Architecture in the second half of the 20th century: forms of expression and the “environmental issue”

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Highlights

Conservation and energy retrofit issues in the second half of the 20th century architectural heritage.
Responsible approach based on the analysis of the relationship between architectural language and technology.
Attention to detail, materials, and original construction techniques may lead to design proposals which attempt to respect the intentions of its authors, preserving the features which are holders of cultural values.

Abstract

Numerous architectural works from the second half of the 20th century, having a recognized cultural value, turn out to be quite problematic when observed in the scope of today’s unavoidable principle of environmental responsibility. Though representing an energy “issue”, they are at the same time a “high-level witness” in the context of architecture, whose original form of expression, language, and perception must be preserved as intact as possible. This paper critically presents three interventions on architectures in Turin by Domenico Morelli that allow us to make a series of general observations concerning the relationship between preservation and adaptation of works from the second half of the 20th century.

Keywords

Building envelope, Energy efficiency, Building refurbishment, Preservation of the architecture of the second half of the 20th century

1. INTRODUCTION

If the “window” and “building envelope” topic should in our opinion become a prerogative in terms of inalterability – especially in the renewed use or rehabilitation of the architecture from the second half of the 20th century – and thus should be considered an unavoidable perceptive characteristic of the preservation action – as much as distribution, material, and construction procedure – then the choice to write this paper concerning some of the architectural works by Domenico Morelli – “an important witness within the context of Turin architecture” [12] – may allow an original reasoning, in which the technological and formal elements of composition within a cognitive process related to the works and their author may acknowledge and
relate to each other with a strong awareness, not only in response to functional demands, but also and above all to recognize and safeguard their expressive value.

In an analytical and objective comparison between the original 1960s documentation (design drawings and reports, archive material) and the results of recent “transformations” applied to the three case studies analysed: – the former SIP (hydroelectric company of Piedmont) office building, Palazzo Nuovo and, conclusively, the RAI (Italian public radio and television network) skyscraper, all located in Turin – we wish to trace a path of late Post-war designer’s architecture alternative to the simplistic adoption of common areas of intervention “by comparable typologies”, searching for the safeguard of architectural language codes on a “case-by-case” basis, even in response to recent regulations and standards.

The cases of existing building heritage – historical and contemporary – rehabilitation, supported by financial incentives, no longer allow to disregard retrofitting in terms of energy, which may lead to improvements in case of constructions with a minor architectural quality but – oppositely – risk becoming a factor of alteration and loss of identity for the architectural structures that – although being problematic from an energy and environmental perspective – have indeed a cultural and historic value.

The case studies presented hereinafter may be considered significant due to certain critical reflections on the architectural forms of expression in the second half of the 1900s, and in terms of compliance with design requirements related to environment safety. As well as sharing the same author (Domenico Morelli), the same urban context (Turin), and the same quasi-contemporary style, the works have in common both formal and expressive quality of the building envelope, with an exposed metal structure, large doors and windows, and continuous façade systems.

Given their relevance to the Italian architectural heritage, the three works have been selected and included in the national census of architecture from the second half on the 20th century by DGAAP (general directorate of contemporary art and architecture, and city suburbs) of MiBACT (Italian Ministry of cultural heritage, cultural activities, and tourism).

The “expressive form” of the SIP building and Palazzo Nuovo building envelopes appears changed following energy efficiency improvement work, though carried out following two different design philosophies:

• in the first case, there is an almost complete defiance of the original language codes, and in particular of the innovative technology of the building envelope, resulting in a severely deformed building, even on a
The third case study concerned the RAI headquarters in Turin, a work of established cultural value, considered one of the most important works by Aldo Morbelli and Domenico Morelli, currently abandoned but object of attentions for a possible rehabilitation intervention in the near future. The building currently has a similar appearance to its original form, and the building envelope is still unchanged. The matter of relationship between preservation and retrofitting of energy performance is currently open and not easily solvable.

