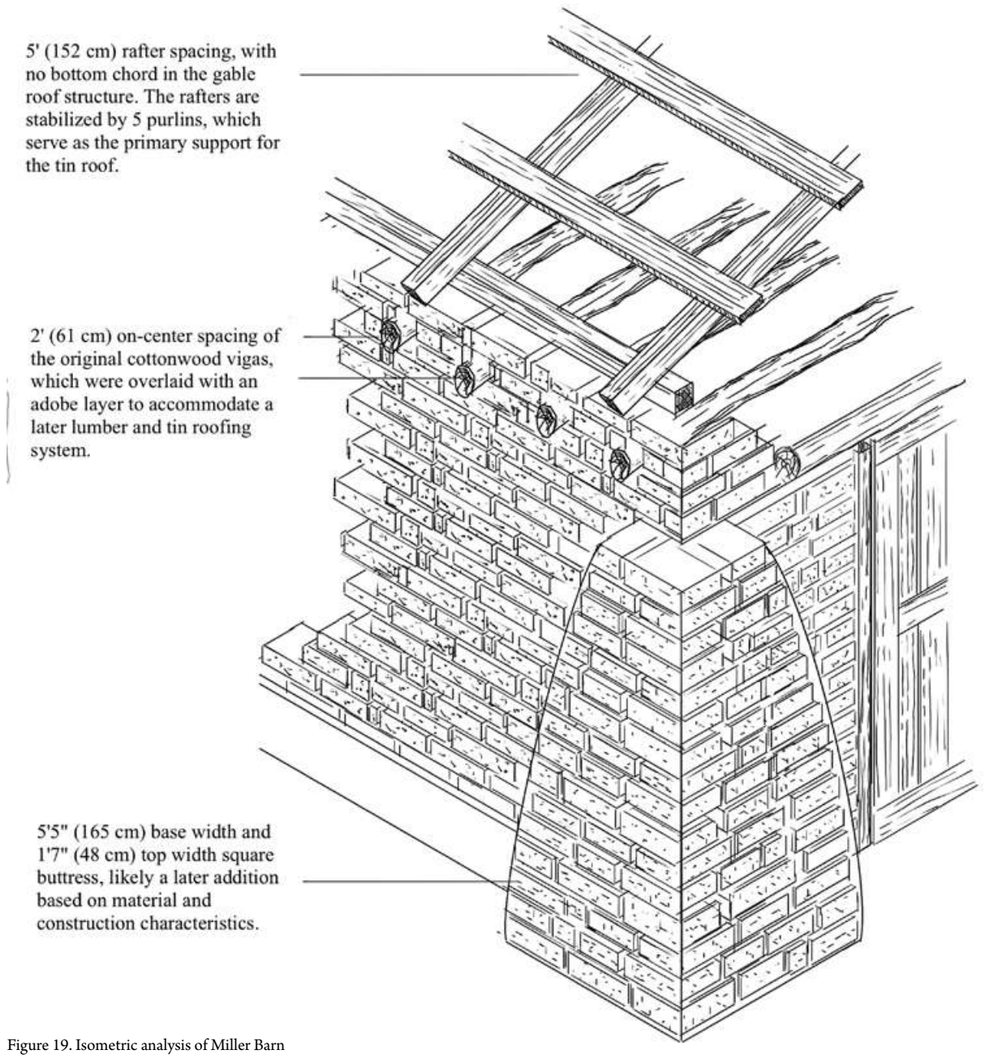


Figure 19. Isometric analysis of Miller Barn

- Garcia Barn

Directly fronting the Mesilla Lateral, this barn is in a transitional area between the tightly arranged residential core of the Mesilla Historic District and the more open, agriculturally zoned parcels around the town

It retains a traditional compact footprint and low-rise profile but incorporates milled beams and metal roofing. The modest character of this adaptation is evident in the roof structure, with lumber trusses assembled from short pieces. Adobe walls bear the load, while the roof assembly reflects the integration of industrial materials to extend span and durability. The barn exemplifies a modest hybridization typical of smaller-scale farming embedded in Mesilla's historic fabric.



Figure 20. Garcia Barn



Figure 21. Interior of Garcia Barn

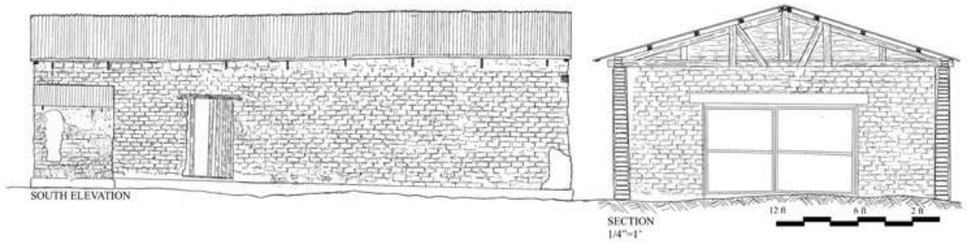


Figure 22. Section and south elevations of Garcia Barn

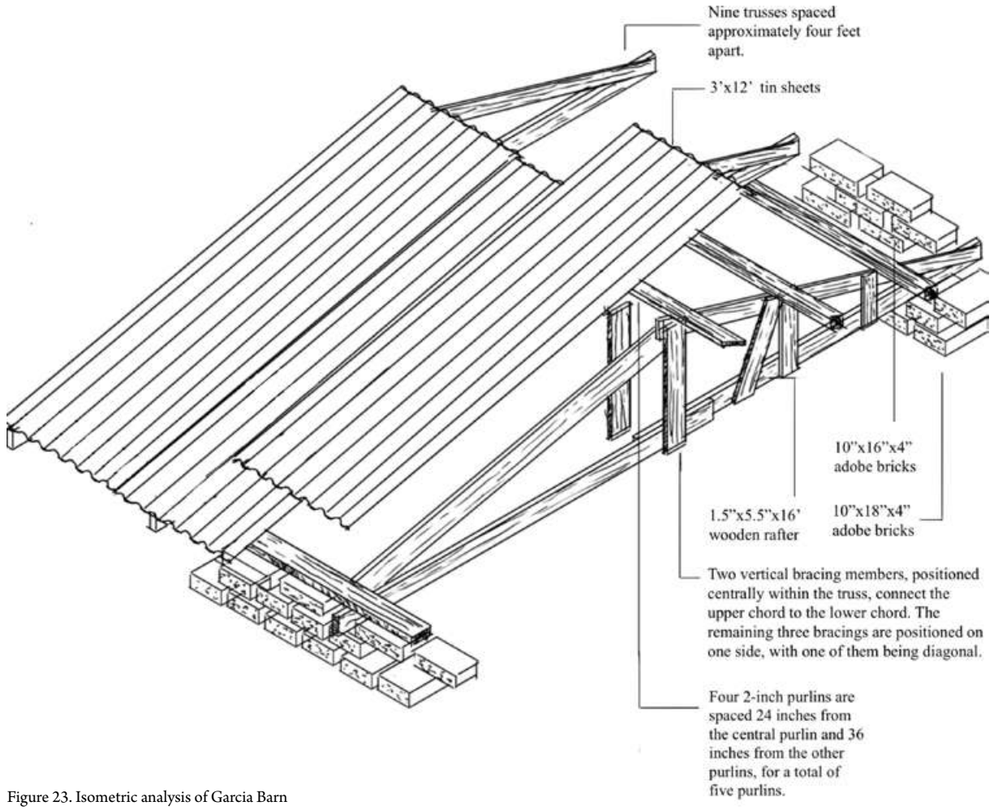


Figure 23. Isometric analysis of Garcia Barn

- Guerra Barn

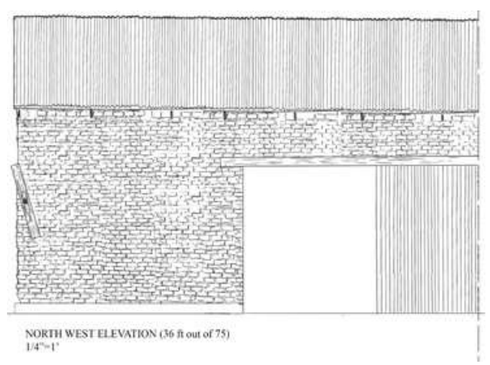
Guerra Barn exemplifies a more pronounced typological evolution, combining tall adobe walls with scissor trusses and metal roofing for broad spans. Its engineered roofing atop earthen masonry marks a clear structural hybridization, enabling greater storage capacity and altered interior proportions. In contrast to more compact barns, this one reflects the spatial ambitions associated with early twentieth-century commercialized agriculture. The presence of steel ties connecting opposing walls suggests that the proportions and spans exceeded the limits of conventional adobe construction, necessitating reinforcement.



Figure 24. Southeast elevation of Guerra Barn



Figure 25. Interior of Guerra Barn



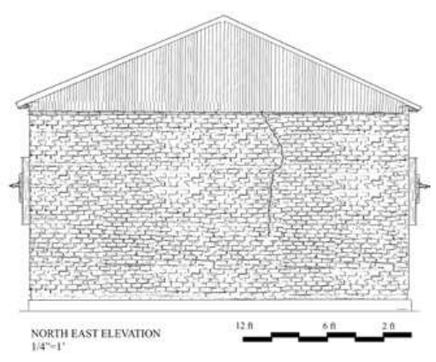


Figure 26. Northwest and northeast elevations of Guerra Barn

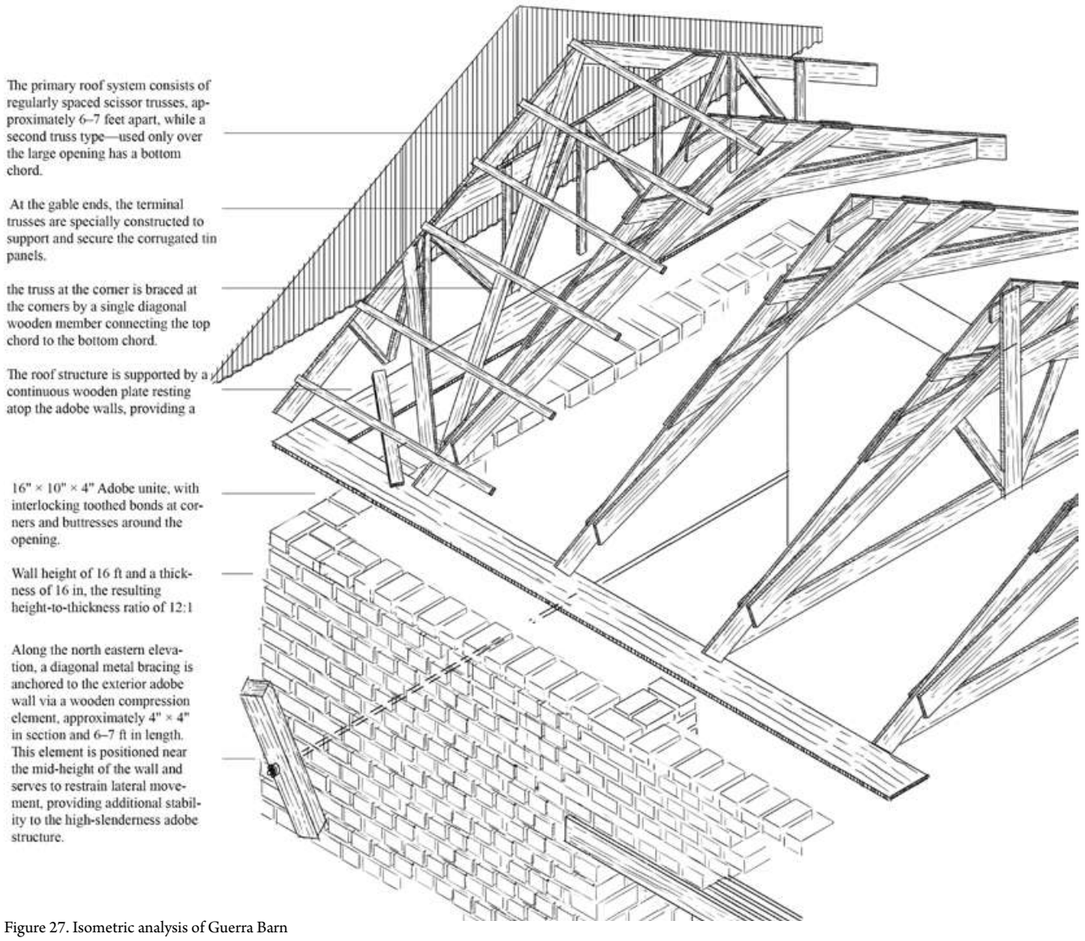


Figure 27. Isometric analysis of Guerra Barn

Typological Synthesis

Across our five case studies, a consistent typological shift is visible: compact low-rise adobe forms (Miller and Garcia) give way to longer-span barns integrating milled-lumber trusses and metal roofing (Rigney, Guerra, and Glover). But the degrees of hybridization are different. Miller retains evidence of an earlier viga-supported roof replaced by milled lumber and metal sheeting; Garcia has a comparatively modest truss system assembled from shorter milled members; Rigney, Guerra, and particularly Glover employ larger roof structures for substantially greater spans. The transition therefore involves not simply a change in material but a reconfiguration of design toward larger barn volumes and entrances and modified wall–roof interfaces that mediate between earthen load-bearing systems and lightweight roofing. The resulting hybrids maintain continuity in adobe wall-building while selectively incorporating new materials and systems.

The original builders of the five barns could not be identified from the available records. But though their incorporation of milled-lumber roof systems and other industrial materials reflects the growing Anglo-American influence in Mesilla, these features do not point clearly to their builders' cultural background. Mesilla's population included both long-established Mexican and New Mexican families and Anglo-American settlers, making these barns the products of a hybrid culture.

Discussion

To understand how and when these adobe barn types emerged, we must situate them within the transformation of the Mesilla Valley's agricultural landscape as the railroad connected the valley to regional markets and brought industrial materials into these borderlands, including dimensional lumber and corrugated metal roofing. These allowed for the longer spans and lighter frames that we see in all five barns, replacing the traditional vigas and earthen roofs of Spanish Colonial and Mexican extraction. Yet the new availability of such materials was just one factor.

Although sovereignty shifted after the U.S. acquisition of New Mexico in 1848, agriculture in the Mesilla Valley remained rooted in earlier Mexican patterns of irrigation, communal labor, and mixed farming. Several circumstances hindered a transformation. First, the valley was not stable farmland but a plain characterized by seasonal flooding, shifting river channels, and extensive wetlands. This is evident in Mary Daniels Taylor's description of acequia maintenance: "Acequias were being cleaned for water to come from the river to the fields, the Mesillero [resident of Mesilla] either made his own *fatiga* [crew for required communal labor] or paid a *peón* [hired laborer] to do his ditch cleaning for him" (Taylor 2004: 143). Second, agricultural development was

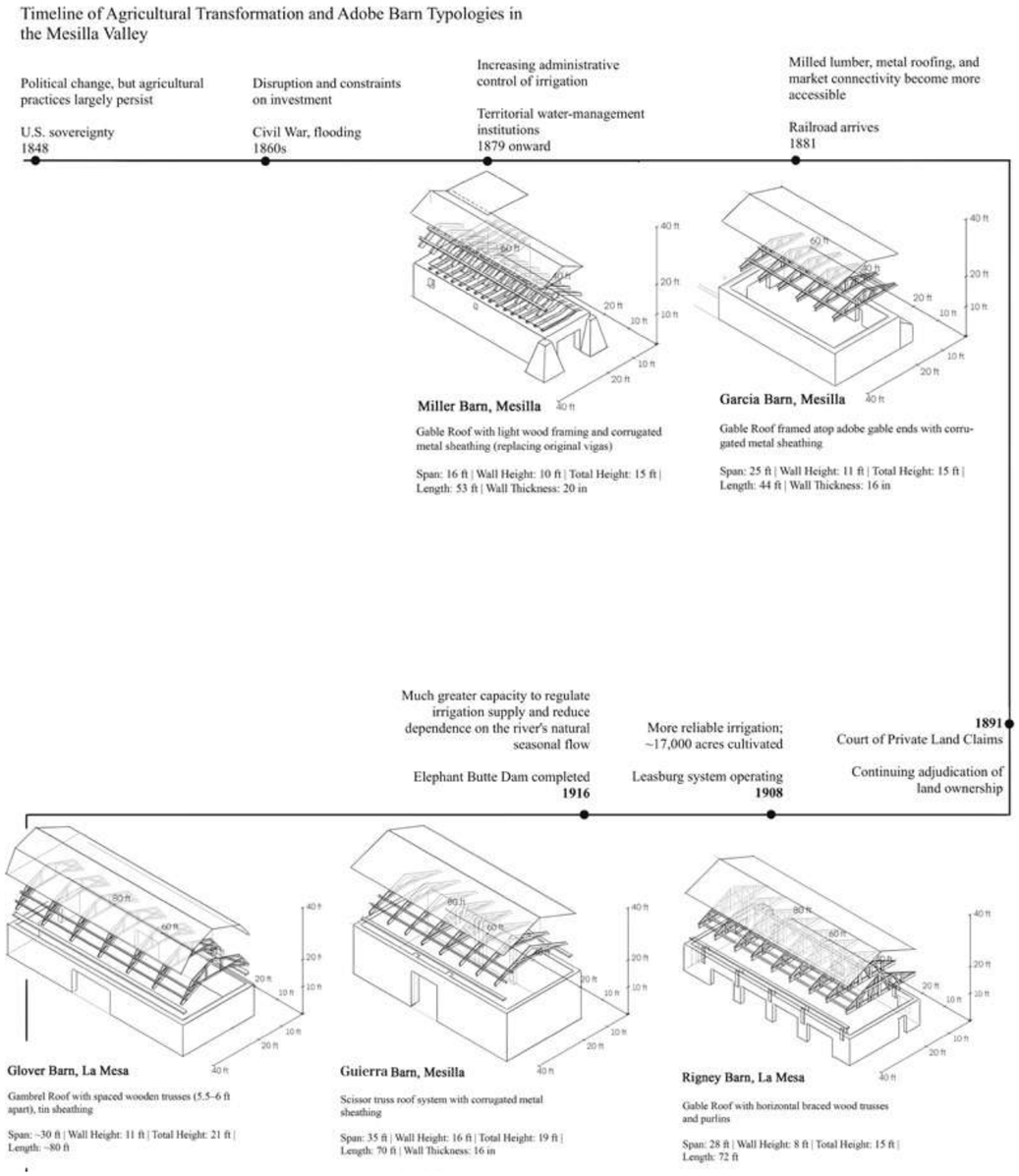


Figure 28. Timeline of agricultural transformation and proposed emergence of adobe barn types in the Mesilla Valley

constrained by political instability. Taylor notes that "Others also had moved away from Mesilla in earlier times of trouble and heartache. The Civil War and the flooding river gave motivation to some to look toward the Sacramento Mountains to the East" (Taylor 2004: 170). Third, the agricultural landscape of the Mesilla Valley was shaped by changing administrative frameworks. Much of the valley had developed within Spanish and Mexican grant systems. Following the Mexican Cession (1848), Congress established the Office of the Surveyor General of New Mexico (1854) and later the Court of Private Land Claims (1891) to investigate and adjudicate these preexisting claims, reflecting ongoing land ownership conflicts up to the late nineteenth century. More broadly, the reorganization and privatization of communal land grants disrupted village-based agrarian systems, fragmenting some holdings and enabling the consolidation of others (Correia 2009: 88–89).

Alongside these changes in land administration, water management was increasingly institutionalized. Baldwin notes that as of 1879 territorial legislators established a framework consisting of water companies, irrigation districts, and conservancy districts. Authority over this system was centralized through the office of the territorial engineer, and following the passage of the Reclamation Act in 1902 the federal government also assumed a role, as manifested in the completion of the Leasburg Dam and Canal. By the 1908 irrigation season, the Leasburg system provided farmers with a "constant and ample supply" of water, supporting some 17,000 farm acres. The increased reliability of irrigation encouraged the purchase of farmland as confidence grew in the valley as a site for agricultural investment (Baldwin 1938: 319–322). With improved transportation and new building materials, this confidence was favorable to the raising of larger hybrid adobe barns.

