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# Heritage as architecture

## Methods and practices in Europe today

Symposium



21–22 May  
2025  
Mendrisio Campus

Curated by  
Franz Graf and Giulia Marino



 **UCLouvain**

Louvain research institute for Landscape,  
Architecture, Built environment

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Cover:  
Charles-François Thévenaz,  
Stade olympique de la Pontaise, Lausanne, 1954  
(Musée historique de Lausanne)

Il patrimonio  
come architettura:  
metodi e pratiche  
nell'Europa di oggi

In un momento in cui la transizione ecologica ci impone di reinventare un approccio più responsabile e conservativo alla progettazione architettonica, in cui l'efficienza energetica richiede paradossalmente interventi sempre più invasivi sugli edifici esistenti e in cui la demolizione e la ricostruzione sono ancora le pratiche dominanti, la progettazione all'interno dell'ambiente costruito esistente sta emergendo come un nuovo paradigma. Sebbene ormai imperativo, questo approccio è stato esplorato e sperimentato per circa vent'anni nella conservazione dell'architettura del XX secolo, andando oltre il "riutilizzo" consensuale che è diventato ormai banale. L'analisi di una serie di approcci di conservazione, preservazione e restauro, sia in termini di approccio progettuale e questioni teoriche, sia in termini di requisiti costruttivi più pragmatici, permetterà di approfondire queste nuove pratiche contemporanee nel 2025 a livello europeo. Si aprirà inoltre una discussione, al di là di ogni certezza, sulle strategie virtuose di intervento sugli edifici esistenti e sulle pratiche benevole, con una scelta necessariamente limitata di opzioni, ma in un patrimonio con una forte identità qualitativa, riconosciuta o meno. Si pongono una serie di interrogativi. Quali somiglianze e differenze si possono osservare nelle campagne di restauro del patrimonio monumentale nei diversi paesi europei e in relazione al patrimonio più diffuso? Quali metodi vengono sperimentati in un processo che riteniamo

**esemplare? Quanto sono efficaci gli strumenti digitali o meno utilizzati nel progetto di restauro, dalla diagnosi alla costruzione? Come possono le strategie progettuali in architettura di qualità consolidata informare i processi in cui tale qualità viene sistematicamente sacrificata per far spazio alle esigenze energetiche e/o economiche?**


Heritage as  
architecture:  
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today

**At a time when the ecological transition requires us to reinvent a more responsible and conservative approach to architectural design, when energy efficiency paradoxically demands increasingly invasive interventions in existing buildings, and when demolition and reconstruction are still the dominant practices, designing within the existing built environment is emerging as a new paradigm. Although now imperative, it has been explored and tested for some twenty years in the challenging conservation of twentieth-century architecture, going beyond the consensual 'reuse' that has become trivial.**

**The analysis of a series of approaches to conservation, preservation and restoration, in terms of the project approach and its theoretical issues, as well as the most pragmatic construction requirements, will shed light on these new contemporary practices in 2025 at the European level. It will also open up a discussion, beyond all certainties, on virtuous strategies for intervening in existing buildings and benevolent practices, with a necessarily limited choice of options, but in a**

**heritage with a strong qualitative identity, whether recognised or not. A number of questions arise. What similarities and differences can be observed in monumental heritage restoration campaigns in different European countries and in relation to a more widespread heritage? What methods are being tested in a process that we consider to be exemplary? How effective are the tools - digital or other - used in the restoration project, from diagnosis to construction? How can project strategies in architecture of established quality inform processes where it is systematically sacrificed to energy and/or economic requirements?**

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- 14:00–14:30** Saluti istituzionali
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- 14:30–15:00** *Les écoles industrialisées romandes de l'après-guerre (CROCS): monuments ou ressources durables ?*  
**Franz Graf** (architecte, professeur USI-ARC et professeur honoraire EPF de Lausanne)
- 
- 15:00–15:30** *La première étape de l'EPFL à Ecublens (1970-1983). Quelle stratégie de sauvegarde pour un jeune monument évolutif ?*  
**Giulia Marino** (architecte, professeure UCLouvain et EPF de Lausanne)
- 
- 15:30–16:00** *Patrimoine gisant*  
**Pierre Hebbelinck** (architecte, éditeur, Liège)
- 
- 16:00–16:30** Pausa
- 
- 16:30–17:00** *Rétablissement de la singularité. Restauration du Rectorat de la VUB – Architecte René Braem*  
**Erik Hendrickx** (architecte, associé au sein du bureau Origin, Bruxelles)
- 
- 17:00–17:30** *Le Corbusier: nouvelles protections et diverses pratiques de restauration de l'immeuble à la Porte Molitor*  
**Bénédicte Gandini** (architecte - historienne, Fondation Le Corbusier)
- 
- 17:30–18:00** *Marcel Lods à Sotteville-lès-Rouen. Une Reconstruction.*  
**Richard Klein** (professeur émérite des écoles d'architecture, ENSAP de Lille, Université de Lille)
- 
- 18:30–20:00** **Tavola rotonda**  
 Dialogo con **Martina Voser** (architect, professor - ETHZ)

Auditorio  
 Teatro dell'architettura  
 [Zoom Webinar](#)

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- 09:00–09:30** *Restauration du béton armé des bains publics à Bellinzona*  
**Eugen Brühwiler** (dr ing. civil dipl. ETH/SIA, professeur honoraire EPF de Lausanne)
- 
- 09:30–10:00** *Development of the Conservation Management Plan of Álvaro Siza's Ocean Pool within the Getty Foundation's Keeping It Modern Initiative.*  
**Rui Póvoas** (engineer, emeritus professor - University of Porto - FAUP)
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- 10:00–10:30** *Piani di Conservazione per l'architettura moderna: strategie di intervento per due opere di Pier Luigi Nervi*  
**Cristiana Chiorino** (Fondazione Pier Luigi Nervi)  
**Francesco Romeo** (ingegnere e professore ordinario Sapienza Università di Roma)
- 
- 10:30–11:00** Pausa
- 
- 11:00–11:30** *Continuità costruzione. Interventi nel contesto e nell'edificio principale del politecnico federale di Zurigo*  
**Ruggero Tropeano** (architetto dipl. ETH/SIA)
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- 11:30–12:00** *Linee guida d'intervento: Edificio Jorge Machado Moreira e Giardini Burle Marx, Rio de Janeiro 1949-1961.*  
**Carlo Nozza** (architetto, docente e ricercatore post-doc USI-ARC)
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- 12:00–12:30** *La ricerca sperimentale di Dante Bini. Contributi alla conoscenza e alla salvaguardia*  
**Carlo Dusi** (architetto, docente ricercatore USI-ARC)
- 
- 12:30–13:00** Conclusioni

## Les écoles industrialisées romandes de l'après-guerre (CROCS) : monuments ou ressources durables ?

Franz Graf

L'intervention présentera les recherches menées récemment par Franz Graf et Giulia Marino sur les écoles issues du programme du Centre de Rationalisation et d'Organisation de la Construction Scolaire (CROCS) et celle qui est en cours dans le cadre de *NPR 81 Baukultur* qui les a retenues comme corpus principal.

Au regard du contexte suisse et international, le CROCS est en effet remarquable et exemplaire à la fois. Il se développe dès 1965 dans le cadre d'un vaste programme d'études initié par la Municipalité de Lausanne, une étude ambitieuse, pensée comme « une opération globale d'organisation et de rationalisation de la construction scolaire ». « Construire mieux, plus vite et plus économiquement » face à la pénurie d'établissements scolaires était l'objectif justifiant une planification de longue haleine et un investissement considérable dans les études préparatoires. Le procédé de construction métallique industrialisée issu des recherches menées par les architectes Jean-Pierre Cahen, Paul Vallotton, Michel-Robert Weber et Jacques Dumas est une réussite, avec une trentaine de bâtiments réalisés à Lausanne, sur le territoire du canton de Vaud ainsi qu'en Suisse et à l'international. Il s'agit d'une première pour un système constructif suisse dont les applications dépassent très rarement les frontières cantonales. L'importance de l'opération est en effet incontestable dans le panorama européen et la cohérence du corpus ne fait pas de doute quant à la signification de ces objets industriels produits en série grâce à une planification draconienne, où la qualité constructive et architecturale, deux aspects indissociables, est portée au plus haut niveau.

