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From "Baukultur" to "Umbaukultur"

A Critical Framework for Adaptive Reuse

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Abstract

This paper develops within the framework of the Swiss National Science Foundation research project *From "Baukultur" to "Umbaukultur". From a culture of demolition and replacement to a culture of care and repair*, conducted at the Institute for Sustainable Architecture and Technology (IAST) of the Academy of Architecture in Mendrisio. The study aims to contribute to the ongoing discourse on adaptive reuse by proposing a critical framework grounded in shared values and cross-disciplinary strategies. Drawing on the "waste hierarchy" established by European Directive on waste management, and on conservation theories developed in heritage preservation, the paper explores how a similar hierarchy can guide architectural practice towards minimal intervention and maximum socio-environmental benefit. By analyzing the principles of minimal intervention in conservation theory and cross-referencing them with methodologies from other sectors, the research proposes a theoretical model for adaptive reuse structured around three levels of action: *reduction*, focusing on behavioral change, maintenance, and reprogramming; *reuse*, involving conversion and redesign; and *recycling*, encompassing material and formal transformation. This hierarchy promotes a paradigm shift from the current throwaway-culture of the construction industry to one centered on care, preservation, and sustainable transformation. Ultimately, the paper advocates for the establishment of a shared value system, a theory of most minimal intervention and most positive effects, as foundation for future policies and practices in architectural reuse.

Keywords: Baukultur, Umbaukultur, Minimal Intervention

Introduction

This contribution develops within the framework of a research project entitled *From "Baukultur" to "Umbaukultur". From a culture of demolition and replacement to a culture of care and repair*, funded by the Swiss National Science Foundation (SNSF) under the NRP 81 research program and conducted by the group led by Prof. Muck Petzet at the Institute for Sustainable Architecture and Technology (IAST) of the Academy of Architecture in Mendrisio. The research project aims to foster dialogue among different perspectives, professionals and academics working daily across various research fields, with the goal of exploring possible strategies, scenarios, and perspectives for improving the quality of the built environment. The project investigates the causes of the replacement culture

that characterizes the construction sector today, analyzes its consequences and costs, and identifies tools to promote behavioral change towards a culture of care. The contribution presented at this conference serves as a bridge-reflection between the long research process developed within the chair of Sustainable Design, its teaching and research activities, as well as the related events of the past decade, and the goals and interdisciplinary context of the research project funded by the Swiss National Science Foundation. The contribution seeks to verify if, within the field of architectural reuse, there exists a shared system of values, similar to those found in other, even very different, disciplines and sectors, that can be used to assess the effectiveness of reuse projects and their impact on the socio-economic context in which they are developed.

Theories of Minimal Intervention

The contribution, entitled *From "Baukultur" to "Umbaukultur". A Critical Framework for Adaptive Reuse*, aims to explore a possible framework for a shared system of values and strategies within the field of architectural reuse. The underlying idea is that, through an effort, both economic and ecological, as limited as possible, and therefore through the most minimal intervention, it should be possible to achieve results that have the most positive impact on the socio-economic and cultural context in which the project is developed. Several other sectors and disciplines, even those quite different, have long established a hierarchy of intervention. This hierarchy, consolidated through practice and usage, has led, often through European directives and national legislation, to the definition of a clear pyramidal system that prioritizes certain actions over others according to the logic of prevention. This is the case, in various national contexts, of the sector of waste management, which, seeking to transform waste into a resource, has developed a clear hierarchy among three types of actions, summarized by the well-known slogan "reduce, reuse, recycle." First, this shared hierarchy establishes *reduction* as the most effective strategy for waste management, grounded in the awareness that prevention, as to say reducing the amount of waste produced, is the most effective approach. Second comes *reusing*, a verb that encourages extending the lifecycle of objects, delaying as much as possible the moment of their disposal. Finally, *recycling* represents the last possible strategy for managing resources that are no longer needed for their original purpose, materials that have become waste but can, through proper processing, be reintroduced into a productive cycle and made functional again for new uses. Article 4 of Directive 2008/98/EC on waste, formally defines this hierarchy of values under the title "Waste Hierarchy." The most effective strategy, and the one that the directive recommends giving priority to, is "(a) prevention," followed by "(b) preparing for re-use," then "(c) recycling," then "(d) other recovery, e.g. energy recovery," and finally the least desirable option, "(e) disposal." The directive requires Member States to adopt this hierarchy «[…] as a priority order in waste prevention and management legislation and policy." It further specifies "When applying the waste hierarchy referred to in paragraph 1, Member States shall take measures to encourage the options that deliver the best overall environmental outcome. This may require specific waste streams departing from the hierarchy where this is justified by life-cycle thinking on the overall impacts of the generation and management of such waste.»