The transformation was also conditioned by geography. The larger barn forms in the Mesilla Valley reflect agricultural conditions different to those of northern New Mexico. Rivera's study of acequia culture describes New Mexican irrigation as a system in which water management was intertwined with landholding, agricultural practice, and community organization (Rivera 1998). As Rivera said in an interview, "Landholdings were tiny up north. You didn't need a big barn if your crops were just for the family table." Hence the link between the scale and spatial organization of agriculture and the attendant architecture. In northern New Mexico, narrow valleys, fragmented landholdings, and community-managed acequia systems produced patterns of cultivation around the *acequia madre* and its secondary channels, with agricultural buildings for small-scale output. In the Mesilla Valley, by contrast, larger parcels were integrated into an engineered system of main canals, laterals, and drains associated with the expansion of federally managed irrigation. These larger and more regularly organized agricultural landscapes supported increasingly commercial production with greater requirements for storage, livestock, equipment, and processing. Figure 29 illustrates this contrast spatially, juxtaposing the northern irregular, acequia-oriented agricultural landscape with the Mesilla Valley's larger and more regular fieldscape. It also situates barns within these systems: smaller granaries (*galeras*) are distributed among the narrow plots in the acequia landscape while larger barns appear alongside expanded fields, roads, and engineered irrigation in the southern system. The larger hybrid adobe barns can therefore be seen not simply as enlarged versions of earlier agricultural buildings but as components of differently scaled and increasingly infrastructural farmland (Rivera 1998: 30-36).

Our five case studies appear to register these changing conditions at different scales. The smaller Miller and Garcia barns, embedded within the historic settlement of Mesilla, retain compact vernacular characteristics and a closer spatial relationship to the town's older agricultural landscape. Rigney

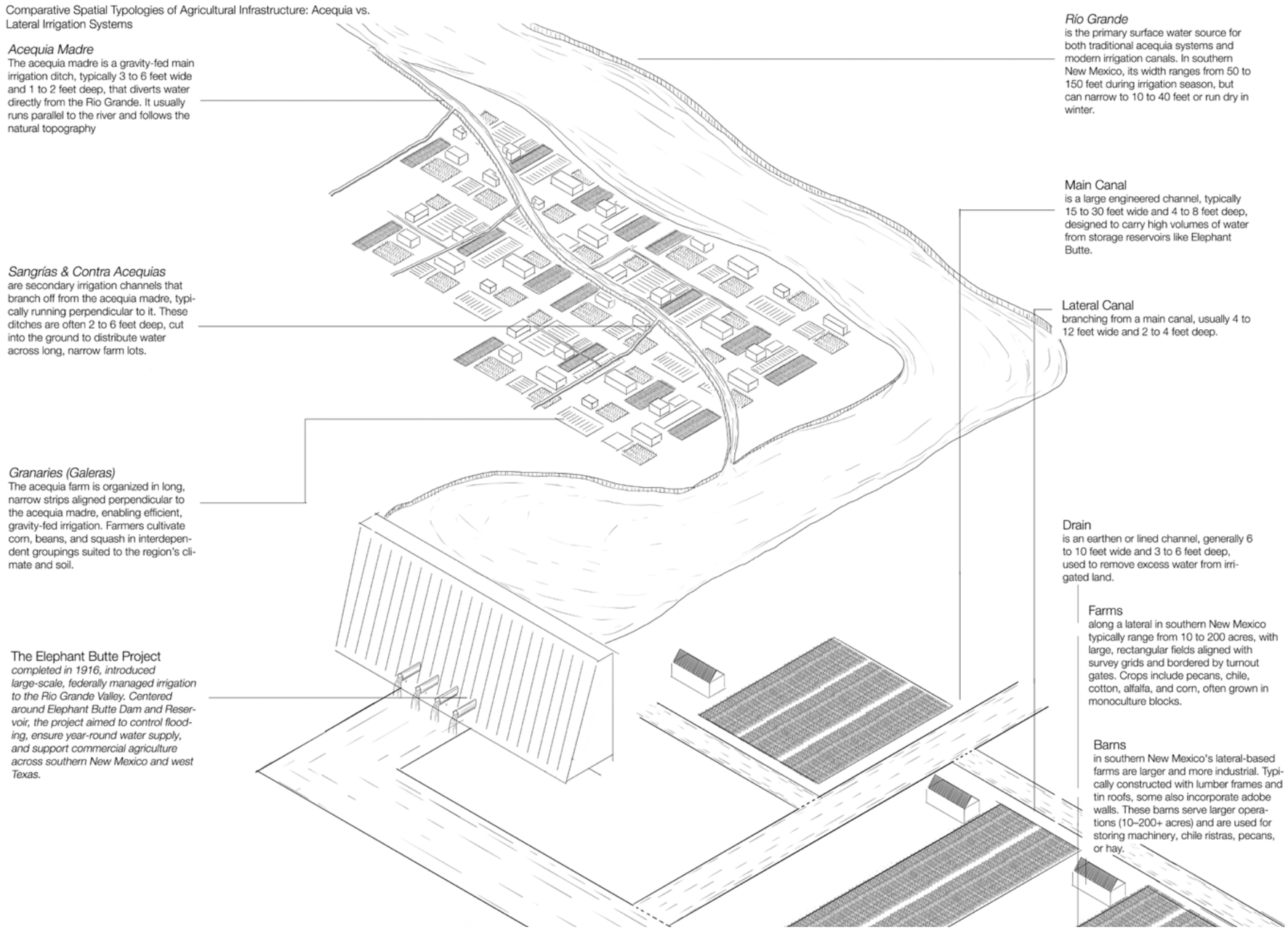


Figure 29. Spatial comparison between northern and southern New Mexico

and Glover, by contrast, are within the cultivated landscape of La Mesa and its lateral-and-drain network. Their larger spans and more specialized functions suggest a closer relationship to the expanding rural economy of the time. Guerra is in the middle, retaining adobe construction while incorporating an enlarged roof and volume.

The architectural evidence therefore complicates the association between political sovereignty, railroad arrival, and typological change. The Mexican Cession of 1848 did not immediately reorganize agriculture, and as of 1881 the railroad gave access to new materials without necessarily creating the conditions for larger barns. The Rigney, Glover, and Guerra barns rather appear connected with a later convergence of improved transportation, regulated and reliable water management, and investment. Their scale and incorporation of industrial building materials are a product of this agricultural expansion.

Changes in land tenure and economics further conditioned the transformation of adobe storage buildings. The reorganization and privatization of communal land grants following U.S. annexation disrupted village-based agrarian systems, fragmenting some holdings and consolidating others. These shifts altered the scale of barns and their siting, away from household compounds to the edges of fields and transport routes (Correia 2009: 88–89). The Great Depression accelerated these dynamics: as capital-intensive industrial barns became unattainable for many smallholders, hybridization (such as with milled-lumber roof systems atop existing adobe walls) offered a pragmatic means of expanding storage without abandoning vernacular construction. In this context, adobe barn hybrids can be seen as architectural responses to both agrarian restructuring and economic constraint (Hurt 2002: 297–304).



Figure 30. Cotton gin in La Mesa



Figure 31. Timber and corrugated metal barn in the Mesilla Valley

The later decline of adobe barns in the Mesilla Valley raises further questions about the links between economic, agricultural, and architectural developments. The context of the Great Depression deserves investigation, as it placed new pressures on American farmers and altered patterns of investment (Hurt 2002: 297–304). How these conditions affected the construction, modification, or continued use of adobe barns in the Mesilla Valley remains unclear. At the same time, the expansion of commercial agriculture, particularly cotton-growing in the 1920s and '30s, introduced specialized processing requirements and new building types, including cotton gins.

Mechanization and buildings with timber and metal framing, metal roofing, and other industrial materials may have further reduced the suitability of traditional adobe barns for evolving needs. Modernization may initially have encouraged adaptation before increasingly specialized agricultural practices favored different types altogether. Further research into the economic conditions, chronology, materials, and functions of twentieth-century agricultural buildings in the Mesilla Valley could clarify the relationship between these developments and the hybrid adobe barn's eventual decline.

Conclusions

The adobe barns documented in the Mesilla Valley represent distinct, under-recognized agricultural building types. Through case studies, our research has identified recurring spatial and construction patterns that distinguish these hybrid structures from smaller adobe storage buildings and later industrialized ones. Recognizing these adobe barn hybrids expands our view of earthen construction beyond the domestic and religious spheres more commonly studied in New Mexico. Studying Mesilla Valley barns may help illuminate a potentially broader transformation of adobe rural architecture across the American Southwest.

The expansion of agricultural economies in the Mesilla Valley led to the development of new building types driven by greater storage and circulation needs and the incorporation of industrial roofing into adobe building culture. Further research should examine additional examples along the Río Grande and investigate how later developments such as the Great Depression, cotton-growing, and mechanization contributed to the adaptation and eventual decline of these curious hybrids.

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Biography | Biografía | Biografia

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Mulham is an architect whose work focuses on traditional construction practices, adaptive retrofitting, and resilient housing. He holds a master's degree in Historic Preservation from the University of Notre Dame and a degree in Theory and History of Architecture from Damascus University. He is the founder of metmar.studio, a practice developing low-resource building systems for vulnerable environments.

Matthew Espeland

Evaluating Thermal Performance and Lifecycle Economics of Rural Housing in Northern Uganda

Evaluación del comportamiento térmico y la economía del ciclo de vida de las viviendas rurales en el norte de Uganda

Avaliação do desempenho térmico e da economia do ciclo de vida das habitações rurais no norte do Uganda

Keywords | Palabras clave | Palavras chave

Adaptive comfort, Cost of ownership, Vernacular architecture, Field study, Acholiland

Confort adaptativo, Coste de propiedad, Arquitectura vernácula, Estudio de campo, Acholiland

Conforto adaptativo, Custo de propriedade, Arquitetura vernácula, Estudo de campo, Acholiland

Abstract | Resumen | Resumo

Rural Uganda has a housing deficit of 2.4 million units amid rapid population growth, and prospective homeowners often have a choice between vernacular earth construction and imported industrial systems. Existing literature demonstrates the thermal superiority of earthen construction over industrial alternatives, yet few studies simultaneously quantify both physical performance and lifecycle economics using empirical data. This study addresses that gap with the construction of three prototype kiosks in Kalongo, Uganda, of enhanced wattle and daub, rammed earth, and interlocking stabilized soil blocks (ISSB). Indoor temperatures were monitored over 70 days and evaluated against the ASHRAE 55 Adaptive Comfort Model. Simultaneously, detailed capital expenditure and cost-of-ownership projections were drawn up. Wattle and daub showed the highest thermal compliance at 68.8%, followed by rammed earth (62.3%), and ISSB (59.7%). Rammed earth requires the lowest initial capital, whereas ISSB's lower maintenance cost offsets its higher capital requirement, reflecting a "predictability premium" embedded in industrial construction.

La Uganda rural presenta un déficit de 2,4 millones de viviendas en un contexto de rápido crecimiento demográfico, y quienes desean construir una vivienda suelen poder optar entre sistemas vernáculos de tierra y sistemas industriales importados. La literatura existente demuestra la superioridad térmica de la construcción con tierra frente a las alternativas industriales, pero pocos estudios cuantifican simultáneamente el comportamiento físico y los costes del ciclo de vida a partir de datos empíricos. Este estudio aborda esta cuestión mediante la construcción de tres prototipos en Kalongo, Uganda: uno de entramado y barro, otro de tapial y un tercero de bloques de tierra estabilizada y encajables (ISSB). Las temperaturas interiores se registraron durante 70 días y se evaluaron de acuerdo con el Modelo Adaptativo de Confort de ASHRAE 55. Paralelamente, se realizaron estimaciones detalladas de la inversión inicial y del coste total de propiedad. El entramado y barro presentó el mayor grado de cumplimiento de los parámetros de confort térmico, con un 68,8 %, seguido del tapial (62,3 %) y los ISSB (59,7 %). El tapial requiere la menor inversión inicial, mientras que el menor coste de mantenimiento de los ISSB compensa su mayor inversión inicial, lo que refleja una "prima de previsibilidad" asociada a la construcción industrial.

As zonas rurais do Uganda enfrentam um défice habitacional de 2,4 milhões de unidades, num contexto de rápido crescimento populacional, e os futuros proprietários têm frequentemente de escolher entre a construção vernácula em terra e os sistemas industriais importados. A literatura existente demonstra a superioridade térmica da construção em terra face às alternativas industriais; no entanto, poucos estudos quantificam simultaneamente o desempenho físico e a economia do ciclo de vida utilizando dados empíricos. Este estudo aborda essa lacuna através da construção de três quiosques-protótipo em Kalongo, no Uganda, utilizando taipa reforçada, terra compactada e blocos de terra compactada com bordas entrelaçadas. As temperaturas interiores foram monitorizadas ao longo de 70 dias e avaliadas de acordo com o Modelo de Conforto Adaptativo ASHRAE 55. Simultaneamente, foram elaboradas projeções detalhadas relativas às despesas de capital e ao custo de propriedade. A taipa apresentou a maior conformidade térmica, com 68,8%, seguida da terra compactada (62,3%) e dos blocos interlaçados (59,7%). A terra compactada requer o menor investimento inicial, enquanto o menor custo de manutenção dos blocos compensa a sua maior necessidade de investimento, refletindo um "prémio de previsibilidade" inerente à construção industrial.

Introduction

The built environment of rural Uganda is shaped by the country's complex colonial history and the stark economic divide between urban centers and rural peripheries. In rural contexts, there is a limited spectrum of housing—the traditional *ot-lum* type or the more contemporary *duka* type (Fig. 1). The *ot-lum* can be characterized by its use of single-skin wattle and daub walls with a thatched roof over light framing elements, typically with a circular shape (Fig. 2). Family housing units consist of a series of these structures, each with a unique programmatic function, organized around a

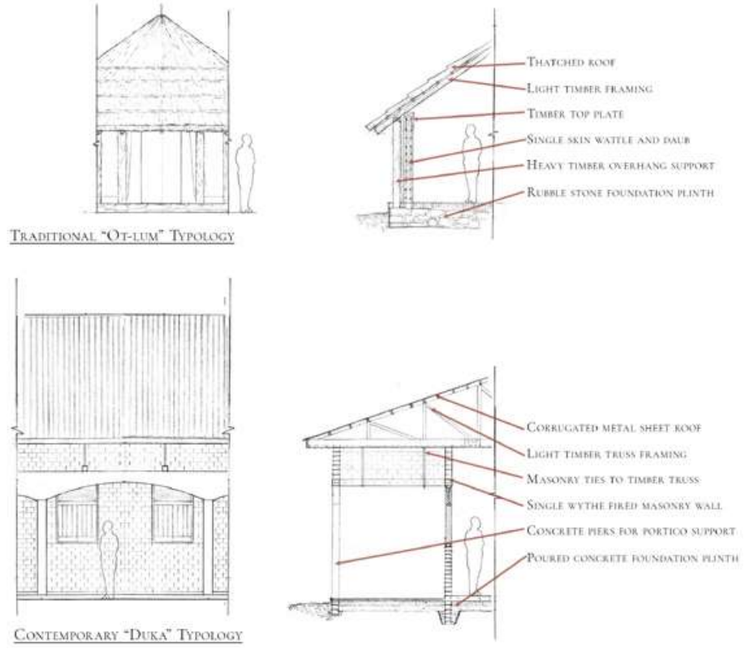


Figure 1. Comparison of *ot-lum* and *duka* types





Figure 2. Local examples of *ot-lum* types (Quinlan Gallagher)



Figure 3. Local examples of *dye-kal* arrangement





Figure 4. Local examples of *duka*

central courtyard or *dye-kal* (Fig. 3), the hub of the home (Girling 1960). Historically, materials for the *ot-lum* could be gathered in the vicinity, and many of the building materials are still local and able to be gathered. The construction and maintenance of an *ot-lum* is frequently a combined household self-building effort.

The *duka* shop-house has a rectilinear form, typically built of fired adobe blocks with timber-truss and sheet-metal roofing (Fig. 4). It is typically split between a shop at the front and a family apartment in the back. *Duka* building materials are normally purchased, particularly the fired bricks. These are hand-molded and stacked in large mounds for firing (Fig. 5), sometimes near the site, though they are normally seen on the periphery of communities. The vast quantities of firewood required for firing have a large carbon footprint. The complexities of *duka* construction often require the hiring of skilled labor, and the process tends to be phased according to the available capital, often leaving shells of homes awaiting further financing (Figs. 6 and 7).

The British colonial period, ending in 1962, marked a shift in tectonics from the semi-pastoral *ot-lum* to more permanent masonry homes. Colonial housing policy graded dwelling systems from more vernacular to more permanent (Byerley 2009). Contemporary intervention by foreign NGOs has further introduced imported building materials and construction methods that lack the inherent evolutionary adaptations of vernacular systems (Juma and Suhrke 2002). These imported systems have coincided with a demographic explosion. Uganda has roughly 46 million inhabitants and is one of the world's youngest countries, with a median age of 16.8 years (UBOS 2024). By 2040, the population is expected to double, exacerbating an existing housing deficit



5

Figure 5. Brick-firing mounds outside the village



7

Figure 6. Local masonry technique



6

Figure 7. Phased construction of a local *duka*

of 2.4 million units (Ministry of Finance, Planning and Economic Development 2024). Development occurs unevenly, with the southern urban centers enjoying most income and infrastructure improvements, as is evident in the allocation of permanent building systems. In the historically marginalized northern Acholiland region, wattle and daub walls are found in 16.1% of homes, with 85.3% of households opting for thatch roofs and 89.9% for earthen floors (UBOS 2021). This is in stark contrast with the capital Kampala, where just 1.3% of homes are of wattle and daub and 0.0% have thatched roofs. Broader Ugandan trends indicate a transition toward more permanent masonry, with 65.3% of homes now being built this way (UBOS 2021). Yet rural population growth means that the number of households relying on vernacular construction systems is also increasing. Existing literature shows a need for evaluation of a spectrum of building types responding to individual contexts and offering families a variety of housing solutions across demographic strata.

Academic studies in sub-Saharan contexts have analyzed lived experience and shown that earthen structures passively provide a more comfortable indoor space than industrial ones. Hailu et al. (2021) found that in Ethiopia 88% of traditional earthen home occupants were satisfied with their indoor environment, compared to 22% in modern homes. These findings are consistent with those of Widera (2021), showing 60-70% occupant satisfaction in selected vernacular dwellings across Togo, Benin, and Ghana, compared to 20% satisfaction in modern ones. Nematchoua et al. (2014) found that traditional structures outperform modern ones in both wet and dry seasons. In Uganda there are limited studies on thermal comfort, with Kajjoba et al. (2022) evaluating it in low-income housing in Kampala and finding that 67.8% of respondents reported comfort.

Recent research relies largely on computer simulations, subjective data, or predicted mean vote surveys. In-situ field studies that test these theories are scarce. Furthermore, the literature tends to be compartmentalized by specific thermodynamic envelopes (Carrobé, Rincón and Martorell 2021) or broad economic evaluations (Hashemi and Cruickshank 2015). Adegun and Adedeji (2017) reviewed 136 studies from 17 countries and confirmed that earthen materials are cheaper and more comfortable than contemporary alternatives in Africa. Few studies simultaneously quantify both physical performance and lifecycle economics across prototype models, though there have been calls for such analyses (Abdel Gelil Mohamed and Abo Eldardaa Mahmoud 2023). Furthermore, most studies focus on urban environments with stable supply chains and reliable material cost information. The present study's isolated rural setting involves the opportunity to leverage this research as a primary source for future economic studies.