Néanmoins, et malgré une réception enthousiaste, les CROCS, comme l'ensemble de la production de l'industrialisation légère des années 1960 et 1970, sont considérés comme des modèles constructifs obsolètes et font l'objet d'assainissements énergétiques destructeurs quant à leur qualités spatiales et matérialité originale. La recherche en cours se propose de répondre à quelques problématiques urgentes. Les normes énergétiques sont-elles adaptées aux modes constructifs qui caractérisent l'architecture de la seconde moitié du XX<sup>e</sup> siècle ? Les procédures qui mènent à une rénovation complète, répondent-elles à l'exigence de rapidité et efficacité pour faire face aux enjeux climatiques actuels ? Dans quelle mesure la multiplication des acteurs du terrain, avec des objectifs parfois divergents – l'énergie, le confort, le patrimoine, la

Bernard Vouga,  
Marx Levy architectes  
Groupe Scolaire des  
Bergières, Lausanne,  
1969-1973  
(photo Cédric Widmer)

sécurité, la rentabilité, les usages, etc. – risque de compliquer ce processus pourtant reconnu comme incontournable pour une société inclusive et fondée sur les valeurs de la durabilité ? Comment repenser à partir de la *Baukultur* le processus de rénovation, processus complexe et pourtant crucial pour l'environnement ?



### Post-war industrialised schools in French-speaking Switzerland (CROCS): monuments or sustainable resources?

This presentation will outline recent research on schools built under the Centre for the Rationalisation and Organisation of School Construction (CROCS) programme and ongoing research under *NPR 81 Baukultur*, which has selected them as its main case study. In the Swiss and international context, CROCS is both remarkable and exemplary. It was developed in 1965 as part of a major study programme initiated by the City of Lausanne, an ambitious study conceived as 'a comprehensive operation to organise and rationalise school construction'. To 'build better, faster and more economically', given the shortage of schools, was the objective that justified long-term planning and considerable investment in preparatory studies. The industrialised metal construction process developed by the architects Jean-Pierre Cahen, Paul Vallotton, Michel-Robert Weber and Jacques Dumas was a success, with some thirty buildings constructed in Lausanne, the canton of Vaud, Switzerland and abroad. This was a first for a Swiss building system, which very rarely extends beyond cantonal borders. The importance of the project in the European context is undeniable, and the coherence of the corpus leaves no doubt as to the significance of these industrial objects, which were mass-produced thanks to rigorous planning and in which construction and architectural quality, two inseparable aspects, were raised to the highest level.

However, despite their enthusiastic reception, the CROCS, like all light industrial production of the 1960s and 1970s, are considered obsolete construction models and are subject to energy renovations that destroy their spatial qualities and original materiality. Ongoing research aims to address a number of pressing questions. Are energy standards adapted to the construction methods that characterised the architecture of the second half of the 20th century? Do the processes leading to complete renovation meet the requirements of speed and efficiency needed to meet current climate challenges? To what extent does the proliferation of actors in the field, with sometimes divergent objectives - energy, comfort, heritage, safety, profitability, use, etc.? - risk complicating this process, which is nevertheless recognised as essential for an inclusive society based on the values of sustainability? How can we use building culture to rethink the renovation process, which is complex but crucial for the environment?

## La première étape de l'EPFL à Ecublens (1970-1983). Quelle stratégie de sauvegarde pour un jeune monument évolutif ?

**Giulia Marino**

Achévé en 1984, l'ensemble cohérent de la première étape de l'EPFL à Ecublens est une réalisation originale par sa conformation de mégastructure développée sur la base d'un plan directeur qui a su établir des règles et proposer une gamme d'éléments architecturaux à disposition de tous les partenaires de l'« organisation du projet » et en fait une œuvre collective majeure. Cet « instrument merveilleux », cette « grande œuvre » est l'aboutissement de la décision de transférer l'EPUL devenue EPFL à Dorigny dès 1965, et des nombreuses études qui se sont développées avant et après un concours légendaire. Le lauréat et concepteur de l'ensemble, Jakob Zweifel, est un des plus remarquables représentants des architectes suisses du second après-guerre, à la renommée internationale qui sera cimentée après cette œuvre.

Elle est parfaitement aboutie dans son fonctionnement et dans sa forme, « ouverte » mais contrôlée lors de sa genèse mouvementée et de ses adaptations nécessaires. La qualité urbanistique et de détail sont le résultat d'une systématisation de la construction qui a exploré tous les possibles et retenu la préfabrication et l'industrialisation à bon escient. La qualité de sa morphologie systémique et de son architecture d'éléments assemblés soigneusement dessinés aux textures polychromes, de son intégration dans l'Ouest lausannois et du projet paysager développé avec une grande personnalité de la profession, Ursula Schmocker-Willi, en font une pièce unique, fondation d'une école au développement considérable.

Les bâtiments de l'EPFL-Première étape ont été évalués en 2023 comme « objet d'intérêt national qui requiert un classement comme monument historique ». L'EPFL est une institution d'enseignement et de recherche en constante évolution, des travaux de rénovation et mise aux normes sont donc nécessaires et auront un impact sur la matérialité des bâtiments originaux.

Une étude patrimoniale a été menée par Giulia Marino et Franz Graf en 2024, originale par son ampleur et ses objectifs. Elle explicite la valeur patrimoniale du campus de la première étape de l'EPFL, dans les contextes suisse et international, afin d'en sauvegarder les qualités intrinsèques. S'appuyant sur une recherche documentaire approfondie et une phase d'analyse in situ, la confirmation de la valeur patrimoniale s'est appuyée sur les diverses déclinaisons de celle-ci, de la valeur architecturale au sens large, à la valeur constructive et technique, ainsi que la valeur d'usage. D'autre part, organisées par éléments construc-

tifs et composants, des lignes guide cohérentes pour les futures interventions que l'EPFL entreprend sont formulées dans une logique de sauvegarde des qualités existantes lors des aménagements à venir des espaces intérieurs et des extérieurs de l'ensemble.

Jakob Zweifel architecte,  
Zweifel+Strickler, Metron,  
Campus EPFL, Première  
étape, Ecublens,  
1970-1983  
(photo Giulia Marino)



### **The first phase of the EPFL in Ecublens (1970-1983). What conservation strategy for a young, evolving monument?**

The coherent ensemble of the first phase of the EPFL in Ecublens, completed in 1984, is an original achievement by its megastructure design, developed on the basis of a master plan that established rules and proposed a range of architectural elements available to all partners in the "project organisation", making it a major collective work. This "marvellous instrument", this "great work", is the culmination of the decision to move the EPUL, which became the EPFL, to Dorigny in 1965 and of the numerous studies carried out before and after a legendary competition. The winner and designer of the complex, Jakob Zweifel, is one of the most remarkable representatives of post-war Swiss architecture, whose international reputation was consolidated by this work.

It is perfect in function and form, "open" but controlled throughout its eventful genesis and necessary adaptations. Its urban and detailed quality is the result of a systematic approach to construction that explored all the possibilities and made judicious use of prefabrication and industrialisation. The quality of its systemic morphology and its architecture of carefully designed, assembled elements with polychrome textures, its integration into the west of Lausanne and the landscaping project developed with great personality by Ursula Schmockler-Willi make it a unique piece, the foundation of a school that has undergone considerable development.

The buildings of the EPFL-Première étape were classified in 2023 as "objects of national interest requiring classification as historic monuments". The EPFL is an educational and research institution that is constantly evolving and therefore requires renovation and modernisation work that will have an impact on the materiality of the original buildings. A heritage study was carried out in 2024 by Giulia Marino and Franz Graf, which was original in its scope and objectives. It explains the heritage value of the first phase of the EPFL campus in the Swiss and international context in order to preserve its intrinsic qualities. Based on in-depth documentary research and an on-site analysis phase, the heritage value has been confirmed in its various aspects, from architectural value in the broadest sense to constructive and technical value, as well as utility value. Coherent guidelines for EPFL's future interventions, organised by building elements and components, were also formulated in order to preserve the existing qualities in the future development of the complex's internal and external spaces.

**Pierre Hebbelinck**

La lecture propose d'investiguer trois axes de réflexions portant sur la terminologie *Patrimoine architectural* qui désigne, depuis un siècle et demi, un choix de bâtiments sur la base de critères de sélection portés par les instances publiques. L'angle choisi sera celui d'esquisser des questions d'ordre de conception architecturale et de politique de l'architecture au travers la pratique quotidienne de la production architecturale.

Le chantier en cours de restauration du Palais des Beaux-Arts de Bruxelles conçu par Victor Horta permet d'aborder la notion de *Patrimoine* au sein des ensembles nettement plus vastes que sont l'histoire et la mémoire. Il y sera question notamment d'envisager une approche spéculative de l'histoire de cette construction et de proposer une conception intégrant de manière appuyée les redoutables blessures subies par les bétons d'origine.

