Sustainability, Museums, and Codes of Exhibition Design. History and Counter-History of Exhibition Design

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Abstract
Today, culture is considered the fourth pillar of sustainability. It is therefore essential to address this theme in relation to museums, which are bastions of culture and potentially a driving sector for global sustainable development. The recent inclusion of sustainability in 2022 ICOM's definition of a museum highlights the need to rethink exhibition design as a systemic design lever. On the one hand, museums are undergoing a radical transition facing many challenges; on the other, we must ask how to intervene more effectively. This paper analyzes the field of temporary museum exhibitions and identifies recurring principles, the 'three codes of exhibit design', emerging from the history of exhibition design discipline. In line with Bruno Zevi's view of history as a tool for present-day action, this study examines 102 case studies (1927 to 2022) through the contemporary lens of sustainability. The goal is to define a fourth, essential design code: the Environment Code, which complements and integrates the existing three. This research proposes a counter-historical reading of exhibition projects as a methodological and operative tool to define a new sustainable methodology, establishing the Environment Code as a generative hypothesis for the future of exhibition design.

Keywords
Exhibit design
Museums
Sustainability

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Introduction

Today, sustainability essentially means taking care of future needs, addressing the environmental, economic, and social dimensions (Goodland, 1995). However, as described in *Culture: Fourth Pillar of Sustainable Development* (Wiktor, 2020), these three aspects no longer capture all the dimensions of our global societies. The cultural dimension is therefore proposed as a fundamental fourth pillar of sustainable development. As Duxbury (2019) points out, "imagining transformation requires a deeper understanding of how people shift their worldviews and shape new modes of engagement with sustainability". Given these premises, it is necessary to address sustainability in relation to institutions whose core activity revolves around culture: museums. A pivotal moment in this direction was the 2022 ICOM General Conference in Prague, where the definition of 'museum' was updated to explicitly include sustainability as a founding value (ICOM, 2022). There are approximately 95.000 museums worldwide, welcoming between 1 and 2 billion visitors each year. These institutions clearly have the potential to support sustainable development. This paper discusses the current status of museums regarding sustainability, highlighting in particular the sector's weaknesses in the area of exhibition design. The aim is to provide a new interpretive framework for contemporary museum exhibitions by identifying three recurring constants, the Codes of Exhibition Design, and by introducing a fourth, the Environment Code, through a critical reading of the History of Exhibition Design.

Sustainability in Museums

Despite the potential that the sector could have in contributing to sustainable development, museums today are still not fully engaged in this process and remain reluctant to consider sustainability goals as a shared and priority mission.

A more comprehensive overview of the European context can be drawn from the survey conducted by the Network of European Museum Organisations (NEMO, 2022), which involved 578 European museums in responding to various questions on the topic of sustainability.

Among the findings, it is particularly significant that nearly 70% of respondents stated that, within their institutions, the level of awareness regarding the Sustainable Development Goals and climate action is insufficient, and that they either lack or are unaware of specific guidelines on the subject.
Furthermore, 65% of the participating museums reported having no team or dedicated figure responsible for sustainability-related activities.

Lastly, to confirm that the problem is not merely episodic but rather systemic, the main obstacles to a sustainable transition in museum organisations were identified as a lack of funding (60%), limited support from public administrations (39%), and the low strategic relevance assigned to this type of initiative (24%).

Looking more specifically at the situation of museum exhibitions, the challenges and weaknesses of the sector become even more apparent. For example, the financial records of the Triennale

di Milano show that in 2019 alone, approximately €1.82 million were invested in exhibition installations, most of which were sent to landfill at the end of the shows. The following are the installation costs for six of the most significant exhibitions held between 2019 and 2021:

- *Enzo Mari*, 17/10/2020 to 12/09/2021 (€ 137,500)
- *Vico Magistretti. Architetto milanese,* 11/05 to 12/09/2021 (€ 68,415)
- *The State of Art of Architecture*, 16/02 to 29/03/2020 (€ 86,407)
- *I Quaderni di Giancarlo De Carlo. 1966–2005*, 24/01 to 29/03/2020 (€ 32,432)
- *OooOoO (Play Skatepark),* 27/11/2019 to 16/02/2020 (€ 280,000)
- *Broken Nature*, 01/03/2019 to 01/09/2019 (€ 760,717)

The financial impact of this expense category is significant, especially when one considers that these are sunk costs. Moreover, it is crucial to emphasize that exhibitions generally have a significant environmental footprint. Indeed, the discipline of exhibition design inherently operates on a limited temporal and spatial scale. Exhibition projects are typically conceived for short timeframes and are highly context-dependent.

