

## Giancarlo de Carlo's University Colleges in Urbino. Studies and analysis for the Conservation Plan

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**Abstract:** The contribution presents part of activities that have been carried out for the preparation of the Conservation Plan of the Giancarlo De Carlo's University Colleges of Urbino, funded by the Getty Foundation within the "Keeping it Modern" program in 2015. Starting from a comprehensive evaluation and understanding of the values that are represented in the complex, the Conservation Plan aims at establishing a "sustainable" management strategy, which means finding a "point of balance" between conservation and change, between an important cultural value, which has led to an international recognition, and the demands of everyday management.

Within the Conservation Plan, specific guidelines for the preservation of modern materials and architectural elements and a schedule of interventions, preventive activities and controls are being developed. This paper presents the first steps of the research, the results already achieved and the themes currently being discussed.

**Key words:** conservation plan, modern heritage, preventive conservation, heritage preservation, condition assessment.

### Las Residencias Universitarias de Giancarlo de Carlo en Urbino. Estudios y análisis para el Plan de Conservación

**Resumen:** Esta contribución presenta parte de las actividades que han sido llevadas a cabo para la preparación del Plan de Conservación de las Residencias Universitarias de Giancarlo de Carlo en Urbino, financiado en 2015 por la Fundación Getty dentro del programa "Keeping it Modern". El objetivo del Plan de Conservación es establecer una estrategia de gestión "sostenible", partiendo de una evaluación integral y la comprensión de los valores que el conjunto representa, lo que significa encontrar el "punto de equilibrio" entre renovación y conservación, entre el importante valor cultural que ha llevado a un reconocimiento internacional y las demandas de la gestión diaria.

Dentro del Plan de Conservación se están desarrollando recomendaciones específicas para la conservación de materiales y elementos arquitectónicos modernos y el calendario de intervenciones y actividades preventivas. Este artículo presenta los primeros estadios de la investigación, los resultados ya alcanzados y los temas que se están discutiendo actualmente.

**Palabras clave:** Plan de Conservación, patrimonio moderno, conservación preventiva, conservación del patrimonio, evaluación del estado de conservación.

#### Scope

—*The University Colleges of Urbino*

The University Colleges of Urbino, built by Giancarlo De Carlo between 1962 and 1983, are among the most significant and interesting architectural works of the post-war period. The Collegi are a huge construction, not far from the historic centre, where the Universities are located.

The complex covers over 62.000 square meters and consist of 5 "cores" (Colle, Aquilone, Serpentine, Tridente, Vela), each of which includes rooms (single or double rooms, with individual or shared bathrooms); "private" spaces used by small groups of students (kitchens, living rooms, terraces...); "public" spaces, with a specific function (classrooms, study rooms, a library, a canteen, indoor and outdoor theatres...) and spaces that are freely accessible and usable, such as the pathways and the common spaces.



**Figure 1.** - Aerial view. (Ph. Fulvio Palma).

The concept behind the project was incredibly modern: a university campus open to the city, provided with services and cultural activities, which citizens could access.

Nevertheless, these services have never been realized and the changes occurred in the last decades have led to a complete transformation of the requirements and needs. Some demands for change are based on prescriptive requirements (an adequate compliance to the current standards in terms of safety and energy efficiency should be guaranteed as well as the accessibility for people with disabilities) whilst some changes are required to adapt the building to new necessities, habits and ways of life (e.g. as there is an increasing number of foreign students, part of the complex is used as a guesthouse).

In addition, the preservation of materials and architectural elements is an issue which needs to be addressed urgently; also taking into account that some improvements that should be introduced to ensure a greater durability.

— *The Conservation Planning approach, concept and current applications at the international level.*

The ICOMOS Madrid Document "Approaches For The Conservation of Twentieth-Century Architectural Heritage" (ICOMOS ISC20C 2011- 2014) is, at this moment, the main reference for the conservation of modern architecture. The Document stresses the need for a full understanding of the building that is the essential reference for all the decisions about the care and conservation of the authenticity and integrity. Materials, architectural elements, technical equipment, but also interiors, furniture and associated art works should be identified and assessed, as well as the context (landscape and urban setting) and the intangible meanings (e.g. the historic, social, scientific or spiritual value) of the site.