Le travail éditorial mis en œuvre par l'Atelier d'Architecture sur l'œuvre de l'architecte Louis Bosny (Belgique, Liège, 1924-1983), sorte de « d'architecte inconnu » (à l'instar du soldat inconnu) sorti de l'ombre par un travail de trois années de recherche, permettra d'investiguer les notions de « validations patrimoniales » par les instances publiques, de proposer des actions concrètes pour la diffusion des concepts engagés politiquement, de construction sobres et économiques, et les aspects innovants portés par l'architecture de l'après-guerre en Europe. Dans l'exposé de la transformation d'une maison de dix ans d'âge conçue sur le modèle de pavillon clef en main (maison Delsaute, Queue du Bois, Belgique), une attention sera portée à l'ensemble du patrimoine bâti, sur les récits portés par les formes communes de l'architecture ordinaire. La conception de ce projet tentera d'illustrer les notions de vitalité portée par la création architecturale face au contexte de morbidité, à la pratique de formes morales et doctrinaires mises en œuvre notamment par les politiques du Patrimoine en Europe.

**Lying heritage**

This lecture will explore three areas of reflection on the term 'architectural heritage'. For the last century and a half, this term has been used to designate a selection of buildings based on a set of criteria laid down by public bodies. The angle adopted will be that of outlining questions of architectural design and architectural policy

through the day-to-day practice of architectural production. The ongoing restoration of the Palais des Beaux-Arts in Brussels, a building designed by Victor Horta, provides an opportunity to examine the notion of heritage in the context of the much wider issues of history and memory. In particular, the approach to the history of the building will be speculative, with a view to proposing a design that takes full account of the substantial injuries sustained by the original concrete. The editorial work undertaken by the Atelier d'Architecture on the oeuvre of architect Louis Bosny (Belgium, Liège, 1924-1983), a sort of 'unknown architect' (akin to the concept of the 'unknown soldier'), has been brought to light following three years of research. The objective of this research is twofold: firstly, to investigate the notions of 'heritage validation' by public authorities and, secondly, to propose concrete actions for the dissemination of politically committed concepts of sober and economical construction, as well as the innovative aspects of post-war architecture in Europe. The presentation will also focus on the transformation of a ten-year-old house designed on the model of a turnkey pavilion (Maison Delsaute, Queue du Bois, Belgium). Attention will be paid to the built heritage as a whole, and to the stories told by the common forms of ordinary architecture. The design of this project will attempt to illustrate the notions of vitality embodied in architectural creation in the face of a context of morbidity, and the practice of moral and doctrinaire forms implemented in particular by heritage policies in Europe.

Un chapiteau de BOZAR en cours de travail à Bruxelles. Salle de Musique de chambre. (Photo d'avril 2023).



## Rétablir la singularité La restauration du Rectorat de la VUB – Architecte René Braem

### Erik Hendrickx

Le bâtiment du rectorat de la Vrije Universiteit Brussel (VUB) est un chef-d'œuvre de l'architecte moderniste Renaat Braem (1910-2001). Il est achevé en 1976, année où Braem, alors âgé de 66 ans, développe pleinement son architecture organique unique. En 2007 ce bâtiment est devenu l'un des plus jeunes monuments protégés de la Région de Bruxelles-Capitale. Le 50<sup>e</sup> anniversaire de la VUB en 2019-2020 a marqué le début du projet de restauration et de rénovation qui a été suivi par ORIGIN Architecture & Engineering. René Braem compte parmi les plus importants représentants de l'architecture d'après-guerre en Belgique. Il est connu comme étant un architecte visionnaire et socialement engagé. Il a commencé sa carrière comme stagiaire auprès de Le Corbusier et a rejoint le CIAM. Son architecture oscille entre rationalité et poésie.

Le projet met un certain temps avant de voir le jour. Sa recherche d'une forme à la fois puissante et symbolique le conduit finalement au plan en ellipse. Cette forme dynamique reflète ainsi une vision héliocentrique du monde et symbolise la recherche de «la vérité ultime» – une mission parfaitement en adéquation avec le rôle d'une université.

Outre sa vision architecturale, Braem est profondément convaincu que l'architecture ne se résume pas à la simple fonctionnalité. C'est pour lui, un moyen de propager une idéologie et des idéaux. Cela se reflète dans l'avent sculptural, les espaces de rencontre et les fresques murales de 500 mètres de long sur le noyau du bâtiment. Le siège du Rectorat représente donc un bel exemple d'«architecture totale», dans laquelle se rejoignent forme, fonction, symbolisme et art. Dans cette présentation on retracera l'histoire fascinante du bâtiment du Rectorat. Quel était le défi de la restauration et rénovation ?

Respecter la valeur patrimoniale, tout en préparant le bâtiment pour le 21<sup>e</sup> siècle. La fragilité de ce patrimoine moderniste a été une préoccupation majeure lors de l'intervention. Les modernistes expérimentent souvent avec la matière, la forme et la technique dans une quête d'honnêteté constructive, exempte d'ornementation. Leurs bâtiments sont dès lors plus susceptibles d'être endommagés par toutes sortes de phénomènes.

La restauration ne se limite pas à apporter des améliorations techniques, mais elle rétablit également le symbolisme et l'ouverture de la conception d'origine. L'introduction de bureaux paysagers et la restauration des peintures murales donnent une seconde vie au bâtiment.

Renaat Braem architecte,  
Rectorat de la VUB,  
façade principale  
(photo T. Fischer, 2018)



### Restoring singularity

#### The restoration of the VUB Rectorate - Architect René Braem

The rector's building of the Vrije Universiteit Brussel (VUB) by the modernist architect Renaat Braem (1910-2001) is widely regarded as an architectural masterpiece. Construction of the building was completed in 1976, the year when Braem, then aged 66, fully developed his unique organic architecture. In 2007, the edifice was designated a protected monument, thus joining the select group of recently recognised heritage sites within the Brussels-Capital Region. The 50th anniversary of the VUB in 2019-2020 marked the start of the restoration and renovation project, which was monitored by ORIGIN Architecture & Engineering.

René Braem is widely regarded as one of the most significant exponents of post-war architecture in Belgium. He is seen as a visionary and socially committed architect. He initiated his professional career as a trainee under Le Corbusier, subsequently joining the CIAM. His architectural work is characterised by a constant dialogue between rationality and poetry.

The project encountered significant delays before its completion. Following an exhaustive search for a form that was both powerful and symbolic, the elliptical plan was ultimately selected. This dynamic form is indicative of a heliocentric worldview and serves as a symbol of the pursuit of 'the ultimate truth', a mission that aligns seamlessly with the role of a university.

In addition to his architectural vision, Braem subscribed to the conviction that architecture was more than merely functional, believing it served as a medium for the dissemination of ideology and ideals. This concept is reflected in the sculptural canopy, the meeting spaces and the 500-metre-long murals on the building's core. The Rectorate's headquarters thus serve as a prime exemplar of 'total architecture', a concept that synthesises form, function, symbolism and art in a cohesive whole.

This presentation will provide a detailed historical account of the

Rectorate building, exploring its origins and the events that have shaped its development over time. What were the principal challenges encountered in the restoration and renovation process? In order to demonstrate respect for its heritage value, the building must be prepared for the 21st century. The fragility of this modernist heritage was a significant concern during the work. Modernists frequently engaged in experimentation with material, form and technique in pursuit of constructive honesty, unencumbered by ornamentation. Consequently, their structures are more vulnerable to damage from a range of phenomena.

The restoration process has been shown to engender technical enhancements, whilst concomitantly re-establishing the symbolism and openness that characterised the original design. The introduction of landscaped office spaces and the restoration of the murals have been instrumental in rejuvenating the building.

## Le Corbusier : nouvelles protections et diverses pratiques de restauration de l'immeuble à la Porte Molitor

### Benedicte Gandini

Aux deux derniers niveaux de l'immeuble Molitor, conçu avec son cousin Pierre Jeanneret, se trouve l'appartement-atelier de Le Corbusier occupé de 1934 jusqu'à sa mort, en 1965. Cet espace traversant, entre Boulogne-Billancourt et Paris, est conçu comme lieu de vie et atelier d'artiste. La Fondation Le Corbusier, légataire universel de l'architecte, est propriétaire de cet espace, devenu lieu de mémoire, et a la charge de sa conservation, son entretien, et son ouverture au public initiée en 1991.

Rapidement après le décès de Le Corbusier, les œuvres de Le Corbusier sont protégées. Le 31 janvier 1972, l'appartement-atelier est classé au titre des monuments historiques, protection suivie le 27 décembre 1972 par l'inscription de la façade sur rue et la toiture du 24 rue Nungesser-et-Coli, puis le 31 octobre 1990 de l'inscription des façades et couvertures sur rues et sur courettes, du sol des courettes et du hall d'entrée. L'appartement-atelier reçoit en 2011 le label « maison des illustres » et après l'inscription sur la Liste du patrimoine mondial, le 17 juillet 2016, d'une série transnationale de 17 œuvres ou sites, dont fait partie l'Immeuble Molitor, le 9 juin 2017 ce dernier est classé en totalité, sauf l'intérieur des appartements privés.