Sanya's multi-criteria assessment effectively tabulates a variety of thermal, economic, and social factors, weighting them to appraise a spectrum of vernacular and modern building types (Sanya 2007). But the breadth of that study limited its ability to gather empirical evidence to verify its conclusions, and it relied instead on rigorous benchmarking. With the construction of full-scale architectural prototypes and a strict reliance on environmental data logged and measured against the ASHRAE 55 Adaptive Comfort Model, this study captures evidence that may be used to verify literary modeling. ASHRAE 55 has become the standard for validating naturally ventilated buildings in African contexts (Efeoma and Uduku 2014). Our study accordingly pursues three interrelated aims: to generate empirical thermal performance data across three construction types; to establish primary-source capital expenditure and cost-of-ownership data in a context where this is scarce; and to examine the relationship between thermal performance and lifecycle economics so as to inform future housing interventions in rural Uganda.

Methodology

Site Selection and Prototype Design

This research was conducted in Kalongo, Uganda (3°02'N, 33°22'E) from January to March, covering the end of the dry season and the onset of the wet one, with its active portion being in early January. Kalongo is located some 300 miles north of Kampala and 100 miles from Gulu, the nearest city (Fig. 8). Despite its nearly 10,000 inhabitants, Kalongo's traffic links are poorly maintained dirt roads that are often impassable after heavy rain. So the town has the desired supply-chain isolation albeit with logistics to support a field study. Previous engagement with the community afforded critical contacts and resources otherwise unavailable.



Figure 8. Map of Uganda



Figure 9. The three kiosks at the research site in Kalongo

After selection of the site, standard prototype kiosks were designed, each as a 9′ × 7.5′ rectilinear structure. Each one was oriented with its 7.5′ wall on the north-south axis. Each western wall included a 4.5′ × 4.5′ steel awning-style window with a small louvered opening above the operable portion, as is typical in the region. Each eastern wall included a 3′ × 6.75′ steel security door. Each kiosk's roof pitch was roughly 4:12. The kiosks shared a raised plinth foundation, consisting of rubble stones with cement and smaller stone infill. Wall thickness and roofing materials varied between kiosks so as to accurately reflect the reality of housing in Kalongo. Preliminary design drawings for each kiosk were given to a local contractor for verification and coordination, though some construction decisions were ultimately left to the builders, as they had greater knowledge of local systems and materials (Fig. 9).

the base during construction and timbers in direct contact with the foundation plinth were treated with spent motor oil, a common practice in Kalongo. The larger gum poles embedded in concrete at the corners were treated with spent motor oil and wrapped in plastic damp-proof membrane.



Figure 10. Kiosk 1 – Triple-skin wattle and daub

Type Specifications

Kiosk 1: Triple-skin wattle and daub (Fig. 10). This type served as an enhanced proxy for the *ot-lum* hut. The walls consisted of an outer layer of daub applied to bamboo wattle, with an additional daub layer on the wattle interior, as is traditional. A 4″ air gap and a further wattle and daub layer were added as a departure from the traditional form, intended to test whether this type could be elevated to meet the demands of more sophisticated scaled development while remaining within a vernacular framework. The overall wall thickness was measured at 15″. As the connection between the top plate and rafters was not airtight, the builder included a small vented opening. The roof was constructed of large (4″ diameter) rafters. A 9″ layer of thatch was then laid on the rafters over plastic damp-proof membrane, which was also used for edge and penetration flashings. Insecticide was sprayed along

Kiosk 2: Rammed earth with buried formwork (Fig. 11). Designed as an idealized hybrid, this type was intended to provide high thermal performance without the capital intensity of cement masonry. The walls were constructed of monolithic rammed earth, using on-site soil (*murrum*) and local unskilled labor for manual compression using simple wooden rammers. To reduce the need for specialized labor, the builders employed a "lost formwork" technique whereby the bamboo used to form the earth was left embedded in the wall. The overall wall thickness was measured at 10″, a product of the corner support poles, similarly fashioned to those of Kiosk 1. A 9″ layer of thatch was also laid on this kiosk, applied over larger (4″ diameter) rafters and an additional perpendicular layer of bamboo purlins with 1″ diameter. As in Kiosk 1, a small vent gap was left between the top of the wall and the rafters. Damp and insect mitigation was applied as in Kiosk 1, albeit with damp-proof membrane only at the edges of the roof rather than all over it.



Figure 11. Kiosk 2 – Rammed earth with buried formwork

Kiosk 3: Interlocking stabilized soil blocks (Fig. 12). This type served as a proxy for the aspirational model of more permanent contemporary housing. The walls were constructed of interlocking stabilized soil blocks (ISSB) using a rented Makiga machine. ISSB were chosen for an idealized scenario limiting the use of fired bricks to minimize impact on forest reserves. ISSB generally also require less cement and therefore contain lower embodied energy than standard fired bricks (Hashemi and Cruickshank 2015). The machine was loaded with the mold for a standard block measuring 5″ (w) × 10″ (l) × 5″ (h). The soil mix was made on site using local *murrum* in a 1:1:5 mixture of sand, cement, and *murrum*. The blocks were then left to dry in the sun for two weeks. The walls were laid in a single wythe with no mortar. A 6″ concrete ring beam was poured on top of the ISSB, serving as a lintel for the window and door, with two embedded #4 reinforcing bars for tensile strength. A timber top plate was fitted over the ring beam with ISSB infill to allow for the slope of the roof, which was framed with timber rafters and finished with corrugated iron sheeting.

Data Collection and Evaluation Framework

Thermal Performance. One Elitech RC-51H temperature sensor was hung from the roof of each kiosk at a height of roughly 5.75′, out of direct sunlight at all times, to log the interior temperature and relative humidity every 15 minutes. Thermal data were collected in two phases. In an initial 4-day active monitoring period (Dec. 30 to Jan. 4), the windows in each kiosk were manipulated to isolate the effects of passive ventilation: open for the first 48 hours and closed for the remaining 48 hours. Subsequently, data continued to be logged at 15-minute intervals through March 10, with the windows closed and the kiosks unoccupied. This gave a total monitoring period of 70 days, from the peak dry season through the onset of the wet season. The extended dataset thus captures the purely inherent thermodynamic behavior of each envelope without occupant adaptation. The data

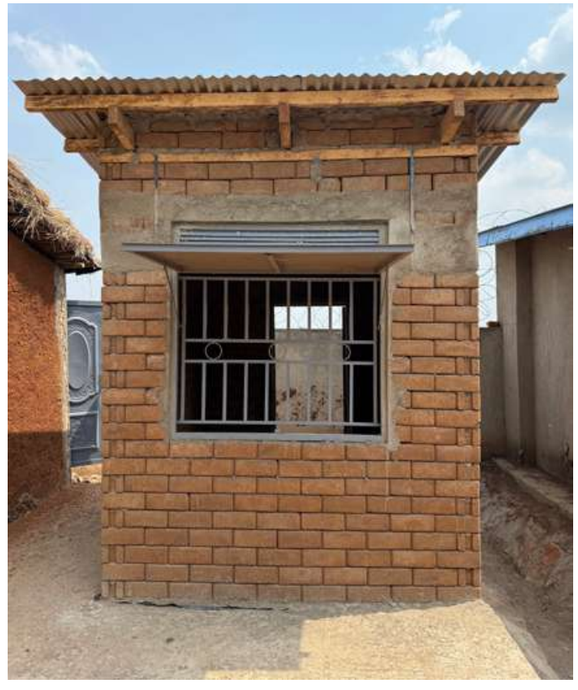


Figure 12. Kiosk 3 – Interlocking stabilized soil blocks

were evaluated using the ASHRAE 55 Adaptive Comfort Model. Failure times, in which the indoor temperatures transgressed preset acceptability limits, were then calculated for each kiosk.

Economic Evaluation. The builder used a live bill of quantities to track every cost related to construction. The costs of shared materials or tools (sand, water, etc.) were proportioned by relative use. The contractor's costs also include the transporting of materials to the remote site. Capital expenditure for each kiosk was broken down into major building components and cost categories (e.g., materials, tools, transport). Economic leakage, or the quantity of capital spent outside of Kalongo, was calculated for each kiosk. To evaluate long-term viability, a 20-year cost-of-ownership (CoO) projection was modeled, reckoning recurring maintenance costs for each kiosk and factoring in the unique relative rates of degradation. Local labor and material rates were generated by the builder. A sensitivity analysis collated different maintenance scenarios based on the builder's experience.

Results

Thermal Performance

Temperature data from each kiosk were benchmarked to acceptable standards using ASHRAE 55 Adaptive Analysis. While humidity data were also logged, the study scope was limited to dry-bulb temperature. The prevailing mean outdoor temperature (tpma) was 26.87°C (80.36°F), as reported by the Uganda National Meteorological Authority. While this outdoor temperature varies monthly, published climate data indicates variation that is statistically insignificant, with a range from 25°C to 27.5°C, and so including this calculation would shift the comfort limits only slightly (about 1°F) either way. A static comfort zone was therefore applied across the monitoring period for simplicity in comparison. Comfortable temperature was calculated to be:

$$T_{comf} = .31 \times t_{pma} + 17.8 = .31 \times (26.87°C) + 17.8 = 26.13°C$$

80% satisfaction is achieved with +/-3.5°C, giving an acceptable range of 22.63°C – 29.63°C (72.73°F – 85.33°F) (ASHRAE Standard 55-2020).

Over the initial 4-day field study, it was Kiosk 2 that showed greatest compliance with the prescribed temperature limits, at 63.8% of the time. Kiosk 3 was within the limits for 61.2% of the time, and Kiosk 1 performed least well, at 60.6%. These aggregate figures mask a sharp diurnal divergence. In the daytime cycle (07:00–19:00), Kiosk 1 did best by far, with a pass rate of 81.7% of the time. Kiosk 2 passed at 58.8%, and Kiosk 3 at 46.8%. In the nighttime cycle, however, Kiosk 3 outperformed the others with a pass rate of 76.5%. Kiosk 2 passed at 68.7% of the time, and Kiosk 1 only at 37.9%. All three kiosks responded to window management, with Kiosk 1 showing the greatest sensitivity, with its nighttime pass rate increasing to 52.4% with windows closed.

The failure profile for Kiosk 1 was cold-biased, as it stayed within the upper limit for 98.5% of the time, as opposed to 62.1% at the lower limit. Its magnitude of failure was significant: 9.1°F on the lower side. Conversely, Kiosk 3 was heat-biased, as its peak temperatures exceeded the upper limit by 10.6°F, with compliance of just 71.9%, but it remained above the lower limit for 89.3% of the time. Kiosk 2 had the most balanced profile, remaining within the upper and lower limits for 82.8% and 81.0% of the time, respectively.

After the 4-day active study, the sensors continued to log data for another 70 days. All the data for this period, plotted in Fig. 13, were in a closed, unoccupied state.

The initial pass rates varied over the monitoring period. Kiosk 1 achieved the highest overall compliance at 68.8%, followed by Kiosk 2 at 62.3%, and Kiosk 3 at 59.7%.

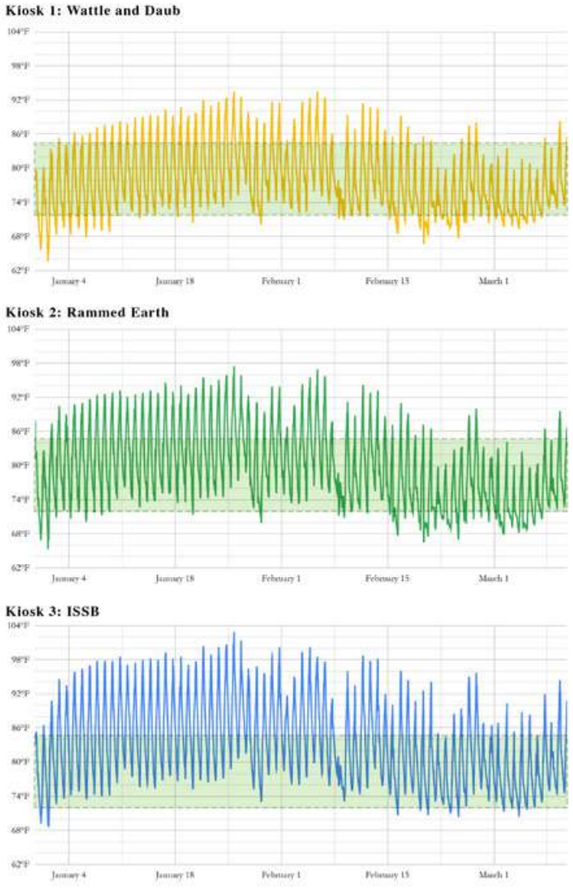


Figure 13. Thermal performance over 70 days

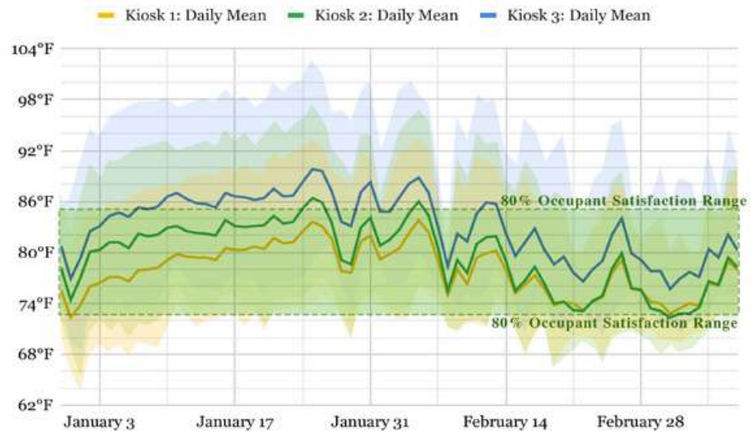


Figure 14. Daily mean over 70 days

Each kiosk's failure profile sharpened considerably with the larger dataset. Kiosk 1 remained cold-biased, failing the lower limit for 18.3% of the time. Its initial 98.5% upper-limit pass rate fell to 87.2% over the extended study. Kiosk 3 remained heat-biased, staying within the upper limit for only 63.4% of the time. A particularly warm day in January took all three kiosks to their peak temperature, with Kiosk 3 logging 102.9°F, a substantial 17.6°F above the upper limit. As the extended study allows analysis of kiosk performance across the dry and early wet seasons, the daily mean temperatures plotted through the study show the interiors cooling over the transition (Fig. 14). Kiosk 1 continued to fare better thermally, though the interior temperature difference between Kiosks 1 and 2 reduced as the season cooled.

Economic Evaluation

Rigorous price data collection allowed detailed analysis of capital expenditure (CapEx) for each kiosk. Kiosk 2 proved to be the most cost-efficient system, with a total cost of 6,992,175 Ugandan shillings (UGX) (~$1,998), followed by Kiosk 1 at UGX 7,799,676 (~$2,228). Kiosk 3 was the costliest at UGX 11,745,149 (~$3,356), roughly 68% more than Kiosk 2. These costs are charted in figure 15. To highlight each type's scalability, marginal costs (the outlay required to build a second kiosk) were calculated and compared, excluding any tools or materials able to be reused for another unit. Here again, Kiosk 2 remains the least costly at UGX 5.67 million. Kiosk 3 is still the costliest at UGX 8.25 million, though this represents only a 45% premium over Kiosk 2.

Capital expenditure for each kiosk was broken down by components as shown in figure 16. These costs concern mostly building materials, labor, and equipment, and chiefly materials, accounting for roughly 61% of CapEx in Kiosks 1 and 2 and 58% in Kiosk 3. The cost of the Makiga machine greatly increased the equipment cost for Kiosk 3, accounting for 22% of CapEx. Regarding economic leakage, non-local purchases are shown hatched in figure 16. Most of the capital spent for all three kiosks remained in Kalongo, though some industrial components, such as the steel windows and doors, were purchased in Kampala, along with the Makiga machine. Kiosk 3 involved most expenditure outside of Kalongo: roughly UGX 4.4 million, representing 37.6% of its CapEx. Kiosks 1 and 2 had about 29.6% and 33.1% of their CapEx spent outside Kalongo, roughly UGX 2.3 million each.

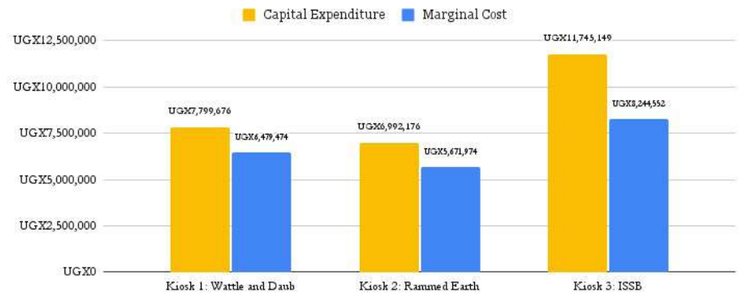


Figure 15. CapEx and marginal cost comparison

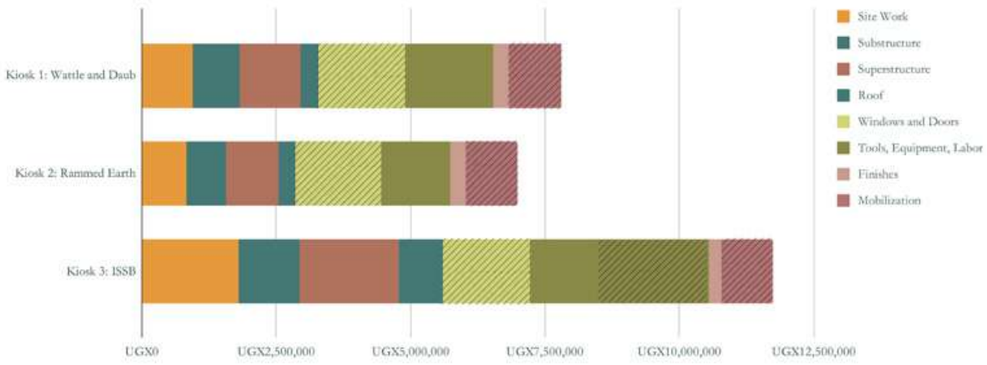


Figure 16. CapEx by building component with economic leakage

To accurately reflect the cost of ownership (CoO) for each building type, a rudimentary operational expenditure calculation was performed. The organic nature of the building systems coupled with the unpredictable climate of Kalongo made it necessary to run calculations based on varying maintenance requirements: low, standard, and high for each kiosk. In a region where standardized maintenance is not available, the scenarios were based on heuristic models provided by the contractor, checked with colleagues, as shown in table 1:

Kiosks 1 & 2	Low maintenance	Standard maintenance	High maintenance
Termite treatment	6 times yearly	18 times yearly	36 times yearly
Mud wall repair	3 years	2 years	1 year
Thatch roof repair	4 years	3 years	2 years
Thatch roof replacement	10 years	8 years	4 years

As Kiosk 3 is largely made of more industrial materials, its maintenance requirements were described as less involved, limited to termite treatment 3 times, 6 times, and 18 times yearly for the low, standard, and high maintenance scenarios, respectively.

Using rates gathered from local builders, CoO was charted for each kiosk with these maintenance schedules. The calculations were applied also to marginal cost as an exercise in scalability. CoO was reckoned over a hypothetical 20-year period. Under the standard maintenance scenario, Kiosks 1 and 2 generated roughly an additional UGX 2 million in maintenance requirements relative to Kiosk 3. Yet the high initial capital required for Kiosk 3 offsets its maintenance savings and it remains the most expensive type. In CoO analysis with marginal cost, the initial capital for Kiosk 3 is closer to that of Kiosks 1 and 2, making it the least expensive type after 20 years. Under high maintenance conditions, Kiosk 3 becomes the least expensive type after 20 years in both CapEx and marginal cost, incurring just UGX 1.5 million in maintenance, as opposed to some UGX 6.6 million for Kiosks 1 and 2. CoO for each scenario is plotted in figure 17, wherein the shaded area represents the range between high and low maintenance scenarios.