Conservation does not exclude change (which is an essential component for transmission to the future of a living heritage) but any transformation should be carefully

weighted and based on appropriate management tools: a Conservation Plan should therefore be prepared before works start, to provide specific conservation policies to guide development and change.

The Conservation Plan has therefore been defined as: "a document which explains why a place is significant and how you will sustain that significance in any new use, alteration, repair or management (...) It is based on a very simple thinking process which starts with describing what is there, why it matters, what is happening to it and the principles by which you will manage it and then sets more detailed work programmes for maintenance, management, access, use or other issues" (HERITAGE LOTTERY FUND 2002).

The Conservation Plan fosters the change towards a "proactive" attitude, which requires conscious and careful evaluation, to prevent and control the impacts and includes a comprehensive study (historical research; analysis of the significance; condition assessment; analysis of the current and potential risks...) and sets the policies to conserve, manage and interpret the cultural significance identified in the site. The plan should also define the "limits of acceptable change", which means identify the significant parts of the heritage site, the areas where interventions are possible, the suitable uses and the conservation measures to be taken.

The Conservation Plan is a document rather new for southern Europe whilst it is quite diffused in the UK and in Australia, where that methodology was used for the first time and where there are already some important experiences on 20th Century architectural heritage (see the Sydney Opera House Conservation Plan, prepared for the first time in 1993 and revised several times since then; KERR 1993, 1999, 2003).

To test on a large scale the Conservation Planning approach for 20th Century architectural heritage the Getty Foundation launched in 2014 the "Keeping it modern" programme, an international grant initiative that supports the creation of conservation management plans that "guide long-term maintenance and conservation policies, the thorough investigation of building conditions, and the testing and analysis of modern materials" ([http://www.getty.edu/foundation/initiatives/current/keeping\\_it\\_modern/](http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/)). The program is part of the Conserving Modern Architecture Initiative (CMAI), a "comprehensive, long-term, and international program" whose goal is to advance the practice of conserving twentieth-century architecture, "through research and investigation, the development of practical conservation solutions, and the creation and distribution of information through training programs and publications" ([http://www.getty.edu/conservation/our\\_projects/field\\_projects/cm\\_ai/](http://www.getty.edu/conservation/our_projects/field_projects/cm_ai/)) and is directed to important buildings of the 20th Century, that have the potential to serve as model at the international level.

## Aims

### —The aims of the Plan

The Conservation Plan of the University Colleges of Urbino is currently being drafted (the completion is scheduled for March 2017), with a grant from the “Keeping it Modern” program. With that grant the outstanding architectural significance of the complex is recognised at the international level, as well as its potential to be a reference for the conservation of modern materials and architectural elements. Preparing that Conservation Plan is a big challenge and a chance to discuss whether a value-oriented approach is viable, when dealing with a huge brutalist building, raw materials and elements that, at first glance, all look the same and have no specific qualities.

Starting from a comprehensive evaluation and understanding of the values that are represented in the complex (and that include the architectural significance, the social value, the connection with landscape and the historic city, and the different meaning experienced everyday by the over 1100 students and workers that live, study and meet in those spaces), the Conservation Plan will develop an overall management strategy which includes several aspects (conservation procedures and guidelines, identification of new functions and uses, energy efficiency - to improve the indoor comfort and reduce the operating costs, facilities, new connections with the city...). In that context, the specific issues of the site will be considered (as the size of the complex, the need of working without driving away the students and the accessibility problems, since a large part of the complex is not accessible by vehicles...).

### —Conservation issues

The preservation of materials and architectural elements is a key point of the Conservation Plan.

The external facades of the complex are characterised by bricks and concrete, both used without plaster or other coating. From a conservative point of view, the fair-faced concrete slabs represent the main challenge.

