Mending or Ending?

Consumer Durables, Obsolescence and Practices of Reuse, Repair and Disposal in West Germany (1960s–1980s)

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Over the course of the 20th century, consumer practices of care, repair and disposal underwent substantial changes. "Ending is better than mending", whispered a nightly recorded voice into the ears of those sleeping in Aldous Huxley's dystopia *Brave New World* (1932) to encourage them to throw old possessions away and buy new ones.[1] Two to three generations later, the indoctrination seems to be routine for many consumers in the Global North. A recent survey among Germans aged between 18 and 39 reported that half of them have never had a pair of shoes repaired.[2] By contrast, at the time Huxley was writing, around 40% of what Germans spent on shoes flowed into repair services.[3]

When consumers decide whether to "mend or end" a commodity, they decide on the temporality of its use. But consumer product lifetimes have also changed over time. When the term "consumer durables" – *langlebige Gebrauchsgüter* in German – spread in post-war economic thinking, these items were less "durable" than might be believed, and a second term soon followed: product "obsolescence", which expressed the notion that consumer durables "age" and users might see them as "obsolete" when compared to the latest offerings. Whether a

1 Huxley, Aldous: Brave New World, Harlow: Longman 2008 (first published in 1932), p. 40.

2 Anon.: Wegwerfware Kleidung, Repräsentative Greenpeace-Umfrage zu Kaufverhalten, Tragedauer und der Entsorgung von Mode, Hamburg 2015, p. 73.

3 Sudrow, Anne: "Reparieren im Wandel der Konsumregime. Bekleidung und Schuhe in Deutschland und Großbritannien während des Zweiten Weltkriegs", in: Technikgeschichte 79, 3 (2012), p. 227–254, here p. 232.

consumer durable's lifetime is prolonged or terminated is thus co-determined by norms and values on temporal agendas such as novelty, transience and deterioration, alongside broader economic and sociocultural considerations. In the second half of the 20th century, mass consumers in affluent Western societies, for instance, acquired the latest car or television model also as a marker of status or lifestyle, and self-repair was more of a recreational activity than an economic need. By contrast, in socialist societies, repairing, reusing or hording items for later use or barter were personal strategies to overcome the shortcomings of the socialist market.[4]

In the United States, Susan Strasser has described how, after the nation transitioned into a mass consumer society in the interwar years, the traditional stewardship of objects decreased and throwing away became the norm for worn-out clothes or broken things; convenience and disposable products were now marketed on a mass scale and urban authorities installed waste services as public disposal channels.[5] But even given the disposability of goods and the availability of waste infrastructures, discarding still poses the problem for consumers of parting with goods – a problem for which terms such as "dispossession" and "divestment" have been introduced in material culture studies; as well as the issue of waste, it raises ethical questions of morals and norms, of values, meanings and their re-definition.[6] While the transitions of the United States and various Western European countries into mass consumption societies have been extensively described,[7] there is a lack of relevant research on using and discarding consumer durables: the issues of wear and tear, repair and the practices of care,

4 See Gerasimova, Ekaterina /Chuikina, Sofia: "The Repair Society", in: Russian Studies in History 48 (2009), p. 58–74; Möser, Kurt: "Thesen zum Pflegen und Reparieren in den Automobilkulturen am Beispiel der DDR", in: Technikgeschichte 79, 3 (2012), p. 207–226.

5 Strasser, Susan: Waste and Want. A Social History of Trash, New York: Metropolitan 1999.

6 Lucas, Gavin: "Disposability and Dispossession in the Twentieth Century", in: Journal of Material Culture 7 (2002), p. 5–22; Gregson, Nicky/Metcalfe, Alan/Crewe, Louise: "Moving Things Along. The Conduits and Practices of Household Divestment", in: Transactions Institute British Geographers 32 (2007), p. 187–200; Gregson, Nicky/Crewe, Louise: Second-Hand Cultures, Oxford/New York: Berg 2003.

7 For West Germany see: König, Wolfgang: Geschichte der Konsumgesellschaft, Stuttgart: Franz Steiner 2000; Haupt, Heinz-Gerhard (ed.): Die Konsumgesellschaft in Deutschland, 1890–1990. Ein Handbuch, Frankfurt a. M.: Campus 2009; Andersen, Arne: Der Traum vom guten Leben. Alltags- und Konsumgeschichte vom Wirtschaftswunder bis heute, Frankfurt a. M.: Campus 1999.

disposal, reuse and resale, once the affluence of the latter 20th century saw households acquiring more and more items.[8] Even on the quantitative level, detailed figures on equipment acquisition are absent, as are approximate numbers on the continuous growth in household possessions over time (while household sizes shrank) or on second-hand markets and the importance of private or professional repair and resale.

This chapter considers the case of West Germany between the 1960s and the 1980s, when consumers adopted novel values and ways of handling domestic equipment. From the 1960s onwards, post-war economic prosperity saw "citizen-consumers" – as historians would later term them[9] – shopping in supermarkets and acquiring novel consumer goods such as pre-packaged food, plasticware and mass-produced furniture. Items such as furniture and washing machines were now acquired without the idea of a lifelong or even intergenerational use in mind, and practices of care, reuse and disposal changed accordingly. Such everyday practices have left behind virtually no manifest historical sources, so the chapter approaches changing consumer culture indirectly, through three closely interlinked fields, namely discarding bulky waste, the conditions and channels for private and professional reuse, resale and repair, and, on the discursive level, debates on society's wastefulness and product obsolescence. Sources that document these fields include expert journals for waste practitioners, archival documents on waste collections, reports on or price tables from second-hand markets, surveys within the electrical profession, consumer journals, housekeeping or repair guidebooks, trade address books, popular and professional literature and the press.