Le long processus d'inscription sur la Liste du patrimoine mondial de « *L'œuvre architecturale de Le Corbusier. Une contribution exceptionnelle au Mouvement moderne* », reconnaissance majeure, a permis donc d'apporter un nouveau regard à cet édifice complété d'une réflexion autour de projets de protection et de restauration. En effet, après une étude patrimoniale menée sur l'appartement par Giulia Marino et Franz Graf, l'appartement-atelier ainsi que la toiture-terrasse de l'immeuble ont été restaurés entre 2014 et 2018 et des études en vue de travaux de restauration des façades, aujourd'hui en cours, ont également été commandées.

Les objets mobiliers de l'appartement qui n'étaient pas encore protégés, viennent de faire l'objet d'un classement au titre des monuments historiques comme ensemble historique avec une servitude de maintien dans le lieu.

Cette présentation fera état de ce nouveau regard à l'origine de ces dernières protections et restaurations, privilégiant comme état de référence celui de 1965, date de la mort de l'architecte, tout en essayant de mettre en évidence les problématiques et incohérences de différentes approches de la restauration.



### **Le Corbusier: new protection and various restoration practices for the Porte Molitor building**

On the top two floors of the Molitor building, designed with his cousin Pierre Jeanneret, is located Le Corbusier's apartment-studio, occupied from 1934 until his death in 1965. This crossing space, between Boulogne-Billancourt and Paris, was designed as a place to live and an artist's studio. The Fondation Le Corbusier, the architect's universal legatee, is the owner of this space, which has become a place of memory. The Foundation is responsible for its conservation and maintenance, and has opened it to the public since 1991. Shortly after Le Corbusier's death, his works were protected. On 31 January 1972, the apartment-atelier was listed as a historic monument, followed on 27 December 1972 by the listing of the street façade and roof at 24 rue Nungesser et Coli, and on 31 October 1990 by the listing

of the street and courtyard façades and roofs, the courtyard grounds and the entrance hall. In 2011, the apartment-studio was awarded the 'Maison des Illustres' label, and following the inclusion on the World Heritage List on 17 July 2016 of a transnational series of 17 works or sites, of which the Molitor Building is one, on 9 June 2017 it was listed in its entirety, with the exception of the interior of the private flats. The long process of inclusion on the World Heritage List of "LeCorbusier's architectural work. An exceptional contribution to the Modern Movement", a major award, has enabled us to take a fresh look at this building, and consider projects for its protection and restoration. Following a heritage study carried out on the flat by Giulia Marino and Franz Graf, the studio flat and the building's roof terrace were restored between 2014 and 2018, and studies have also been commissioned with a view to restoring the façades, work that is now underway. The furnishings in the flat, which were not previously protected, have now been classified as historic monuments, with an obligation to maintain them in situ. This presentation will look at the new situation that has led to the latest protection and restoration work, using 1965, the date of the architect's death, as a reference point, while attempting to highlight the problems and inconsistencies of the different approaches to restoration.

## Marcel Lods à Sotteville-lès-Rouen. Une Reconstruction

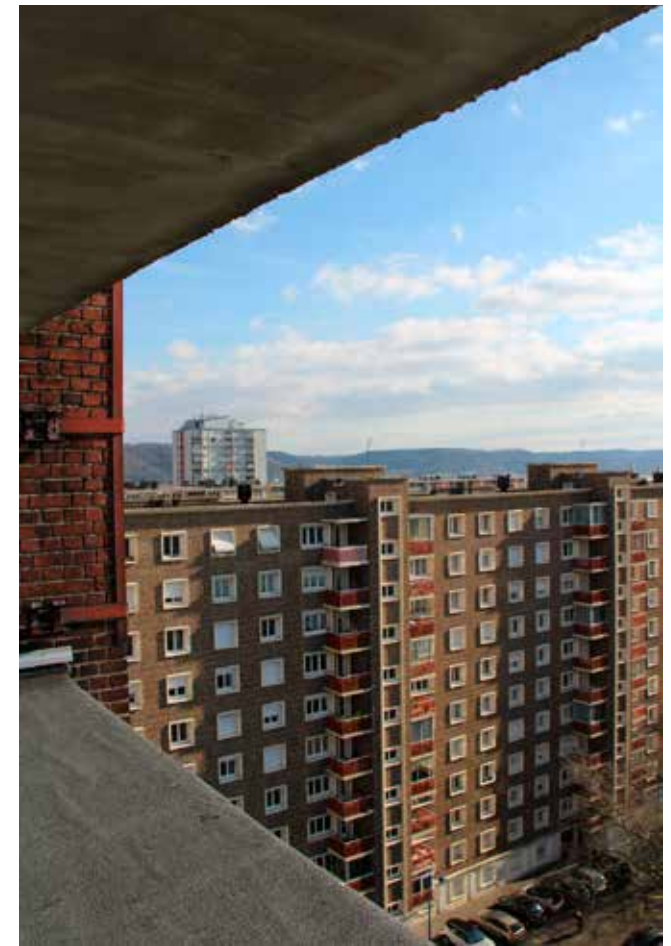
Richard Klein

Étalée sur plus de vingt ans, la reconstruction de Sotteville-lès-Rouen et de la Zone Verte conçue par Marcel Lods témoigne d'évolutions constructives largement héritées de l'esthétique et des matériaux mis en œuvre avant la Seconde guerre mondiale. Les murs de la cité de la Muette de Drancy et de l'école de plein air de Suresnes (1931-1935) étaient déjà composés de dalles préfabriquées, faites de gros galets noyés dans un béton vibré. Inscrits dans cette continuité, les trois immeubles de la frange Ouest de l'ensemble de la Zone Verte (1946-1957), ainsi que le groupe scolaire Sud (1950-1957), sont édifiés à partir d'une ossature en béton armé. Les façades dont la partie visible comporte un parement extérieur en gros cailloux sont composées d'un vide d'air et d'un parement intérieur de béton. Comme Perret au Havre, Lods s'affranchit d'une maçonnerie porteuse au profit d'une ossature avec un remplissage par panneaux dont la composition est l'objet d'une très grande attention. Construits suite à la réalisation d'immeubles prototypes (1953-1955), à proximité immédiate de la Zone Verte, l'immeuble Flandre (1956-1960) et le groupe scolaire Nord (1957-1964) sont mis en œuvre à partir de panneaux porteurs issus du procédé Camus. Dès les années 1950, Marcel Lods, fervent défenseur de l'industrialisation, emploie fréquemment ce procédé dans une production de logements de masse : à la Faisanderie à Fontainebleau (1951-1953), à la cité Gaston Roulaud à Dancy, à la cité Paul Éluard à Drancy, à la cité Paul Vaillant Couturier à Drancy.

Alors que la Faisanderie a été réhabilitée, par les architectes Eliet & Lehmann, qui ont évoqués les panneaux Camus comme étant une « démonstration du savoir-faire technique français » en soulignant « la grande valeur historique, architecturale et technique » des immeubles, la cité Gaston Roulaud a été détruite sous le prétexte du coût trop élevé d'une réutilisation.

La chronologie des techniques constructives à l'œuvre dans les logements collectifs de Marcel Lods montre la nécessité de la prise en compte de la longue durée dans l'évaluation des architectures de la reconstruction. D'un point de vue patrimonial, le devenir très contrasté de ces ensembles révèle le poids de considérations politiques et idéologiques souvent indépendantes des réalités matérielles et culturelles de ces architectures. Ces questions seront évoquées dans une perspective opératoire pour la connaissance, la sauvegarde et l'adaptation de cet héritage.

Sotteville-lès-Rouen, La  
Zone Verte, Marcel Lods  
architecte.  
(photo Richard Klein 2023)



### Marcel Lods in Sotteville-lès-Rouen. A Reconstruction

Spread over more than twenty years, the reconstruction of Sotteville-lès-Rouen and the Zone Verte designed by Marcel Lods bears witness to constructional developments largely inherited from the aesthetics and materials used before the Second World War. The walls of the Muette housing estate in Drancy and the outdoor school in Suresnes (1931-1935) were already made of prefabricated slabs of large pebbles embedded in vibrated concrete. Continuing in this vein, the three buildings on the western fringe of the Zone Verte complex (1946-1957), as well as the South school complex (1950-1957), were built using a reinforced concrete framework. The façades, the visible part of which has an external facing of large stones, are composed of an air space and an internal concrete facing. Like Perret in Le Havre, Lods did away with load-bearing masonry in favour of a framework with a

panel infill, the composition of which was the subject of great attention. The Flandre building (1956-1960) and the Nord school complex (1957-1964) were built following the completion of prototype buildings (1953-1955), in the immediate vicinity of the Zone Verte, using load-bearing panels based on the Camus process. From the 1950s onwards, Marcel Lods, a fervent advocate of industrialisation, frequently used this process in mass housing production: at La Faisanderie in Fontainebleau (1951-1953), at La Cité Gaston Rouaud in Dancy, at La Cité Paul Éluard in Drancy and at La Cité Paul Vaillant Couturier in Drancy.