2. SIP OFFICE BUILDING OF TURIN

“The use of warm and precious materials, the meticulous study of colours – often elementary and bright – the affectionate and joyful care for every single technological detail – from the light sources to the air conditioning system and the acoustic system – humanize this interior, they make it lived-in. At this level, technology ceases to be the topic of an engineering manual, and rises to the status of expression medium” [1]. The monobloc designed for the SIP (hydroelectric company of Piedmont) offices in Via Avogadro formalizes an advancement in the architectural production by Domenico Morelli, and in this specific case even in the positively established relationship with the existing former headquarters, 500 metres away, designed by Carlo Angelo Ceresa, marking an almost unique contrast and result in Post-war Turin.

In fact, the plan – as well as guaranteeing good sunlight exposure to both façades – allowed the creation of a rupture on the front facing the Turin Citadel, distinguishing the new construction from the existing elements.

Morelli distributed the wing of offices across a rectangular plot of land along the main north-south axis, leaving the central section for the industrial area, but also introducing an innovative exposed load-bearing structure (designed by Eng. A. Antoldi), a metal skeleton with “the walls made of light, vertically undulating metal alloy, with the exception of the two stair blocks and the services coated with clinker, of a cold yet harmonic blue-green colour” [2].

The façade is distinguished by an extruded steel load-bearing structure, patrimonio architettonico italiano, le tre opere sono state selezionate nel Censimento nazionale delle architetture del secondo Novecento a cura della Direzione Generale Arte e Architettura contemporanee e Periferie Urbane (DGAAAP) del MiBAC. I caratteri espressivi degli involucri degli Uffici SIP e di Palazzo Nuovo si presentano mutati a causa di interventi migliorativi delle prestazioni energetiche, ispirati però da differenti esigenze di progetto: • nel primo caso, si assiste ad una negazione quasi totale dei codici linguistici originari e, in particolare, dell’innovativo sistema tecnologico dell’involucro edilizio, restituendo un edificio gravemente deformato anche nei caratteri percettivi; • nel secondo caso, si sperimenta un compromesso, oggetto di salvaguardare gli elementi figurativi dell’involucro edilizio originale, in buona parte sostituito nelle sue componenti principali. Tuttavia l’attenzione dei nuovi progettisti al rispetto dei caratteri dell’opera è stata in parte disattesa nella fase esecutiva, peraltro affidata ad altri soggetti attuatori, per una mancanza di continuità e coordinamento fra progettazione e direzione lavori.

Del tutto differente è invece il terzo caso studio, la sede RAI di Torino, una delle più importanti opere di Aldo Morbelli e Domenico Morelli, dismessa dal 2013, e oggetto di attenzione per un possibile recupero edilizio. L’edificio, allo stato attuale, si presenta ancora quasi del tutto integro nei caratteri percettivi, l’involucro edilizio è rimasto inalterato. Il dibattuto rapporto tra conservazione e adeguamento alle prestazioni energetiche, resta una questione aperta e di non facile risoluzione.

2. PALAZZO PER UFFICI DELLA SIP A TORINO

“L’uso di materiali caldi e preziosi, lo studio accuratissimo dei colori, spesso elementari ed accesi, l’attenzione prestata con affetto e simpatia ad ogni particolare tecnologico, dalle fonti luminose al condizionamento dell’aria e agli impianti acustici, umanizzano questi interni, li rendono vissuti. La tecnologia a questo livello, cessa d’essere argomento da manuale ingegneresco, assurge a strumento d’espressione” [1]. Il monoblocco dei nuovi Uffici delle SIP (Società Idroelettrica Piemontese) in via Avogadro sancisce uno scarto in avanti nella produzione architettonica di Domenico Morelli, in questo specifico caso anche nel rapporto risolto in positivo con l’antica sede esistente, a 500 metri di distanza, opera di Carlo Angelo Ceresa, segnando un contrasto e un risultato pressoché unici nella Torino del Dopoguerra.

La disposizione planimetrica infatti, oltre a garantire un buon soleggiamento delle due facciate, consente di creare una rottura...
protected only on the sides on the ground floor with stone slabs, with a serizzo granite base between each load-bearing element for an improved resistance to wear. At the top floors the walls have insulating panels clad with anodized aluminium, which “[…] represent the most relevant decorative element of the entire work; perhaps it is due to the profile pureness of these parallel rings – with a light and shadow effect that is the result of the trapezoid contour of the slabs composing them – that is the cause of the aerial structure effect”, as we can read in the design report of 1957 [3]. In the staircase block, the structure is a metal skeleton integrated in the walls, whilst the external envelope is made of enamelled blue-green klinker.

