Ludovica Cappelletti, PhD, Architecture, Built Environment, and Construction Engineering, at the Politecnico di Milano in Milan, Italy.
ludovica.cappelletti@polimi.it

Lola Ottolini, PhD, is Architect and Assistant Professor in Interior Architecture and Exhibition Design at the Politecnico di Milano (DATSU).
lola.ottolini@polimi.it

MADE IN POLIMI

35 Square Meters for 150 Years of History

Ludovica Cappelletti, Lola Ottolini

A great exhibition is not defined by ample space or an extensive budget but by its design and interpretation. Can these fascinate visitors, draw them in, and involve them in the discovery of a great story? *Made in Polimi* represents one potential answer to this challenge, realized in a limited space and on a limited budget.[1]

ALL PHOTOS MATTEO ANDREOLETTI AND LUCIA AVOLIO, 2022

View of *Made in Polimi* in the Rectorate Hall of the Politecnico di Milano. The suspended keyword light installation joins the two exhibition spaces across the atrium.

Made in Polimi is a permanent yet transformable exhibition designed to convey in one small space more than 150 years of history of the Politecnico di Milano. Established in Milan in 1863 as an institution for the dissemination of technical and scientific knowledge, the Politecnico today focuses on teaching and research in the fields of architecture, design, and engineering.[2] *Made in Polimi* showcases many well-known and revolutionary designs – from plastic objects to Formula 1® racing tires, from the chair in a visitor's living room to the office building that houses their workplace – and reveals them to be the products of a *polytechnic* method. It also presents the most recent developments in the cutting-edge research being carried out by professors in the laboratories and departments of the university, as well as cultural projects devised to bring science and technology to a larger audience, inviting visitors and students to recognize in these stories the driving force of innovation, so that they too might be inspired to tackle present issues by imagining beyond what already exists.

Made in Polimi aims to tell an inclusive and expansive story of the university's past, present, and future. Housed in the main, most representative historical building of Politecnico di Milano's central campus, it makes use of two small rooms on either side of the central atrium. A series of hanging neon "keywords" creates a visual-spatial continuum that connects the two exhibition spaces (intro image). In total, only 35 square meters (or about 377 square feet) have been transformed into *Made in Polimi*. By creating a purpose-built space that can accommodate constant change – of selected stories and objects displayed – the exhibition makes the most of its footprint and budget to draw

visitors in and spark their curiosity through an easily accessible, understandable design.

THE CURATORIAL PROJECT

The central question for the curatorial team was: How do we convey the broad timespan and different aspects of the university's past and present in such a small space, while aiming to create a positive learning experience for visitors familiar with the institution – professors, students, and staff – and the wider public?

We answered this question by keeping people at the center of the exhibition's design: those who have attended the Politecnico di Milano through the years and whose stories feature in the exhibition *and* those who visit *Made in Polimi* today. Among the individuals featured in the exhibition are women and men who have graduated from or taught at the Politecnico and whose designs and inventions have become part of our daily lives (fig. 1): for example, Giovanni Battista Pirelli, a graduate in Industrial Engineering (1870), who founded Italy's first rubber factory, which produced everything from electric cables to automobile tires; or the architects who founded BBPR studio and designed the Velasca Tower in Milan (1956–58); or Gio Ponti, designer of the *Superleggera* chair for Cassina (1957); or Marco Zanuso, who realized *Radio Cubo* with Richard Sapper for Brionvega (1964). Alongside these well-known individuals and their stories, *Made in Polimi* displays the work of current researchers, designers, and professors whose innovations in fields from nanotechnology to aerospace engineering seek to better our lives and inspire the public.