The chapter begins by looking at the phenomenon of bulky waste (*Sperrmüll* in German). Emerging in the 1950s, this specific waste fraction represented a material trace of changing practices in acquiring and discarding household effects. Many consumers "ended" the use of consumer durables by discarding them on bulky waste heaps. The experience of local authorities in dealing with

8 Rough sketches include: Slade, Giles: Made to Break. Technology and Obsolescence in America, Cambridge, MA: Harvard University Press 2006; Trentmann, Frank: Empire of Things. How We Became a World of Consumers, from the Fifteenth Century to the Twenty-first, London: Allen Lane 2016, p. 622–755; König, Wolfgang: Geschichte der Wegwerfgesellschaft. Die Kehrseite des Konsums, Stuttgart: Franz Steiner 2019; Heßler, Martina: "Wegwerfen. Zum Wandel des Umgangs mit Dingen", in: Zeitschrift für Erziehungswissenschaft 16, 2 (2013), p. 253–266.

9 Cohen, Lizabeth: A Consumer's Republic. The Politics of Mass Consumption in Postwar America, New York: Knopf 2003; Prinz, Michael: "Bürgerrecht Konsum", in: Archiv für Sozialgeschichte 44 (2004), p. 678–690.

bulky waste and its removal gives us a glimpse into practices of discarding and the channels for disposal. Given households' increasing acquisitions on a quantitative level, discarding via bulky waste collections soon began to take precedence over handing down or reselling. However, even as bulky waste, these items had an "afterlife":[10] some were salvaged, repaired and reused, while most bulky waste was dumped in landfills whose specific combinations of materials eventually generated unforeseen long-term problems.

The following two sections are devoted to the channels and conditions of reuse, resale and repair, describing them as interlocking strategies which were co-determined by consumer offers and discarding practices. The first part provides an overview of repair and resale, mostly on the basis of professional markets or services; some sources also shed light on private reselling, handing down or self-repair practices. The second part looks at professional repair in the case of televisions and radios and shows that repair adhered to various economic developments depending on respective product categories. Services for advice, maintenance and repair were key for the widespread adoption of any sophisticated technical appliance,[11] while self-repair was restricted to expert users or, in the case of lay users, to simple fixes. As we will see, televisions were notorious for regular defects over several decades and their use relied on a booming field of professional repair. In contrast, post-war radio designs became less repairable, leading to a decline in the radio repair sector.

The chapter concludes with the post-war intellectual critique of the contentious notion of "throwaway society" (*Wegwerf-Gesellschaft*). This term was also prominent in a fierce dispute on product obsolescence which emerged in the 1970s. The debate grappled discursively with disposability, excess waste and the contemporary observation of a demise of repair and repairability as well as foreshortened product lifespans. But in the end, the discussions did virtually nothing to promote repairable or more durable designs; they failed to shed light on why and how users "ended" a consumer durable or to clarify how producers actually managed product lifespans.

The focus areas identified above – discarding bulky waste, the paradigms of repair, reuse and resale, and debates on wastefulness and obsolescence – were part and parcel of changing cultures of "ending" and "mending". The chapter carves out their historical situatedness in the context of larger social, economic

10 See Dhawan, Ayushi: "The Persistence of SS France. Her Unmaking at the Alang Shipbreaking Yard in India" (this volume).

11 Krebs, Stefan/Weber, Heike: "Rethinking the History of Repair: Repair Cultures and the 'Lifespan' of Things" (this volume).

and cultural changes: authorities redefined the households' problem of how to discard bulky items as a public obligation; the average affluence of households increased, as did their acquisitions; producers amplified their product offerings while innovation rates likewise accelerated; and cost ratios shifted in favour of accessing new equipment since rising wages hampered the labour-intensive re-use and repair markets.

"ENDING" CONSUMER DURABLES IN THE AFFLUENT AGE: BULKY WASTE AND ITS DISPOSAL

Like many other West German cities, Frankfurt am Main established a municipal disposal service for bulky items in the early 1960s. As Frankfurt's bulky waste service operated on call and involved a charge – disposing of a sofa cost 2 Deutsche Mark (DM) and a chair 1 DM –, staff documented any incoming item for whose final disposal the municipal waste service would be responsible:[12] over a period of five weeks in the spring of 1961, 125 couches, 5 chaise longues, 40 armchairs, 75 mattresses, 27 beds and three fridges were collected, along with some further small household items. In 1967, the yearly list read as follows:[13] 2,009 sofas and couches (i.e. more than 160 per month), 3,532 cardboard boxes, 2,190 boxes and suitcases, 1,011 spring frames, 2,135 mattresses and more than a thousand carpets, chairs, beds, armchairs and cupboards, 1,376 stoves, around a thousand shelves, 632 refrigerators and washing machines, and considerable numbers of bicycles, car tyres and other items.

As an unintentional historical record, these descriptions indicate the onset of households' growing need to dispose of old things once the early post-war period of thrift and make-do gave way to affluence and the increasing consumption described in consumption history.[14] In the course of two to three decades, equipment in kitchens and other rooms in the house changed as much as the channels and methods of discarding and disposal. By 1970, mass consumption had profoundly transformed Western European societies. Convenient heating

12 See the archives of the Institut für Stadtgeschichte (IFS), Magistrat an Stadtverordneten-Versammlung: "Müllbeseitigung und Straßenreinigung", 19 Jun. 1961, Stadtkämmerei, 2.060; on fees: Anon.: "Stadtreinigung holt sperrige Güter ab", in: Frankfurter Hausfrauen-Zeitung, Jul. 1965, p. 4.