In addition to the dimension of the elements (in some cases the thickness is less than 10 cm), that does not guarantee an adequate level of protection from the corrosion of the reinforcement, there are specific risk factors to be considered such as the different types of mix design, the environmental conditions (position, exposure, orientation), the quality of materials and construction; the surface treatments (some surfaces have been bush-hammered and this resulted in an increased porosity and, consequently, an increased vulnerability). Consequently, there are different levels of decay, ranging from a good state of repair to situations in which the corrosion of the reinforcement bars has already led to cracking,



Figure 2.- Collegio del Colle. View of walkways.



Figure 3.- Collegio dell'Aquilone. Façade.

delamination, spalling, and to a significant loss of material. The conservation of the wooden windows and doors frames is a second important issue: all the elements are custom-designed and almost all of those in the common areas are unique pieces. Since most of them are exposed to the weather, without any protection, some of them have already been replaced using materials that are more durable and easy to maintain whilst others are rotten and damaged and are liable to be replaced in the next future.



Figure 4.- Collegio del Colle. Decay of the window frames.



Figure 5.- Collegio del Tridente. The windows of the rooms.

## Research methodology

### —Data collection and risk assessment

As first step of the preparation of the Conservation Plan, a comprehensive registry of the architectural elements has been developed for a complete description of the building. In that phase all the frames (doors, windows, roof lights, panels) and all the concrete elements have been identified with an alphanumeric code, classified and related to a state of conservation.

Then, starting from a detailed analysis of the architectural elements, hazardous situations, issues and predictable damages have been identified, considering the use of each element. For example, the windows of the rooms required a special attention, since they are likely to be used more often those in the common areas, are not repaired from the weather and have a significant influence in determining the interior comfort conditions. It should therefore be discussed whether a simple maintenance work can be proposed or the energy efficiency can be improved, and how.

As said before, the preservation of the concrete slabs is a major problem and it is essential to identify the areas that require urgent attention and where a repair is needed; the

areas where a limited intervention is still possible; and the areas that are in a good state of repair and can be treated to prevent further damage. To identify the different materials and states of conservation a complete mapping of the main facades and a score evaluation of the external surfaces have been realized. The analysis has been integrated with the results from the diagnostic activities (carbonation depth analysis using phenolphthalein).

Starting from those maps, some areas for the pilot sites have been identified that are representative of the state of conservation of the concrete. Here, some promising conservation and repair techniques have been evaluated through several on-site tests, namely: protective treatments; to be applied on the concrete elements that are in a good state of conservation with preventive purposes; repair mortars; to repair the damages that has already occurred. Besides, for the areas that are “at risk” (because of the position, the shape of the elements, the material used...) or that are difficult to access for inspection and maintenance, “ad hoc” protection strategies, such as flashings or protective coatings, are being studied.

The same approach was used for the doors and windows frames: over 4300 elements have been analysed and over 180 types have been identified. A score, ranging from 0 to 4 defines the state of conservation of each element of the complex.

All the data produced have been imported into special software (PlANET Beni Architettonici) that have been expressly conceived for built heritage (BORGARINO, BENATTI, DELLA TORRE 2014) and that we are testing here for the first time on modern heritage.

The database has been organized taking into account and the size of the complex and the need to introduce as soon as possible a new management routine.