Architecture, Built Environment and Construction Engineering

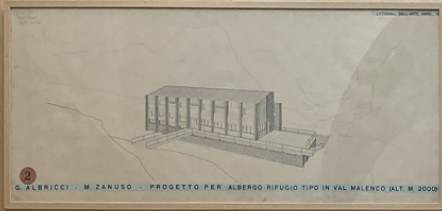Chimica, Materiali e Ingegneria Chimica "Giulio Natta"
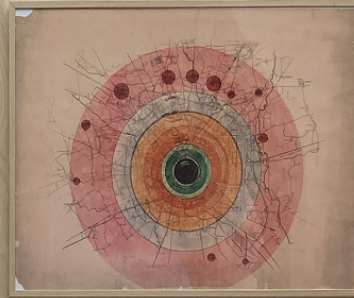
...nation and Bioengineering

Design   Design   Architettura e...

Ingegneria Civile e Ambientale   Civil and...

G. ALBRICCI - M. ZANUSO - PROGETTO PER ALBERGO RIFUGIO TIPO IN VAL MALENCO (ALT. M. 2000)

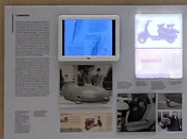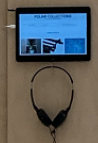History, & Memory   Pioneers   Student Life
STORIA E MEMORIA   PIONIERI   VITA DA STUDENTE

The exhibition design deliberately allows a high degree of choice in how each visitor explores and engages with these stories.[3] Devised as an open archive, the exhibition is organized into 13 multidisciplinary thematic sections – or "keywords" – that suggest *one* possible way of navigating the display based on a visitor's area of interest: so, for example, someone interested in the history of the Politecnico might focus on "History & Memory," which provides an overview of the establishment of the school; or a visitor fascinated by the famous graduates of the university might be drawn to the "Pioneers" theme.[4] Yet across the thematic sections, the exhibition is also thought of as a *hypertext*,[5] a system where each visitor, starting from one object, document, or image, can find unexpected connections with other things on display and build different paths. Each item

is presented as a singular element within the related thematic section, but there may be several ways to reach it. For example, one can simply view *Radio Cubo*, on display as a physical object, or proceed further: in the section "Poliroom," the visitor can read the story behind the project and its creator, Marco Zanuso, as well as examine related drawings, photographs, and videos. Then, moving outside the section, visitors can also learn about plastic, one of the materials that composes *Radio Cubo*, in the "Pioneers" panel dedicated to Giulio Natta, engineer and Nobel Prize winner for his development of polypropylene (1954), or explore Zanuso's learning experience in the "Student Life" section. *Made in Polimi* prompts visitors to explore and to build a tailored experience according to their interests. Its design encourages them to be curious and engaged in

Fig. 2.

Like a secret closet, the drawers, trays, and devices built into the exhibition's "second skin" enhance the feeling of discovery and wonder as visitors interact with the Politecnico's many stories.

creating their own unique pathways, using intuitive instruments built into the exhibition.

THE EXHIBITION DESIGN

Exhibition designers worked alongside curators to translate this approach into the physical structure of the space. *Made in Polimi* contains 105 objects, more than 1,000 documents and photographs, 20 drawings, and 60 research stories, interviews, publications, and videos.

Architects designed the exhibition structure to cope with the broad spectrum of items on display, from original documents and objects that are part of the university's collection to artifacts scattered around the world that could not be experienced in the space – such as the design for the underground railway system of Milan (1955–64) or the A1 highway (1956–64) along the Mediterranean coast – that needed to be evoked through digital instruments, photographs, or videos.

At the same time, the curatorial and design teams addressed the need to intrigue different audiences so that both curious visitors and informed scholars could appreciate it regardless of their degrees of preparation. Descriptive texts offer detailed information about protagonists and their interpretation of the polytechnical method while drawings and objects provide the emotional impact of experiencing original pieces.