13 IFS, Magistrat an Stadtverordneten-Versammlung: "Kehrichtabfuhr im Allgemeinen", 26 Feb. 1968, Magistratsakten, 6.961.

14 See König, Geschichte; Haupt, Die Konsumgesellschaft; Andersen, Der Traum.

systems were gradually replacing traditional fireplaces, which accounts for the more than thousand stoves in Frankfurt's bulky waste service in 1967. Mass motorisation had set in, and rural citizens were also becoming mass consumers. Moreover, consumers replaced appliances or furniture more often than the previous generation. By 1970, purchases of key appliances such as washing machines and televisions mostly served to replace older models, while the use of innovations such as cassette recorders, video recorders and dishwashers grew steadily. The share of possessions that were repaired or reused fell, as shown in the subsequent section on "mending".

Bulky waste (*Sperrmüll*) appeared as urban litter in the late 1950s, when some consumers discarded unwanted items by dumping them on street corners or in car parks, or driving to the outskirts of the town or city and dumping them there.[15] Small traders and warehouses also discarded packaging, and in the 1960s, abandoned cars began to appear. At first, municipal authorities were undecided as to whether these residues constituted a municipal responsibility.[16] But in their effort to keep towns and cities clean, many swiftly took on the task. By 1962, more than a hundred towns and cities with over 10,000 inhabitants were operating bulky waste services, according to an initial survey by the Association of German Cities.[17] In 1964, a national study on bulky waste was conducted, with the results affirming that urban households had turned into "considerable producers of bulky waste", with old mattresses, chairs, pianos, furniture, carpets, sewing machines and bicycles figuring as prominent items.[18] Some local representatives even called for municipal bulky waste services for towns with fewer than 10,000 inhabitants.[19] While "ending" cars was left to private dismantling channels and junkyards, bulky waste systems became a seemingly indispensable extension of municipal waste disposal services, with just one basic rule: any item, except for motor vehicles or rubble, was considered as potential bulky waste as long as it did not fit into municipal waste bins for disposal. While citi-

15 Mahlke, H.: "Sperrmüllabfuhr in Bochum", Städtetag 7 (1961), p. 395–397; Borchert, Fritz: Gutachten über die Sammlung, Aufbereitung und Beseitigung von Sperrmüll. Berlin/Munich: Schmidt 1964.

16 Langer, W.: "Geordnete Müllablagerung", in: Städtetag 1 (1965), p. 41–48.

17 Only 128 towns and cities replied; seven of them lacked separate bulky waste services. See Erbel, Alfons: Sperrmüllabfuhr. Ergebnis einer vom Deutschen Städtetag im Einvernehmen mit dem Verband Kommunaler Fuhrparks- und Stadtreinigungsbetriebe im Jahre 1962 durchgeführten Umfrage, Cologne: Deutscher Städtetag 1963.

18 Borchert, Gutachten, p. 4.

19 Magistrat: Kehrichtabfuhr: Auszug aus den Mitteilungen der Kommunalen Gemeinschaftsstelle für Verwaltungsvereinfachung, 25 Aug. 1963, Nr. 148/63.

zens had once been responsible for the disposal of their effects, now neither individual consumers nor producers but rather local authorities took over the duty and logistics of durables' final disposal.[20] In rural areas without a waste service, a gravel pit often served as an informal dumping ground.

Bulky waste emerged for several reasons. The 1964 bulky waste study pointed to rising incomes which enabled the purchase and replacement of furniture and domestic appliances and the shrinking scrap, second-hand and repair trades.[21] But alongside these economic reasons, social, cultural, material and spatial aspects were decisive. Urban apartments and post-war housing lacked adequate storage space for people to hold on to items that were no longer being used. Domestic fireplaces, once ignited by scrap cardboard or wood, disappeared, and novel consumer goods such as plastic bowls or pocket radios would rarely be reused or repaired. Moreover, the traditional care or repair of furniture and other possessions and practices of handing down or reselling old things were substituted by a consumer culture dominated by a passing use of more and more objects.

Popular books and magazines on housekeeping, overtly aimed at housewives, offer some insight into these changing disposal practices. Around 1960, advice on reuse, e.g. how to make a sideboard from the old living room cabinet, was still abundant.[22] But housewives were also encouraged to discard old items to keep order. In particular, moving house was the perfect opportunity to "part with all useless clutter" as described in a women's magazine: housewives should sort through wardrobes, drawers, cellars and attics and get rid of the "gimcrack" hoarded in them.[23] This article advised donating old clothes and furniture to charitable organisations – channels for reuse which were still relevant in later times but were forced into a niche when compared with the volumes disposed of in bulky waste collections.

In the 1960s and 1970s, bulky waste services were available in more and more urban regions and easy to use – they were free of charge or required a minimal additional fee. This contributed to the steady increase in the amounts collected. Volumes of bulky waste fluctuated between regions, but they were clearly related to collection arrangements and the sizes of municipal waste bins.

20 Strasser, Waste; Weber, Heike: Reste und Recycling bis zur "grünen Wende" – Eine Stoff- und Wissensgeschichte alltäglicher Abfälle, Göttingen: Vandenhoeck & Ruprecht 2021 (forthcoming).