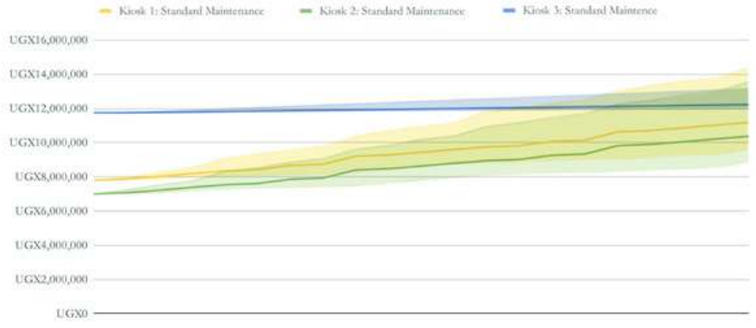


Figure 17. CoO over low, standard, and high maintenance scenarios

Discussion

Mechanics of Thermal Failure

While the aggregate thermal pass rates of the three types appear comparable (~60-69%), the figures mask divergent physical behaviors. Each system transgresses the comfort limits through distinct mechanisms embedded in its material properties, with implications for future adaptations.

Kiosk 1 (wattle and daub) showed the strongest passive cooling of the three, with the highest overall pass rate, while also complying with the upper comfort limit most frequently. The low thermal conductivity of its triple-skin mud walls effectively attenuated daytime solar heat gain. However, this same low thermal mass made it unable to store daytime heat for release during the cooler nights, resulting in the lowest pass rate at the lower limit. Kiosk 3 (ISSB) showed the opposing mechanism. The dense block walls stored and transmitted heat during the night, resulting in good nighttime compliance. But its highly conductive iron sheet roof chronically overheated the interior during the day. Kiosk 2 (rammed earth) performed intermediately. Its breathable thatch roof released accumulated heat during the day while its monolithic earth walls retained warmth at night. It showed the most evenly distributed failure profile and the closest approximation to a truly passive envelope.

The earth-walled prototypes (Kiosks 1 and 2) failed thermally in ways that can be partially addressed through behavioral adaptation, such as closing windows at night, occupying the space, or using blankets. The failures of the industrial system (Kiosk 3) require more architectural intervention, as the iron roof will continue to let the structure overheat regardless of occupant behavior. Addressing such failures involves material changes, such as insulation beneath the iron sheet or addition of radiant barriers, as opposed to behavioral changes. These findings underscore a fundamental asymmetry whereby the earth-walled prototypes provide superior passive cooling but cannot retain warmth overnight, while the industrial prototype provides nighttime stability at the cost of daytime heating. An alternate system, pairing the density of ISSB walls with a less conductive roof structure, would respond to some of these issues.

Economics of Permanence

The initial capital expenditure data highlights the added expense embedded in a transition to contemporary industrial housing materials, with Kiosk 3 being 68% more expensive than Kiosk 2. While this reflects a material upgrade, it is also the consequence of the region's isolation. The great distance from the nearest city coupled with poorly maintained roads inflates the baseline cost of industrial construction. Capital spent procuring industrial goods moreover does not recirculate in the local economy. Kiosk 3 left a large share of its construction budget outside of Kalongo, while the spending for Kiosks 1 and 2 was largely local. The steel windows and doors used in all three kiosks also reflect a consistent sourcing vacuum for industrial materials. Where local economic circulation is a priority, the distribution of expenditure warrants consideration by homeowners and builders.

Calculating the marginal cost of construction is crucial to evaluating the potential for mass adoption. The cost premium of Kiosk 3 over Kiosk 2 is reduced to just 45% in marginal cost, and just 28% over Kiosk 1. The largest saving in marginal cost concerns the Makiga machine, a one-time purchase that can be used for other projects. The region's high deforestation and termite risk also gives Kiosk 3 an advantage in terms of scalability, given its limited use of timber. But for subsistence-level households, securing the capital to access the machinery required for ISSB is often impossible, which limits them to the more vernacular options of Kiosks 1 and 2.

An economic insight emerges from the contrast of initial CapEx with 20-year CoO. The organic envelopes of Kiosks 1 and 2 can trap low-income families in a perpetual cycle of costly, labor-intensive operational expenditure (OpEx), though this risk is mitigated by abundant local generational craftsmanship. The CoO models confirm that in a "standard" maintenance scenario, Kiosk 2 remains the cheapest option at 15% less than Kiosk 3 after 20 years. Yet in an agrarian context such as Kalongo, household income is volatile, tied to uncontrollable environmental factors such as rainfall and crop yields. Organic buildings tend to degrade in parallel with these environmental pressures. This can force rural families to expend critical capital, both economic and human, on repairs and maintenance intrinsic to vernacular construction. Thus Kiosk 3's low OpEx increasingly offsets its initial CapEx, as shown empirically in the "high maintenance" CoO scenario. The steep initial cost of the ISSB structure can be justified as an investment for financial stability against environmental volatility, which homeowners may see as a "predictability premium."

Thermal and Economic Performance in the Social Context

The dissonance between the thermal performance of earth-walled systems and the durability of more industrial masonry results in a complex decision-making matrix for prospective homeowners. Architectural evolution in rural Uganda is moreover not driven only by thermal calculus. The sociocultural matrices conceptualized by Sanya show that material selection is also guided by questions of status and cultural relevance (Sanya 2012). Vernacular earth construction, while culturally relevant and thermally superior, is burdened with socioeconomic stigma linked to cyclical poverty. Organic architecture is visibly ephemeral, having evolved from pastoralism. The need to maintain and replace organic elements is thus a reminder of occupants' vulnerability. The psychological security derived from a more industrial, permanent structure can therefore outweigh thermal considerations, which occupants may mitigate through adaptive measures.

Improvements and Future Iterations

To contextualize the performances presented here, some limitations must be acknowledged. First, these prototypes were constructed as experiments rather than examples of established practice. As such, they lacked the craft input that would otherwise improve durability, performance, and aesthetic quality. Additionally, all temperature data were logged in unoccupied structures. Introducing a standard heat load would likely help mitigate Kiosk 1's nighttime cold while exacerbating Kiosk 3's daytime heat. The thermal performance of each kiosk would likely be improved if occupants adopted behaviors such as opening windows during the day and closing them at night. Most of the thermal data capture only a single operational state, though the brief ventilation phase confirmed that all three kiosks were responsive to climate management. And as the testing began some three weeks after completion, the earth walls may have still contained residual moisture, promoting evaporative cooling and so inflating daytime pass rates and nighttime fail rates. As the kiosks dried over the course of the study, their upper-limit performance tailed off, reaching equilibrium after a few weeks.

Some field observations must be included here for the sake of transparency and accuracy. First, Kiosks 1 and 2 showed significant termite damage some weeks after construction. Despite initial ground treatment, termites were able to infest the kiosks through the bamboo embedded in the walls, eventually making their way to the roof framing (Fig. 18). Once the damage was noticed, more aggressive treatment was applied, reflected in the "standard" maintenance scenario for conservative upkeep. Additionally, as the season transitioned from dry to wet, Kiosk 2 began to suffer water infiltration through its roof, as the lack of a damp-proof membrane let the heavy rain leak in after soaking through the thatch. Not only does this affect durability but it is also possible that the leakage cooled the kiosk during the wet season. Kiosks 1 and 2 were also beginning to show signs of degradation where the outside mud walls met the ground, likely as a result of insufficient plinth height. Lastly, it is worth noting that for Kiosks 1 and 2, bamboo was selected to replace wooden framing, given the lack of a local supply of quality lumber, and the aspirational idea of using a more resilient, abundant material for future construction.



Figure 18. Evidence of termite damage in Kiosks 1 and 2

Conclusions

Ultimately, this research does not seek to establish a single "best" construction system. Rather, it seeks to inform future architectural work in the region. The departure of these prototypes from more conventional local systems limits our ability to generalize the results to vernacular systems with generations of iterative design evolution. The overlapping complexities of thermal comfort, economic needs, and social stigmas also render a single design solution unlikely. Instead, these findings suggest that future architectural interventions should pragmatically retrofit industrial materials suited to this environmental context, without loss of durability and scalability. Concurrently, the large, growing demographic that still relies on vernacular earthen systems could benefit from design improvements to stabilize building integrity and improve maintenance predictability. The methodology employed in this study is transferable to other regions where tension between vernacular and industrial construction persists, as more of the world develops from rural contexts. The broader adoption of vernacular building methods faces many obstacles, including the dominance of industrial materials, the stigma attached to earth construction, and the erosion of craft knowledge. Addressing these barriers requires an understanding of the empirical evidence presented here and institutional support for craft training alongside development of hybrid vernacular-industrial systems. The future of rural construction in Uganda lies not in the replacement of one approach by another but in the simultaneous scaling and iterative improvement of both.

Acknowledgments

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Biography | Biografía | Biografia

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Matthew is a graduate of the University of Notre Dame, where he earned a Bachelor of Architecture (B.Arch) with honors in 2024. He also completed minors in Italian Studies and Sustainability, reflecting broad academic interests and a commitment to integrating cultural and environmental considerations into practice. He currently works at a prominent Chicago-based residential architecture firm specializing in the application of traditional design and detailing to modern homes. His ongoing research focuses on vernacular building traditions, thermal performance, and housing economics in Uganda's Acholiland region, where he has conducted extensive fieldwork supported by grants from INTBAU and the Institute of Classical Architecture & Art in conjunction with the Luminarts Foundation.

Mahan Motalebi, Marcus Shaffer

Circular Vernacular: Pigeon Towers as Ecological Mediators in Urban–Rural Contexts

Vernáculo circular: Los palomares como mediadores ecológicos en contextos urbano-rurales

A arquitetura vernácula circular: Os pombais como mediadores ecológicos em contextos urbano-rurais

Keywords | Palabras clave | Palavras chave

Circularity, Earthen architecture, Ecological structures, Vernacular infrastructures, Iranian pigeon towers

Circularidad, Arquitectura en tierra, Estructuras ecológicas, Infraestructuras vernáculas, Palomares iraníes

Circularidade, Arquitetura de terra, Estruturas ecológicas, Infraestruturas vernáculas, Pombais iranianos

Abstract | Resumen | Resumo

This paper investigates how pigeon towers may be reimagined as contemporary ecological mediators incorporating environmental circularity and ecological diversity into urban–rural settings. Through archival research, field documentation, and comparative analysis of Iranian and other pigeon towers, the study argues for a dynamic and evolving understanding of these vernacular structures and their capacity for adaptation in contemporary contexts. Framing such vernacular infrastructures as dynamic, environmentally conscious architectures, the research examines how their materiality, tectonics, and spatial logic enable a circular, adaptive system across rural and urban contexts. It reveals how the material (raw earth) and construction logic of Iranian pigeon towers play a role in their deterioration, ultimately proposing a decay-informed construction cycle. The study recovers the vernacular wisdom embedded in traditional craftsmanship as knowledge applicable to contemporary design, research, and practice.

Este artículo investiga cómo los palomares pueden reinterpretarse como mediadores ecológicos contemporáneos que incorporen la circularidad ambiental y la diversidad ecológica en contextos urbano-rurales. A través de la investigación de archivo, la documentación de campo y el análisis comparativo de palomares iraníes y de otros lugares, el estudio plantea una comprensión dinámica y evolutiva de estas estructuras vernáculas y de su capacidad de adaptación a contextos contemporáneos. Al considerar estas infraestructuras vernáculas como arquitecturas dinámicas y ambientalmente conscientes, la investigación examina cómo su materialidad, su tectónica y su lógica espacial permiten configurar un sistema circular y adaptable en contextos rurales y urbanos. El estudio revela cómo el material (tierra cruda) y la lógica constructiva de los palomares iraníes intervienen en su deterioro y, a partir de ello, propone un ciclo constructivo que incorpora este proceso de degradación. El estudio recupera la sabiduría vernácula presente en los oficios tradicionales como un conocimiento aplicable al diseño, la investigación y la práctica contemporáneos.

Este artigo investiga como os pombais podem ser repensados como mediadores ecológicos contemporâneos, incorporando a circularidade ambiental e a diversidade ecológica em contextos urbano-rurais. Através de investigação de arquivo, registo documental no terreno e análise comparativa de pombais iranianos e de outras origens, o estudo defende uma compreensão dinâmica e evolutiva destas estruturas vernáculas e da sua capacidade de adaptação em contextos contemporâneos. Ao considerar estas infraestruturas vernáculas como arquiteturas dinâmicas e ambientalmente conscientes, a investigação examina como a sua materialidade, tectónica e lógica espacial permitem configurar um sistema circular e adaptativo em contextos rurais e urbanos. O estudo revela como o material (terra crua) e a lógica construtiva dos pombais iranianos desempenham um papel na sua deterioração e, em última análise, propõe um ciclo construtivo que tem em conta esse processo de deterioração. O estudo recupera a sabedoria vernácula incorporada nos ofícios tradicionais como conhecimento aplicável ao design, à investigação e à prática contemporâneos.

Introduction

Beyond the static views often presented in scholarly research, this paper examines pigeon towers typologically as ecological structures that mediate interactions between humans, non-humans, and the environment, functioning as integral components of agricultural infrastructure. The discussion that follows is grounded in archival sources, direct fieldwork in Iran, and a comparative typological analysis of Iranian pigeon towers with those in other regions, considering how these vernacular structures have evolved and what that trajectory says about their capacity to adapt.

We situate Iranian pigeon towers in a global context, tracing the emergence and evolution of dovecotes across cultures and regions. Though pigeon towers have also been built elsewhere, we focus on earthen examples and types chiefly in Iran, Egypt, and Spain. Iranian towers are selected as the primary focus because they are unique in relying on unreinforced mud blocks/adobes as their sole material (Motalebi and Shaffer 2023). This singular material approach underscores their engagement with earth as both construction material and living resource, marking them as a distinctive vernacular type defined by tectonics, materiality, and circularity. Earth is viewed as an active, responsive element incorporated into construction, maintained through the towers' design, and enriched by their use, contributing in turn to the land's fertility and productivity. By examining the materiality, structure, design solutions, and contextual connections of such vernacular earthen structures, we can infer lessons for approaches in architectural design and research.

Most existing sources on pigeon towers are specific to one country or region and approach them in isolation, largely through documentation (e.g., Badiee Gavarti et al. 2022; Prieto Vergara 2025). This paper offers a typological compilation showing the similarities and differences in their origins, tectonics, and construction, tracing them to the present and considering how their evolution may inform contemporary practice. For Iranian and Spanish towers, our comparison draws on non-English sources that often contain in-depth analysis but are difficult to access without translation. Spanish sources were translated using online tools and Farsi sources were rendered directly and synthesized for reference.

The Iranian material presented draws on author fieldwork in July 2024 in which several towers were visited in the villages of Jilanabad and Gavart, Isfahan province, with exploration of spatial qualities, structural characteristics, and tectonics. These towers were mostly privately owned and access was limited, as some owners were unavailable or unwilling to grant access. Of the towers visited, two were unattended and accessible for interior exploration, as documented here. This firsthand material, read alongside historical and comparative sources, shows that these structures are systems that continue to adapt and evolve.

Vernacular Architecture: A Dynamic Perspective

The *Encyclopedia of Vernacular Architecture* (Oliver 1997) gives the following definition:

> *Vernacular architecture comprises the dwellings and all other buildings of the people. Related to their environmental contexts and available resources, they are customarily owner or community built, utilizing traditional technologies. All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies and ways of living of the cultures that produce them.*

Attempts to define vernacular architecture are thus inherently limited by the vast diversity of building types, forms, functions, and traditions embraced (Oliver 1997). Though commonly applied to Indigenous, folk, and traditional building practices, the term resists a fixed definition, as the field spans multiple disciplines, each with its own priorities.

More broadly, Dell Upton (1993) argues that the vernacular draws us in through its irregularity, like classical ruins, producing what he calls a "dichotomy of us vs. them." This can result in admiration for what modern architecture lacks or in a sense of superiority, seeing "us" as progressive and "them" (the vernacular) as backward. This opposition reinforces the misconception that the vernacular is unchanging, in opposition to the dynamic realm of "high architecture" (Upton 1993).

Conventional vernacular studies have focused largely on cultural transmission, tracing efforts to preserve or replicate old ways in new contexts. While Upton acknowledges the value of this, he advocates a shift in focus toward the overlooked aspects of vernacular architecture—those that foster dynamic expression rather than mere replication.

In support of Upton, Marcel Vellinga (2006) says vernacular traditions should be treated as evolving rather than static practices, as this points to their relevance and integrates them into contemporary discourse. These traditions are built on ecological, resource-efficient practices that can inspire contemporary design. With challenges such as climate change, urbanization, and resource scarcity, incorporating vernacular ideas may help us create sustainable and resilient buildings (Vellinga 2006).

Vernacular types may thus be models for contemporary practice. Earthen pigeon towers, particularly those of Iran, represent a fascinating intersection of vernacular architecture, ecological functionality, and cultural heritage. Once central to rural life, they are now largely abandoned as a result of urbanization, changing agricultural practices, and environmental degradation. Through understanding the causes of this decline and the intentions behind their design and development, we can find ways to reassert pigeon towers as dynamic structures of value today.

Pigeon Towers / Dovecotes

Pigeon towers, also called dovecotes, have long been a prominent feature of vernacular architecture from the Middle East to Europe and Africa. The development of similar building types in different regions is common in vernacular architecture, in keeping with local materials, contexts, and traditions, though it is unclear whether pigeon towers developed independently in each region or if the concept spread from one to another. In any event, across different cultures they appear built of such local materials as earth, clay, and stone (Fig. 1). The main purpose of housing pigeons in the Middle East was to collect their droppings for fertilizer, though elsewhere the object was their meat and eggs.

The layout and circulation of vernacular dovecotes respond to the "two fundamental uses of the building: 'habitual' and 'circumstantial'" (Abril Revuelta 2015). "Habitual" refers to the pigeons' occupations, such as resting or rearing their young. "Circumstantial" refers to occasional human visits to provide water and grain and gather droppings. The relationship between these uses informs the design, as do the local building materials used.

<u>History and Development of Pigeon Towers Across the World</u>

The background of these structures can be traced through architectural and agricultural texts and the writings of travelers. In *Geōponika: Agricultural Pursuits*, a tenth-century Greek text, a chapter is devoted to the use of pigeon dung in agriculture and how to build a pigeon house with attention to the occupants' wellbeing and needs (Owen 1805). Thus pigeon towers should be built at a distance from other structures to discourage predators. The stone columns supporting them should be arranged in circular formation, or if stone is not available, wooden pillars may be used, to a height of 7 cubits. Latticed windows are required on the east and west sides for natural light and pigeon access along with an entrance on the south side for the caretaker.