One of the most relevant international examples in this regard is the exhibition *The Waste Age: What Can Design Do?* held at the Design Museum in London in 2021. For the first time, a temporary exhibition was designed and analysed according to a complete environmental audit, which considered all phases of the life cycle: pre-exhibition, during the exhibition, and post-exhibition (Hahn, 2021).

The initial estimated impact was 190 tonnes of CO_2, but thanks to a set of sustainable strategies, including the reuse of structures, biodegradable materials, renewable energy, and modular design, the footprint was reduced to just 28 tonnes. This result is especially significant considering that a single shipped installation accounted for 50% of those emissions. The case demonstrates how intentional, data-supported design, using tools such as LCA, can drastically reduce environmental impact while maintaining high cultural value (Design Museum, 2024).

This case, and the broader imperative to adopt a more circular approach in the design of museum exhibitions, highlight the need for a strategic effort to explore innovative and sustainable processes within this specific domain (Crippa et al., 2022a).
However, while a regulatory vacuum currently discourages the adoption of sustainable approaches, we must also consider the cultural barriers rooted in a traditional 'know-how' that struggles to evolve (Crippa et al., 2022b).

It is therefore essential to attempt the construction of an alternative exhibition tradition (Crippa, 2023), enriched with meanings and insights drawn from the history of exhibiting, or more precisely from a counter-history (Zevi, 1994), that can concretely innovate exhibition practices by grounding them in a corpus of knowledge, critical reflection, and both historical and contemporary cases of notable relevance.

Methodology

From a methodological perspective, this paper analyzes codes and sustainable innovation practices in the field of exhibition design, focusing on both the so-called 'masters' of design and more contemporary practitioners Tab. I.

YEAR - EXHIBITION	AUTHOR - PLACE
1927 - Kabinett der Abstrakten di El Lissitzky	El Lissitzky - Museum of American Art, Berlin
1935 - INA Pavillion	F. Albini - Fair, Milano
1936 - Mostra dell'antica oreficeria italiana	F. Albini - VI Triennale, Milano
1936 - Sezione tessili	L. Baldessari - VI Triennale, Milano
1938 - Bauhaus 1919-1928	H. Bayer - MoMa, New York
1941 - Mostra di Scipione e del Bianco e Nero	F. Albini - Pinacoteca di Brera, Milano
1942 - Art of This Century	F. Kiesler - Peggy Guggenheim collection, New York
1948/1959 - Allestimento del Castello Sforzesco	BBPR - Castello Sforzesco, Milano
1951 - Artchitettura Misura dell'uomo	E. N. Rogers - IX Triennale, Milano
1953 - La Nuova Arte Italiana	F. Albini - Liljevalchs Konsthall, Sweden
1954 - Salone d'onore	F. Albini - X Triennale, Milano
1954 - PAC MILANO	I. Gardella - PAC, Milano
1955 - ETRU	P. e G. Ortelli - Rinascente, Milano
1955 - Omaggio alla Spagna	P. e G. Ortelli - Rinascente, Milano
1955 - Padiglione Montecatini	F. Albini, F. Helg - Trade Fair, Milano
1955 - Padiglione Eni	E. Carboni - Trade Fair, Milano
1956 - Padiglione RAI	A. Castiglioni - Trade Fair, Milano
1956/1957 - Mostra "Piet Mondrian"	C.Scarpa - MAXXi, Roma
1957 - Museo Gypsotheca Antonio Canova	C. Scarpa - Antonio Canova Museum, Treviso
1957/1968 - Allestimento museale	L. Bo Bardi - Museu de Arte de São Paulo (MASP), San Paolo
1959 - Bahia no Ibirapuera	L. Bo Bardi - Biennale, San Paolo
1959 - Padiglione Montecatini - Sala Materie Plastiche	A. e P.G. Castiglioni - XXXVII Furniture Fair, Milano
1961 - Padiglione Montecatini - Edison	F. Albini, F. Helg, B. Noorda - Trade Fair, Milano
1963 - Mostra della navigazione interna padana	A. e PG. Castiglioni, M. Huber - Palazzo Reale, Milano
1967 - Padiglione Montecatini - Chimica, un domani più sicuro	A. Castiglioni - Trade Fair, Milano
1968/1971 - The Juke Box	E. Sottsass - Itinerant
1969 - Boutique Altre Cose	U. La Pietra - Milano
1969 - Mostra di Poesia concreta	AG Fronzoni - Ca' Giustinian, Biennale di Venezia
1970 - VISIONA II	V. Panton - Furniture Fair, Colonia