As Constance Perin writes, "The relationship between exhibitions and what audiences carry away is not linear, but rather is complexly mediated by myriad factors, not least of which are audiences' repertoires of prior knowledge, semantic systems, and interpretive frames."[6]

The very attempt to acknowledge this nonlinearity while implementing a wide range of communication strategies lies at the heart of *Made in Polimi*'s concept. Its spaces are devised as *Wunderkammern*, or cabinets of curiosities, where visitors are encouraged to interact with the exhibition by opening drawers, reading through documents, and flipping through images in a self-directed process of discovery. The cabinet of curiosities is not a new concept for museum exhibitions. Indeed, the simplicity of its design and the intuitive nature of the visitor experience make it a natural choice when many complex – and perhaps even competing – narratives need to be presented together in a small space and with limited resources.[7] Designers made the most of the exhibition's two small rooms, transforming them into large, interactive cabinets – full of levers to push and pull, drawers to open and close, and papers to rifle – creating a feeling of genuine discovery, as though visitors had stumbled upon a forgotten wardrobe filled with heirlooms in the attic of their family home (fig. 2).

Designers translated this vision into a successful and affordable exhibition, not only in terms of budget optimization, sustainability, maintenance, and ease of content changes, but also in relation to the cultural enrichment offered to visitors. Given the limited dimensions of the exhibition rooms, the team opted to keep the central spaces free and open to visitors. To accommodate the exhibition elements, they redesigned the walls, creating a "second skin" of standard wood panels that lend the rooms the familiar appearance of a cabinet, with warm colors that are in stark contrast to the marble and stucco of the atrium. A cavity between the existing walls and this second

Fig. 3. The exhibition uses many different communication strategies.

skin provides the space needed to embed collection objects and display components: drawers; sliding trays; newspaper sticks; mounts for flyers, magazines, and tablets; video monitors; and a few glass boxes for original objects (fig. 3). There is nothing sophisticated about these display elements, produced like pieces of furniture with simple hardware and standard materials: the overall costs for the exhibition, which did not exceed 150.000 euros (approximately $156,000), take into account the all-in costs of building two custom cabinets with enough flexibility to be useful for a wide variety of objects and materials that may be placed on view in the years to come.[8]

MADE IN POLIMI: AN "EXHIBITION MACHINE"?

Made in Polimi might be seen as an "exhibition machine" without a fixed path or univocal beginning or end.[9] You can visit it once, remaining involved in a simpler, emotional approach, perhaps impressed by a general view or by the set of almost 100 small objects recovered from the experimental laboratories and departments of the Politecnico and reassembled on top of the walls in the "Sky of Politecnico Products" (fig. 4). But it also invites you to come back: to delve into the drawers, to feel the pleasure of picking up a student's booklet from the early 1900s, to get lost in one of the many stories, and

to continue this process for as long as it interests you (fig. 5).

The success of the display relies on its method of storytelling.[10] Yes, visitors to *Made in Polimi* learn about the Politecnico di Milano through the works of its professors and students, but they also discover that, even if they didn't realize it, they have long been connected to the work of the university in their everyday lives – through the objects in their homes, the transportation systems they use, and the buildings they work in, walk through, or simply admire. These suggestions can engage the public by acting as "catalysts for exploration,"[11] sparking curiosity about other connections yet undiscovered.

The structure of *Made in Polimi* is transformable and extendable: its contents can be periodically updated, while the cabinetry and system of keywords remain in place, providing a consistent way of connecting and accessing new nodes. The physical and digital mediums of display – images, documents, videos, and objects – engage the visitor in different interactive approaches, from reading and observing to touching and listening.

The hope of the exhibition's curators and designers is that *Made in Polimi* also acts as a hub connecting the spokes of a wider system of collections and archives: many departments and laboratories at the Politecnico hold historical collections – gathering measuring instruments, didactic devices, and original machines built at the university or used in teaching activities. The exhibition could become an ideal place in which to connect these disparate resources to one another, a place where fragments or

selected objects, when grouped together, can tell bigger, more expansive stories. The exhibition also offers access to "Polimi Collections," an online repository that presents the artifacts collected by the departments.[12]

At present, the exhibition space is enjoyed by more than 250 visitors per week. Their experiences will provide feedback on the efficacy of the *Made in Polimi* model and information on the easiness of interaction with the display.