21 Borchert, Gutachten, p. 4.

22 See e. g.: Anon.: "Was tun mit dem alten Schrank?", in: Brigitte 1 (1960), p. 67.

23 Anon.: "Wir ziehen um!", in: Brigitte 17 (1959), p. 43.

Towns and cities with public open-street collections had higher bulky waste volumes – often also including bags filled with textiles or paper – than those with fee-based pick-up services, an experience which led West Berlin to switch from street collection to a pick-up service in 1975. In regions lacking large municipal waste containers, bulky waste amounts reached higher levels. Figures on total amounts diverge, but they suggest that by the early 1980s, the average inhabitant – in urban as well as rural households – generated between 22.7kg and 35.6kg of bulky waste each year.[24] Detailed studies on material contents are rare, but an analysis for the mid-1970s in the district of Ludwigsburg reported that paper and wood represented more than half the weight of waste, followed by paperboard (16 to 19%), plastics (around 7%) and iron (5 to 8%); glass and textiles contributed around 3 to 6%.[25] By the late 1970s, more and more electrical consumer appliances were also being found in the content of bulky waste.[26]

For consumers, discarding consumer durables meant putting the items on the street the evening before collection day – often this was offered quarterly –, or calling municipal services and arranging a pick-up date on which municipal waste workers would come and remove the items (fig. 1). Municipal waste services, on the other hand, were ill prepared for this waste fraction and its diverse material contents. Initially, several towns and cities worked in collaboration with local scrap traders which also might salvage recyclable items from local dumps. When Bochum disposed of the items of its initial collections in local dumps,[27] citizens gathered there and took reusables back home. To avoid this circulation of abandoned goods for reasons of hygiene, the bulky waste was eventually burnt on site. Darmstadt handed the responsibility entirely to scrap dealers to organise a yearly bulky waste collection.[28] Waste salvage still constituted a business around 1960, and the scrap trade (*Altwarenhandel*) involved buying various used materials to process them for reuse in production. But such reuse channels would soon disappear as a result of declining scrap prices and increasing combi-

24 See Lösch, Klaus: Probleme des Abfallaufkommens und der Abfallbeseitigung dargestellt am Beispiel bundesdeutscher Städte, Bremen: 1984, p. 24; Argus [Arbeitsgruppe Umweltstatistik] (ed.): Umweltforschungsplan des Bundesministeriums des Inneren. Abfallwirtschaft. Forschungsbericht 10303503. Bundesweite Hausmüllanalyse 1979/80, Berlin 1981, here p. 158.

25 Müll und Abfall, Beihefte 14 (1978); Langer, Hans/Stief, Klaus: Menge und Zusammensetzung von Abfällen, Berlin: Schmidt 1978, p. 37.

26 Hungerbühler, Eberhard: Neuer Rohstoff Müll-Reycling, Ravensburg: Maier 1975, p. 39.

27 Mahlke, Sperrmüllabfuhr, p. 395–397.

28 Erbel, Sperrmüllabfall, p. 5.

nations of material components – dismantling and recycling a cast iron stove was safe and simple when compared to a 1970s television set. Most bulky waste ended up in municipal landfills, where it was shredded, bulldozed and buried along with other waste. By 1975, municipal waste consisted of roughly 65% household waste, 9% bulky waste and 26% trade waste. By now, nearly 40 incineration plants were in operation, and these likewise absorbed a share of around 9.5% of bulky waste.[29]

Figure 1. Scene from Düsseldorf's bulky waste collection: waste workers load discarded sofas, prams, chairs and mattresses for disposal. Photograph by Irmgard Baum (undated). Source: Stadtarchiv Düsseldorf, 025_422_010.

29 Gerhards, Kurt-Hermann: Menge und Art der Kunststoffe im Müll und ihre Bedeutung für die Schadstoffemission aus Müllverbrennungsanlagen, PhD dissertation, University of Stuttgart 1975, p. 39.

As a highly visible sign of changing usage and disposal patterns, bulky waste became a contested icon of mass consumerism and throwaway practices. For public discourse, cultural critics, concerned citizens and waste professionals alike, it indicated West Germany's rapid transition to a throwaway society. Vance Packard's *Waste Makers* – a revealing perspective on the ephemerality of American consumer culture, translated as "Die große Verschwendung" in 1961 – was widely read,[30] and in the public debate, corporate America's promotion of convenient disposability was almost univocally rejected. The author and journalist Theo Löbsack interpreted bulky waste as the "capitulation of large swathes of the population" unable to resist the lure of advertising and the latest fashions. In his eyes, discarded "radios that still played, irons that still could be ironed with" represented a consumer culture that threw away consumer durables "by sudden aversion or because of the irresistible wish to own the 'latest model'".[31] Aware of the fact that the items consumed would eventually end in municipal waste heaps, waste experts closely observed changing consumption patterns. They noted the decline of the waste salvage trade which had once scrapped old washing machines or stoves as much as the role of fashion that on average saw "one generation … consume at least two complete sets of furniture".[32] In 1970, a waste practitioner described bulky waste as "a true reflection of the development of civilisation and rising standard of living of populations …, with the first signs of the transition from a 'consumer society' to a 'throwaway society' becoming apparent".[33]

Over the course of the 1970s, bulky waste was still seen as a sign of throwaway consumption patterns, but what was more prominent in public discourse was its rediscovery as a reservoir for reusables. Salvaging piles of bulky waste for vintage finds became such a trend that some municipalities stopped announcing collection dates in the daily press. "If you search through the mountains of old cardboard boxes, you will find wall clocks, grandfather clocks and pocket watches, dressers, tables and chairs from the last 50 years of German home decor and sometimes also from the Biedermeier era", reported the news magazine

30 Packard, Vance: The Waste Makers, New York: McKay 1960; Packard, Vance: Die große Verschwendung, Düsseldorf/Vienna: Econ 1966 (1st edition: 1961).