The building offers very interesting and particularly innovative solutions (standardization of the construction system, component modularity, dry assembling of the building envelope panels), with special attention to construction details that reduce most of the recurring technical issues related to buildings of this kind, such as thermal bridges and condensation.

“The 1.63 m window module has been installed in relation to the dimensions of the room as a whole or to the possible combinations following different uses, given the purposely designed movable walls. […] Therefore, the factors accurately controlled were the rationality of workspaces, the frequency of motion along the horizontal and vertical plane, the elimination of causes of disturbing noises, the uniformity and adjustment of natural and artificial light, temperature adjustment, the hygrometric layer, and the air recirculation within the environment over the different seasons” (Project report, 1957) [3].

In December 1951 Morelli wrote to Gio Ponti to have direct information concerning the Sculpontia pivoting wooden window, with the Venetian blind interposed between the double glass [3]. The type of window the architect would choose was very similar, but the final material used for it would be anticrodal [4], a special type of aluminium, silicon, magnesium, and manganese alloy that increases corrosion resistance, manufactured by the company L.L.L. (Lavorazione Leghe Leggere), with a particular colour recalling the white hue of silver and the shininess of chrome and nickel: “The broad glass surface of the façade was made of anodized anticrodal windows that needed to respond to high aesthetic demands as well as functional requirements, such as a high thermal and sound insulation capacity, as well as the insertion of Venetian blinds for protection from sun rays” [5].

In the 1957 project report [3] it is stated that: “The window’s rotation direction has been adjusted depending on the different sunlight exposure conditions of the façades, with the possibility to screen the sun rays in a suitably gradual manner by means of the Venetian blinds, contained and moving between the
double glazing that the window are equipped with, even when the latter are open. […] Sound and thermal insulation has been addressed, in the top section, by means of double-glazing laid using special rubber splines. The bottom section features, along with the outer decorative element made of anodized aluminium sheet, prefabricated panels with a 50-mm insulating layer of glass wool embedded between two sheets of asbestos, and suitably latched to a wooden frame coating the windowsills, all within a 6-cm thickness”.

In 2003, the building underwent a rehabilitation operation concerning mainly the interior lay-out and the building envelope. The open-space areas were all divided in offices, with the exception of two floors. The building envelope, subject to meticulous design choices by Morelli, currently stands completely transformed by the following interventions:

- complete removal of windows and realisation of a new continuous façade juxtaposed to the original opaque envelope;
- coating of the exposed metal structure and of the opaque envelope of the stairwell with glossy white sheet metal slats;
- new serizzo stone cladding of the raised floor.

As may be observed upon comparing the original condition and the current condition (Figs. 1-2), the operation has drastically changed the aesthetic features of the building, changing also the relation with the near and coeval Gualtiero Casalegno residential building. The new continuous façade features a modularity that respects the original design only in terms of the sill level. The glass modules composing it, superimposed to the opaque parts of the original envelope (sill and head), have completely modified the original composition of full and empty spaces, altering the existing relationship between the horizontal lines of the façade and the vertical frame of the exposed metal structure. Moreover, a new white box profile sheet changes the section of the structural pillars, making them stand out over the glass-covered continuous façade. Therefore, one of main characteristics of the building is lost: one of the first-ever examples of exterior metal carpentry in Italy [6], modified in this way, becomes “invisible”.

It must be underlined that an alternative more respectful of the aesthetic-technological concept by Morelli would have certainly been possible, also because the original solution already included a rather thick double window with integrated solar screens (already sufficient to avoid overheating of the interior spaces).

Replacing the existing doors and windows with elements having a similar design, dimensions, and opening system (rotation on the central vertical axis) would have thus been easily taken into consideration.
In the rehabilitation interventions carried out on the architecture of the second half of the 20th century the use of new windows complying to new standards turned out to be in most cases distortive of the expressive traits and choices of their designers (Fig. 3).