YEAR - EXHIBITION	AUTHOR - PLACE
1970 - Contenir, Regarder, Jouer	E. Mari - Musée des Arts Décoratifs, Louvre, Parigi
1972 - Italy: the new domestic landscape	MoMa, New York
1979/1981 - Rimostrare	AG Fronzoni - Falcone Theatre, Palazzo Reale, Genova
1980 - L'altra metà dell'avanguardia 1910-1940	A. Castiglioni - Palazzo Reale, Milano
1991 - TOURISMS: suitCase Studies	E. Diller e R. Scofidio - Itinerant
2006 - The Good Life: New Public Spaces for Recreation	WORKac - Van Alen Institute - Itinerant
2006 - Museo di Quai Branly	J. Nouvel - Quai Branly, Parigi
2009/2010 - Emilio Vedova/ Renzo Piano	R. Piano - Magazzini del Sale, Fondazione E. e A.Vedova, Venezia
2010 - Drawing Fashion	Carmody Groarke - Design Museum, London
2010 - Museo di storia naturale di Venezia	L. Greppi - Fondaco dei Turchi, Venezia
2011 - L'anima di gomma, estetica e tecnica al passo con la moda	Fondazione Pirelli - Triennale, Milano
2011 - READYKEA - Revolution to smash global capitalism	A. Scarponi - Voltaire Cabaret - Zurigo
2011 - All	M. Cattelan - Guggenheim Museum, New York
2012 - Museo della Storia di Bologna	M. Bellini, I. Lupi, StudioBASE2 - Palazzo Pepoli, Bologna
2013 - LIVING THE FUTURE Year of Science 2013	Atelier Bruckner - Natural History museum, Berlino
2013 - ANTICLIMAX	Fala Atelier - Palacio Sinel de Cordes, Lisbona
2013 - Werdi Vagner	Scandurra Studio Architettura - Palazzo della Gran Guardia, Verona
2014 - Hidden unveiled	Studio Nendo - National design Museum, Singapore
2016 - ALBUM "BFF016"	Set Architects - Florim Ceramiche Spa, Milano
2016 - Unfinished, Spanish Pavillion	C. Iñaqui ,Q. Carlos - XV Biennale, Venezia
2018 - Klimt Experience - The FAKE Factory - Crossmedia Group	Mudec - Mudec, Milano
2018 - Palazzo reale - Sala degli Alabardieri e delle Guardie	C. Gambardella - Reggia di Caserta, Caserta
2018/2019 - RENZO PIANO: PROGETTI D'ACQUA	Studio Azzurro - Magazzini del sale, Venezia
2019 - Porto di Genova, Lisetta Carmi	F. Librizzi - Oratorio di Santa Maria della Vita, Bologna
2019 - TIRES/VISCOSE	Francesco Librizzi Studio - Casa Saraceni, Bologna
2020 - Negozio di scarpe Almini	Cino Zucchi Architetti - Cino Zucchi Architetti
2020 - Caravaggio - Bernini. Baroque in Rome	Formafantasma - Rijksmuseum, Amsterdam
2021/2022 - Amazonia	L. Salgado - MAXXI, Roma
2021/2022 - Mostra "Piet Mondrian"	Daniel Koep e Doede Hardeman - Mudec, Milano

Tab. I
Summary table of the case studies analyzed. Here are the 58 case studies, including *I Grandi Maestri* and more contemporary authors (Credits: D. Crippa, L. Botta, B. Di Prete).

The selection of the 102 case studies was based on three main criteria:

A historical or design relevance;
B traceability and documentation of the project;
C the potential for reinterpretation through contemporary codes.

Although the selection primarily favours Italian examples, the aim is to provide critical depth to the discipline through the method of 'counter-history', in line with Zevi (1994), rather than to offer a quantitative or comparative overview.

diid No. 86 — 2025
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This approach draws from a broader reflection on design as a driver of systemic transition. As Fry (2009) states, contemporary design must take an active role in 'redirection' — the capacity to culturally and operationally steer design toward sustainable futures. Similarly, Manzini (2015) emphasizes the urgency of building new design cultures based on relationships, contexts, and communities — visions fully aligned with the idea of the Environment Code as a tool for the systemic transformation of the exhibition field.