31 Löbsack, Theo: "Müll-Lawine", in: Universitas 12 (1971), p. 1285–1294, here p. 1287.

32 Wienbeck, U.: "Die Entsorgung als Teilaspekt der Infrastruktur in Verdichtungsgebieten", in: Städtehygiene 6 (1970), p. 138–142, here p. 138.

33 Jäger, Bernhard: "Menge und Zusammensetzung von Siedlungsabfällen", in: Städtetag 4 (1970), p. 205–209, here p. 208.

Der Spiegel in 1972.[34] Searching through bulky waste became a hobby for refurbishing enthusiasts and was daily labour for those who provided goods for flea markets and second-hand stores when these became fashionable in the late 1970s.[35] Michael Thompson's now classic "Rubbish Theory" originates in this specific historical setting; it describes how what is worthless for one user may be highly valuable for another.[36]

In the 1980s, public discourse finally shifted to the environmental problems of bulky waste. Environmentally aware citizens rescued items of bulky waste from the dump as a way of saving resources and protesting against overconsumption. A 1990 guidebook on reusing bulky waste depicted such contemporary rag pickers as heroes, "the true nature conservationists, recycling specialists and ultimately perhaps decisive for saving the blue planet we call earth".[37] The book also gave tips on repairing old equipment and on channelling valuable items such as copper wire and kitchen sinks back into economic circulation. Moreover, by the late 1980s, the potentially hazardous effect of dumping electronic waste became evident: along with televisions, electronics and refrigerators, toxic chemicals such as PCBs and CFCs were being channelled into landfills and the air.[38]

"MENDING" CONSUMER ELECTRONICS: CONDITIONS AND CHANNELS FOR REUSE, RESALE AND (SELF-)REPAIR

For clothing, the shift from mending to ending has been frequently described – and with it, the changing conditions of repair and reuse.[39] Mending helped work-

34 "SPERRMÜLL. Fuzzis und Schrotties", in: Der Spiegel, 18 Sep. 1972, p. 175.

35 "Schrank ausgemistet. Auf der Mode-Szene blüht ein neuer Zweig. 'Second-hand'-Handel mit teuren Modellen", in: Der Spiegel, 24 Jul. 1978, p. 141.

36 Thompson, Michael: Rubbish Theory. The Creation and Destruction of Value, Oxford: University Press 1979; for the cult of refurbishing old cars see Lucsko, David N.: "'Proof of Life' – Restoration and Old-Car Patina" (this volume).

37 Golluch, Norbert/Klöstzer, Eckhard: Das Sperrmüll-Buch, Reinbek: Rowohlt 1990, quote p. 12.

38 Organisation for Economic Co-operation and Development (ed.): Product Durability and Product Life Extension. Their Contribution to Solid Waste Management, Paris: OECD 1982, p. 65.

39 Sudrow, Reparieren; Lockren, Patricia: "Strategien und Techniken textilen Reparierens. Eine Exploration anhand englischer Frauenkleidung des ausgehenden 19.

ing families to wear clothes at length, hand them down or reuse them, while bourgeois households valued needlework as a female skill and a sign of provident housekeeping. Tailors also offered mending services, but their number fell from 150,000 in the early 20th century to 12,000 in the late 1970s in West Germany.[40] The shift was gradual, and in the early 1960s, housekeeping books and even the popular women's fashion journal *Brigitte* featured tips on how to mend or reuse worn-out clothes.[41] Marketed as a disposable garment, nylon tights are an extraordinary example, with *Laufmaschendienste* (literally "ladder services") offering professional repairs to runs in tights until around 1970, when high labour costs and low-priced nylon tights led to a decline in the service.[42] Only some rare users subsequently resorted to workarounds such as nail polish to stop runs. But the lengthy historical (predominantly female) tradition of needlework has not vanished and can be seen in the sewing boxes still found in many households (fig. 2).

When it comes to electrical appliances, statistics and historical studies document their rapid dissemination but pay less attention to questions of repair, reuse and disposal. A rare survey from around 1970 reported the following figures on disposal, at a time when nearly three quarters of households owned a washing machine and refrigerators were in use in 84% of households:[43] a quarter of used refrigerators were given away to relatives or other users, 8 to 22% were used as a

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und beginnenden 20. Jahrhunderts", in: Technikgeschichte 79/3 (2012), p. 291–298; Derwanz, Heike: Zwischen Kunst, Low-Budget und Nachhaltigkeit. Kleidungsreparatur in Zeiten von Fast Fashion, in: Krebs, Stefan/Schabacher, Gabriele/Weber, Heike (eds): Kulturen des Reparierens, Dinge – Wissen – Praktiken, Bielefeld: transcript 2018, p. 197–224.

40 See Lenger, Friedrich: Sozialgeschichte der deutschen Handwerker seit 1800, Frankfurt a. M.: Suhrkamp 1988, p. 178; König: Wegwerfgesellschaft, p. 71.

41 See e. g. Richter, Else: Das große Haushaltsbuch, Gütersloh: Bertelsmann 1964, p. 552; For "Brigittes Modebriefkasten" see e. g. Brigitte, 12 Jun. 1959, p. 33 or ibid., 5 Feb. 1959, p. 14.

42 Weber, Heike: "Made to Break? – Lebensdauer, Reparierbarkeit und Obsoleszenz in der Geschichte des Massenkonsums von Technik", in: Krebs/Schabacher/Weber, Kulturen des Reparierens, p. 49–83.