In the case of the former SIP offices the construction details adopted by Morelli, due to their thickness, would have allowed an eventual windows replacement with adequate performaces, safeguarding the distinguishing features of the work.

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Figure 1. Domenico Morelli, SIP Office Building, Turin, 1951-57 (with T. Finzi; structure by A. Antoldi; construction company: Rain-eri). The face of the prism overlooking Via Promis is distinguished by the vertical stair block [2].

Figure 2. Domenico Morelli, SIP Office Building, Turin, 1951-57 (with T. Finzi; structure by A. Antoldi; construction company: Rain-eri). Comparison between original condition (left) [2] and current condition (right) (photographs by the authors with P. Merlo, 2018).
Figure 3. Domenico Morelli, SIP Office Building, Turin, 1951-57 (with T. Finzi; structure by A. Antoldi; construction company: Raineri). Comparison between original condition (left) [2] and current condition (right) (photographs by the authors with P. Merlo).
3. “PALAZZO NUOVO”

In 1958 the University of Turin announced a competition for the design of the new Social Sciences (Law, Literature, Philosophy, and Educational Sciences). The co-winners were Gino Levi Montalcini and the group including Sergio Hutter, Felice Bardelli and, indeed, Domenico Morelli – shortly after the completion of the SIP office work. The four developed the design together and the building was completed in 1968. With an 8,200-m² (88,264-ft²) floor area and a 147,700-m³ (about 5,216,000-ft³) volume, the new university building – named “Palazzo Nuovo” (new building) – includes two main blocks of different heights, laid out in parallel and connected down the midline by sleeves containing the stairs and bathrooms, thus leaving two courtyards internal to the building. The block overlooking Via S. Ottavio (Fig. 4) is 28 m (93 ft.) tall, in a slightly backwards position compared to the boundary of the plot, and is connected to the ground floor by means of two 500-seat lecture halls designed as independent spaces and projecting on the same street. The upper floors host two smaller, 50-seat lecture rooms as well as the offices and services for each of the 4 faculties. The block overlooking Via Roero di Cortanze is 14 metres (46 ft.) tall and hosts 8 150-seat lecture halls laid out in a comb shape, whose presence is noticeable on the façade by means of the emerging volumes. The building is distinguished by its metal structure and façade system – composed of light and insulated infill panels, coated with metal sheet at the window sill and head – as well as the double-glazed aluminium windows and brise-soleil (with the blades rotating on the vertical axis). The building, named “Palazzo Nuovo” clearly stands out from the surrounding historic context – the construction is close to the historic city square Piazza Vittorio – both in terms of scale/volumetric composition and in terms of the exposed elements and the modern envelope materials.

Most recent renovation work on the building was done in 2013-14, designed by Società SibillAssociati srl (Genova). The main scope was improving energy efficiency, in line with the energy use reduction policy launched by the university, thanks to the following intervention:

- the complete refurbishment of the main façade, which were dismounted and substituted with prefabricated panels with high performance windows and integrated shading system (Figs. 5-6);
- the application of an insulation coating on the opaque portions of the building envelopes for both blocks;
- ventilated façades were built on the ends of the two main blocks;
- solar thermal, PV, and rainwater collection systems were integrated.
The improvement of energy performance has been – as in many other cases – the main reason for renovation work on the building. The building has subsequently undergone expansion work (construction of the library on an underground floor of the inner courtyard) and functional upgrade (i.e. the fire escape stairs, removal of asbestos), but it would have mostly required a planned and efficient maintenance and, perhaps, an all-encompassing recovery design, able to integrate the “energy” issues with cultural, functional, and layout issues. The recent intervention and the task given to the designers, on the other hand, was limited to a building envelope and to the energy saving objectives, avoiding the possibility to design an overall refurbishment.