In his *Agricultura General*, published in 1513, Gabriel Alonso de Herrera describes design criteria for pigeon towers in the Iberian Peninsula. Specifications for dovecotes are also given in *Ten Books of Architecture* by Leon Battista Alberti (1955 [1485]). Both authors emphasize similar considerations in terms of location, structure, material selection, and maintenance. Pigeon towers should thus be in open, treeless fields close to water. They should be built to a manageable height of around 3.5 m, allowing pigeons to glide in comfortably while allowing human access by a standard ladder of some 170 cm. Both Alberti and Herrera note the importance of protrusions for alighting and perching in the form of ledges or bricks projecting before the pigeonholes. Alberti says this is advisable because it prevents fledglings from having an open view of the sky. Plastering and whitewashing are highlighted by both as ways to keep dovecotes comfortable and

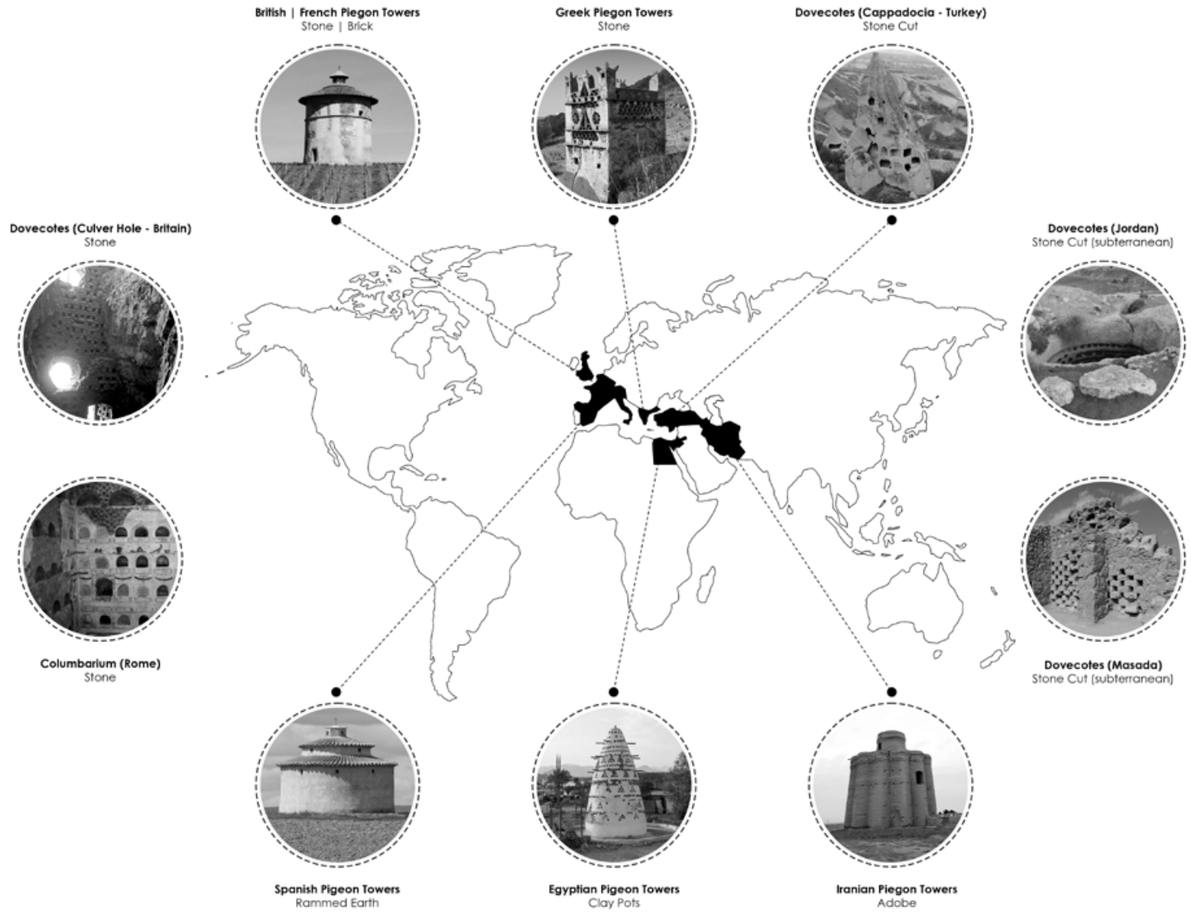


Figure 1: Regions where different types of pigeon tower are found, suggesting a possible route of transfer between east and west

clean for the birds and free of climbing predators. They also emphasize that human care is needed for both the structure and the pigeons, provided in such a way as not to disturb them.Alberti distinguishes clay and other earth-based materials as being most suitable, including bricks if not overbaked. Wood is considered useful, but not stone. This relates to the thermal comfort afforded by materials such as clay and brick and wood.

In his 1991 study *An Historical Enquiry into the Design and Use of Dovecotes*, John McCann identifies six factors in the design of pigeon towers for meeting pigeons' needs, based on British examples. These include appropriate height, a clear field of view, perches, a dark interior, moderate proximity to water, and distance from human activity, reflecting pigeons' sensitivity to disturbance. He also considers pigeons' homing habits, noting their preference for dark spaces, man-made structures, and gaps or cracks in buildings. He recommends materials that maintain comfortable interior temperatures and, like Alberti, observes that material choice may be guided by availability and convenience (McCann 1991).

Like many building types shaped by productive needs, pigeon towers have evolved in terms of use, material articulation, and relationship to their environment. These changes, whether aesthetic, functional, or technical, have been driven by shifts in agricultural practices, land use, and production demands as well as the encroachment of settlements upon rural landscapes, ultimately contributing to the decline of pigeon towers. As mentioned, pigeons inhabit towers only under specific conditions, which these evolving factors may disrupt, leading them to fall into disuse. Maintenance also requires sustained labor, whereas less labor-intensive fertilizers are now available.

Iranian Pigeon Towers

Literary evidence suggests that Iranian pigeon towers have existed since around the ninth century CE (Heidari Bani 1999). Over time they evolved from simple enclosures into highly refined structures, reaching a peak in the sixteenth-century Safavid era, when their design combined advanced construction techniques with intricate spatial and aesthetic details (Beazley and Harverson 1982). Found mainly in central Iran, particularly Isfahan province, they were built in fields near surface water or underground aqueducts (*qanats*) (Fig. 2), also serving as farmland boundary markers. *Qanats* are ancient systems that tap aquifers through a series of tunnels, supplying water for daily and agricultural use but not enough for continuous irrigation. As a result, agriculture in central Iran has always depended on fertilizers, given the region's arid to semiarid climate, and the importance of pigeon towers as fertilizer sources led to the development of vernacular construction expertise and innovation.



Figure 2: Iranian pigeon towers along a stream (François Molle, WikiMedia Commons)

Typology

Iranian pigeon towers can be categorized in three main formal types: rectangular, circular, and clustered. These can be divided into subcategories (Fig. 3), depending on the desired capacity and the related structural requirements, integrating tectonics and geometry. Also considered is material efficiency while optimizing the interior surface area to accommodate as many pigeon cells as possible (Beazley and Harverson 1982).

Design and Construction

Design and construction methods for pigeon towers, like much vernacular architecture, may vary even within one region. But the general design remains based on the common features of interior nesting spaces, small openings for pigeon entry/exit, access for humans, and a prominent white gypsum band on the exterior (Ansari 2013). The smooth gypsum surface is thought to prevent predators such as snakes from climbing the tower, though the white color may also serve to attract pigeons (Badiee Gavarti et al. 2022). A drainage course is also formed at the top edge with patterns of brick (often fired adobes) designed to keep out water (Fig. 4).

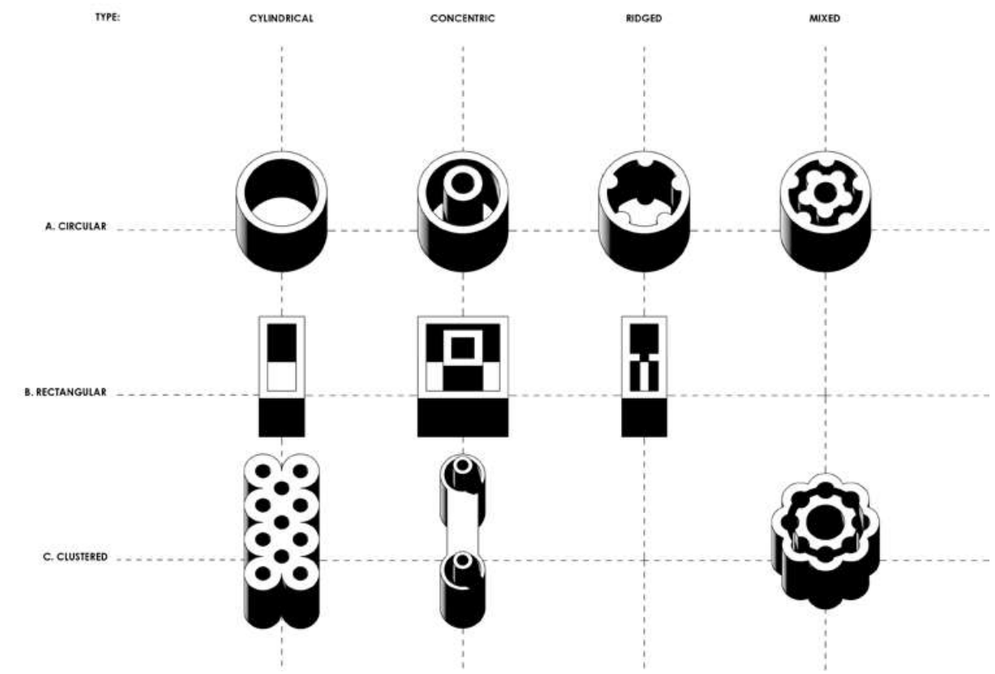


Figure 3: Typological variation in Iranian pigeon towers

What distinguishes Iranian pigeon towers from parallel examples is their multistory design. Unlike many single-space dovecote types, which typically rely on movable ladders for access (McCann 1991), Iranian towers with concentric walls around a core typically have multiple levels (usually two) connected by masonry stairs. This also gives access to the roof, facilitating maintenance (Fig. 5).

Pigeonholes in Iranian towers are created by leaving gaps between the inner blocks. The solid-void pattern in the repetition of holes and perches shows an integration of function and aesthetics (Beazley and Harverson 1982) (Fig. 6). Measuring approximately 20 × 20 × 15 cm, the holes inform the tower's interior geometry, with an asymmetrical mud pyramid below each one as a perch, facilitating the collection of droppings. Given the sloping form, other pigeons have easier access to the adjoining cavities (Beazley and Harverson 1982).

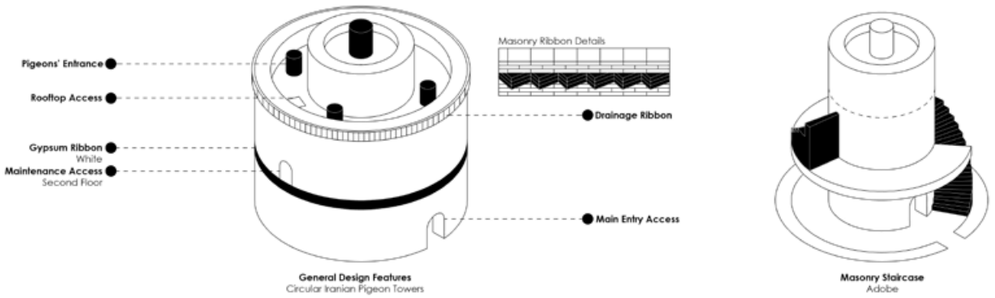


Figure 4: Typical architectural features of Iranian pigeon towers

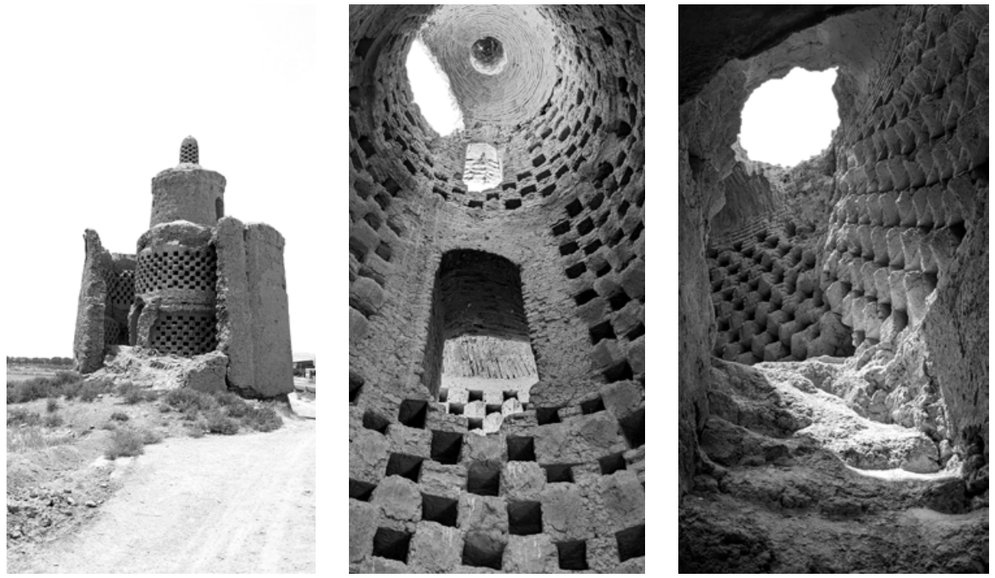


Figure 5: Exterior and interior of a pigeon tower in Isfahan province, with its core, solid-void pigeonhole pattern, and masonry stair to the top

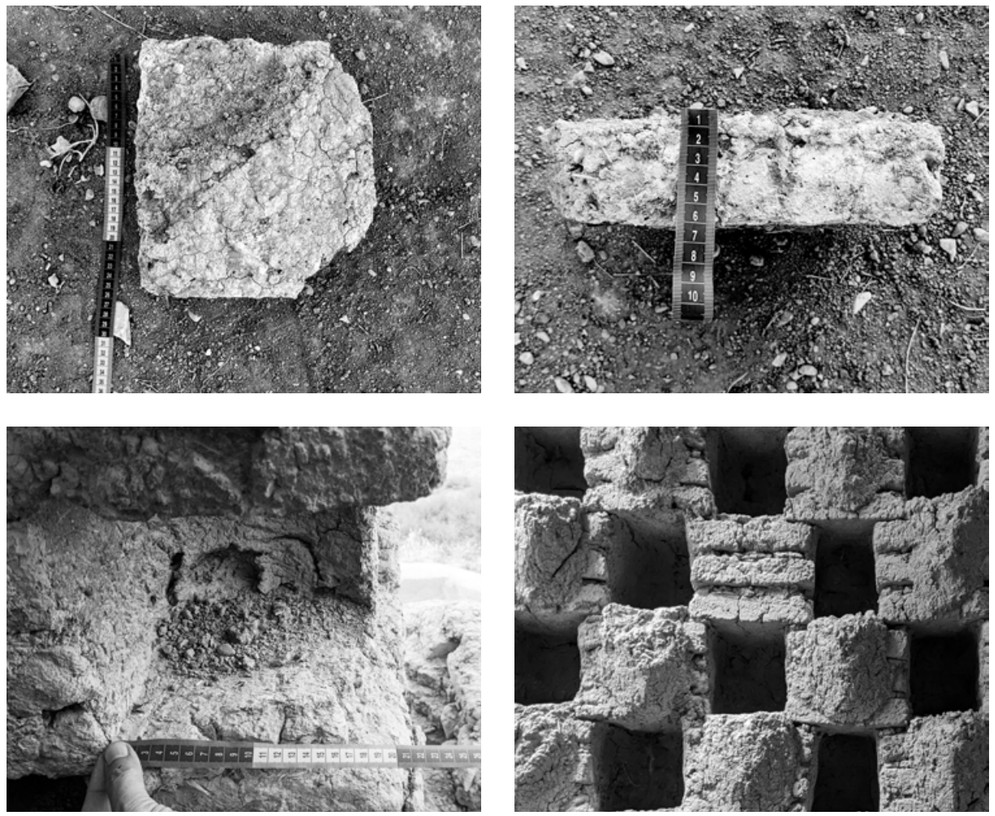


Figure 6: Top: Dimensions of an adobe brick from an Iranian pigeon tower (25 × 25 × 5 cm). Bottom left: Pigeonhole measurements (approx. 20 × 20 × 15 cm). Bottom right: adobe courses forming pigeonholes

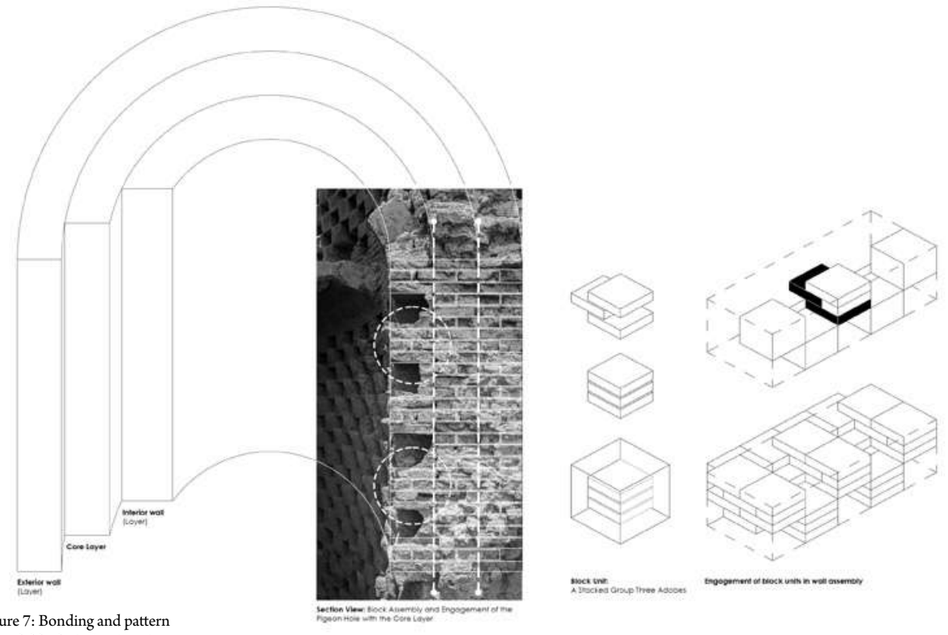


Figure 7: Bonding and pattern of earth blocks in Iranian pigeon towers and the resulting courses

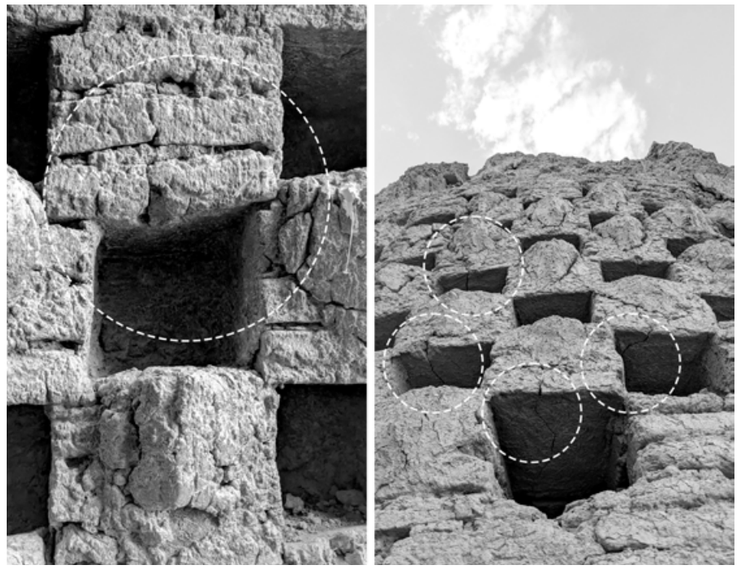


Figure 8: Cracking in the sides of blocks over voids, developing mainly along the central axis and near the supported bottom corners

A close examination of wall tectonics and masonry patterns in Iranian pigeon towers shows that a stack of three earth blocks serves as the basic building unit. This may relate to the block dimensions, as stacking three makes a cube and thus forms pigeonholes of suitable size. This configuration also results in structurally stable walls while integrating a solid-void pattern in their width. This is achieved by cantilevering the middle blocks of each stack so as to engage with the set of blocks in the layer behind. The middle block thus has a crucial structural role, while the bottom block is more vulnerable, bearing greater loads without direct support beneath (Figs. 7 and 8). Laying blocks in this pattern may be straightforward in a linear wall assembly but adapting it to the curved walls of circular towers and resolving the associated structural challenges takes skill.

Structural System

A notable aspect in pigeon-tower design and construction is resistance against forces such as earthquakes, wind, and recurring micro-vibrations from fluttering wings. Given the characteristics of the materials used in Iranian towers (unfired earth blocks), local architects have sought to enhance stability and durability through formal considerations involving a uniform distribution of forces. Even transfer of forces is more easily achieved in structures with less complex, symmetrical designs in which all load-bearing elements are well distributed (Houri-Zadeh 2014). This is also linked to the tectonic logic of the building materials. Circular towers appear to be the commoner type, and the tectonics of earth blocks allow the construction of various coherent configurations, as seen in the several types of Iranian pigeon tower, relying on a single material unit (Mashhadi 2014). The standard circular plan is important, as the tectonics of construction with earth blocks requires the entire structure to be under compression to limit tensile stress (Beazley and Harverson 1982). A circular plan also creates a dynamic form that more effectively diverts lateral wind forces, whereas a rectangular plan with flat surfaces obstructs the flow and receives greater loads (Fig. 9).