43 Study quoted in: Fleischer, Arnulf: Langlebige Gebrauchsgüter im privaten Haushalt. Ein Beitrag zu Bedarfsentwicklungen privater Haushalte unter besonderer Berücksichtigung des Ersatzbedarfs, Frankfurt a. M.: Peter Lang 1983, p. 257–258. For figures on distribution, see Wölfel, Sylvia: Weiße Ware zwischen Ökologie und Ökonomie. Umweltfreundliche Produktentwicklung für den Haushalt in der Bundesrepublik Deutschland und der DDR, Munich: oekom 2016, p. 84.

means of payment to buy a new one, and some were kept as a second or spare refrigerator. Around 30% were discarded, and two thirds of those still worked. And while in 1966, only one in every five old washing machines that were replaced were discarded, this figure rose to 70% a few years later – most likely because of a significant innovation of that time, as fully automatic models made former semi-automatic washers obsolescent.

Figure 2. The inherited sewing box of Christa Weber, the author's mother.

These figures indicate the persistence of handing down and resale; such private or professional channels for disposal and reuse co-existed alongside the discarding of bulky waste. Most specialised shops not only sold new wares but also offered repair services, and many also sold or otherwise reused old equipment – a fact which was never reflected in trade statistics. The tendency of retailers to sell used equipment for payment gradually dwindled at different times for different product categories. Around 1985, formal second-hand offers represented 15% of cameras sold and nearly 6% of television sets, while the sale of used domestic appliances was rare.[44] Second-hand washing machines, for instance, accounted

44 Gebhardt, Peter: Der Markt gebrauchter Güter. Theoretische Fundierung und empirische Analyse, Hamburg: Kovač 1986, p. 70, 77 and 85.

for only around 3% of the yearly sales in that product category.[45] Since then, complex safety and liability regulations for second-hand electrical equipment have made formal resale and refurbishment more complicated and, except from rare models known for their durability, exports dominate the trade.[46]

From a user viewpoint, refurbished or repaired second-hand models at reduced prices enabled consumers with lower incomes or young people setting up home to acquire otherwise unaffordable equipment. From the 1970s onwards, rummaging through second-hand stores or bulky waste heaps also became a fashionable hobby. Moreover, next to hoarding old things in cellars or storerooms, cabinets or drawers, private resales or handing down equipment remained prevalent practices, as indicated by the classified ad journals that appeared in the local press in large cities in the 1970s or current online portals such as eBay. There was a thriving second-hand trade in West Berlin, which represented a unique case because of its isolated geographical position. The weekly local newspaper *Zweite Hand* ("Second Hand") was full of private resale offers, certain districts were known for their bric-a-brac shops, and the trade telephone directory from 1989 listed 262 antique shops, 85 second-hand dealers and over 40 clearing-out businesses.[47]

The mass production and consumption of electrical appliances gave rise to approximate rules of thumb for average lifespans (which were rarely made explicit) and a demand for regular maintenance and repair. While an analysis of the content of bulky waste shows that broken appliances were not necessarily "mended" any more, the repair sector for domestic electrical equipment flourished on the basis of the growing quantities sold. In the 1970s, experts noted that refrigerators regularly broke down in the first years after purchase but that they lasted for around 10 to 12 years.[48] Black-and-white television sets were said to

45 Ohlwein, Martin: Märkte für gebrauchte Güter, Wiesbaden: Deutscher Universitätsverlag 1999, p. 39.

46 E.g. Miele washing machines or Vorwerk vacuum cleaners, see Broehl-Kerner, Horst et al. im Auftrag des Umweltbundesamtes: Second Life. Wiederverwendung gebrauchter Elektro- und Elektronikgeräte, Berlin: Umweltbundesamt 2012.

47 Klocke, Andreas/Spellerberg, Annette: Aus zweiter Hand. Eine sozialwissenschaftliche Untersuchung über den Second-Hand-Markt in Berlin/West, Berlin: Berlin-Verlag Spitz 1990; Janßen, G./Burkard, T.: Recherche über Projekte und Initiativen, die sich mit der Weiterverwendung von Sperrmüll befassen, Manuskript, Berlin 1989, p. 2.

48 Upmalis: "Lebensdauer von Haushaltsmaschinen und -geräten", in: HLH. Lüftung, Klima, Heizung, Sanitär. Zeitschrift des Vereins Deutscher Ingenieure 33/12 (1972), p. 389f.

need on average one repair per year and to have a lifespan of 6 to 12 years; for portable radios (and cassette recorders) these figures were respectively 0.8 or 1.3 repairs a year and a lifespan of 4 to 10 or 3 to 7 years.[49] To avoid transporting bulky items, technicians often repaired them in the home. In the case of Siemens, the 55 million electrical appliances installed in West German households in the late 1970s resulted in 1.8 million annual repairs, 90% of which took place in the home. Repair services were provided by Siemens customer services, contracted repair shops or specialist shops.[50] Among consumers surveyed at that time, only eleven percent had never required a repair service for their radio, television or record player.[51]

At the same time, some consumer studies remarked a lack of willingness among consumers to have things repaired since searching for repair facilities could be demanding and consumers often overestimated repair costs.[52] So these general assertions have to be differentiated for different product categories. For upscale consumer electronics – a term which was growing in popularity – surveys suggest that consumers decided where to buy depending on the availability of customer and repair services or customer advice.[53] Until the 1970s, customer services were still operating on a local basis and evaluated by word-of-mouth[54] – stores were either known or notorious for their repair services or warranty options. According to a survey from the late 1970s, the majority of consumers favoured specialised stores for purchase or repair; only a third of consumers bought their consumer electronics in warehouses, mail-order outlets or wholesale stores.[55] This situation would change fundamentally once consumer

49 Rühl/Hantsch, Strukturuntersuchung, p. 94.

50 Tietz, Bruno: Der Markt für Haushaltselektrik und -elektronik in der Bundesrepublik Deutschland von 1960 bis 1990 (Symposium 26. bis 27. Jan. 1979, eine Branchenanalyse), Hamburg/Saarbrücken: Gruner und Jahr 1979, p. 385.