Key elements have emerged from this analysis as recurring across the discipline of Exhibition Design. They may be distinguished into three categories — defined here as Codes of Exhibition: background code, setup code, and object code.

These three elements, through their interrelationships and variable recombinations, provide a key to interpreting the exhibition projects analyzed in the study, and may be adapted across various contexts within the discipline.

Subsequently, again inspired by Zevi's theoretical approach, the history of exhibition design was reinterpreted through a fourth, more contemporary lens: sustainability.
In this phase, 48 case studies of exhibitions by the Masters were re-analyzed, using sustainability — primarily environmental and economic — as a parameter to redefine the history of exhibitions based on entirely new criteria.
This produced what Zevi (1994) might call a 'counter-history': a retrospective inquiry that uncovers new design invariants while laying the groundwork for a renewed awareness capable of informing future exhibition practices.

Specifically, the paper discusses four case studies — one of which deliberately contradicts the parameter of sustainability — to better define what emerges today as a fourth and necessary code: the Environment Code.

From Zevi and the Invariants to the Three Codes of Exhibition

In his book *La forma dell'effimero*, Caliari (2000) observed that "exhibition design is the technique of displaying in relation to an architecturally defined space and of communicating through the coexistence of multiple codes". He also noted that both architecture and exhibition design share a common self-expositional tension, which manifests through the creation of symbolic systems that are often borrowed from one another. Caliari emphasized that, despite the many points of intersection between the two disciplines, they must remain autonomous systems of thought. Rather than merging, they should engage in a dialogue through the exchange of codes (Caliari, 2000).

This early recognition already acknowledged the autonomous value of exhibition design as distinct from architecture. It also hinted at the existence of underlying codes that emerge from the intersection between architecture and exhibition design, even if those codes were not yet formally defined.

In this context, it is helpful to revisit the work of architectural historian Bruno Zevi, particularly the theory of 'invariants' he

developed in *Il linguaggio moderno dell'architettura* (1978). Zevi proposed a radically innovative approach to reading architectural history. Rather than following a chronological path, he moved back in time from the present to uncover recurring architectural constants. These were defined as seven 'invariants' that support good architectural practice and are described by Zevi (1978) as a "methodological synthesis designed to train new generations of designers to grasp, through a heretical reading of architectural history, the guidelines and references applicable to contemporary design".

Although focused on architecture, Zevi's work demonstrates how history, approached critically, can offer valuable insights for reforming the contemporary design culture.

Building on this premise, the present study applied a similar method to the field of exhibition design. A total of 48 historical case studies from 1936 to 1990 were analyzed, followed by 57 contemporary examples from 2000 onward (see Tab I). This analysis led to the identification of three recurring constants, defined here as Exhibition Codes, that serve as interpretive tools within the field of Exhibition Design Fig. 1:

- Background Code (BS): the place where the exhibition takes place;
- Design Code (DC): the staging, the tools through which the designer conveys the values of the exhibition;
- Object Code (OC) the relic, what is being exhibited.

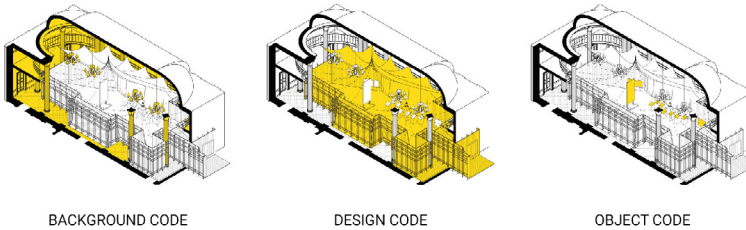

Fig. 1
The Three Codes of Exhibition Design. The Background Code, the Design Code, and the Object Code in Carlo Scarpa's Giacomo Manzù Exhibition at the Ala Napoleonica, Museo Correr, Venice, 1964 (Credits: D. Crippa, L. Botta, B. Di Prete).

These three codes provide a synthetic framework for understanding the projects analyzed, and they are applicable to a wide range of exhibition contexts. It is important to emphasize that these categories should not be understood in isolation. Their true meaning and utility emerge when they are read in relation to one another.