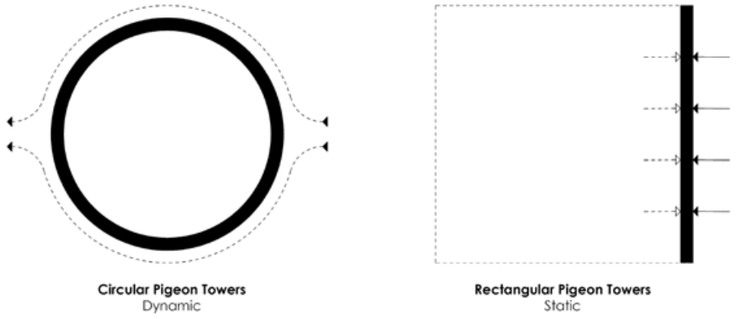


Figure 9: Lateral wind forces on rounded exterior surfaces versus flat surfaces, which face the wind and receive greater loads

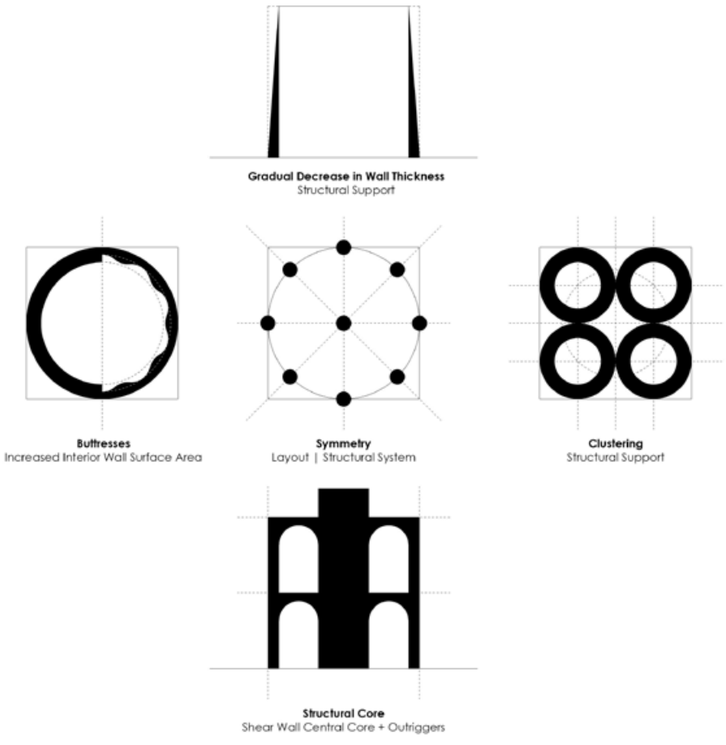


Figure 10: Iranian pigeon tower configurations to enhance stability

In both the circular and rectangular types, the wall thickness gradually decreases from base to top, forming a tapering profile as the inner side remains straight and the exterior slopes inward. This enhances resilience against lateral forces and vertical loads while reducing the amount of material needed. In types with concentric walls, the central walls function as a shear core structure, similar to the core systems used in high-rise buildings (Houri-Zadeh 2014 and Ansari 2013). The exterior wall(s) is/are connected to the core by arches acting as buttresses in an integrated structural system. In towers with ridged walls the thickness is reduced, as the ridges serve as buttresses (Fig. 10).

Damage Analysis

Although these structural methods mitigate degradation, the towers remain vulnerable to various agents of deterioration in relation to their structural characteristics and components, broadly classifiable as aging (of both materials and structure), human activities, and environmental factors. Damage commonly manifests as structural cracking, partial collapse, or material disintegration.

Cracks typically appear at the top and bottom, often vertically, generally resulting from structural movements in opposing directions due to a range of interacting factors (Warren 1999). Cracks originating at the base tend to have wider openings that narrow as they extend upward, whereas cracks from the top progressively close as they extend downward.

Cracking in the upper portions may occur when irrigation water is absorbed by the lower parts, leading to differential settlement, stress redistribution, and transverse deformation, including the Poisson effect (Ansari 2013). Rainwater infiltration and drainage leaks can produce similar cracking patterns at the top, often leading to localized deterioration (Warren 1999).

Cracks forming in the lower portions are primarily associated with material aging, gradually weakening the performance of mortars. The structure thus becomes increasingly susceptible to deformation and cracking under sustained loads and environmental stresses, including transverse strains (Ansari 2013).

While water absorption remains the dominant factor of deterioration in earthen structures, other agents such as wind may also exert erosive effects. Although these impacts are often minor, cumulative action can amplify material loss and structural damage over time (Warren 1999). As mentioned and illustrated in Fig. 9, the overall dovecote geometry also influences the magnitude of wind loads, resulting in varying patterns of deterioration.

The exterior of pigeon towers is more susceptible to disintegration due to its exposure to various factors as compared to the center or interior. This also applies to the core structure of concentric towers. The core is typically found to remain intact, or to disintegrate more slowly than other parts (Fig. 11).

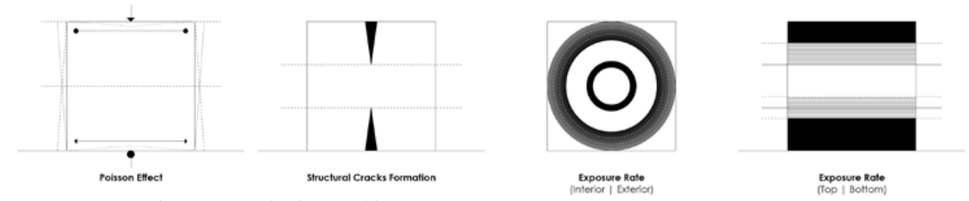


Figure 11: Factors contributing to material and structural deterioration

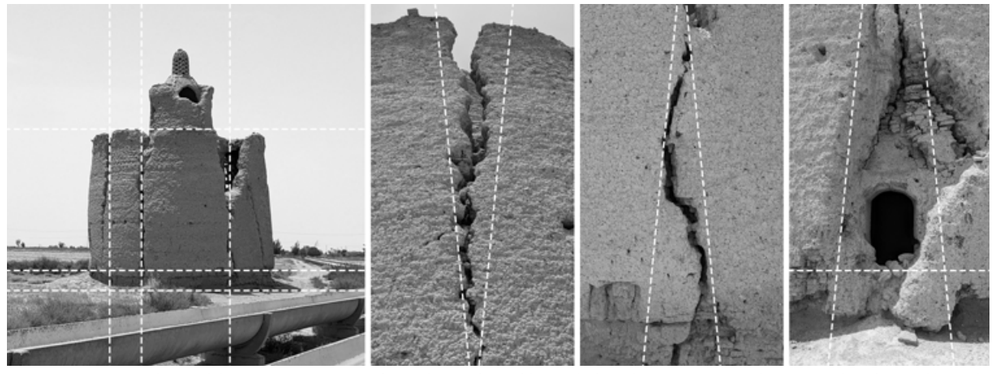


Figure 12: Damage analysis and deterioration patterns. Left: Cracking and crumbling at the base due to moisture. Right: Structural cracking and layered deterioration according to exposure

An analysis of disintegration across tower exteriors shows that the lower third is most affected, given its higher exposure to loads and ground moisture. Next is the top third, with lower exposure, whereas the middle third fares best, with damage mainly caused by wind or gradual material aging (Fig. 12).

Decay, Deterioration, and Circularity

Many examples of Iranian pigeon towers have fallen into disrepair due to disuse or abandonment. Farmers are increasingly inclined to demolish them to make more space for crops, which has led to a drop in the number of exemplars.

While some towers still subsist in farmland, the expansion of settlements has incorporated others into urban fabric, compromising both the pigeons' comfort and safety and the structures' intended function, contributing to their decline.

Recent efforts have been made to restore and maintain these pigeon towers, though they have often failed to capture the essence of the original concept, prioritizing monumentality over functionality and ecological integration. Fig. 13 shows an Iranian pigeon tower under renovation/reconstruction. As pictured below, cement-stabilized earth blocks are being used (with a higher proportion of cement lower down), disrupting the tower's material homogeneity for the sake of durability. This also undermines its material integrity with their environment, negating the potential for true circularity.

The materiality and intended function of Iranian pigeon towers position them as a form of agricultural infrastructure rooted in soil-based architectural intelligence. Built almost entirely of unfired earth blocks, they operate as a truly cyclical building type, directly embedded in local ecologies. Their primary objective, to house pigeons so that their droppings may be used as fertilizer, establishes a closed loop between architecture, biodiversity, and agricultural soil. In this cycle the building becomes an active mediator between species and land: pigeons inhabit the earthen structure, their waste nourishes the surrounding soil, and the crops grown in turn sustain human communities, builders of dovecotes. These towers therefore function as ecological interfaces rather than mere objects, embodying biological processes in spatial and material form. They show how vernacular earthen construction integrates material performance, environmental processes, and agriculture into a coherent system, offering a model for rethinking architecture as ecological infrastructure that supports both human and other-than-human life while maintaining the resilience of the land/earth (Fig. 14).



Figure 13: Iranian pigeon tower under reconstruction using cement-stabilized earth blocks/adobes, with human settlement and infrastructure encroaching on the farmland (Serhii Ivashchuk)



Figure 14: Conceptual illustration of how Iranian pigeon towers enhance agriculture through the embrace of decay and innovative material use

Parallel Earthen Typology: Pigeon Towers in Egypt and Spain

Earthen pigeon towers are also found in Egypt and Spain, shaped by locally available materials, climate, and building knowledge. Both regions share earth as a base material, though their construction methods and material combinations differ from the Iranian model. Below we examine these two types in turn, contributing to broader comparisons with Iranian examples.

Egyptian Pigeon Towers

In ancient Egypt, pigeon towers were tall, sturdy buildings of clay housing hundreds or even thousands of birds for both food and fertilizer. The most common design featured walls lined with hundreds of clay pots embedded sideways into thick walls, with their mouths serving as nesting holes (Figs. 15 and 16). These dovecotes were frequently built over granaries or as upper stories, with human access by a wooden ladder (Husselman 1953). In some cases, tree branches were inserted into the walls as perches (Fig. 17).

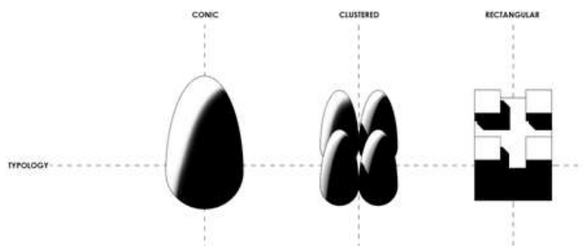


Figure 15: Egyptian pigeon tower typology

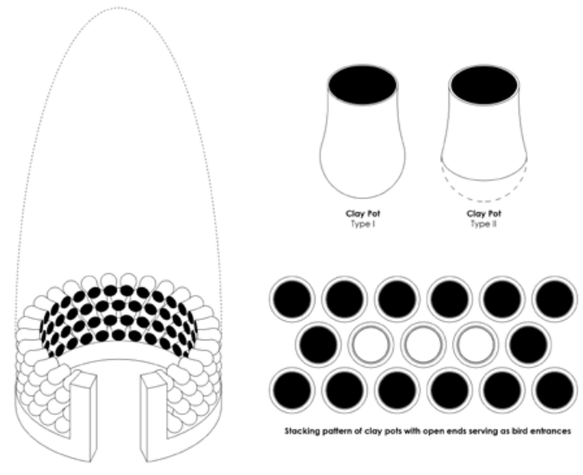


Figure 16: Tectonics and use of clay pots in Egyptian pigeon towers

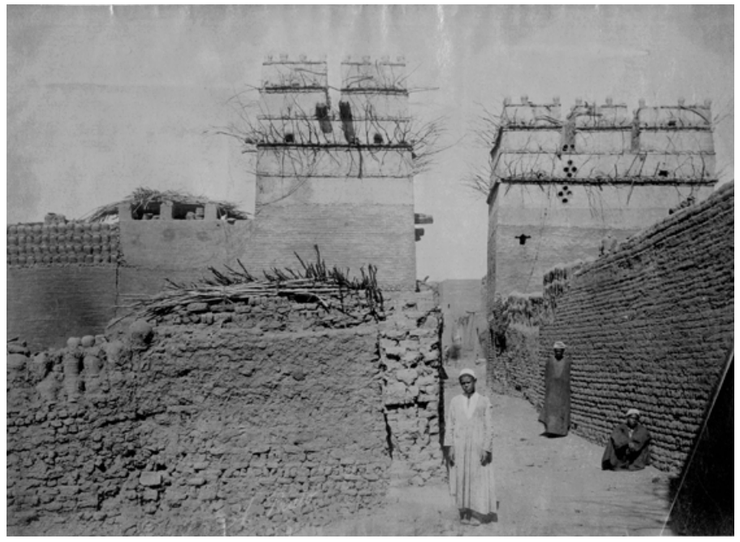


Figure 17: Pigeon towers in an Egyptian village with clay pots visible on the left. Pots are also used as decorative elements at the top (A. Beato, Archivio fotografico Museo Egizio, Turin)

Building on the design factors discussed above, the Egyptians may have made these clay-pot pigeonholes following behavioral observation of pigeons nesting in earthenware. Pots were fitted where pigeons naturally roosted, and their use may also reflect the preexisting Egyptian practice of using clay pots to mummify venerated birds. This might have led to their adoption in dovecotes once the use of pigeon droppings as fertilizer became widespread in fourth-century BCE Greco-Roman Egypt (Bailleul-LeSuer 2012). The shape and materiality of clay pots also seem suitable, with good thermal performance and a secure bulbous space for nests and eggs.

Spanish Pigeon Towers

Pigeon towers called *palomares* can be found across many Spanish regions, such as Tierra de Campos (Roldán Morales 1983; Malmierca Zurdo 2004; Canova 2005; Abril Revuelta 2015), La Mancha (Castilla Pascual et al. 2020), or Asturias, which has distinct stone-built types (Prieto Vergara 2025), all shaped by local materials, climate, and tradition. The use of earth and clay is apparent in most Spanish examples. These remarkable pigeon towers were circular, square, or rectangular in plan, often including a central courtyard (Figs. 18 and 19) as a transitional space attractive to pigeons, with a water trough (Abril Revuelta 2015).



Figure 18: *Palomares* in Malva, Spain (Rodelar, Wikimedia Commons)

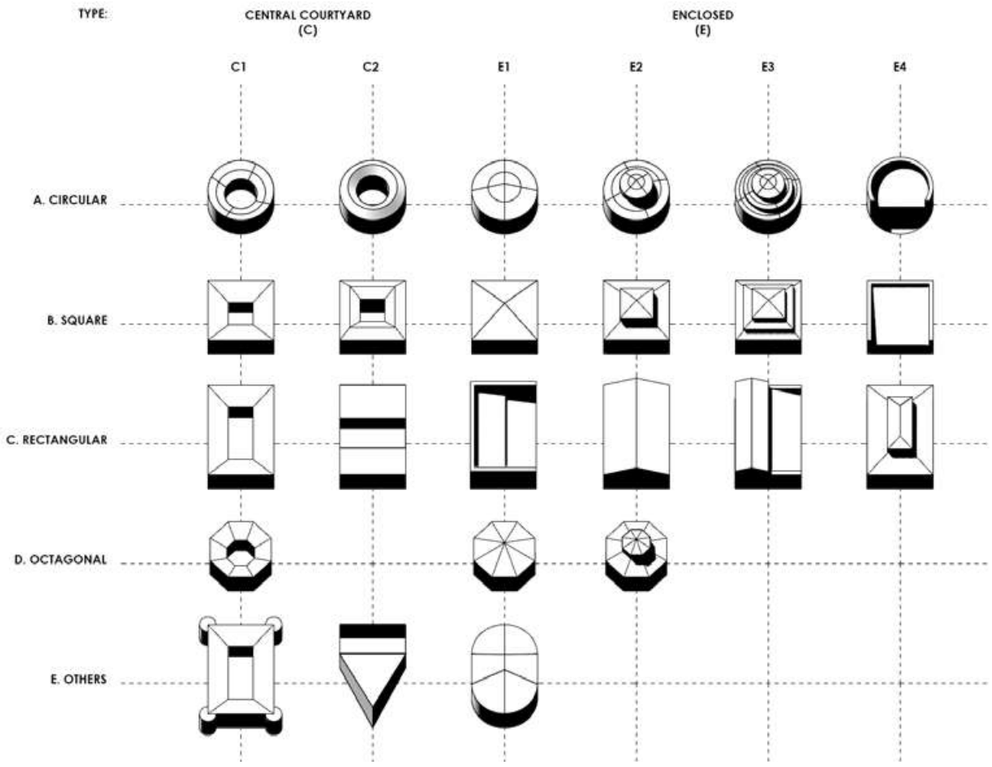


Figure 19: Typological variation in Spanish pigeon towers in Tierra de Campos (Drawing adapted from a chart by Manuel Malmierca Zurdo, 2004)

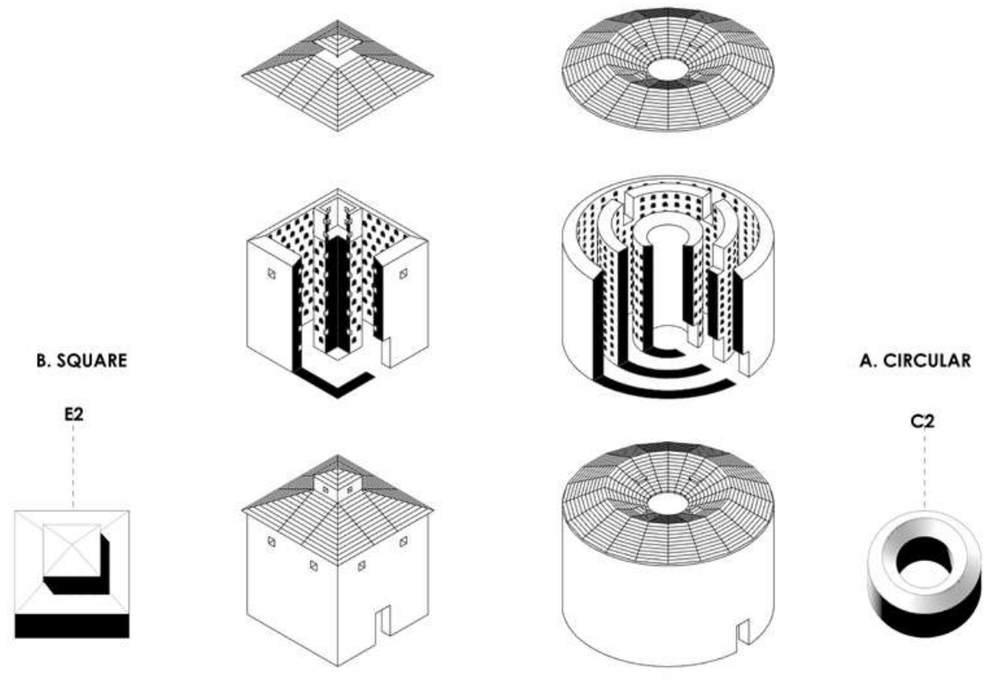


Figure 20: Left: Square pigeon tower with a central pillar. Right: Circular pigeon tower with a courtyard and concentric walls (Adapted from drawings by Roldán Morales)



Figure 21: Ruined Spanish pigeon tower revealing its construction techniques, with mud and straw plaster, adobe higher up, and a rammed earth wall lower down (Left: Luis Fernández García, Wikimedia Commons. Right: David Pérez, Wikimedia Commons)

Spanish dovecotes employ diverse spatial variations to maximize the number of nests. Concentric layouts with a central pillar or core have pigeonholes built into both outer and inner wall surfaces. The interior configurations determine the roof structure, with multi-leveled forms that slope inward or outward with curved red terracotta tiles (Manuel Malmierca Zurdo 2004). The central pillars found in some towers also support a timber roof (Fig. 20). Openings are incorporated in the roof or in a *castillete*, a turret in the roofline for pigeon access. They are executed by interrupting the tiled roof slope between two rafters or with a small dual-pitched roof section including a little window set into the vertical plane. Several such openings may appear along the same roof slope, according to the dovecote's size and subdivisions (Castilla Pascual et al. 2020).