While the Faisanderie was restored by architects Eliet & Lehmann, who described the Camus panels as a 'demonstration of French technical know-how' and emphasised the 'great historical, architectural and technical value' of the buildings, the Gaston Rouaud housing estate was demolished on the pretext that it would be too expensive to reuse.

The chronology of the construction techniques used in Marcel Lods' multi-family dwellings demonstrates the need to take a long-term view when assessing the architecture of the Reconstruction period. From a heritage point of view, the highly contrasting futures of these complexes reveal the weight of political and ideological considerations that are often independent of the material and cultural realities of these architectures. These issues will be addressed from the perspective of how to understand, safeguard and adapt this heritage.

## Restauration du béton armé des bains publics à Bellinzona

### Eugen Brühwiler

Le « Bagno Pubblico » à Bellinzona en Suisse a été construit entre 1967 et 1970 selon un projet des architectes Flora Ruchat-Roncati, Aurelio Galfetti et Ivo Trümpy. Une passerelle en béton armé précontraint d'une longueur de 380 mètres est le « fil conducteur ». Elle relie la ville aux bords de la rivière Ticino, en traversant l'espace public des bains à une hauteur de six mètres. Les vestiaires sont situés sous la passerelle, et l'espace des bains et son parc est structuré en fonction des circulations des utilisateurs des bains et des habitants. Les constructions en béton armé brut sont à la fois imposantes et filigranes, et elles structurent le paysage et organisent l'aménagement. Les Bains de Bellinzona sont considérés comme l'une des œuvres majeures de l'architecture tessinoise récente. L'édifice est d'une importance nationale.

Les ouvrages en béton armé des bains sont la passerelle avec les rampes d'accès, ainsi que les piscines avec les pavages et les plongeoirs. Après plus de 40 ans d'exposition aux intempéries et aux sels de déverglaçage, appliqués notamment sur la passerelle, des dégâts de corrosion d'armature, parfois avancés, ont été constatés par zones locales et de manière systématique sur certains détails constructifs. La majorité des surfaces en béton apparent ne présentaient par contre que peu de dégâts visibles.

Le projet de restauration des ouvrages en béton fait partie d'un projet de rénovation de l'entier du complexe des bains, élaboré par le bureau d'architecture Galfetti Associati Sagl à Massagno. Concernant la restauration du béton armé, le concept d'intervention proposé en 2012 a comme objet de remettre en état les zones montrant des dégâts avancés et d'améliorer les détails constructifs et endommagés, ainsi que d'appliquer une protection de surface par une imprégnation hydrophobe profonde sur toutes les surfaces exposées en béton apparent. Une campagne d'essais préliminaires a ensuite été réalisée en 2013-2014 pour valider les méthodes d'intervention et les matériaux appropriés. Les travaux relatifs aux bétons ont été réalisés par étapes entre 2014 et 2019.



### Restoration of the reinforced concrete of the public baths in Bellinzona

The 'Bagno Pubblico' in Bellinzona, Switzerland, was built between 1967 and 1970 to a project by the architects Flora Ruchat-Roncati, Aurelio Galfetti and Ivo Trümpy. A 380-metre-long pre-stressed reinforced concrete footbridge is its 'connecting thread'. It links the town to the banks of the Ticino river, crossing the public bathing area at a height of six metres. The changing rooms are located under the footbridge, and the baths area and its grounds are structured to accommodate the movement of bath users and residents. The raw reinforced concrete constructions are both massive and filigree, giving structure to the landscape and organising the layout. The Bellinzona Baths are considered one of the major works of recent architecture in Ticino. The building is of national importance.

The reinforced concrete structures of the baths are the footbridge with its access ramps, and the swimming pools with their paving and diving boards. After more than 40 years of exposure to the elements and to de-icing salts, applied in particular to the footbridge, corrosion damage to the reinforcement, sometimes advanced, was noted in local areas and systematically on certain construction details. The majority of exposed concrete surfaces, however, showed little visible damage.

The project to restore the concrete structures is part of a project for the refurbishment of the whole bathing complex, developed by the architectural firm Galfetti Associati Sagl at Massagno. With regard to the restoration of the reinforced concrete, the intervention concept proposed in 2012 aims to restore the areas showing advanced damage and improve the damaged constructional details and apply surface protection by means of a deep hydrophobic impregnation to all exposed concrete surfaces. A campaign of preliminary tests was then carried out in 2013-2014 to validate the intervention methods and appropriate materials. The concrete work was carried out in stages between 2014 and 2019.

## Sviluppo del piano di gestione della conservazione della Piscina das Marés di Álvaro Siza, nell'ambito dell'iniziativa Keeping It Modern della Getty Foundation

### Rui Póvoas

Gli interventi sul patrimonio storico possono essere identificati con molti nomi diversi – conservazione, riabilitazione, ristrutturazione, restauro, ricostruzione e riqualificazione, tra gli altri – che, caratterizzando diverse modalità di intervento sugli edifici esistenti, riflettono l'essenza di qualsiasi intervento nell'ambiente costruito: rinnovare l'esistente – trasformando, correggendo, mantenendo, sostituendo, aggiungendo o sottraendo – in altre parole, attraverso diverse operazioni che incarnano il problematico esercizio della gestione della trasformazione – obiettivo finale di qualsiasi azione sul patrimonio.

Per quanto tecnicamente impegnativo possa essere questo esercizio, in definitiva, si tratta sempre di affrontare un problema architettonico. In questo senso, altre opere di rilievo sono indiscutibili fonti di conoscenza e riconosciuta influenza sulla produzione disciplinare.

La nostra presentazione intende costituire un piccolo contributo alla disciplina, prendendo spunto da un recente intervento in un edificio iconico dell'architettura del XX secolo: la Piscina das Marés di Álvaro Siza a Matosinhos, in Portogallo. In questo caso specifico, abbiamo anche avuto l'opportunità di beneficiare di un finanziamento della Getty Foundation attraverso il programma Keeping it Modern, che ci ha permesso di sviluppare il lavoro di ricerca presso il Centro di Studi di Architettura e Urbanistica della Facoltà di Architettura dell'Università di Porto (CEAU/FAUP) e sviluppare il Piano di Gestione e Conservazione dell'edificio, con l'obiettivo di fornire linee guida per la sua manutenzione a medio e lungo termine, nonché per il suo uso appropriato.

Verranno illustrate diverse fasi del progetto di ricerca, tra cui le attività svolte per: comprendere il luogo e valutarne l'importanza; identificare i "Principi di progettazione di Álvaro Siza" per la Piscina das Marés; definire un insieme di politiche di conservazione e gestione; valutare la mitigazione del rischio e i cambiamenti climatici; stabilire modalità di utilizzo e sviluppare un piano di manutenzione, supportati dalla tecnologia BIM. Verrà inoltre presentato brevemente l'intervento di conservazione e ampliamento della piscina, recentemente condotto da Álvaro Siza. In questo caso, sarà dedicata particolare attenzione a: il rilievo di ispezione, diagnosi e relativa campagna sperimentale; alle diverse opzioni adottate da Álvaro Siza per affrontare i danni al calcestruzzo, inclusi alcuni approcci risolutivi per la riparazione.



### **Development of the Conservation Management Plan of Álvaro Siza's Ocean Pool within the Getty Foundation's Keeping It Modern Initiative**

Interventions in the heritage can be identified by many different names: conservation, rehabilitation, renovation, restoration, reconstruction, and upgrading, as well as many others. They characterise the different ways of intervening in existing buildings and reflect the essence of any intervention in the built environment: making the old new - transforming, correcting, maintaining, replacing, adding or subtracting - in other words, through different operations that embody the problematic exercise of managing transformation – the ultimate goal of any heritage intervention.

No matter how technically demanding this exercise can be, in the end it is always an architectural problem we are dealing with. In that sense, the relevance of other architectural works is unquestionable as a source of knowledge with a recognised influence on production in this discipline.

Our presentation intends to constitute a small contribution to the field, taking advantage of a recent intervention in an iconic building of 20th-century architecture: Álvaro Siza's Ocean Swimming Pool in Matosinhos, Portugal.