For example, in the *Mostra dell'Antica Oreficeria Italiana* held during the 6th Triennale di Milano in 1936, Franco Albini essentially removed the Design Code (DC) by using an extremely lightweight frame. This emphasized the vast architectural space of the Triennale (BC) while allowing the collection of jewelry (OC) to appear as if it were floating in space.

Another key example is the *Mostra della Navigazione Interna Padana* (1963), designed by Achille and Pier Giacomo Castiglioni with M. Huber. In this exhibition, great emphasis was placed on the Design Code (DC), which reconstructed a wooden riverbed with walls so high that the architecture of the Royal Palace was almost imperceptible, effectively negating the Background Code (BC).

diid No. 86 — 2025
Doi: 10.30682/diid8526j

This bold spatial intervention created a fully immersive environment aligned with the exhibition's theme.

In *Contenir, Regarder, Jouer*, an exhibition by Enzo Mari at the Louvre in 1970, the Design Code (DC) was realized through trapezoidal cardboard modules, folded and interlocked to serve as display units for products by Danese. This simple layout, composed of repeated modules, reinforced the presence of the Setup Code over the Background Code (BC) and elevated the Object Code (OC) through precise arrangement. In this case, a strong interplay emerged between the objects on display and the display system itself, making them almost inseparable.

Among more recent examples, *The Good Life: New Public Spaces for Recreation* by Zoë Ryan (USA, 2006) demonstrates an exhibition in which the Design Code (DC) is dominant. The space is defined almost entirely by the staging, effectively minimizing the Background Code (BC). The Design Code (DC) and Object Code (OC) merge into a singular visual and conceptual unit.

Finally, the exhibition *Renzo Piano: Progetti d'Acqua*, designed by Studio Azzurro in 2018–2019 and held in Venice, is among the most emblematic cases of close collaboration between all three display codes. The exhibition layout encouraged a fluid visitor experience, like being carried by a current. The idea of space utilization (BC) reflected the conceptual underpinning of the show, while the exhibit operated on multiple visual and sensory levels. The designers made the spatial experience completely immersive and engaging. The Design Code (DC) was not focused on showing the technical details of the works (OC) but instead conveyed the mental process behind them, allowing the audience to gain a deeper understanding of both the architecture and the designer's vision.

A Counter-History of Exhibitions: Sustainability as an Opportunity

As we have seen, the analysis carried out in this paper is closely tied to the desire to define what appear to be constants in the discipline of Exhibition Design, which currently lacks such a clustering. The Codes identified above demonstrate the existence of a common thread connecting the projects of the Great Masters to those more contemporary.

In addition to identifying and defining these three invariants (Zevi, 1978), it is also useful to explore the possibility of making history a tool for action in the present.

Zevi, with his historicist and anti-essentialist approach, asserts that "architecture and architectural historiography coincide; each era must forge its own architecture and re-read the past with modern eyes [...], modern historiography offers an indispensable tool, the only non-dogmatic one, the only one removed from stylistic rules, to make architecture" (Ghia, 2018). Zevi is strongly convinced, a belief he inherited from Karl Popper (Popper, 1957), that history and knowledge more generally are not identifiable as an episteme (certain knowledge) but rather

as a doxa (opinion). Therefore, applying this scientific method to history is a moral duty to ensure anti-dogmatic knowledge, knowing that neutral historians do not exist (Zevi, 1979) and that any historian can offer a reinterpretation of history itself.

For this very reason, Zevi derives his invariants "not from paradigmatic production, from the lowest common denominators, but from exceptions, from heretical acts of poetry" (Ghia, 2018) not to translate them into clearer terms, but to generate new meanings from them, to multiply their metaphors (Tafuri, 1968).

Therefore, in this concluding paragraph, we chose to analyze the case studies by the Great Masters again, using a modern and now necessary parameter: that of Sustainability. Given this necessity, it seems useful to define a counter-history of exhibitions with the goal of (re)reading the traditional case studies (Docci & Chiavoni, 2017), identifying some virtuous models to define, subsequently, guiding principles capable of directing, or rather redirecting, a correct design methodology to apply to the present time and to codify for the near future.