Compared to the original condition, in this case the exposed metal structure – that recalls the innovative SIP office solution – turns out to be less protruding. Moreover, the new façade is glossy and reflective, offering the image of the Mole Antonelliana monument in front of it (Fig. 3). The remaining opaque portions of the building have been insulated using rendered EPS panels that, increasing the façade’s thickness.
Figure 5. Palazzo Nuovo, comparison between images before the intervention (left, from Società SibilliAssociati srl, Genova) and after the intervention (right, photos of the authors).
Upon observing the result of the operation, the technical struggle in resolving certain construction issues emerges. These may be due both to the “lotting plan” and partial nature of the work performed (a thermal insulation coating was applied, but the metal railings and the roof cladding were not subject to any restoration or maintenance work), as well as the intermediate steps between a complex design (even in terms of partitioning the continuous insulation and the large amount of thermal bridges) and the actual execution of work.

4. RAI HEADQUARTERS SKYSCRAPER IN TORINO

The RAI (national public broadcasting company of Italy) headquarters skyscraper (Fig. 7), located in Via Cernaia, was built between 1962 and 1968 almost at the same time as the other RAI offices in Rome and Milan, as part of an impressive infrastructure program of the company to host plants, administrative headquarters and central and regional offices. The project by Aldo Morbelli and Domenico Morelli, with Sergio Hutter, Domenico Bagliani and Fabrizio De Miranda (for the structures), is innovative in many aspects and represents an experiment “able to translate the symbols of the process of economic expansion and social transformation taking place in Italy into architectural codes” [14], also thanks to the choice of a steel structure, functional to the needs of construction times and costs. The building has a complex volumetric configuration, result of the requests of the client for maximum exploitation of the site and of the relationship with the historical urban area in which it is located. The main volume, the so-called “skyscraper”, overlooks the XVIII December square, set back from the square and hosts all the offices. The integration with the historic Via Cernaia, characterized by eclectic architecture of the second half of the nineteenth century with heights of about 20 m, is solved through a volume with dimensions proportionated to the efficient maintenance and, perhaps, of a comprehensive project capable of integrating the “energetic” with the figurative, functional, distributive. The recent intervention and the incurring data on the progetts were in fact limited at the sole involving the building and all the important parts for the obiettivi of energy savings, not permitting the control of all the other components of the opera. Rispetto alla condizione originaria, la struttura metallica a vista – che rimanda all’innovativa soluzione degli uffici SIP –, risulta in questo caso meno sporgente. Inoltre la nuova facciata appare lucida e riflettente, restituendo l’immagine dell’antistante Mole Antonelliana (Fig. 5). Le restanti porzioni opache dell’edificio sono state isolate utilizzando pannelli isolanti in EPS intonacati che, oltre all’espressione della facciata, hanno una colorazione diversa da quella originale. Osservando il risultato dell’intervento emerge la difficoltà tecnica nella risoluzione di alcuni nodi costruttivi. Ciò può essere dovuto sia alla “lotizzazione” e parzialità delle opere eseguite (si realizza il cappotto termico ma non il recupero e la manutenzione delle ringhiere metalliche e delle faldobrezie), sia ai passaggi intermedi tra un progetto complesso (anche nella risoluzione della continuità dell’isolamento e dei numerosi ponti termici) e l’effettiva esecuzione delle opere.

4. GRATTACIELO PER UFFICI RAI A TORINO

La sede RAI di via Cernaia (Fig. 7) fu costruita tra il 1962 e i 1968 quasi contemporaneamente alle altre sedi di Roma e Milano, nell’ambito di un imponente programma di infrastrutturazione della giovane azienda per ospitare stabilimenti e sedi amministrative e redazioni centrali e regionali. Il progetto di Aldo Morbelli e Domenico Morelli, affidati da Sergio Hutter, Domenico Bagliani e Fabrizio De Miranda (per le strutture), è innovativo sotto
the context, also characterized by arcades, which respect the composition of the built surroundings [15], but with a clearly modern aspect. Within a varied urban context, on the edge of the nineteenth-century city, the architects decided to «create a complex that for materials and architecture clearly denoted the new technical and functional requirements» and «maintained the architectural lines within the limits of maximum simplicity and traditional compositions, in order to disturb as little as possible the valuable architectures still preserved in the surrounding environment». The building envelope, divided into modules with a structural skeleton, is mainly characterized by a curtain wall system in aluminum and double glazing. «The grintel, a special alloy of aluminum and silicon, which takes on a beautiful purple-gray color, has also been used to cover the beams towards the facade, to cover joints and in other internal parts” [15]. The curtain wall was custom designed with the Alsco Malugani company, using prefabricated elements, within a complex project, which provides homogeneous solutions from the point of view of architectural language, but diversified by «rhythm» and modularity of the openings in the different parts of the building.