In this particular case, we also had the opportunity to benefit from funding from the Getty Foundation through the Keeping it Modern Initiative, which has enabled us to conduct research at the Centre for Studies in Architecture and Urbanism of the Faculty of Architecture of the University of Porto (CEAU/FAUP), regarding the development of a Conservation Management Plan for Álvaro Siza's Ocean Pool. The aim was to provide guidelines for its maintenance in the medium and long term, as well as for the appropriate use of the building. Several steps of the research project will be discussed, such as the activities conducted to: understand the place and assess its

significance; identify 'Álvaro Siza's Design Principles' for the Ocean Swimming Pool; define a set of conservation and management policies; assess risk mitigation and climate change; establish measures of use and develop a maintenance plan, including user manuals, and supported by BIM technology. Additionally, there will be a short presentation of the intervention for the conservation and expansion of the swimming pool, recently conducted by Álvaro Siza.

In this case, particular attention will be given to: the inspection and diagnosis survey, emphasizing the respective experimental campaign, and the several diversified options taken by Álvaro Siza regarding the measures for dealing with damage to the concrete, including different solutions for its repair.

## Piani di Conservazione per l'architettura moderna: strategie di intervento per due opere di Pier Luigi Nervi

**Cristiana Chiorino**  
**Francesco Romeo**

I piani di conservazione elaborati nell'ambito del programma Keep it Modern della Fondazione Getty su due opere dell'ingegnere italiano Pier Luigi Nervi, il complesso di Torino Esposizioni (1947-1948) e lo Stadio Flaminio (1956-1959) rappresentano casi studio esemplari nell'applicazione di approcci interdisciplinari e strumenti digitali avanzati nel restauro del patrimonio del XX secolo.

Il Piano di Conservazione di Torino Esposizioni, elaborato dal Politecnico di Torino in collaborazione con la Pier Luigi Nervi Project Foundation, si fonda su un'analisi sperimentale della struttura e sulla definizione di linee guida per interventi compatibili con l'opera di Nervi. L'approccio si distingue per l'integrazione tra diagnosi materica, valutazione della sicurezza strutturale e strategie di manutenzione preventiva, proponendo un modello di gestione sostenibile per edifici di grande complessità tecnologica.

Analogamente, il Piano di Conservazione dello Stadio Flaminio, sviluppato dalla Sapienza Università di Roma con la Pier Luigi Nervi Project Foundation e Do.Co.Mo.Mo. Italia, adotta un processo articolato in tre fasi: riconoscimento del valore storico-architettonico, analisi dello stato di fatto e definizione delle linee guida di intervento. Un aspetto innovativo del piano di conservazione è lo sviluppo di una piattaforma HBIM, che consente una gestione dinamica dei dati e delle strategie conservative, integrando la fruizione della documentazione di archivio, il rilievo digitale reality-based, la modellazione 3D e le raccomandazioni operative.

Entrambi i casi evidenziano l'importanza di metodi basati su un rigoroso approccio scientifico, che combinano strumenti di analisi avanzati con la conservazione. Essi offrono spunti di riflessione sulle potenzialità di questi strumenti per la tutela del patrimonio architettonico moderno in un contesto europeo, contribuendo al dibattito sui criteri di autenticità, sostenibilità e compatibilità degli interventi di restauro.

### Conservation Plans for Modern Architecture: strategies for intervention in two works by Pier Luigi Nervi

The conservation plans drawn up as part of the Getty Foundation's Keeping it Modern Initiative on two works by the Italian engineer Pier Luigi Nervi, the Torino Esposizioni complex (1947-1948) and the

Stadio Flaminio (1956-1959), are exemplary case studies in the application of interdisciplinary approaches and advanced digital tools in the restoration of the XX-century heritage.

The Conservation Plan of Torino Esposizioni, drawn up by the Politecnico di Torino in collaboration with the Pier Luigi Nervi Project Foundation, is based on an experimental analysis of the structure and the definition of guidelines for interventions compatible with Nervi's work. The approach stands out by its integration of material diagnosis, structural safety assessment and preventive maintenance strategies, proposing a sustainable management model for buildings of great technological complexity.

Likewise, the Stadio Flaminio Conservation Plan, developed by the Sapienza Università di Roma with the Pier Luigi Nervi Project Foundation and Do.Co.Mo.Mo. Italia, has adopted a process divided into three phases: recognition of the historical-architectural value, analysis of the current state of affairs and definition of guidelines for intervention. An innovative aspect of the preservation plan is the development of an HBIM platform which enables dynamic data management and preservation strategies, integrating the use of archival documentation, reality-based digital surveying, 3D modelling and operational recommendations.

Both cases highlight the importance of methods based on a rigorously scientific approach, combining advanced analysis tools with conservation. They stimulate reflection on the potential of these tools protecting the modern architectural heritage in a European context, contributing to the debate on the criteria of authenticity, sustainability and compatibility of restoration projects.

Stadio Flaminio  
(photo © Matteo Cirenei)



## **Continuità costruzione** Interventi nel contesto e nell'edificio principale del politecnico federale di Zurigo

**Ruggero Tropeano**

Il risanamento della terrazza principale verso la città dell'edificio ETH HG nel Campus cittadino del politecnico è il risultato di una gara del 2004 che aveva per scopo una soluzione dichiarata provvisoria per garantire l'impermeabilità della copertura per almeno 15 anni. Ci aggiudicammo il progetto e l'esecuzione con un intervento delicato sulla costruzione progettata inizio anni Settanta da Charles Eduard Geisendorf che comprendeva anche la connessione sotterranea con l'edificio principale, la mensa, le palestre e il padiglione dell'associazione degli ex alunni. Ch. E. Geisendorf professore di architettura al politecnico aveva iniziato dal 1960 in poi significativi interventi sia nella sede principale con aggiunte importanti ma discretamente invasive nella costruzione di Gottfried Semper e di Gustav Gull, che nel sito dei laboratori e della facoltà di ingegneria con l'importante intervento anni Trenta di Otto Rudolf Salvisberg. Il nostro concetto proponeva l'idea di aggiunte con elementi in cemento prefabbricati al posto dei rivestimenti minerali esistenti, questo per due principali ragioni, la semplicità di montaggio e poi smontaggio e la referenza alla materialità della facciata con le aggiunte di Gull sull'opera di Semper, queste tutte eseguite nei primi anni Venti dello scorso secolo con pietra artificiale. Il progetto definitivo e la costruzione hanno anche dato la possibilità di adeguare parapetti e illuminazione secondo le norme di sicurezza vigenti e con architetti paesaggisti di ripopolare le zone verdi con particolare attenzione ai percorsi pedonali e alle scarpate sulla strada incanalata tra corpo principale e mensa.

Nel 2019 il nostro ufficio si aggiudica come capogruppo una gara a livello federale per la pianificazione e progettazione di lavori di risanamento (restauro, conservazione e ristrutturazione funzionale) dello stesso edificio. Il contratto descrive inizialmente dieci campi di azione dei quali uno dedicato alle opere urgenti e un progetto completo di rifacimento del garage sotterraneo nella zona dell'entrata principale.

L'intervento era stato un'ennesima opera di Ch. E. Geisendorf che negli ultimi anni aveva riscontrato debolezze statiche importanti per la portata del piano terrazza d'entrata. Con un concorso venne scelta una soluzione molto impegnativa, successivamente scartata. Il nostro progetto aveva il dovere di rientrare in un definito contesto finanziario con l'obbligo di adempiere a tutte le richieste di sicurezza, in particolare per le vie di fuga. Rispettando la struttura del secondo piano sotterraneo, rinforzando le colonne in acciaio e rifacendo il soffitto del

ETH, Sede centrale, Krypta,  
(photo R. Tropeano 2023)

primo con la riscoperta di uno spazio sotto l'entrata principale, denominata Krypta già in uno studio analitico del 1996, siamo riusciti a ridare continuità all'opera di Ch. E. Geisendorf in questo nuovo millennio.



### **Construction continuity** Interventions in the context and main building of the Swiss Federal Institute of Technology Zurich

The reclamation of the main terrace towards the city of the ETH HG building on the polytechnic university's city campus is the result of a 2004 competition aimed at an avowedly provisional solution to ensure the waterproofing of the roof for at least 15 years. We were awarded the project and its execution with a delicate intervention on the building originally designed in the early seventies by Charles Eduard Geisendorf, including the underground connection with the main building, the refectory, gyms, and the pavilion of the alumni association. C.E. Geisendorf, professor of architecture at the Polytechnic, began important work in 1960, both in the main building, with significant but discreetly invasive additions to the edifice designed by Gottfried Semper and Gustav Gull, and in the site of the laboratories and the Faculty of Engineering, with an important project in the 1930s by Otto Rudolf Salvisberg. Our concept proposed the idea of additions with prefabricated concrete elements instead of the existing mineral coatings. This was for two main reasons: simplicity of assembly and later dismantling, and the match between of the material qualities of the facade with Gull's additions to Semper's work, all of which were made in the early 1920s using artificial stone. The final design and construction also ensured the parapets and lighting comply with current safety regulations and enabled landscape architects to repopulate the green areas, with a particular concern for the footpaths and embankments on the road running between the main building and the refectory.