The utility of a counter-historical reading of exhibiting in a sustainable context may easily be recognized by analyzing the work of one of the masters of exhibition design, Achille Castiglioni. Castiglioni's work, as anticipatory as it is unconscious, is extraordinarily contemporary even when viewed through the lens of Sustainability (primarily environmental and economic). To better focus on the master's contribution, it is useful to consider two setups that, from a perspective of sustainability, emerge as two antithetical models: *La chimica domani e oggi* (1967) and the setup of the *RAI Pavilion* (1956). The 1967 exhibition represents a disarmingly effective model in terms of communication and the ability to engage the viewer; through the use of suspended ceilings (SC), the space is compressed, creating an apparently infinite neutral landscape, in which the contents (OC) 'rain' from above, catching the viewer by surprise. However, when reinterpreted based on the Sustainability parameter, the exhibition could not be considered among the most virtuous examples of setup, as the criticality of using large quantities of materials, without a clear plan for their post-exhibition use, becomes evident. Conversely, the setup for the *RAI Pavilion* (1956) is an example of sustainability because, while adopting a strong Design Code (DC), the design logic follows principles that today we might define as eco-design. The project focuses on the study of a joint with which to assemble a series of shaped panels in various ways, allowing for the flexible integration of graphic content, creating exhibition surfaces, or even transforming into ready-to-use furniture systems. This design system allowed for considerable savings on many fronts, from the purchase of materials to the construction process, allowing for easy disassembly and reuse for possible subsequent setups. Another project of notable interest is the *Sala Materie Plastiche* for the 37th Milan Furniture Fair. The uniqueness, in this case, lies in the use of easy to move and to dismantle micro modular setup systems that do not require external lighting, as the lights are already integrated into the individual exhibition system.

Very positive examples can also be found among other Great Masters, including E. Diller and R. Scofidio's 1991 work, the exhibition *TOURISMS: suitCase Studies*, in which the suitcases both transport and display the exhibition's content. Each suitcase is self-sufficient and contains its own structure, images, and lighting. This makes the exhibition easily transportable to other museums with a low setup impact. This sustainable approach to exhibiting clearly takes into account logistical aspects, which are part of the systemic thinking needed to design setups with a sustainable perspective.

Conclusions

As shown, the museum sector is currently undergoing a period of transition, despite some difficulties, from unsustainable current practices towards experiments that challenge the dominant thinking. It is precisely within this context of change that it becomes necessary to rethink various aspects of the sector. This paper analyzes the problem of the unsustainability of temporary exhibitions, highlighting the need for a radical change in the discipline of Exhibition Design, particularly from a design perspective.

Initially, three design clusters called Exhibition Codes were identified to characterize the complexity of an exhibition project in order to define the scope of the discipline and establish a common ground for discussion. The Background Code (BC), the Design Code (DC), and the Object Code (OC) are representative of an Exhibition Design project, and it was demonstrated how, when recombined in different ways each time, they form the backbone of such a project.

Following the teachings of Bruno Zevi, the history of the discipline was used as a tool for action in the present. The analysis thus moved from the present to the past of Exhibition Design history, identifying sustainability as a key parameter for reinterpreting the projects in the study. The process was then reversed, moving from past to present, to indicate possible new directions for the future of the discipline oriented towards sustainable design.

In other words, historical case studies were selected that, when reinterpreted through a contemporary lens such as sustainability, can enrich the meaning and reveal new opportunities for a discipline that is necessarily in transition Fig.2.

Based on this reinterpretation, it becomes necessary to introduce a fourth Exhibition Code called the Environment Code, which together with the three previously identified completes the matrix of a contemporary exhibition project. The Environment Code (is an aspect that permeates the other three codes and raises issues such as both the pre-exhibition and post-exhibition phases. In this sense, the Environment Code does not stand as an isolated code but acts as a systemic meta-code capable of redefining the relationships between Background Code (BC), Design Code (DC), and Object Code (OC) in light of a more circular design approach Fig.3.

This code, in fact, highlights the need to find multi-temporal exhibition solutions, thereby designing the entire life cycle, and multi-level solutions, identifying specific technical approaches that are interconnected and take the complexity of the entire project into account.

