

Technical cultures of repair, from prehistory to the present day

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Repairs are a special moment in the "**biography of an object**" (Appadurai, Kopytoff). Although it was taken off the market circuit when it was bought, the object returns to the field of exchanges after being repaired, following an accident, wear and tear, or due to shortages or political commitments to sustainable consumption. This circulation generates knowledge and know-how, it involves professions and sociability (often gendered), it enhances the organization of a production system, largely supported by subcontracting networks and decentralized workshops, including in the contemporary period. Even in electronic processes, supposedly preventing any appropriation, are nestled complex embodied know-how, cultural cements of established professional circles (Callén). Recent creations of repair sites for electronic equipment attest the strength of this model but also the emergence of a new consumerist logic. Renewed studies since a generation on the restoration of technical objects in museums converge with these subjects dealing with "the life of the objects" (Bonnot) by asking the question of the limit between the necessity to repair and the preservation of traces of use, this limit materializing the distinction between a functional object (being repaired) and piece of art (being restored).

Research in archeology is full of examples of repairs at all times. Since the **Paleolithic**, societies have repaired flint, either to sharpen sharp tools or to produce other tools. It is then necessary to distinguish what is of the order of repair to retain the desired use of the object, and what is associated with true recycling using a partially formatted raw material. The analysis of repaired objects allows us to understand the reasons for the repairs and to approach the values assigned by each community to the objects in question. In some cases, this may involve repairs to an object that has caused a considerable workload; in others, the symbolic value of these objects has created a need to preserve them, as it is illustrated by the case of ceramic material.

The gap is to be emphasized with the historical works. While the history of consumerism, which has been booming for a generation, has been heavily influenced by second-hand sales, the prolongation of life of objects in scarcity societies and recycling circuits, the history of repairs was not often addressed. Similarly, the interest in re-employment in approaches crossing anthropology, ethnology, sociology, archeology and the history of technology has quite neglected the study of gestures, places, knowledge and repair circuits. Business archives suggest, however, over the long term, the **extent of repairs in craft and manufacturing enterprises**, sometimes along intercontinental circuits. Recent approaches show the importance of these everyday and repetitive techniques in the reconfiguration of trade identities around operative skills and in the emergence of transverse production sectors, for example for the supply of spare parts and fasteners. It belongs to the history of the rationalization of work, as already shown by the studies on artillery (Alder) or on shipbuilding ("From repairs came industry," said H el ene V erin). Thus, repair techniques are part of the concept of "technology's middle ground" by which Kevin Borg defines "an ambiguous space between production and consumption".

While the transformation of production methods in the 19th century through the interchangeability of parts led to a "discipline" of repair, in the 20th century the planned obsolescence introduced a new relationship to the object that excluded any possibility of repair - hence transforming the goals assigned to engineers. This disappearance of the repair prompted the reactions of sociologists in the 1960s (Packard) and more recently, of consumer groups (and their lawyers, like against Apple in 2003), of journalists (Slade), and even industrialists concerned with sustainable economy (Warner *et alii*). In the 20th century, whereas the era of mass consumption diffused the culture of the ready to use and throw away in the West, the **communist ideology** on the contrary emphasized the technical cultures centered on the extended uses of the objects in the name of the inventiveness, the rationalization and the value of human work. In the communist countries, secondary schools trained girls to make clothes and repair clothes and boys to make objects with wood and other materials (Golubev, Smolyak). Magazines and clubs promoted repairing know-how among amateurs, while repair centers were created and included specialized workshops in household technologies, clothing, shoes, etc. Planned industry malfunctions,

with stock outs and systematic rejects, were then compensated by amateur and professional repair circuits and by the traffic of spare parts and pieces (Siegelbaum).

The subject opens on the place of technical action to restore and sustain the functionality of the objects – that is, **the human part of technology**. Western industrialization itself has fostered critical reflections on the urge to progress and the dehumanization that went hand in hand with it. In the 19th century, while mechanization and the race for power and speed led to the sanctification of technology and to the marginalization of the human factor, the place of repair was indicative of the willingness to enhance the appropriation of the machine by man (Jarrige, Barron). The milieu that was concerned with the quality of the objects, their reliability, their safety (like in the Conservatoire des arts et métiers) and hence, with repairs and maintenance, reintroduced descriptions and analysis of the human action in technical publications, and collected all sorts of techniques – everyday life techniques and micro-inventions-, in connection with the rising profession of mechanic (Dufaux).

This technical culture of repair, which has matched the intensification of production (artisanal and industrial) and which has received its theorization (Simondon) raises the question of the temporalities. Are mending techniques to be assigned to a traditional material culture or do they participate in new know-how? Ordinary repairs in the countries of the South and in Asia are emblematic of a **plurality of temporalities**. The work on repairs in Africa shows the way here (Speranza). Scrubbing, sanding, varnishing are all acts that anticipate degradation and are part of a maintenance economy, suggesting the need to study the temporality - and the words (Roulon-Doko) - of this complex activity, occasional and / or regular, combining the short-term and the long-term life of objects (Dupré). These daily and ordinary repair cultures are widely found in developing countries and continue today. But the current situation of countries such as Ghana which is subject to the dumping of electronic products from developed countries, repaired for resale or recuperated (waste fields), raises the question of the articulation of these new intensive practices - an expression of obvious economic domination - with traditional ones inscribed in very different logics. Moreover, whereas it is quite usual to consider repairs as part of the so-called informal economy (Cheneau-Loquay), the last decades have been blurring the border between the circuits of objects in rich and poor countries because of the emergence of the culture of reparation as an ecological approach and as a citizen commitment to slow consumption. The economy of recycling and re-use reflects an institutionalized concern for the environment – that is questioned (Monsaigne) – in addition to individual repair practices (Anstett, Ortar).

Finally, repair is a **reflexive operation**, which purpose is not only the restoration of a disturbed function or a damaged envelope, but also the investigation of the causes of dysfunctions, which is part of the improvement and the perfecting of devices, and belongs to the innovative practices (Jackson). Beyond this, repair is resurfacing today in an unexpected way, as a claim of technical intelligibility that undermines the *topos* of the gap between manual and intellectual activities: this reconfiguration could invite us to rethink our conditions of access to reflexivity as being originally and always already technological (Crawford).

This symposium proposes to examine **the evolution of repair practices and cultures in the long term, in a global and comparative perspective**. It intends to examine the sites of repair (factories, docks, workshops, clubs, garages, home, etc.), the figures of the repairer (the amateur and the professional) and the ways in which the functionality of objects is envisaged during repairs (repair as restoration or repair as transformation). An approach based on geographical areas should allow the identification of circulations of models and repair techniques from one region to another, and understand how such circulations impact the economy and techniques around the world. The object is at the core of our approach - its materiality, its circulations, its biography allowing to grasp the cultural contexts in which to consider repairs.

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