DISCOVERING THE PAST TO DESIGN THE FUTURE: MODEL EXPORTABILITY

Completed in October 2020 and fully opened to the public in February 2021, *Made in Polimi* has served as a reference point in the Politecnico di Milano for students and staff, especially during the pandemic.[13] As everyday life has resumed, the exhibition has attracted even more visitors, who take time to familiarize themselves with all (or some of) the Politecnico's stories. We hope that *Made in Polimi* inspires them, through the visionary ideas it exhibits, as they conceive their own projects for the future.

In this way, *Made in Polimi* attempts "to create what might be called 'narrative environments'; experiences which integrate objects and spaces – and stories of people and places – as part of a process of storytelling that speaks of the experience of the everyday and our sense of self, as well as the special and the unique."[14] What is of interest here is to investigate what aspects of this experience might be significant when viewed as adaptable elements in the culture of exhibition projects more broadly.

Fig. 6. Interpretive panels, on display and contained in drawers, present visitors with accounts of the research, inventions, and creative leaders of the Politecnico, past and present. Different mediums – text, photographs, videos, etc. – engage the visitor.

Made in Polimi proposes a system that may be implemented and scaled according to the needs and requirements of any venue, large or small: it shows how a small space can be designed for easy content implementation and rotation, employing tools and items that can be relocated, substituted, or highlighted, depending on the curatorial choices proposed from time to time. A dynamic, hands-on archive, available to the visitor, that uses mass-produced materials, commonly available on the market and assembled using elementary techniques, it exhibits items reproduced on paper with great symbolic value but minimal economic expense, while making digital materials available via relatively low-cost media like tablets and monitors (fig. 6). It creates a space that invites personal interactive interpretations, proposing an approach where cultural resources – instead of economic ones – lead the exhibition choices toward inclusivity of contents, interests, and abilities. These characteristics may offer a replicable model: *Made in Polimi* represents one possible approach for the telling of dense and complex stories in small, low-budget exhibitions, while its structure and its means of narration are easily adapted to other stories and institutions that wish to relate their history and ongoing projects in ways that spark visitors' imaginations. ∎

1   *Made in Polimi* is curated by Federico Bucci, Claudio Camponogara, Ludovica Cappelletti, Alessandro Colleoni, Laura D'Ambros, Vincenzo Ficco, Luisa Lualdi, Simona Olgiati, Chiara Pesenti, and Mascia Sgarlata. Exhibition design by Lola Ottolini with Beatrice Chiarini. Graphic design by Francesca Ceccoli and Andrea Puppa. Installation, construction, and management support by area Tecnico Edilizia, Politecnico di Milano. Press Office: Media Relations Unit, Politecnico di Milano. *Made in Polimi* has been realized with the contribution of the Departments, the Laboratories, and the research groups, Campus Life Division and Public Engagement and Communication Division of the Politecnico di Milano, along with a number of institutions and individuals. Design objects are courtesy of Cassina spa, Kartell spa (Museo Kartell), Brionvega (SIM2 BV International srl), Tecno spa, Zanotta spa.

2   Among the most recent contributions on the history of the Politecnico di Milano, see *Made in Polimi 1863–2013* (Milan: Electa, 2013); *4 elements/taking care. Padiglione Italia*, ed. Federico Bucci, Luisa Collina (Mantova: Corraini, 2019).

3   On storytelling and social engagement, see Maria Mortati, "Experiencing the Art Museum: Methods for Public Engagement," in *Museum Experience Design*, ed. Arnold Vermeeren, Licia Calvi, and Amalia Sabiescu (Cham, Switzerland: Springer, 2018), 97–114. On the role of museums as centers of knowledge for visitors, see John H. Falk, "Museums as Institutions for Personal Learning," *Daedalus* 128, no. 3 (1999): 259–75.