In 2019 our office as team leader won a federal tender for the planning and design of renovation work (restoration, conservation and functional restructuring) of the building. The contract initially described ten fields of action, one of which was devoted to urgent works and a complete project for the remodelling of the underground garage in the area of the main entrance.

The intervention involved yet another work by C.E. Geisendorf, which in recent years had revealed significant static weaknesses in the stability of the terrace floor of the entrance. A competition had led to the selection of a very challenging solution, which was then discarded. Our project had to comply with a strict budget, and to fulfil all the safety requirements, in particular for emergency exits. By respecting the structure of the second underground floor, reinforcing the steel columns and rebuilding the ceiling on the first floor with the rediscovery of a space under the main entrance, already called the Krypta in an analytical study in 1996, we managed to restore continuity with the work of C.E. Geisendorf in this new millennium.

## Linee guida d'intervento: Edificio Jorge Machado Moreira e Giardini Burle Marx, Rio de Janeiro 1949-1961

### Carlo Nozza

L'edificio Jorge Machado Moreira è un esempio notevole di architettura moderna brasiliana. Costruito per ospitare la Faculdade de Arquitetura e Urbanismo (FAU) Universidade Federal do Rio de Janeiro (UFRJ), è stato progettato dall'architetto Jorge Machado Moreira e Escritório Técnico Universitário (ETUB), in collaborazione con Roberto Burle Marx, paesaggista per gli spazi esterni e i giardini. L'articolazione volumetrica tra i blocchi dalle diverse proporzioni e tipologie edilizie genera cortili interni al piano terra e ampi spazi di attraversamento ai livelli superiori, tutti ben proporzionati per mitigare in modo naturale le condizioni ambientali presenti all'intorno.

L'impiego di materiali e sistemi costruttivi industrializzati e modulari ha permesso di realizzare volumi unitari di grande qualità plastica.

Studiare i documenti originali di progetto e accompagnamento delle diverse fasi della costruzione, conservati presso l'archivio del Núcleo de Pesquisa e Documentação (NPD), ha permesso di approfondire il notevole valore documentale di questo edificio e dei suoi giardini per la storia materiale dell'architettura moderna brasiliana. Dal 2009 i giardini e la sistemazione degli spazi all'intorno dell'edificio progettati da Roberto Burle Marx, sono protetti dall'Istituto do Patrimônio Histórico e Artístico Nacional do Brasil (IPHAN).

Il complesso ha sempre ospitato la facoltà di architettura in coabitazione con altri istituti, tra i quali per alcuni anni gli uffici del rettorato UFRJ e oggi la facoltà di belle arti.

La principale causa del presente stato di degrado è la complessa stratificazione dei numerosi cambi d'uso che hanno avuto luogo nel tempo spesso in contrasto, oppure in contraddizione, con le intenzioni del progetto originale e la natura stessa dell'edificio.

La bozza preliminare dello studio delle linee guida per la conservazione, uso appropriato, riqualificazione energetica sostenibile e restauro di una porzione prototipo che presentiamo, descrive la materia e la costruzione originali. Queste necessitano di interventi urgenti perché versano in condizioni critiche, dovute principalmente alle severe condizioni climatiche, alla mancata manutenzione ed a alcuni gravi fraintendimenti che nel tempo hanno accompagnato l'approssimativo e mai pianificato cambio di destinazioni d'uso, l'adeguamento degli impianti tecnologici e dei servizi. Il progetto di ricerca coordinato da Faculdade de Arquitetura e Urbanismo-UFRJ, con il supporto CNPq-Brasile, è svolto in collaborazione con USI-Accademia di architettura, con il supporto SNSF-Svizzera.



**Intervention Guidelines: Jorge Machado Moreira Building and Burle Marx Gardens, Rio de Janeiro 1949-1961**

The Jorge Machado Moreira Building is a remarkable example of modern Brazilian architecture. Built to house the Faculdade de Arquitetura e Urbanismo (FAU) of the Universidade Federal do Rio de Janeiro (UFRJ), it was designed by architect Jorge Machado Moreira and Escritório Técnico Universitário (ETUB), in collaboration with Roberto Burle Marx, the landscape architect for the grounds and gardens.

The articulation of the volumes between blocks of different proportions and building types gives rise to internal courtyards at ground level and large crossing spaces on the upper levels, all well proportioned to naturally mitigate the environmental conditions present around them.

The use of industrialised and modular materials and construction systems made it possible to create unified volumes with a notable sculptural quality.

Studying the original designs and records of the different phases of construction, kept in the archives of the Núcleo de Pesquisa e Documentação (NPD), has made it possible to explore the considerable documentary value of this building and its gardens in the material history of modern Brazilian architecture. Since 2009, the gardens and the arrangement of the grounds around the building, designed by Roberto Burle Marx, have been protected by the Instituto do Patrimônio Histórico e Artístico Nacional do Brasil (IPHAN).

The complex has always housed the Faculty of Architecture in cohabitation with other institutes, including for some years the offices of the UFRJ rectorate and today the Faculty of Fine Arts.

The main cause of its present state of deterioration is the complex stratification of the numerous changes of use that have taken place over time, often contradicting or conflicting with the intentions of the original project and the very nature of the building.

The preliminary draft of the study of the guidelines for the conserva-

tion, appropriate use, sustainable energy retrofit and restoration of a prototype portion of the edifice that we present describe its original materials and construction. These call for urgent intervention, because they are in a critical state, mainly due to the severe climatic conditions, lack of maintenance and some serious misunderstandings, which over time have accompanied the imprecise and invariably unplanned changes of intended use, together with the upgrading of the technological systems and services.

The research project coordinated by the Faculdade de Arquitetura e Urbanismo-UFRJ, with the support of CNPq-Brazil, is conducted in collaboration with USI-Academy of Architecture, and with the support of SNSF-Switzerland.

## La ricerca sperimentale di Dante Bini. Contributi alla conoscenza e alla salvaguardia

### Carlo Dusi

Dante Bini, architetto, costruttore, inventore e imprenditore va annoverato tra i protagonisti di quella particolare fusione tra ricerca strutturale, innovazione tecnologia e costruttiva, e ricerca architettonica che ha segnato il dibattito e la pratica dell'architettura nella seconda metà del XX secolo.

Il suo lavoro, sostanzialmente ignorato dalla storiografia e dalla critica dell'architettura per decenni, solo in tempi recenti è stato oggetto di studi che ne stanno facendo emergere il valore.

Tuttavia la conoscenza effettiva delle sue sperimentazioni ed opere è ancora lacunosa - soprattutto quella riguardante gli aspetti materiali - per la scarsità delle fonti documentarie disponibili generalmente selezionate e divulgate dallo stesso Bini, per la sua attitudine imprenditoriale che lo portava a delegare a società, o a collaboratori, in parte autonomi lo sviluppo operativo delle sue ricerche o dei progetti, e per una letteratura e una pubblicistica recenti in gran parte scritta dallo stesso Bini o riferita ai suoi scritti. Il presente contributo rappresenta un compendio degli studi condotti nell'ambito dell'attività di ricerca dell'Area di costruzione e tecnologia dell'USI-Accademia di architettura sugli aspetti materiali, costruttivi, della tutela e del restauro, riguardanti la prima e più nota delle sue sperimentazioni. Saranno illustrati i risultati riguardanti due momenti cardine di questa sperimentazione, entrambi dichiarati beni di interesse culturale e pertanto soggetti a tutela: il "Mushroom field" (1966-1968) - il cantiere sperimentale a San Cesario sul Panaro (Modena), in cui venne sviluppato il sistema - e la casa di vacanze per Michelangelo Antonioni a Costa Paradiso in Sardegna (1971), forse la migliore opera di Dante Bini in cui si condensa una buona parte del dibattito architettonico di quegli anni, certamente la più mediaticamente nota, ma anche quella meno realmente conosciuta nei suoi caratteri materiali.

Le ricerche condotte su fonti dirette e indirette, anche inedite, si sono recentemente arricchite della disponibilità dell'archivio personale che Dante Bini ha donato all'Accademia di architettura.

### Dante Bini's experimental research. Contributions to its understanding and conservation

Dante Bini, architect, builder, inventor and entrepreneur, is to be seen as one of the leading figures active in that particular fusion of

structural research, technological and constructional innovation and architectural research characteristic of the debate and practice of architecture in the second half of the twentieth century.

His work was substantially ignored by architectural criticism and historiography for decades, and has only recently been the subject of studies that are revealing its value.

However, the actual knowledge of his experiments and works is still incomplete, especially their material features. This is due to the scarcity of the available documentary sources, which were generally selected and disseminated by Bini himself, his entrepreneurial outlook, which led him to delegate the operational development of his research or projects to companies or collaborators, some of them independent, and to the recent literature and journalism largely written by Bini himself or by drawing on his writings.

