Documentation of the Collections:
A Historical Reading

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Historicising the Collections

The systematic study of the collections, which have formed over a period of seventy years, brings to light the different seasons that have played out in the life of the Museo Nazionale Scienza e Tecnologia di Milano, with alternating events concerning the role of objects in its cultural production.

The founding project, developed in the period between the two world wars and fully conceived during the Italian economic boom with the majority of the exhibitions being set up in the former monastery of via San Vittore, is largely tied to the acquisition of collections: thousands of instruments, machines, works of art and other materials coming from the world of research, industry and collecting, accompanied by a special library on the history of science and technology. This driving force extended to the early 1970s with the expansion of the exhibition spaces in the adjacent area that faces via Olona, with the Rail and Aeronaval pavilions entirely dedicated to the transport technology. These were years of important investment for the acquisition and installation of large object-monuments – such as trains, ships and planes – and related collections, largely made up of models (Curti 2000).

In the following decades, nevertheless, profound economic and social changes shifted the balance towards new requirements and ways of representing scientific research and innovation in public, deemed to be more suitable for tackling the challenges of imminent globalisation, the acceleration of technology and deindustrialisation (Bud 2017). Objects lost their initial appeal. The new research perspectives on the social, political and cultural implications of science and technology (along with new historiographical approaches) definitively

caused a crisis in the teleological narration of science and innovation, and also in public trust in museum institutions, something that could no longer be taken for granted (Pestre 2017). In this modified context, the rhetoric on national achievements from which technoscientific museology had originated, and on which the Milan Museum had formed its first collections, finally lost its public value (Paoloni 2018). In the same way, the encyclopaedic and universalistic intent typical of the leading national science and technology museums, such as the Deutsches Museum in Munich, which greatly inspired the Milan Museum, could hardly withstand the vastness, speed and pervasiveness of production in the second half of the 1900s. The mission of constantly updating collections in all fields of knowledge and technoscientific applications proved to be utopian (Boyle, Hagmann 2017).

The role of collections was thus called into question, not only in terms of economic sustainability, but also in terms of meaning. In the educational approach of these museums, the objects have not always played a primary role in the exhibition. They are still used on the same level as other display devices such as dioramas, reconstructions of environments and interactive exhibits. Original objects are exhibited beside reproductions or models and, as long as they are not 'relics' connected to national celebrities, they are not used for their specific story or 'biography', but as representative examples of technology, as often they are new technologies arriving directly from the manufacturing companies. The collections are not at the centre of the exhibition and the exhibition is not the result of the study of the collections (Canadelli 2019; Alberti 2005).

Hence the need, expressed in each institutional identity with its own methods and timing, to rethink the role of collections in science and technology museums, questioning the status of the cultural heritage they preserve and introducing a critical historical approach. Processes of critical self-reflection have been initiated, starting with the leading international institutions. This context has allowed the establishment of research centres or units dedicated to the study of collections, to technical-scientific museology, to the history and material culture of science and technology. The relationship between the museum and academic research has been transforming, sustaining itself with shared, co-financed projects in which knowledge and methodologies can become complementary (significant in this regard is the ARTEFACTS consortium with its associated annual conference and editorial series).[1]

Also, for the Museum in Milan the systematic study of the collections is a fundamental step which allows the improvement of the institution in many directions: research, new acquisitions, new public narratives. Turning objects into historical sources, redefining the meaning of new acquisitions, and including historical objects in the public discourse about science and technology, is the only way to restore meaning to the museum's original mandate of heritage preservation and documentation. The Osservatorio sul Patrimonio Scientifico e Tecnologico of the Museum was created in 2019 also to pursue this aim. A few years earlier we had activated the first research opportunities on the history of the institution[2] (Canadelli 2016) and on the founding collections, which led to the first scientific publications. An initial focus was on the *Raccolta Documentaria dei Primati Scientifici e Tecnici Italiani*, a collection made up of an archive of over 5000 folders and a group of over one hundred related objects, mainly replicas, documenting the national achievements in

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[1] https://www.sciencemuseumgroup.org.uk/our-work/research-public-history/artefacts-consortium.