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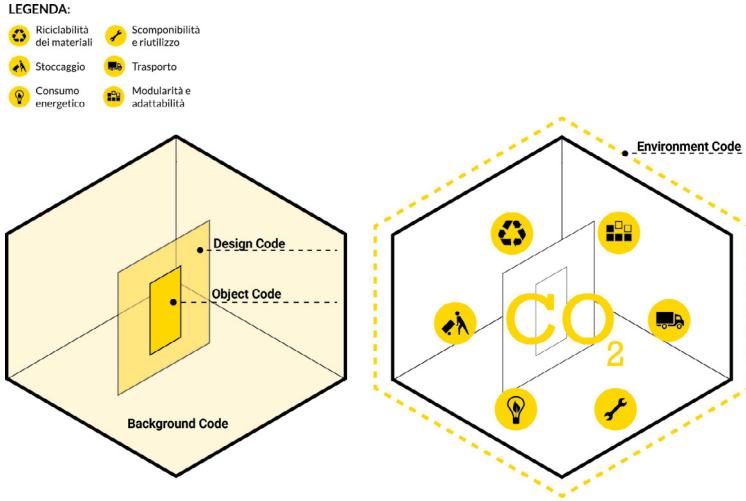

Fig. 2
The Fourth Code of Exhibition Design. The Environment Code is the element that completes the matrix of a contemporary exhibition design (Credits: D. Crippa, L. Botta, B. Di Prete).

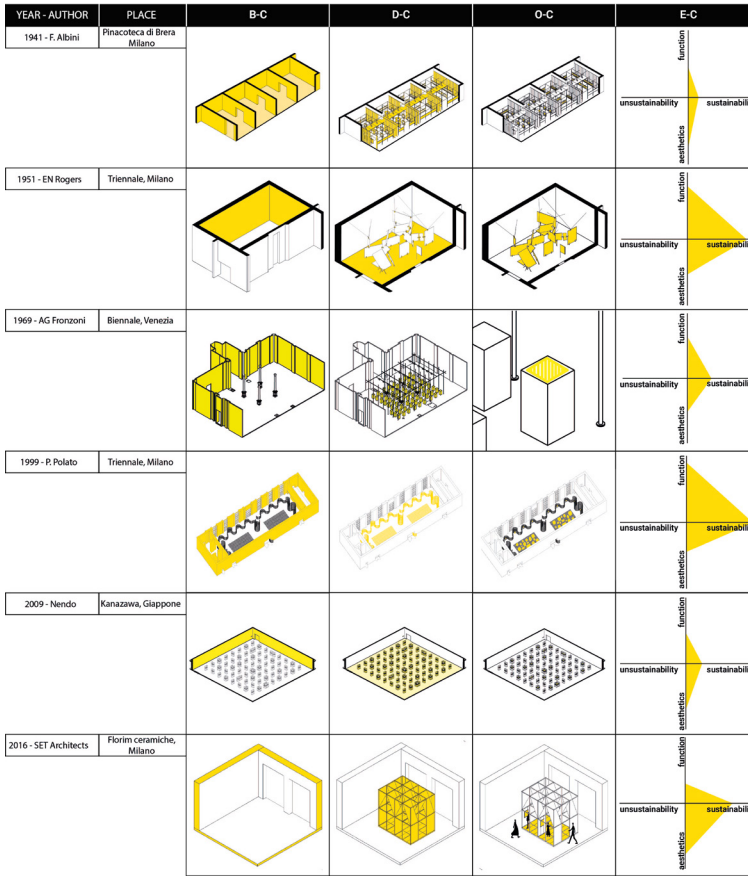

Fig. 3
Six case studies analysed according to the 4 codes of exposition. Comparative table of the 6 projects from 1941 to 2016 (Credits: D. Crippa, L. Botta, B. Di Prete).

diid No. 86 — 2025
Doi: 10.30682/diid8526j

The identification of this fourth code also allows us to outline three future research directions:

A the definition of a series of best practices and designguidelines for the discipline of Exhibition Design;
B the redefinition of the teaching model for the discipline by introducing sustainability aspects into the design process rather than only in the evaluation phase;
C the proposal to develop a regulatory framework for exhibitions in the museum sector.

Looking ahead, the Environment Code could be further subdivided into design subcategories such as material life cycle management, energy consumption, logistics, and disassembly, drawing inspiration from recent international guidelines like UNESCO's Toolkit or the Sustainable Exhibition Guidelines (Abeyasekera, 2006).

The identification of the four Exhibition Codes aims to be the first building block towards generating a radical and systemic change that enables Exhibition Design and museums more broadly to realize the transition towards more sustainable futures (Irwin, 2019).

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Conception of the study: Davide Crippa
Data collection: Davide Crippa, Luca Botta, Barbara Di Prete
Data analysis: Davide Crippa, Luca Botta, Barbara Di Prete
Paper writing: Davide Crippa, Luca Botta, Barbara Di Prete

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