4   The other sections are: "Student Life," "Drawings for Milan," "Art & Science," "Poliroom," "On the Road," "Community," "Everyday Life," "Politecnico Geographies," "Micro & Macro," "In Society," and "Seen By."

5   In its original context, "Hypertext is a computer-based software system for organizing and storing information to be accessed nonsequentially and constructed collaboratively by authors and users. ... Hypertext is frequently said to mimic the associative properties of the mind," David H. Jonassen, "Hypertext as Instructional Design," *Educational Technology Research and Development* 39, no. 1 (1991): 83–92; see also Giuliano Benelli, Alberto Bianchi, Patrizia Marti, Elena Not, and David Sennati, "HIPS: Hyper-interaction within physical space," in *Proceedings IEEE International Conference on Multimedia Computing and Systems 2* (1999), 1075–78; and Elena Not and Daniela Petrelli, "Empowering cultural heritage professionals with tools for authoring and deploying personalized visitor experiences," *User Modeling and User-Adapted Interaction* 29, no. 1 (March 2019): 67–120.

6   Constance Perin, "The Communicative Circle: Museums as Communities," in *Museums and Communities: The Politics of Public Culture*, ed. Ivan Karp, Christine Mullen Kreamer, and Steven D. Lavine (Washington–London: Smithsonian Institution Press, 1992), 184.

7   Suzanne MacLeod, Laura Hourston Hanks, and Jonathan Hale, ed., *Museum Making: Narratives, Architectures, Exhibitions* (London–New York: Routledge, 2012), XX.

8   Figure based on the bill of quantities prepared by *Made in Polimi*'s architect.

9   The expression *macchina per esporre*, which can be translated as "exhibition machine," was employed by architect Franco Albini (1905–77) in a lecture at Politecnico di Torino (academic year 1954/55), "Le funzioni e l'Architettura del Museo. Alcune esperienze," later published in Carlo De Carli, *Architettura. Spazio primario* (Milano: Hoepli, 1982), 416–23.

10   Leslie Bedford, "Storytelling: The Real Work of Museums," *Curator: The Museum Journal* 44, no. 1 (January 2001): 27–34; Bruce Wyman, Scott Smith, Daniel Meyers, and Michael Godfrey, "Digital Storytelling in Museums: Observations and Best Practices," *Curator: The Museum Journal* 54, no. 4 (October 2011): 461–68.

11   Maria Mortati, "Experiencing the Art Museum: Methods for Public Engagement," 112. On the value of interactivity see also, Marianna Adams, Jessica Luke, Theano Moussouri, "Interactivity: Moving Beyond Terminology," *Curator: The Museum Journal* 47, no. 2 (April 2004): 155–70.

12   To view the online collections, see "Polimi Collections," Politecnico Milano 1863, accessed January 5, 2023, https://www.museovirtuale.polimi.it/le-collezioni-storiche/. On the idea of a widespread archive for the Politecnico di Milano see, Fredi Drugman, *Lo specchio dei desideri. Antologia sul museo*, ed. Mariella Brenna (Bologna: Clueb, 2010).

13   Annachiara Sacchi, "Un cielo di oggetti e scoperte. Il Politecnico vola nel tempo," *Corriere della Sera*, February 11, 2021, 37; "Made in Polimi: in mostra passato e futuro dell'ateneo milanese," *Il Sole 24 Ore video*, February 24, 2021, accessed January 14, 2023, https://stream24.ilsole24ore.com/video/tecnologia/made-polimi-mostra-passato-e-futuro-ateneo-milanese/ADdE0vLB.

14   Suzanne MacLeod, Laura Hourston Hanks, and Jonathan Hale, ed., *Museum Making: Narratives, Architectures, Exhibitions*, XIX.