[2] https://www.museoscienza.org/it/collezioni/progetti/progetto-ricerca-storia-museo.

science and technology, set up by the National Research Council (CNR) in1933 for Italy's participation in the Chicago World's Fair *A Century of Progress* (Paoloni 2018). Another study was dedicated to the collection of interpretative models from the drawings of Leonardo da Vinci created in the first edition for the 1939 exhibition *Mostra di Leonardo da Vinci e delle invenzioni italiane* at Palazzo dell'Arte in Milan and later reproduced for the Museum inauguration in 1953 (Beretta, Canadelli, Giorgione 2019). This publication continues along this path with the collections linked to Guglielmo Marconi, who was one of the principal promoters of the Museum in the 1930s. The roots of the Museum clearly emerge in the political culture of the fascist era, with a strategic project which presents a substantial continuity in the post-war period (Canadelli 2016) and which, also for this reason, needs to be discovered and critically reread.

Studying the collections, therefore, means rebuilding the history of their formation, the provenance of individual objects or groups of objects, the reasons for their acquisition, the actors involved, and the social and symbolic value of the objects within a given historical context (Higgith 2019).

The Museum archive therefore becomes fundamental to the process. It includes inventory registers, the photographic archive, correspondence with donors, internal reports on site visits for possible acquisitions, exhibitions projects, as well as the founder's writings. Often the bibliographical material kept in the Museum library is related to the collections, with catalogues, magazine extracts, dedicated articles in the in-house magazine and other publications concerning individuals and specific topics. From here the research expands to the archives, libraries or museums of other involved parties, not only those in Italy.

Equally important, at the same time, is the philological study of the objects, as they are the primary historical source of the museum. The direct observation of their materiality, the traces of use, the labels and inscriptions present, contribute to understanding the originality, provenance and contexts of use; all the information that it is often not possible to reconstruct using any documentation. In this work it is necessary to consult different fields of expertise: connected to materials, to the specific history of a certain type of object, or as in the most recent historical cases, to the direct testimonies of people involved in various ways in their design, production, and use.

The 'biography' of the objects includes their life before arriving at the museum, as well as their life within the museum, from exhibition to storage or vice versa. It comprehends their preservation, exhibition and documental history, and the various public usages that have been made of them, including the relationship established over time with the generations of visitors. The direct accounts of the different professionals who have cared for the objects within the museum constitute another important source of knowledge (Alberti 2005; 2022).

Making Documentation Practices Public

The documentation of MUST collections began in the early years of the institution's existence, with the creation of object entry forms and the insertion of owned assets or loaned assets in inventory registers, where every object received a unique identification number. Also recorded were the donating party, the year of acquisition, the estimated value and the exhibition or storage space designated to the asset in that moment of history. A label with the assigned inventory number was attached to the object. Simultaneously, the Museum systematically

commissioned photographic campaigns of the collections, today preserved in the photographic archive. Research has still not been carried out to clarify how the internal processes of acquisition and registration of objects were conducted, and which professions were involved, but a preliminary analysis would seem to indicate a stronger link to administrative, rather than historical-scientific, roles.

The transition from inventory to catalogue, that is to say to the historical-scientific documentation of collections, only began from the 1980s and 1990s, in a period subsequent to the establishment, in 1975 of the Ministry of Cultural Heritage and the Central Institute for Cataloguing and Documentation (ICCD), which intended to organise the work on the national catalogue.[3] A journey that lasted more than twenty years, undertaken by universities and museums, in collaboration with the ICCD, it would lead to the creation of a specific cataloguing form for scientific and technological heritage (Miniati 2005-08; Vannozzi 2014; Ferrante 2018). This happened in precisely the same years that this heritage was finally added to the legislation on cultural heritage (Codice Urbani 2004), more than eighty years after the first reports about its neglect (Canadelli, Di Lieto 2024).

Although today there are only a few thousand records for Science and Technology Heritage (Patrimonio Scientifico Tecnologico) published online in the General Catalogue for the Ministry of Cultural Heritage, the PST cataloguing form has now become a reference tool for anyone interested in research activities related to this heritage. Nevertheless, given that this heritage is spread out and fragmented throughout Italy, as in the case of archives[4] and school collections (Morisetti, Servida, Ronzon 2024), it still does not receive the professional attention that it merits.