This paper presents a compendium of the studies conducted as part of the research work of the Construction and Technology Area of the Academy of Architecture - USI into the material, constructional, conservational and restoration aspects of the first and best known of his experiments: the system for construction of thin-shell concrete domes using pneumatic membranes, known as "Binishells". The results concerning two pivotal moments of this experimentation will be illustrated, both declared assets of cultural interest and therefore subject to protection. These are the "Mushroom Field" (1966-1968) - the experimental construction site at San Cesario sul Panaro (Modena), where he developed his system - and the holiday home for Michelangelo Antonioni in Costa Paradiso in Sardinia (1971). This is perhaps Dante Bini's finest work, and embodies many aspects of the architectural debate in those times years. It is certainly the best known in the media, but also really the least known in its material properties. The research conducted on direct and indirect sources, including unpublished ones, has recently been enriched by the availability of the personal archive that Dante Bini donated to the Academy of Architecture.

Mushroom field,  
cantiere sperimentale a  
San Cesario sul Panaro  
(Modena) 1966/1967



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- Franz Graf** Franz Graf is an architect, a professor at the Academy of Architecture in Mendrisio-Università della Svizzera Italiana and an honorary professor at the École polytechnique fédérale de Lausanne. In his research he develops an understanding of modern and contemporary construction systems and his publications are collected in reference volumes. The book that brings together many of his essays, *Histoire matérielle du bâti et projet de sauvegarde*, was published in 2014 by the Presses polytechniques et universitaires romandes. Franz Graf is Chair of Docomomo Switzerland.
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- Giulia Marino** Giulia Marino is an architect and professor at the Université catholique de Louvain in Brussels and at the École polytechnique fédérale de Lausanne. She deals with the restoration of the built heritage of the 20th century and the history of construction techniques, with particular reference to lightweight facades and systems. The author of numerous publications, she is currently preparing the publication of a volume on the Immeuble Clarté by Le Corbusier and Pierre Jeanneret, and the proceedings of the international conference devoted to the restoration of the work of Jean Prouvé. Giulia Marino is co-Chair of Docomomo Switzerland.
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- Pierre Hebbelinck** Pierre Hebbelinck was born in 1956 and graduated from the Institut Lambert Lombard in Liège in 1981. In 1982, he established his own architectural studio in Liège, where he engaged in a multifaceted professional role encompassing architecture, lecturing and publishing. Notably, he founded the Fourre-Tout publishing house, which is significant in the context of his contributions to the academic and cultural landscape. The studio's body of work on existing buildings encompasses a broad spectrum of programmes and scales. He has been the recipient of multiple awards, including the Prix du Patrimoine from the Académie Française d'Architecture (2024) and the Europa Nostra prize for applied research.
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- Erik Hendrickx** Erik Hendrickx is an architect who holds a master's degree in conservation and restoration. He is a partner in Origin Architecture & Engineering in Brussels. This office, comprising engineers, architects and architectural historians, has been engaged since 2010 in the restoration of the headquarters of the Rectorate of the

- VUB. In addition to various restoration projects involving works by René Braem, the office has also worked on buildings by a number of architects from the same period, including Willy Van Der Meeren, Lucien Kroll and Jacques Dupuis.
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- Bénédicte Gandini** Bénédicte Gandini (1972) graduated from the Faculty of Architecture at the Politecnico di Milano in 1999 with a degree in Restoration Theory under Amedeo Bellini, and obtained a Master 2 in Art History from Paris 4 - La Sorbonne in 2004. Between 1997 and 2010, she was project manager at the office of Pierre-Antoine Gatier, Architecte en Chef des Monuments Historiques, with particular responsibility for the Alpes-Maritimes region. Since 2005, as architect for the Fondation Le Corbusier, she has been in charge of the conservation of Le Corbusier's architectural works, as well as chairing the Fondation's Committee of Experts on the Built Works.
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- Richard Klein** Richard Klein is an architect and architectural historian, Professor Emeritus of architecture schools, researcher at the Lacth (Ensap de Lille, Université de Lille), President of docomomo France and director of the Architectures contemporaines collection published by Hermann. His research focuses on the history of twentieth-century architecture and its representations. His most recent books include *Modèles Innovation, Les derniers modernes*. With Caroline Bauer, éditions du patrimoine (2023),
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- Martina Voser** Martina Voser (b. 1973) is a Swiss landscape architect and since 2024 full professor of landscape architecture. After graduating from the ETH Zurich with a degree in architecture, she pursued her passion for open-space, landscape and territorial topics working in various Swiss landscape architecture offices. In 2004 Martina Voser founded her own practice and is today partner of mavo Landschaften, a landscape office in Zurich which endeavours to find innovative approaches to the challenges of our time - always in search of site- and task-specific solutions. The research of her new chair that is part of the Institute for Landscape and Urban Studies (LUS) at the Department of Architecture at ETHZ focusses on how to adapt the Swiss cultural landscape to the challenges of the climate change.
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- Eugen Brühwiler** Eugen Brühwiler was Professor of Maintenance and Safety of Existing Structures at EPFL from 1995 to 2023. His teaching and research have focused on the engineering of existing structures and the use of ultra-high performance fibre cement composites (UHPC) for the rehabilitation of reinforced concrete structures. He is a consultant on numerous projects involving existing bridges and buildings, often of high cultural value.
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- Rui Póvoas** Rui Póvoas Emeritus Professor - University of Porto (FAUP). Currently, his research interests focus on studying 19th and 20th century buildings within the scope of Construction History and establishing sustainable intervention methodologies for their

retrofitting and conservation. Guest speaker at several scientific events and a member of various scientific organisations and committees, namely, DOCOMOMO – International Specialist Committee on Technology (ISC/T – co-chair), among others.

**Cristiana Chiorino** Cristiana Chiorino is an architect and PhD at the Politecnico di Torino, with a master's degree in Sauvegarde du patrimoine bâti moderne et contemporain from the Institut d'Architecture of the University of Geneva. She has collaborated with the Pier Luigi Nervi Project Foundation as a consultant for the protection of the Italian engineer's heritage since 2008 and in 2023 she took part in the drafting of the Conservation Plan of Torino Esposizioni, KiM - Getty Foundation. Since 2007 she has been a member of Docomomo Italia, having been a member of the board of trustees from 2011 to 2013.

**Francesco Romeo** Francesco Romeo is Full Professor of Construction Science at the Department of Structural and Geotechnical Engineering (DISG) of Sapienza Università in Rome. A graduate in Civil Engineering from Sapienza Università, he holds an MSc in Engineering from Johns Hopkins University and a PhD from DISG. His research interests include the dynamics and morphology of structures, with a focus on the structural heritage of the twentieth century. Among recently funded projects as Principal Investigator: "Seismic assessment and structural monitoring of the Palazzetto dello Sport in Rome", Municipality of Rome; "Flaminio Stadium Conservation Plan", KiM - Getty Foundation.

**Ruggero Tropeano** Ruggero Tropeano, architect, graduated from the ETH Zurich, where he was a lecturer and associate professor from 1991 to 1999. The author of several publications on Swiss furniture of the thirties, Le Corbusier and Jean Prouvé. Since 2009 he has worked in the studio Ruggero Tropeano architetti. Since 1986 he has been the architect responsible for the Zurich Technopark and the conversion of the Sulzer Escher-Wyss site, followed by several restorations of buildings of the Modern Movement in Switzerland and Germany, notably the Henry and Emma Budge House in Frankfurt (by Ferdinand Kramer, Werner Moser and Mart Stam, 1928) and the Bauhaus in Dessau (by Walter Gropius, 1926).

**Carlo Nozza** Graduated in Architecture from the Politecnico di Milano in 1997; since 1998 he has been practising freelance. From 2005 to 2011, he was a lecturer in architectural design at the Politecnico di Milano. In 2014, he completed a Postgraduate Master's Diploma at the Politecnico di Milano. In 2019, he completed his PhD. Since 2019, he has been a post-doc assistant, lecturer and researcher at the USI-Accademia di architettura. In 2024, he was SNSF Exchange Program Fellow. He is the author of various publications on architectural design, the history of construction and energy retrofit of historical and modern architecture.

A graduate in architecture from the Politecnico di Milano in 1998, he is completing a master's degree in Restoration of the Cultural Heritage at the Politecnico di Milano. Since 2000 he has worked freelance, mainly in restoration work. From 2010 to 2018 he was assistant in the Construction and Technology area at the USI-Accademia di architettura, and in the academic years 2013-2014 and 2017-2019 a collaborator of its Reuse Design Studio. Since 2018 he has been a lecturer and researcher. He is the author of several publications on the history of construction and the restoration of historic and modern architecture.

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