The RAI headquarters building is nowadays closed and unused, also due to problems linked to the presence of asbestos in some internal components. The building is of considerable interest and occupies a strategic position in front of the new Porta Susa railway station (officially opened in 2013). The future rehabilitation project should inevitably consider the adaptation to new functions and energy-environmental requirements, necessitating interventions on the building envelope.

The RAI skyscraper, as classified as a “recent building” in the urban plan PRGC [17], can be subject to building renovation [18], an intervention that would entail the need to satisfy numerous minimum performance requirements for the entire building system and for the individual components subject to modifications [19].

For example, according to the Ministerial Decree DM 26-06-2015, the portions of the façade subject to renovation should reach, after the intervention, a thermal transmittance U, considered inclusive of thermal bridges, lower than 1.9 W/m²K, from 1 July 2015 and 1.4 W/m²K from 1 January 2021. It is useless to observe how the current and original building envelope appears to be inadequate, and should be redesigned.

It is evident, as in the other case studies illustrated, that energy retrofitting imposes choices on the building envelope for which it is possible to identify different scenarios according to the levels of intervention. Certainly an intervention that, while guaranteeing the safety, in particular concerning the

numerosi aspetti e rappresenta una sperimentazione “in grado di tradurre in codici architettonici i simboli del processo di espansione economica e trasformazione sociale in atto nel Bel Paese” [14], grazie anche alla scelta della struttura in acciaio, funzionale alle esigenze di tempi di realizzazione e costi. L'edificio ha un’articolazione volumetrica complessa, risultato delle esigenze della committenza di massimo sfruttamento del lotto e della relazione con il tessuto storico in cui si inserisce. Il volume principale, il cosiddetto “grattacielo”, si affaccia sulla piazza XVIII Dicembre, in posizione arretrata rispetto alla piazza e ospita tutti gli uffici. L'integrazione con la storica via Cernaia, caratterizzata da architetture eclettiche della seconda metà dell'Ottocento con altezze di circa 20 metri, è risolta attraverso un volume prospettico proporzionato al contesto, anch'esso caratterizzato da portici, che rispetta la composizione del costretto circostante [15], ma con caratteri chiaramente moderni. All'interno di un contesto urbanistico disordinato, al limite della città ottocentesca, i progettisti decisero di «creare un complesso che per materiali ed architettura denunciasse chiaramente le nuove esigenze tecniche e funzionali» e di «mantenere le linee architettoniche nei limiti della massima semplicità e tradizionalità compositive, allo scopo di turbare il meno possibile quel poco che resta di pregio nelle ambienti circostante [15]». L’involucro edilizio, scaduto in moduli dallo scheletro strutturale, è prevalentemente caratterizzato da un sistema di facciata continua in alluminio naturale e doppi vetri, « è stato anche impiegato nella copertura della travi di riva, nei coprigiunti e in altre parti interne, il grintel una lega di alluminio e silicio, che assune un colore grigio violaceo di bell’effetto » [15]. Il curtain wall è stato progettato su misura con la ditta Alasco Malugani, ricorrendo a elementi prefabbricati, in un progetto complesso, che prevede soluzioni omogenee dal punto di vista del linguaggio, ma diversificate per «ritmo» e nelle modalità di apertura nelle diverse parti della costruzione. La sede RAI si trova oggi in stato di abbandono, anche per problemi dovuti alla presenza di amianto. L'edificio è di notevole interesse e occupa una posizione strategica di fronte alla nuova stazione di Porta Susa (inaugurata ufficialmente nel 2013). Il progetto di recupero dovrebbe inevitabilmente confrontarsi con l’adeguamento a nuove funzioni e a requisiti energetico-ambientali, rendendo necessari interventi sull'involucro edilizio. Il grattacielo RAI, in quanto classificato come «edificio recente» nel PRGC [17], può essere oggetto di ristrutturazione edilizia [18], intervento che comporterebbe la necessità di soddisfare numerosi requisiti minimi prestazionali per l’intero sistema edifico-impianto e per le singole componenti oggetto di modifiche [19]. Per esempio, secondo il DM 26-06-2015 le porzioni di
operations of removal of asbestos, and the eventual reuse is more oriented towards the preservation of the building envelope respecting fully the compositional characteristics of the complex would be desirable. The conservation of the current building envelope, however, would probably prove to be incompatible with the performance levels required by the current energy saving and efficiency regulations, unless the new requirements are met by a new internal “envelope”. In this way the external alterations would be minimal and it would not even be necessary to verify the impact of the intervention with respect to the context.