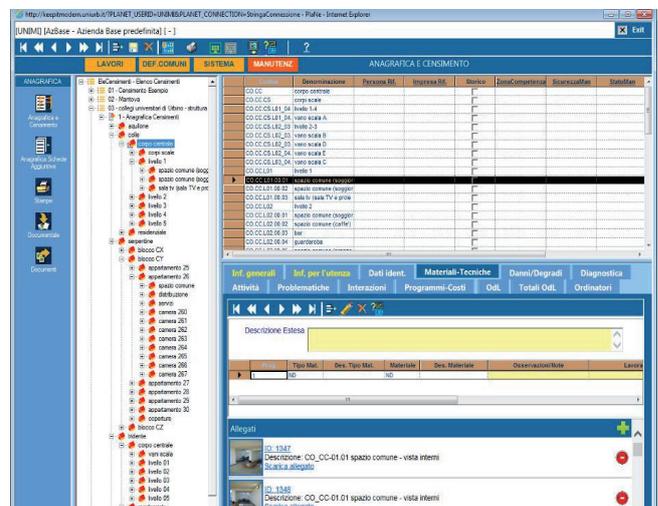
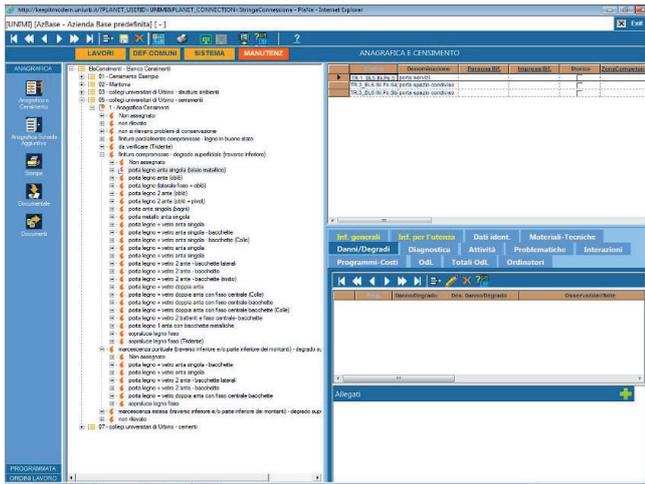


Figure 6.- PlANET Beni Architettonici. Description of the complex and data storage.

Some support tools have been used to speed up the data entry, such as word lists and abaci (that can be selected through a drop-down menu) to describe materials, decays and surface textures and structured forms of data query for an easy identification of the emergencies and planning of the everyday activities.

Doors and windows frames can be easily arranged by type and state of repair and each element can be related to documents, descriptions and images.



**Figure 7.-** PlaNET Beni Architettionici. Registry of the doors and windows frames.

The data collection will be incremented and updated over time, in subsequent studies and in the management routine. It is important that the site managers, that every day take care of the complex, have an active role in the implementation of the management routine, and the availability of updated, reliable and easily accessible data is therefore essential.

### —The “care program”

The data collected in the first stage are being used to realize a “maintenance plan”, defined “Care Program” to emphasize the priority that is given to prevention, controls and “soft” actions.

Within the “Care Program” conservation guidelines are being prepared for concrete elements and frames; the document will suggest repair techniques, conservation and preventive actions to be performed periodically (e.g. regular maintenance of wooden doors and windows, periodic renewal of the protective coating applied on concrete to ensure the conservation of the elements over time...).

Then, a schedule of activities will be established that includes: urgent maintenance works; limited repairs; preventive actions and controls to be performed periodically. Finally, a “user manual” addressed to the students will provide a presentation of the complex, precise instructions for a respectful use and forms for reporting anomalies, problems and maintenance needs.

## Discussion

That plan is prepared by applying to the Conservation Plan the methodological approach established in the studies on preventive conservation (in the international context, see the UNESCO chair on Preventive Conservation, Monitoring and Maintenance of Monuments and Sites, established at the Catholic University of Leuven in March 2009 and recently confirmed until 2020 and the PRECOM3OS network), to include care into a comprehensive management strategy.

An effective conservation, based on prevention and daily maintenance can only be achieved through an integrated approach, knowledge-based and consistent with management and change.

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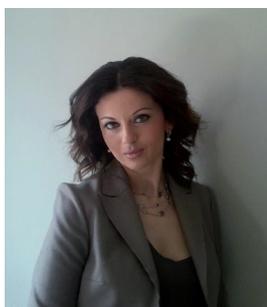
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## Bibliography

- ALLAN, J. (2007). “Points of Balance”. *Journal of Architectural Conservation*, 13:2, 13-46.
- BORGARINO M.P. (2016). “Giancarlo De Carlo’s Urbino University Colleges: A conservation management plan for long-term maintenance and sustainable use of the complex”. In VAN BALEN K. & VERSTRYNGE E. (eds.), *Structural Analysis of Historical Constructions – Anamnesis, diagnosis, therapy, controls*, London: Taylor & Francis.