The most recent history of collection cataloguing at the National Science and Technology Museum engages with this drive to promote research and public interest in Italy's scientific and technological heritage. Essentially lacking a tradition of publishing scientific catalogues for its collections, the Museum has focused on providing free remote access to its documentary resources, firstly by making the catalogues available online: the first 800 object cataloguing records were published in 2007, this then increased to 3,000, followed by the library catalogue in 2010, and then in 2015 the historical archive inventory. Following the COVID pandemic, the digitalization of the Museum collections experienced an extraordinary acceleration on an international level (Baxter et al. 2021; UNESCO 2021) and the Museum also launched a unification and realignment project of the pre-existing data in a new Digital Asset Management System (DAMS), experimenting in 2022 with the publication of all 20,000 objects in Linked Open Data (LOD)[5] format, inspired by the presentation a year earlier of the General Catalogue of Cultural Heritage by the Ministry of Culture. Building on this database, it is planned to integrate the publication of the *collezionionline* interface, and similarly *archivionline* (2023), into the Museum website. This will allow anyone to easily consult all the object records, without any distinction between those with minimal inventory information (even without photos), and those that are more detailed, typical of catalogue record forms, as is already common practice in museums in London and Munich.[6]

This radical choice of broader accessibility seeks to

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3 https://catalogo.beniculturali.it/.

4 https://archividellascienza.org/it/.

5 https://www.museoscienza.org/it/offerta/linked-open-data.

6 https://collection.sciencemuseumgroup.org.uk/ and https://digital.deutsches-museum.de/de/, respectively.

make the internal work on collections increasingly transparent, and it is not without consequences (Getty 2017). This is not a matter of a scientific catalogue aimed at experts, the result of a specific collection-based research project which, at a given moment in history, captures the most up-to-date and authoritative compilation of knowledge for the next generations of researchers. What is being made public is essentially the general inventory of the collections, which has been transformed from a back-office instrument to a free access public resource, and which is enriched and updated in step with the documentation and research work that the Museum manages to support. The richness, variety and specificity of the entirety of the Museum heritage thereby materialize, just like the inevitable incompleteness of the information and the qualitative disparity of the descriptions. The layering of cataloguing becomes evident over time which, although created according to procedural norms, reflects the historical and cultural contexts in which it was compiled, and inevitably bears only some of the multiple levels of meaning inherent in every object, depending on who has evaluated it (Cameron 2010, 81, 87).

In this sense, digital technology raises the critical topic of documenting continuous data updates and relevant authorship, as well as conserving the data itself. Ultimately, what is being called into question is the very practice of documentation, which has been transformed from a behind-the-scenes service activity – individual, specialized, single-media, and objectifying – to a public service, becoming one of the tools through which the Museum conveys its values. It acknowledges that objects are examined from multiple perspectives by audiences with varying levels of prior knowledge and personal experiences (Rohde-Enslin 2020).

In reality, digital technologies erode the foundations of the very concept of catalogue, understood as a publication of a collection of individual object records, divided by domain, consultable in a closed system and typical of a traditional paper catalogue. The semantic web brings to light the revolutionary potential of transforming the catalogue from a list of things to a map of relationships, in a system open to technical and conceptual interoperability which allows different domains and systems to connect. The ICCD also embarked on this road in 2018 with the ArCo – Architecture of Knowledge (Carriero et al. 2019) project and other leading science and technology museums are also engaging – as in the case of the London Science Museum (Congruence project; Boon 2022) and the Deutsches Museum (Memory project/Nationale Forschungsdaten Infrastruktur, 2023-28).

From this perspective, it is fundamental for the future to invest not only in technologies, but above all in research and training. The reflection on the value of the catalogue at an epistemological level leads us to question the type of information it contains (Which historiographies? Which disciplinary perspectives? Which narratives?), the relationships that are established (Which connections activate – or do not activate – the chosen data?), and the impact on the public, which is not necessarily aware of the context in which this information is produced. Digital instruments offer the possibility of increasing the range of contributors who interpret or reinterpret the collection objects, conferring on whoever documents these accounts a responsibility similar to that of those who decide which objects to acquire for the Museum collection. It is only by carefully overseeing the process through which this information is gathered and selected, and by choosing to record it transparently, that it becomes possible to comprehend the framework within which it has been interpreted, and thereby open it to new approaches and keep the dialogue between people and collections alive.

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