51 Quoted in Rühl, Günther/Hantsch, Georg (eds.): Strukturuntersuchung in den Elektrohandwerken, vol. III: Absatzmarktentwicklung in Zahlen, Karlsruhe: ITB (Institut für Technik der Betriebsführung im Handwerk) 1979, p. 218.

52 E.g. reported in: Clemens, Brigitte/Joerges, Bernward: Ressourcenschonender Konsum. Sozialwissenschaftliche Aspekte häuslicher Abfallproduktion und -verwendung, Berlin: Wissenschaftszentrum 1979.

53 Rühl/Hantsch, Strukturuntersuchung, p. 218–219 and 209; Tietz, Markt, p. 1257.

54 In the late 1970s, however, the German Crafts Association (Zentralverband des Deutschen Handwerks) suggested establishing regional centres that would serve as intermediaries between repair services and consumers. See Tietz, Markt, p. 861.

55 Tietz, Markt, p. 380.

electronic chain stores such as MediaMarkt and Saturn offered attractive prices at the expense of customer service and repair from the 1980s onwards.

Figure 3. Cleaning the components of a mixer to enhance its longevity. Self-repair guides in the 1980s considered the maintenance of electrical appliances as a male task, while today's iFixit video clips also display many female hands. Source: Middel, Bernd/Müller-Steinborn, Martin: Selbst Haushaltsgeräte warten und instand setzen, Munich: Compact 1989, p. 71–73, here p. 73.

But to what extent did consumers reach for the wrench themselves? Along with do-it-yourself, self-repair became a trend in the post-war decades that eventually filled up domestic toolboxes – the male pendant to the sewing box.[56] Repair

56 Kreis, Reinhild: Selbermachen. Eine andere Geschichte des Konsumzeitalters, Frankfurt a. M./New York: Campus 2020; Voges, Jonathan: "Selbst ist der Mann": Do-it-

booklets, all clearly written with male readers in mind, first advised that broken electrical gear should be left to specialists for safety reasons and because special tools were needed.[57] Indeed, according to a survey in the late 1970s, only a minority of users indicated that they were able to carry out repairs themselves.[58] Although many users fixed simple problems, only technical enthusiasts used soldering irons or voltmeters. The guidebook on bulky waste mentioned above encouraged readers to salvage discarded electrical appliances for self-repair, as they often simply had broken plugs or switch buttons, or the V-belts in electrical engines may have just slipped.[59] Repair guides of the 1970s and 1980s suggest that users of that time still carried out maintenance that current readers will most likely have forgotten about (fig. 3): they instructed their envisioned male readership on how to disassemble hair dryers, electric razors or blenders so that they could take them apart and clean the parts – routines which made appliances last longer.[60]

GROWTH AND DECLINE: PROFESSIONAL REPAIR AND RESALE OF TELEVISIONS AND RADIOS

Professional repair takes place at a complex intersection where users, producers and suppliers of spare parts and toolkits, retailers, and repairers meet. Over time, repair has had to deal with rising labour costs, falling costs for new items, and changing materials and technologies. As an economic sector, repairing electronic devices has high entry barriers when compared to shoe or clothes repair, a sector in which underprivileged or untrained individuals can set up a business, often in combination with a second job. Electrical repair is regulated by professional and trade infrastructures, national safety and resale regulations and supplier conditions for spare parts. On a macro scale, national or transnational consumer policy and economic as well as technological parameters such as accelerating innova-

yourself und Heimwerken in der Bundesrepublik Deutschland, Göttingen: Wallstein 2017.

57 Fellensiek, Hans: Selber reparieren – aber wie?, Cologne: Buch und Zeit Verlagsgesellschaft 1964, p. 39.

58 In the study quoted by Tietz (without further reference), only around 2 to 6% claimed to repair their television, radio or cassette recorders, see Tietz, Markt, p. 380.

59 Golluch/Klöstzer, Sperrmüll-Buch, p. 12.

60 Middel, Bernd/Müller-Steinborn, Martin: Selbst Haushaltsgeräte warten und instand setzen, Munich: Compact 1989.

tion cycles, the increasing miniaturisation of products and components and the ever growing variety of product models all play a part. While this section collates television and radio repair, it also explores their heterogeneity and the parallel upswing of television repair and downswing of radio repair.[61] And while the German electrical repair sector has shrunk since the late 1980s, once Asian manufacturers and outsourcing strategies had massively transformed the market, electrical repair services have boomed in the Global South.

In West Germany, in 1967, there were roughly 6,000 active radio and television enterprises, employing a workforce of around 34,700 people; in 1976, over 7,600 enterprises provided work for 39,600 employees,[62] among them many radio and television technicians. This was a registered craft; technicians were authorised both to sell and to repair or install domestic sets and aerials, and they were valued for this combination, as shown in the previous section. Moreover, in the heydays of the radio and television repair sector, i. e. in the 1950s and the 1960s and 1970s respectively, repair-only services were also active. Around 1980, for instance, West Berlin's trade phone book listed over eight pages of "television repair services", among them a few full-page advertisements offering instant assistance.[63] In the late 1970s, an estimated 20% of consumer spending on radio, television and audio equipment was for repair and servicing and 80% for new acquisitions.[64]

As with cars,[65] the first generations of televisions were known for their error-proneness. The television's test pattern, broadcast from 1950 to 1997, was an obvious sign of the need for regular television maintenance – it helped technicians to check functions such as sharpness and colour matching. Substituting delicate tubes with transistors made televisions (and radios) more reliable. But with the transition to colour technology in the 1960s, lifetimes even declined for

61 Krebs, Stefan/Hoppenheit, Thomas: "Questioning the Decline of Repair in the Late 20th Century: the Case of Luxembourg, 1945–1990", in: Hilaire-Pérez, Liliane et al. (eds.): Technical Cultures of Repair from Prehistory to the Present Day, Turnhout: Brepols Publishers 2021 (forthcoming).