- BORGARINO M.P., BENATTI E., DELLA TORRE S. (2014). "PlaNet Beni architettonici, uno strumento per la conservazione programmata del patrimonio". In DELLA TORRE S. (ed.), *ICT per il miglioramento del processo conservativo. Proceedings of the International Conference Preventive and Planned Conservation*, Firenze: Nardini Editore, 13-29.
- CLARK K. (2001). "Preserving What Matters: Value- Led Planning for Cultural Heritage Sites". *Getty Conservation Institute- Newsletter*, n. 16: 3.
- CLARK K. (2005). "Conservation Plans... a benefit or a burden?". *Building Conservation*, <http://www.buildingconservation.com/articles/consplans/conserves.htm> [last visit date 05/04/2017]
- DANN N., WORTHING D., BOND S. (1999). "Conservation maintenance management – establish a research agenda". *Structural Survey*, Volume 17, Number 3, pp. 143 – 153.
- DELLA TORRE S. (ed.) (2014). *La strategia della Conservazione programmata. Dalla progettazione delle attività alla valutazione degli impatti*. Proceedings of the Preventive and Planned Conservation Conference vol.1, Nardini: Firenze.
- DOMINGO M., MUÍÑA I. (eds.) (2011). *Intervention approaches in the 20th Century architectural heritage*. Proceedings of the International Conference CAH20thC, Madrid.
- HERITAGE LOTTERY FUND (1998). *Conservation Plans for Historic Places*.
- HERITAGE LOTTERY FUND (2002). *Conservation Management Plans. A guide*.
- KERR, J.S., (1993). 2nd edition 1999, 3rd edition 2003), *Sydney Opera House: an interim plan for the conservation of the Sydney Opera House and its site*, Sidney: The Sydney Opera House Trust, NSW.
- KERR, J.S., (2000). *The conservation plan (7th edition)*, Australia ICOMOS.
- KERR, J.S., (2004), *Conservation plan: a guide to the preparation of conservation plans for places of European cultural significance*, Sydney: National Trust of Australia (NSW).
- MACDONALD S., NORMANDIN K., KINDRED B. (eds.) (2007), *Conservation of modern architecture*, Shaftesbury: Donhead.
- MACDONALD, S., GAIL O. (eds.) (2013), *Conserving Twentieth-Century Built Heritage: A Bibliography* (2nd ed.). Los Angeles: Getty Conservation Institute.
- ORGEIX E., CASCIATO M. (eds.) (2012). *Modern architectures: the rise of a Heritage*. Wavre: Mardaga.
- VAN OERS, R.; HARAGUCHI S. (eds.) (2003). *Identification and Documentation of Modern Heritage*. World Heritage Papers n. 5, Paris: UNESCO World Heritage Centre.
- WORTHING, D., BOND S. (2008; 2nd edition 2016), *Managing built heritage. The role of cultural significance*. Oxford: Blackwell Publishing.
- ICOMOS ISC20C International Scientific Committee on Twentieth-century heritage (2011- 2014). *Approaches For The Conservation of Twentieth-Century Architectural Heritage*.
- Websites:  
<http://www.collegiurbino-decarlo.it> [last visit date 20/02/2017]  
[http://www.getty.edu/conservation/our\\_projects/field\\_projects/cmait/](http://www.getty.edu/conservation/our_projects/field_projects/cmait/) [last visit date 05/04/2017]  
[http://www.getty.edu/foundation/initiatives/current/keeping\\_it\\_modern/](http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/) [last visit date 05/04/2017]  
<http://www.precomos.org> [last visit date 20/02/2017]  
<http://www.icomos-isc20c.org> [last visit date 20/02/2017]



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