The pigeonholes are typically carved directly into the walls using a pickaxe and a template for uniformity before the earthen material has had time to cure (Manuel Malmierca Zurdo 2004). In some examples in La Mancha, however, a lining wall is built inside the enclosing wall or by the partitions, leaving the outer wall intact (Castilla Pascual et al. 2020). These walls are of rammed earth, roughly 80 cm thick, resting on a low stone base laid over a foundation. The upper parts often incorporate adobe, providing flexibility for a sloped roof and supporting small beams with wooden boards nailed to them (Abril Revuelta 2015) (Fig. 21).

Deterioration in these towers stems from lack of roof maintenance: displaced tiles let in water, which progressively damages the timber framing and can lead to eventual collapse. Castilla Pascual et al. (2020) also identify the buildup of uncleared pigeon droppings (*palomina*) on structural floors as a common source of damage, as the accumulated weight can cause deformation.

The design, tectonics, and materiality of Spain's *palomares* are recognized to be influenced by Middle Eastern and Asian knowledge and customs introduced to Iberia between the seventh and fourteenth centuries CE in the Islamic era (Bailleul-LeSuer 2012). There are notable similarities in design and materiality with their Iranian counterparts, such as being built of earth and having concentric walls. But Iranian pigeon towers exhibit distinct differences in design and construction. Egyptian and Spanish towers are built of earth and clay with other materials, by various construction methods. Spanish towers incorporate rammed earth, adobe, terracotta blocks, and wood, and Egyptian ones have clay pots, clay walls, and in some cases fired bricks. Iranian towers, on the other hand, rely on a single material: raw earth. This characteristic integrates material efficiency with building tectonics, focusing on the structural and morphological potential of earth blocks as the sole component. The design and construction of Iranian pigeon towers therefore reflects a set of dependencies across different scales, from a single building block (of unfired, non-stabilized earth) to architecture (earthen building) for serving the intended function while ensuring structural stability (Motalebi and Shaffer 2023).

Discussion: Pigeon Towers as a Model of Adaptive Ecological Infrastructure

Despite these towers' decline, the underlying concepts endure. Dovecotes are still to be seen as architectural remnants or for contemporary pigeon-keeping in urban settings, where ecological relationships continue to be expressed through built form. While these structures are often preserved as static monuments, they may also be reimagined—not as outdated low-tech agrarian features but as examples of inclusive ecological infrastructure able to address contemporary challenges in either urban or rural landscapes. This raises the question of how their materiality and vernacular tectonics may inform contemporary building practices that prioritize circularity.

Examples of what may be called "contemporary vernacular" can be found in the landscapes of Glasgow, at the top of apartment buildings in the Garbage City of Cairo, or in the urban fabric of Isfahan. In Glasgow, pigeon fanciers build "dookits" of recycled or found materials to house their birds, in a practice ecologically mindful of the impacts of material production while promoting a cohabitation of humans and nonhumans. Both Scotland and Egypt historically deployed dovecotes for agricultural purposes, although in these contemporary examples, the structures are recreational. In both





Figure 22: Top: Glaswegian Dookits, derived from "Doocot," Scots for dovecote (Stephen Mclaren). Bottom: Pigeon towers in Garbage City, Cairo (Greg Maka)



Figure 23: Hezaar-Jarib pigeon tower in Isfahan (Isfahan.ir)

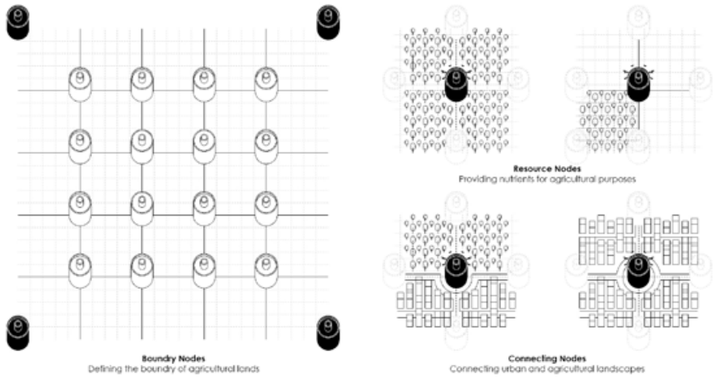


Figure 24: Reimagining pigeon towers as active nodes in urban/rural contexts, in keeping with their former function as boundary markers

cases, a clear separation from human activity is maintained (particularly in Egypt), as the dovecote's height keeps the birds clear of the bustle of the city (Fig. 22).

Some remaining pigeon towers in Isfahan have been renovated as architectural attractions or repurposed as tourist restaurants and cafés. As these towers once functioned as boundary markers, delimiting plots and organizing farmland, now that urban expansion and changes in land use have absorbed many such territories, many towers exist at the fringes of or within transformed environments (Figs. 23 and 24). Reimagining pigeon towers as active nodes in urban and rural life allows them to be understood and engaged with differently. In all events, a study of Iranian pigeon towers alongside comparative examples offers insights into the dynamic nature of vernacular architecture and its capacity for adaptation in contemporary contexts.

Conclusion

This study has sought to go beyond static readings of vernacular earthen architecture by comparing the evolution of pigeon towers in different regions as models for contemporary practice, focusing on earthen examples in Iran, Egypt, and Spain. All the studied types, tectonics, materials, and designs are responses to local climate, available resources, building techniques, and traditions, producing distinct embodiments of a common function. Iranian pigeon towers are notable for relying solely on unreinforced earth blocks, in a material dependence linking design, structure, and decay at every scale—for purely agricultural purposes, with no intention of the pigeons being food or a commodity. Such towers function less as containers for pigeons than as a working link between the environment, humans and nonhumans, and the land: the pigeons' waste enriches the surrounding fields, and the fields in turn sustain the people who work them, and build dovecotes. A pigeon tower is therefore not a passive shelter but an active participant in this cycle, embodying a biological process in spatial and material form.

The contemporary examples discussed also show that the underlying logic of these structures—coexistence between humans and nonhumans, and material accountability to the land—still has relevance today. Taken together, these cases suggest that vernacular earthen construction has more to offer us than questions merely of preservation. Pigeon towers may operate as spatial and ecological mediators, linking past agricultural practices with contemporary urban and rural settings and reasserting their role within evolving ecosystems in support of diverse and sustainable urban–rural environments.

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Mahan Motalebi

Mahan is a PhD Candidate in the Department of Architecture at Penn State University, where his research examines earthen materials and construction at the intersection of architectural design and environmental practice. Through material research and hands-on experimentation, he investigates how vernacular building typologies encode ecological knowledge, and how that knowledge can inform contemporary strategies for a regenerative relationship between the built and natural environments.

Marcus Shaffer

Marcus is an Associate Professor in the Department of Architecture at Penn State, where he teaches materials/process courses and design/build studios. His research interests focus on "The Machine" in an architectural context, ranging from tectonic machines used in building to cultural/ritual machines designed to infuse built spaces with wonder and spectacle. While his scholarship probes architecture machines, he simultaneously develops, prototypes, and employs machines that build earthen architectures at 1:1 scale (rotational tampers and digi-mechanical formwork for poured earth). His forthcoming book, *Konrad Wachsmann's Architecture Machine* (co-authored with Dr. Lizz Andrzejewski) details and situates Wachsman's *Location Orientation Manipulator* as a visionary industrial assembler and exemplary architecture machine developed by architects to explore construction automation.

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Medio siglo sin paradigma (con Alejandro García Hermida) y director de la revista *Teatro Marittimo,* confirma en esta obra su posición como una de las figuras más relevantes de la crítica arquitectónica actual.

David Rivera
Disfuncional funcionalismo. Ideología, arquitectura y crisis, 1945-1980
Ediciones Asimétricas, 2025

The Decline of Idols

El ocaso de los ídolos

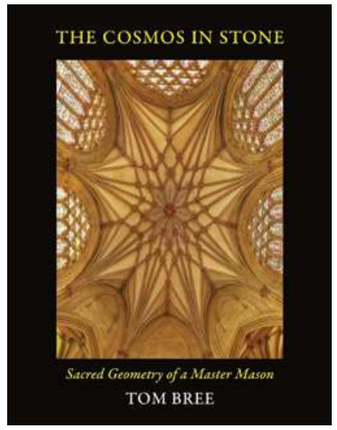
O ocaso dos ídolos

Lucas Martí Guitera

En los últimos años han sido escasos los libros de crítica arquitectónica que puedan calificarse como "eruditos". Este constituye, sin duda, una de esas excepciones. Con un estilo ágil e ingenioso, David Rivera conduce al lector a través de polémicas, manifiestos y referencias bibliográficas, y articula con estos materiales un relato sobre la lenta erosión del dogma funcionalista durante el tercer cuarto del siglo XX.

El título podría inducir a pensar que se trata de un nuevo alegato contra la arquitectura moderna. Sin embargo, el texto se fundamenta en las propias disensiones internas que existieron dentro de ella, y, más allá del tono incisivo característico del autor, la densidad y la amplitud del aparato crítico convierten el libro en una lectura relevante para quienes deseen profundizar en la historiografía de la arquitectura del siglo XX, y en particular en la del Movimiento Moderno.

Alejado de planteamientos partidistas y a favor de una actitud estética abierta, el autor de *La otra arquitectura moderna*,



Exploring the Heart and Soul of Wells Cathedral

Una exploración del corazón y el alma de la Catedral de Wells

Uma exploração do coração e da alma da Catedral de Wells

Jon Allen

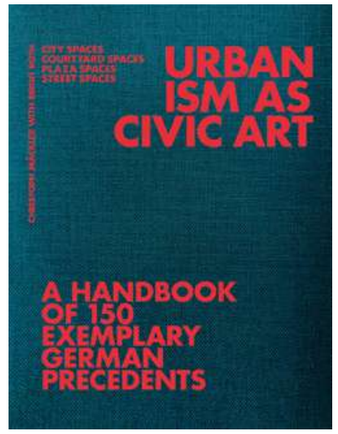
How to fully understand a building constructed 800 years ago, a time so remote from our own? How to penetrate the minds and hearts of those who commissioned, designed, and built Wells Cathedral—England's first full flowering of Gothic architecture?

We need an understanding of Number, Music, Geometry, and Cosmology, which comprised the intellectual and philosophical ("quadrivial") backbone of education at the time Wells was built. We need a meticulous study of contemporary writings, not just as historical source material but as living experience. And, indispensably, we need painstaking measurement, getting to know the building stone by stone over many years.

Tom Bree is admirably qualified to write such a work. He is an accomplished geometer versed in the intellectual and spiritual background of the time as well as being a practicing member of the Wells congregation, with firsthand understanding of how the cathedral functions as a place of devotional practice.

The Cosmos in Stone is a remarkable and delightful book, the definitive study of Wells Cathedral. It explores the design and underlying meaning of the place through short, lavishly illustrated chapters, carefully drawing out the threads of a complex weave of symbolic reference. The reader's understanding builds up slowly but surely in much the same way as the edifice itself was constructed, one course of masonry at a time. Numbers, symbolically and embodied in geometry, come alive. By the end one is completely convinced by Tom Bree's analyses, including the intriguing use of four specific triangles, symbolic numbers, and a set of interrelated measures—and above all, of the heart and soul of it all.

Tom Bree
The Cosmos in Stone: Sacred Geometry of a Master Mason
The Squeeze Press, 2023



Well-Documented Precedents for an Architecture of Cultural Continuity

Precedentes bien documentados para una arquitectura de continuidad cultural

Precedentes bem documentados para uma arquitetura de continuidade cultural

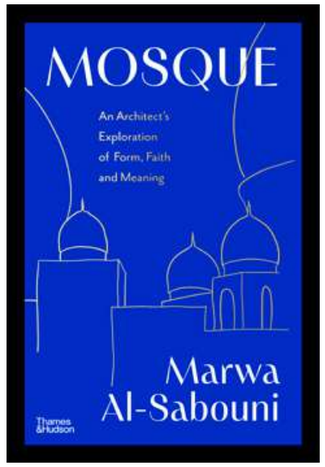
Stefanos Polyzoides

Urbanism as Civic Art is as inspiring a work as it is useful. Christoph Mäckler, Birgit Roth, and their colleagues at the Deutsches Institut für Stadtbaukunst in Dortmund have generated a remarkable resource for reclaiming their country's architectural and urban character.

This *Handbook of Exemplary Precedents* is a masterclass in documentation. Exquisite measured illustrations describe four essential design ingredients of the public realm drawing on scores of German cities: streets, squares, courtyards, and distinct city spaces. These analytical categories remind us that city form can only be fully revealed when its buildings generate a distinctive figure of streets and squares. In the public realm, the built fabric becomes its signature.

Over the centuries, humans have inhabited the earth in urban configurations and building patterns that have proved complex, diverse, and highly livable. Because the German urbanist tradition is so extensive and instructive, many of the theoretical premises and examples of placemaking illustrated in this *Handbook* could be adapted for use in other environments and cultures. Similarly, the insights imparted by this documentary method in the analysis of other places could be adapted and used by architects in Germany and wherever else they may give guidance and inspiration.

Christoph Mäckler, with Birgit Roth
Urbanism as Civic Art: A Handbook of 150 Exemplary German Precedents
JOVIS / Ratio et Architectura, 2025



Ex Oriente Lux

Ex Oriente Lux

Ex Oriente Lux

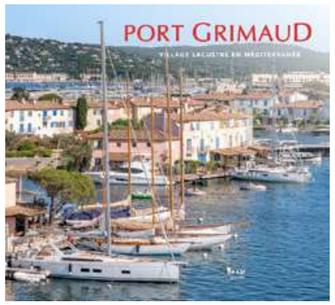
Stefano Serafini

With a solid historical and doctrinal grounding and a mercurial, thoughtful style, Al-Sabouni guides the reader through the interstices of the destructive process that has affected our understanding of the mosque for centuries, to the beating heart of this architectural, religious, and social expression of Islam. The journey is captivating, rich in persuasive commentaries, accompanied by splendid drawings.

Her first section, *Faith*, analyzes prejudices about mosques in the West and within the national fragmentation of the *ummah* (essentially, colonial mystification transformed into ignorance and cultural trauma). Al-Sabouni addresses the role of mosques in shaping the practice and self-awareness of Islam. It follows that the loss of the mosque's significance contributed to Islamic religious and social practice becoming dormant. Her testimony of a journey of existential limpidity alongside widespread religious formalism enlightened my experience as a Western Christian, and her subtle reflections on the mosque made me reflect upon the decadence of Christian churches and their role today, especially in Europe. She says she aims to show the "other" her experience, but that in doing so she ended up learning about it herself. On reading these pages, I likewise gained insights into my own religion and the nihilistic debris surrounding it.

The second part, *Form*, discusses the worldview expressed by the mosque—a choral emergence of metaphysical wisdom through the language of space, residing "at the heart of a trilogy: language, music and architecture" (141), which faded increasingly with modern interpretations. The third part, *Freedom*, contrasts Islam's call for liberation with the modern segregation of urban space, reduced to mere representation, and investigates how secular ideas were intertwined with colonial projects, in architecture as in politics. The elasticity of Roman law with regard to local customs, reflected in the adaptability of traditional Mediterranean urban codes, echoes this reading: the interstices of freedom through which light gets in.

Marwa al-Sabouni
Mosque: An Architect's Exploration of Form, Faith and Meaning
Thames & Hudson, 2026



Implementation of Gentle Architecture

La aplicación de la arquitectura amable

A aplicação da arquitetura amável

Angèle Denoyelle

For an architect, going against the grain of what the masters teach and what is considered "contemporary" is a form of bravery—almost of activism—and carries a risk of disparagement and ostracism by one's peers. This is undoubtedly true of François Spoerry, who came of age at the dawn of the Modern movement and practiced in the context of postwar reconstruction, when the codes governing urban planning and housing were being reinvented. Mass housing on a huge scale, centrality of the automobile, and an overturning of the founding principles of the historic city, perceived as archaic, resulted in a revolution, beneficial in aspects such as functionalism or hygienism, yet soon out of date or even harmful in others.

So when Spoerry embarked on his crazy Port Grimaud project, experimenting with his theory of "gentle architecture"—a concept developed during his captivity in Nazi concentration camps—no one took him seriously. His village was mocked by critics and deemed decadent. Why? Because it did not appeal to the masses, because it returned to historical codes and drew inspiration from projects still too recent to be recognized for their spatial qualities, and because it built precisely what the profession deemed obsolete. Many see in Port Grimaud's multiple historical inspirations only pastiche, not the true architectural and urban vision behind it: the relationship to the landscape, the return to a human scale, to ancestral urban codes, and to everything that anchors architecture to its setting. This is what Antoine Schlamme examines in this analytical work, which, for a change, goes beyond aesthetic considerations to recount Port Grimaud's incredible construction saga and above all to reveal its spatial and architectural rationale, which in some ways appears strangely contemporary.

Antoine Schlammé
Port-Grimaud. Village lacustre en Méditerrané
Archives d'Architecture Moderne (AAM Éditions), 2025



Art Deco at 100: Not Just the Usual Suspects

Art Déco a los 100: No sólo los sospechosos habituales

Art Déco aos 100: Não apenas os suspeitos habituais

Jean-Philippe Hugron

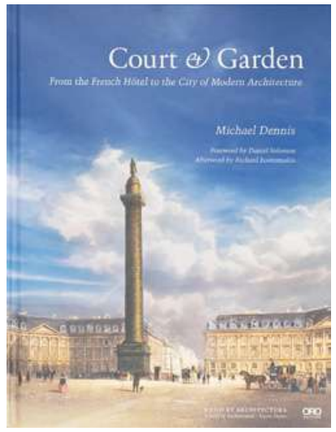
A century already! The 1925 Paris International Exhibition of Modern Decorative and Industrial Arts, which was supposed to lay the foundations of modern art—even of its *esprit nouveau*—proved to be the apotheosis of a certain elegant style… one that would only later be named Art Deco.

The year 2025 was thus an opportunity for numerous French institutions to celebrate this centenary, each from its own perspective: fashion, design, decoration, sculpture, or architecture. Publishing houses, too, embraced the occasion. Leading the way was AAM, which stands for Archives d'Architecture Moderne. For five decades, the Belgian publisher, now also established in Paris, has been bringing to light, publication after publication, the treasures of the interwar period. Within a rich reference catalog—including recent volumes devoted to Jean-Michel Frank, Djo Bourgeois, or Art Deco between China and France, all admirable—*Art Déco – Le grand livre* stands out. As its title suggests, this compendium spans all the arts: sculpture, painting, illustration, glass, lacquer, or ceramics.

Its strength is breaking free from Pavlovian reflexes. Better still, moving on from those endless, repetitive accounts recycling the same figures and hierarchies. In these learned pages, there is pleasure as much in reading as in gazing at the pictures. The eye lingers, alongside canonical references, on lesser-known work. Among them, the bulging muscles of *The Weightlifter in Berlin* by Glyn Philpot, or the slender, still "figurative" legs gradually consumed by geometric abstraction painted by Raphaël Delorme.

The author, Jacques Seray, seizes every opportunity to lead the curious reader down less-traveled paths. Each discipline is an occasion for perceptive biographical notes. Readers will also enjoy a rich and often surprising iconography, a hallmark of AAM. For anyone wishing to apprehend Art Deco beyond the familiar, this "great book" is recommendable.

Jacques Seray
Art Déco. Le grand livre
Archives d'Architecture Moderne (AAM Éditions), 2025



Revisiting Court & Garden *and Its Influence on Contemporary Architecture*

Una nueva mirada a Court & Garden *y su influencia en la arquitectura contemporánea*

Revisitando Court & Garden *e a sua influência na arquitetura contemporânea*

Paul Hardin Kapp

When first published in 1986, Michael Dennis's *Court & Garden* appeared on nearly every architecture student's drafting desk at Cornell University, including mine. My first copy was well worn by the time I graduated, for it was a useful source of ideas about architecture and urbanism. When Dennis was writing, modernism and urban sprawl had taken their toll on the public realm in most American cities; he voiced concern at this rise of anti-urbanism and used the figure-ground concepts of the French *hôtel*—the *cour d'honneur* and the *salons* and *the poché* defining residual parts—to challenge the urban drift of postwar America. Dennis's analysis countered the morphology of modernism and the city, exemplified by Le Corbusier, primarily with his housing types: the Maisons Dom-ino and Citrohan—freestanding structures placed into undefined city space.