In the field of architectural conservation, a long process, one that shaped and traversed disciplinary debates throughout the last couple of centuries, has led to the establishment,

despite differing national and regional specificities, of a broadly shared value system concerning possible approaches and orientations for the preservation of the built heritage. Within this shared framework, developed through the historical evolution of architectural restoration theories and through numerous Charters and other key moments of reflection that have marked the past century and even earlier, the historical and artistic values of architectural heritage are part of a shared vision. Theories of minimal intervention, aiming to preserve the material integrity and the characteristics that make a building an important material testimony to be transmitted to future generations, are widely accepted. In the field of heritage conservation, several common principles guide those responsible for managing interventions on cultural assets. A clear synthesis of these principles was formulated by Michael Petzet in *"Principles of Preservation: An Introduction to the International Charters for Conservation and Restoration 40 Years after the Venice Charter"*, published by ICOMOS in 2000. In this essay, Petzet defines and organizes the principles of preservation, providing definitions for the terms "conservation", "restoration", and "renovation", and arranging them in a hierarchy, from the most to the least desirable forms of intervention, while acknowledging that all may be necessary under certain circumstances. Regarding the term "conservation", Petzet writes: «To conserve is the supreme preservation principle. Together with stabilization and safeguarding measures, conservation work that protects the fabric of a monument and prevents its further loss should therefore have absolute priority over all other measures.» Petzet recognizes that conservation, a broad set of measures aimed at the care and protection of what already exists, is not suitable for all contexts or all the nuanced conditions in which heritage manifests itself. Following conservation in the hierarchy of preservation-oriented interventions comes "restoration". For Petzet, to restore means "to re-establish", a term that in this context should not be understood in a general sense as any act of conservation, but rather as a distinct action, separate from conservation, protection, and renewal. Petzet recalls that the Venice Charter defined restoration as an intervention aimed at preserving and revealing the aesthetic and historical value of a monument, based on respect for original materials and authentic documentation. In other words, the goal of restoration is to bring out values of the monument that have been hidden, altered, or compromised, as to say to re-establish them. The final, least desirable but sometimes necessary form of intervention is "renovation". For the author, alongside conservation and restoration, renovation represents a possible third path, justified either when it leads to conservation-oriented outcomes or, alternatively, when conservation measures themselves are not feasible.

Renovation methodologies commonly adopted in practice are admissible within the field of conservation only when the original material can no longer be technically preserved and must therefore be replaced, or when ancient materials can no longer be exposed to weathering or use and thus need to be covered for protection. Petzet concludes by emphasizing that "conservation", "restoration", and "renovation" together constitute a graduated system of preservation measures. In other words, there are monuments that, under certain circumstances, should only be conserved and not restored, or that may be conserved and restored but not renovated. Moreover, "conservation", "restoration", and "renovation" interventions are closely interrelated and, depending on the situation, may be carried out sequentially or even simultaneously.

In another field of intervention, that of the conservation of pictorial surfaces, shared

orientations also emerge, despite the diversity of approaches and sensitivities that characterize different national and regional contexts. Among these are the principles of recognizability of the intervention, which ensures the avoidance of historical falsifications or distortions of the work being restored; reversibility, according to which restoration treatments must be removable without causing harm to the artwork; and compatibility of the materials used, which must not damage the original fabric of the object. Equally important is interdisciplinarity, that is, the collaboration among different disciplines and professionals, such as historians, chemists, and conservators, who work together through research and knowledge exchange to achieve the most comprehensive and respectful outcome possible. Finally, the overarching approach of minimal intervention remains fundamental, aiming to limit as much as possible the physical and chemical stress to which the artwork may be subjected during the restoration process.

Reduce, Reuse, Recycle: Towards a Possible Theory for Adaptive Reuse

The reflections presented here have converged into a theory of minimal intervention and maximum positive effects within the field of architectural reuse. This theory was first publicly expressed in the context of the curatorship of the German Pavilion at the 13th Venice Architecture Biennale in 2012, followed by a publication, an exhibition at the Academy of Architecture USI in Mendrisio, and the creation of a web platform developed thanks to the work of the students of the *Sustainable Design Lab* course during the 2016/2017 academic year (http://www.reduce-reuse-recycle.info). The ideas drawn from other disciplines and fields, together with the opportunities for sharing and discussion provided by exhibitions and teaching experiences, have contributed to consolidating and confirming this theory. It is based on a set of principles and strategies organized within a pyramid-like structure that prioritizes interventions as limited as possible, while achieving the most positive possible impact on the environment and the socio-economic context in which they are situated, summarized by the expression "reduce, reuse, recycle." The first domain, *Reduction*, encompasses various strategies – from shifting the perception of a building and its surroundings through minimal interventions (which may not even concern the architecture itself but rather the way space is used and perceived, restoring value to what appears to have lost it), to ordinary maintenance, that is, the everyday care of existing structures. This level also includes encouraging behavioral changes among users toward buildings, questioning prevailing norms and standards, and reprogramming the existing functions contained within buildings or infrastructures. The second domain, *Reuse*, comprises several strategies related to renovation, conversion, infill, redesign, subtraction, and addition. The third and final domain, *Recycling*, is the least effective in terms of environmental impact, involving higher levels of intervention. It includes strategies such as pre-cycling (designing buildings with future dismantling in mind), material recycling, and even formal recycling. For a more comprehensive understanding of this theory of minimal intervention, reference should be made to the materials listed in the notes and bibliography. The reader will observe that the theory evolved over the years – with additions and modifications – since its first public presentation in 2012, as a result of ongoing reflection and practice, as well as in response to the different contexts in which it has been applied, and will still be revised in the context of the NRP 81 research mentioned in the introduction.

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