Finding solutions, even within the complex and not too clear legislation on energy retrofitting, which allows to preserve the building envelope even without responding effectively to environmental issues, may not, however, prove to be the correct path from a point of view not only ethical but also economic, given the high maintenance and management costs required to maintain adequate levels of internal comfort. The considerable investment necessary for the rehabilitation and retrofitting the architectural complex would probably lead to exploring solutions that would allow to limit not only intervention costs but also management costs.

Another possible scenario would be the project of a new building envelope to replace the existing one which could respond to the environmental requirements required by the current legislation but in full compliance with the architectural language of the existing one (as in the case of Palazzo Nuovo). It is not an impossible scenario, it is certainly challenging and requires in-depth levels of knowledge of the existing building and recognition of the codes (and values) – of the architectural project and building technology and a careful approach to the respect of the original architecture.

Figure 7. The RAI headquarters seen from Piazza XVIII Dicembre, corner with Via Cernaia. Right: photo from Politecnico di Torino, “Roberto Gabetti” Library Archives, Morelli Fund, MRL_Photo RAI_1_3 Moncalvo; left: photo of the authors (2019).
Perhaps other intermediate ways between the two scenarios outlined could be viable but always with particular attention and in-depth analysis during the phases of knowledge and project and, above all, with the recognition of the value of the building.

The easiest way, that of the intervention of replacement of the envelope, regardless of the existing architecture and its context, almost as a new building (as in the case of the former SIP Offices), denying the original architectural features of historical and cultural values, is absolutely to be avoided.

5. CONCLUSIONS

The recent rehabilitation and retrofitting work on modern architecture of an acknowledged cultural value, and in particular on constructions built in the second half of the 20th century, shows, in some cases, how the lack of specific, critical attention and deep knowledge of the buildings (even upon comparison of the original and current condition) does not yet allow an identification of design proposals that are aware and respectful of the building characteristics.

In this sense the former SIP office case study is emblematic. However, other interventions, like the Palazzo Nuovo one, show design solutions which integrate the energy saving and the conservation issues.

There are a number of Turin architectures from the second half of the 20th century that are at “risk of intervention”: above all, we may mention the Palazzo del Lavoro by Pier Luigi Nervi, built on the occasion of the 100th anniversary of the Italian Unification in 1961, in a deep state of neglect for a number of years now.

But there is a long list of emblematic cases of relevant architectures that were once the icons of a city and of an age and are now hopelessly compromised, such as – by way of example – the Palazzo a Vela by Annibale and Giorgio Rigotti (which was also created for the 1961 Expo), transformed and altered in its perceptive traits in 2003, with the elimination of its original doors and windows frames, or the recent deformating building refurbishment of the Novitiate designed by Giorgio Raineri (1962-65, Turin), with the integration of an incompatible function: luxury housing.

There are no certain or univocal solutions to work on architectural heritage but, most certainly, the knowledge of the existent and the need to recognize (also through archive documentation) the elements that have contributed to the development and creation of the work (relationship with the context, relationship between architectural language and technological solutions, attention to detail, materials, and construction techniques) may lead to an improvement in awareness of the value of the architectural construction, thus...
allowing to safeguard it by means of renovation that is suitable and compliant with standards.

On the other hand, it would be necessary to also work towards adjusting often “indistinct” standards, perhaps effective for ordinary construction work, but that may turn out to be unsuitable for architecture recognized as cultural heritage.

6. REFERENCES