Through analysis of historic precedent and experimentation in his Cornell design studios in the 1970s, Dennis proposed a renewed and distinct American urbanism— one, as he says in his conclusion, "informed by a Neoclassical balance of the American Constitution, by a dialogue between the public and private realms, and by Jefferson's insistence on the inextricable relationship between idea and circumstance." For Dennis, the triumph of modern architecture in postwar America replaced the tyranny of Louis XIV, as regards urban design, with the tyranny of the private realm—American-style corporate development. He argued for a return to creating a rational and cohesive cityscape.

This revised and updated edition by Ratio et Architectura and ORO Editions is laudable and timely. More than a history book about urban typology, *Court & Garden* is a seminal treatise on architecture from the designer's perspective. Elegantly reformatted and hardbound, it will survive better than my softcover 1986 copy, published by MIT Press. Additional content includes Richard Economakis's Afterword concerning *Court & Garden*'s impact on architectural education and practice. Rereading *Court & Garden* is a reminder that Dennis's challenge to us—architects—to assume responsibility in the civic realm remains unrealized, especially in this age in which our cities "continue to be cheapened and made more superficial."

Michael Dennis
Court & Garden: From the French Hôtel to the City of Modern Architecture
ORO Editions, 2025



About Gardens and Intentions

De jardines e intenciones

De jardins e intenções

Carlos J. Irisarri

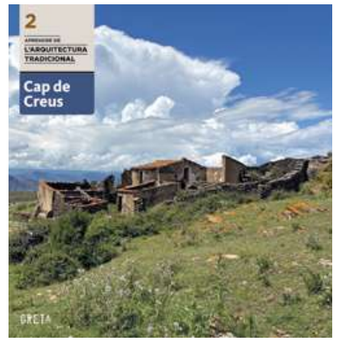
La reciente publicación de este ensayo llena un vacío, a pesar de que en los últimos años hayan aparecido diversas publicaciones en respuesta al creciente interés por el paisajismo y la jardinería. Éstas, tanto de carácter operativo como dedicadas al estudio de su historia global o de periodos concretos, son en general volúmenes académicos y de cierta erudición. La edición que nos ocupa, por el contrario, tiene una vocación claramente divulgativa y se dirige a un público amplio, con el propósito de comprender los jardines de culturas diversas, sin renunciar por ello a un alto rigor documental.

La autora, la australiana de adopción Caroline Davies, ha dedicado gran parte de su vida al jardín, tanto en el ámbito profesional como al frente de la Asociación del Jardín Mediterráneo. Trata de responder en este texto a una pregunta sencilla: ¿qué impulsa al ser humano a destinar tantos recursos a una actividad como la transformación del paisaje natural? Esta cuestión permanece invariable a través del tiempo y las civilizaciones, y no distingue entre escalas ni presupuestos. De ella surge un recorrido cultural que conecta climas y geografías, modos de entender el cosmos, afán de realización en la belleza, simbolismos y otros factores que convergen en una de las actividades más sublimes del ser humano.

La edición opta acertadamente por evocadoras ilustraciones de gran belleza y contenido, en lugar de recurrir a imágenes que difícilmente estarían a la altura de los enclaves reales; al mismo tiempo, la cuidada traducción de Isabel Suárez-Llanos favorece una lectura fluida y agradable, dada la dificultad de trabajar con la nomenclatura autóctona de tantas especies vegetales.

Este ensayo constituye, en suma, una excelente introducción a un universo tan complejo como gratificante: el del paisaje transformado, entendido como la conjunción de la belleza natural y la intervención humana.

Caroline Davies
El jardín eterno
Germinarq, 2025



Anthropological Territory and Architecture

Territorio antropológico y arquitectura

Território antropológico e arquitetura

Joan Ramon Rosell

Esta obra hará disfrutar a los amantes de la arquitectura tradicional entendida desde una perspectiva holística: un elemento integrado en el paisaje, modelado por sus habitantes, construido con materiales de proximidad y fundamentado en técnicas constructivas ancestrales.

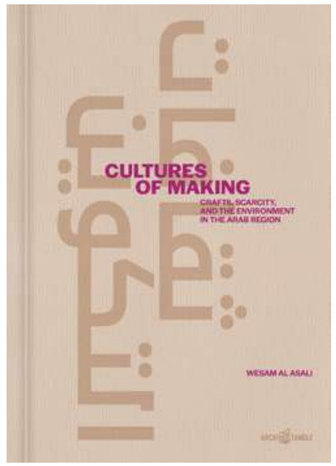
A lo largo de 180 páginas, ampliamente ilustradas con espléndidas fotografías y magníficamente redactadas, el libro nos sumerge en el Cap de Creus, reserva natural que se presenta como un verdadero territorio antropológico. La aproximación arranca en la historia de su población para adentrarse en la geología propia del macizo, con un examen de los diversos litotipos y del uso tradicional de las rocas.

El análisis prosigue con el estudio del rigor del clima y de la importancia del agua como recurso vital, y detalla los ingenios ideados para conducirla y almacenarla. Asimismo, repasa la evolución del paisaje y contrasta los usos agrarios históricos con el abandono que sufren muchas explotaciones en la actualidad.

En el ámbito estrictamente constructivo, las autoras analizan las estructuras agropecuarias –con especial atención a la técnica de la piedra seca–, las masías y otras edificaciones singulares. La obra profundiza en los elementos estructurales, las cubiertas y las aberturas, y concluye con un minucioso estudio de los muros, los morteros y el uso del color.

En definitiva, *Cap de Creus* constituye una obra ejemplar para comprender la estrecha simbiosis entre el territorio, la sociedad y la arquitectura popular.

Olga Muñoz, Marta Puiguriguer
Aprendre de l'arquitectura tradicional. Cap de Creus
GRETA, 2026



The Modernity of Traditional Crafts

La modernidad de los oficios tradicionales

A modernidade dos ofícios tradicionais

Paolo Vitti

Wesam Al Asali's *Cultures of Making: Crafts, Scarcity, and the Environment in the Arab Region* is a profound, beautifully grounded study that redefines traditional crafts not as static, nostalgic relics but as vital, dynamic acts of survival. The word *survival* takes on more meaning as we confront the realities of loss in today's world. We are witnessing the erosion of memory, the breakdown of knowledge shared through intergenerational connection, and general destruction that threatens the very world handed down to us.

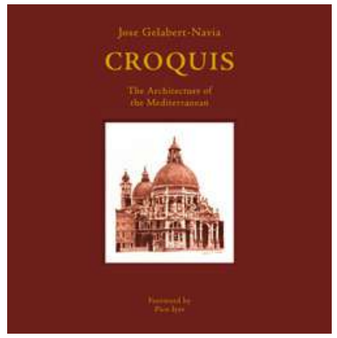
Leaving behind the orientalist perspective towards the Arab Region and institutional heritage frameworks that reduce vernacular practices to folklore, Al Asali frames craft as an evolving, real-life capacity to adapt within landscapes shaped by scarcity, political upheaval, and environmental crisis.

The work is structured around the themes of Maintenance, Sustenance, and Remanence, and shows how "making" penetrates every facet of life, from domestic spaces to regional food systems and urban back-alleys. Through vivid case studies spanning Syria, Egypt, and Morocco, Al Asali documents everything from the seasonal rhythms of floor looms in Sweida or the parametric logic of Fayoum's mud dovecotes to the collective labor of weaving *hatab al-hinna* basketwork in Mit Kinana.

What makes *Cultures of Making* so compelling is its methodological rigor and commitment to "creative archiving." Blending architectural drawings, historical accounts, technical diagrams, and direct interviews with master makers, Al Asali delivers a counter-archive that challenges Western sustainability narratives. It is essential reading for architects, scholars, and anyone interested in the resilient intersections of culture, craftwork, and the environment.

Reading this book encourages one to reconsider traditional Eastern cultures not as antithetical to modernity but as dynamic components of it. Al Asali demonstrates that even as historical environments evolve into modern neighborhoods, traditions continue to thrive through deeply rooted practices, expressing vibrant identities and cultures able to withstand globalization.

Wesam Al Asali
Cultures of Making: Crafts, Scarcity, and the Environment in the Arab Region
ArchiTangle, 2026



The Art of Architectural Travel

El arte del viaje arquitectónico

A arte da viagem arquitetónica

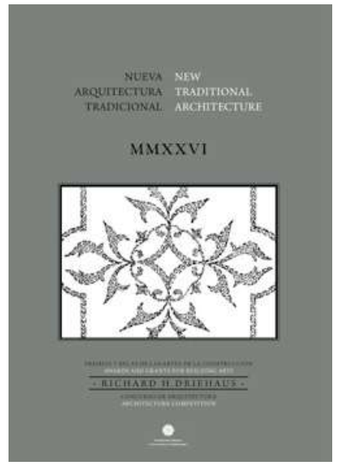
Michael Dennis

A new collection of travel drawings by Jose Gelabert, *Architecture of the Mediterranean*, covers the author's architectural travels in Spain, Portugal, Tuscany, Greece, and Morocco. It is an astonishingly beautiful box-set compilation. Many architects have notebooks of travel sketches, some published, some not. Most, like the sketches of Le Corbusier, are cursory graphic reminders of architecture or urban ideas without artistic pretensions. A few, however, portray architectural or urban scenes with artistic input such as composition, quality of light, color, and subtle reflection of context. These are often in contrast to the author's professional work.

Such is the case of the travel drawings of the early-twentieth-century architect Cass Gilbert, for example, and especially of the Rome drawings of the nineteenth-century classical painter Jean Auguste Dominique Ingres. Ingres's Rome sketches are a complete surprise—everything his Neoclassical drawings are not, free of classical dictates and with a challenging artistic quality.

Such too is the case of the drawings of Jose Gelabert. They are likewise surprising and on a par with Ingres's Roman drawings, rivaling those of his muse, Albert Laprade, whom he praises in the introduction. Gelabert's drawings are pictorially correct, but beyond the dictates of purely architectural statement, like paintings, free to exploit composition, color, and a subtle light evoking the essence of place. Each drawing is beautiful. The problem will be the temptation to take out pages for framing.

José Gelabert-Navia
Croquis: The Architecture of the Mediterranean
Oscar Riera Ojeda Publishers, 2026



Another View of Architecture: Placing Value on Traditional Trades and Vernacular Building

Otra mirada sobre la arquitectura: La puesta en valor de los oficios tradicionales y la construcción vernácula

Outro olhar sobre a arquitetura: A valorização dos ofícios tradicionais e da construção vernácula

Alfonso Zavala Cendra

La última edición del libro *Nueva Arquitectura Tradicional MMXXVI*, impulsado por la Fundación Culturas Constructivas Tradicionales, reúne el trabajo de los cuatro maestros galardonados este año con el Premio de las Artes de la Construcción. La publicación presenta también los emplazamientos de los municipios seleccionados para la nueva edición del Concurso de Arquitectura Richard H. Driehaus.

Los Premios se conceden en cuatro categorías, que abarcan distintos ámbitos de los oficios tradicionales de la construcción: albañilería y cantería; carpintería; forja y vidrio, y acabados y otros trabajos de la construcción tradicional. Este año, los galardonados han sido Gaëtan Chapel, maestro cantero y escultor especializado en la restauración del patrimonio; Ramón Cañil González, maestro carpintero especializado en carpintería de armar; Manuel J. Pérez Entrena y Jacinto J. Pérez Entrena, maestros empedradores pertenecientes a una familia que, desde hace cuatro generaciones, se dedica a la ejecución de pavimentos tradicionales de canto rodado; y, por último, Concepción Potenciano y José Antonio Sierra, que desarrollan desde Toledo una labor artesanal vinculada al vidrio y al metal, continuadora de una trayectoria de más de setenta años.

El Concurso de Arquitectura Richard H. Driehaus ha seleccionado, en su primera fase, los municipios de Aracena (Huelva), Frigiliana (Málaga) y Sahagún (León). En ellos se plantean intervenciones en áreas degradadas de sus centros históricos, que incluyen tanto la recuperación de determinadas edificaciones como la reordenación urbana de los ámbitos delimitados.

En un momento en el que la inteligencia artificial parece ofrecer respuesta a casi todo, mientras los oficios vinculados a la construcción se pierden progresivamente y son sustituidos por sistemas industriales y elementos prefabricados, iniciativas como estas adquieren una especial importancia. Su propósito es recuperar y transmitir una forma de entender la "buena y bella construcción" que ha perdurado durante siglos, basada en el conocimiento de los materiales, el dominio de los oficios y la aspiración de construir edificios capaces de permanecer en el tiempo.

Alejandro García Hermida (coord.)
Nueva Arquitectura Tradicional MMXXVI
Fundación Culturas Constructivas Tradicionales, 2026



Antonio Palacios and the Building of the Metropolis

Antonio Palacios y la construcción de la metrópoli

Antonio Palacios e a construção da metrópole

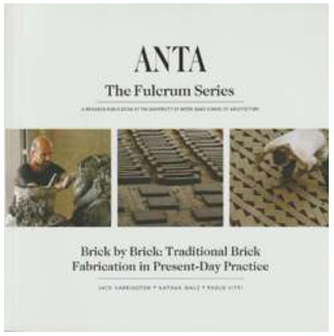
Juan García Millán

Entre abril y junio de 2025 se celebró en CentroCentro Cibeles una gran exposición con motivo del 150 aniversario del nacimiento de Antonio Palacios, considerado por la crítica como la figura más poderosa y destacada de la arquitectura española del primer tercio del siglo XX. La exposición, que partía de un exhaustivo trabajo de investigación y documentación llevado a cabo por los comisarios, Javier García-Gutiérrez Mosteiro y Julián García Muñoz, se planteaba como una reflexión valorativa sobre el legado de Palacios en el Madrid actual, no solo en lo referente a la obra construida (incluida la ya desaparecida), sino también a la que quedó únicamente en proyecto.

Así, se revisaba la profunda huella que el arquitecto dejó en la formación de la imagen de la ciudad y, por tanto, en la configuración mental y la memoria urbana que hoy tenemos de Madrid. En definitiva, una reflexión sobre su explícita propuesta para un Madrid en tránsito de Corte a Metrópoli. La organización de los contenidos —con museografía de Juan Pablo Frade— resultó especialmente acertada, pues, en lugar de un planteamiento meramente temporal, se estructuraba según un criterio espacial, a través de cinco itinerarios que recorrían los principales ejes del Madrid que Palacios supo caracterizar hace un siglo, hasta configurar la transformación de su imagen. La muestra se completaba con un ciclo de nueve conferencias impartidas por especialistas de reconocido prestigio académico. Cabe destacar también el material complementario generado expresamente para la exposición, como las maquetas, de gran rigor conceptual, seis audiovisuales de notable interés y un lúcido reportaje fotográfico.

Todo ello se ha recogido en un extenso catálogo en el que, además de los comisarios, participan acreditados colaboradores y se incluyen aproximaciones monográficas a los edificios más significativos, a modo de canon curatorial. Naturalmente, incorpora una excelente documentación visual compuesta por planos, fotografías y diversos documentos de archivo presentados en la exposición.

Javier García-Gutiérrez Mosteiro y Julián García Muñoz (eds.)
Madrid Metrópoli. El sueño de Antonio Palacios
Ayuntamiento de Madrid y Comunidad de Madrid, 2025



Learning Tradition by Hand

Aprender la tradición con las manos

Aprender a tradição com as mãos

Lorenzo Fei

Brick by Brick is a generous work of documentation. Developed from fieldwork at Fornace Bernasconi in Castel Viscardo (Terni, Italy) by architecture students Jack Harrington and Nathan Walz, with a contribution by Paolo Vitti, it records not just how bricks are made but how building knowledge is accumulated through place, material, repetition, and workmanship.

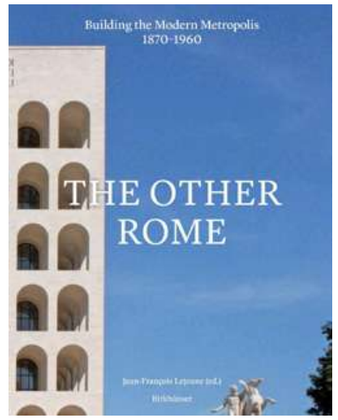
The volume, the first of the ANTA Fulcrum Series from the University of Notre Dame School of Architecture, covers everything from Umbrian terracotta and workshop organization to clay preparation, molds, workstations, drying, firing, and shipping. Its measured surveys, drawings, process diagrams, and photos make brickwork legible as architecture and embodied craft. More than illustrations, the graphics isolate sequences, spatial relationships, and implicit decisions that photos alone cannot explain. They show drawing itself as an instrument for understanding building cultures.

The documentation of the brick farm traces the site's organic development: an architecture shaped incrementally by use, open to continuous transformation and adaptation. Modern machinery is adopted selectively, with human skill being applied where touch, judgment, and experience matter most. Through considerations on the feel of clay, sand as a release agent, inherited stacking patterns, and adaptations to reduce bodily strain, tradition appears not as static repetition but as an evolving discipline.

The book's achievement is pedagogical. Harrington and Walz combine direct participation with minute observation, demonstrating how architectural education can reconnect design with making. Vitti's scholarly guidance, historical framing, and interview with master brickmaker Luigi Bernasconi give their survey cultural depth while preserving the craftsman's voice.

The authors acknowledge that embodied knowledge cannot be fully captured on the page: one must be on-site, observe, inquire, handle materials, and work with craftspeople. Yet this limitation does not diminish their undertaking. *Brick by Brick* is a model for how schools of architecture can serve threatened building cultures by translating thoughtful encounters into knowledge that future generations may carry forward.

Jack Harrington, Nathan Walz, and Paolo Vitti
Brick by Brick: Traditional Brick Fabrication in Present-Day Practice
The Notre Dame School of Architecture, ANTA – The Fulcrum Series, 2025



Rome's Remarkable Legacy of Twentieth-Century Social Housing

El extraordinario legado de la vivienda social del siglo XX en Roma

O extraordinário legado da habitação social do século XX em Roma

Christopher Calott

The Other Rome: Building the Modern Metropolis 1870–1960 is a marvel, a long-needed survey of Rome's remarkable legacy of social housing built after the city became Italy's capital in 1870 and that remains little known to architects and scholars. In this work, edited by Jean-François Lejeune and with significant contributions from Daniel Solomon and Lucio Valerio Barbera, the authors outline a rich trajectory of social housing neighborhoods designed by many of Italy's most accomplished architects to address Rome's persistent housing crisis as it grew fifteenfold in less than a century. These architects consistently pursued continuity with the patterns and fabric of the eternal metropolis, producing garden city-inspired and perimeter-block districts, with innovative experiments that increased in scale and intensity to effectively meet the needs of a fast-growing conurbation. Eventually, the authors argue, the focus on contextual urbanism and decorum demonstrated by the neighborhoods covered here would succumb to CIAM-influenced modernist housing projects, beginning in the 1960s, and mark a rupture in Rome's 2,700-year tradition of cohesive city-building.

This richly illustrated book is a valuable graphic resource including new photos, diagrams, and comprehensive axonometric drawings alongside historic maps, images, and plans, organized around inspired historical essays chronicling Rome's social, economic, political, and architectural development in the first half of the twentieth century through descriptions of representative project neighborhoods. A thoughtful concluding essay by Salvatore Santuccio focuses on Italy's progressive film industry centered around the studios at Cinecittà, which incorporated a variety of architectural settings and contemporary social housing environments in groundbreaking films to portray Rome's social and territorial transformations over this era. This book is a remarkable contribution, nicely delivered in English, admirably illuminating countless valuable precedents of successful social housing and urbanism from a prolific period of twentieth-century Roman design.

Jean-François Lejeune (ed.)
The Other Rome: Building the Modern Metropolis 1870–1960
Birkhäuser, 2025



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