62 Tietz, Markt, p. 837.

63 See Branchen-Fernsprechbuch 1980/81, Berlin West, p. 399–407, online: https://digital.zlb.de/viewer/image/15849345_1980-81/1/ (accessed 15.01.2020).

64 According to interviewed experts which were participants at the yearly conference of the "Bundesfachgruppe" for radio and television technicians. See: Rühl/Hantsch, Strukturuntersuchung, p. 94.

65 Krebs, Stefan: "Maintaining the Mobility of Motor Cars: The Case of (West) Germany, 1918–1980" (this volume).

some years owing to unreliable novel electronics.[66] Moreover, colour television designs required three times as many components as black-and-white sets. As a consequence, the repairer's toolkit had to include more instruments, and repair knowledge and skills had to be updated.[67]

By the mid-1960s, over 60% of West German households had black-and-white televisions; colour TVs began to be distributed more widely in the 1970s.[68] In 1961, the German manufacturer Telefunken reported that 80% of televisions purchased needed repairs within a year, and by 1975, the Stiftung Warentest, the nation's leading consumer testing institution, was still warning consumers that colour TVs were most likely to develop faults within their first half year of use.[69] Suppliers worked closely with licensed repair workshops to mitigate this situation, but they only gradually introduced warranty systems, while some manufacturers like Graetz with its *Prüfgarantiekarte* made internal product testing the norm. By the 1970s, warranties for TV sets still covered only material costs and not the costs of repair. Insurance companies thus developed special policies to cover damage to television sets, but their offers were too expensive to prove popular.

Customer service and professional repair were key for the widespread uptake of televisions. Given the long-term vulnerability of the technology, suppliers supported and expanded repair services which had originated in the 1950s with the radio repair and engineering profession. Suppliers, electrical guilds and professional associations offered training courses to build up a knowledge base and recruit service technicians.[70] By contrast, the contemporary radio sector was a mature market that was now dominated by replacement purchases. In this field,

66 Teupe, Sebastian: Die Schaffung eines Marktes. Preispolitik, Wettbewerb und Fernsehgerätehandel in der BRD und den USA 1945–1985, Berlin: De Gruyter 2016, p. 105.

67 Knobloch, Winfried: Prüfen, Messen, Abgleichen. Service an Farbfernsehempfänger. PAL – SECAM, Berlin: Verlag für Radio-Foto-Kinotechnik GmbH 1970, p. 5 and 27; see also Knobloch, Winfried: Prüfen, Messen, Abgleichen. Fernsehempfänger-Service. Berlin: Verlag für Radio-Foto- Kinotechnik 1962, p. 5 and 20.

68 Rühl/Hantsch, Stukturuntersuchung, p. 101.

69 Teupe, Schaffung, p. 123; see also: "'test'-Report: Kundendienst bei Farbfernsehgeräten", in: Radio-Fernseh-Händler 11 (1975), p. 16.

70 Fellbaum, Günther: Fernseh-Service-Handbuch. Ein Kompendium für die Berufs- und Nachwuchs-Förderung des Fachhandels und Handwerks, 2nd edition, Munich: Franzis 1962, p. 209; Hewel, Horst: Fernseh-Service-Lehrgang, in: Funk-Technik 8, 2 (1953), p. 17–18; Anon.: "Neue Philips-Fernsehlehrgänge beginnen", in: Radio-Fernseh-Händler 10 (1964), p. 406.

repair and repairability were soon to become the exception. Already around 1960, reference books for radio repairmen were noting that radios were no longer being designed with the needs of repairmen in mind, that designs were complicating repair and that producers were forcing repairmen to use only original components.[71] Transistor pocket radios, unique at the time, materialised the trend which would eventually drive the overall consumer electronics market: producers disregarded repairability in favour of fashionable, fast changing designs, miniaturisation and cheap mass production methods.

By 1963, West German consumers could choose from over a hundred models in the pocket radio segment alone; for producers, annual model changes were the norm, and cheap Japanese offers had entered the market.[72] When testing pocket transistor radios in 1964, the consumer magazine DM – West Germany's leading magazine for evaluating consumer products – warned that several of them provided neither customer service nor spare parts, but were "built to be thrown away".[73] While they were available for 20 DM, a West German product like Telefunken's pocket transistor radio *Partner N* cost 156 DM. Pocket radios also illustrated the link between miniaturisation, mass production methods and repairability: shrinking sizes, the integration of components and housings with bonded joints instead of threads meant that individual breakage points were virtually unrepairable.[74]

The overall challenge facing repair services lay in shifting cost ratios which meant that the repair of equipment of average or inferior quality no longer made economic sense. Labour costs increased while prices of new appliances fell. Moreover, these new appliances soon lost in economic value. The valuation tables on consumer electronics which were compiled for second-hand merchants clearly illustrate this accelerated depreciation: the 1964 price listing for used radios, TVs and tape recorders, for instance, described a 10-year-old portable radio

71 See e.g. Knobloch, Prüfen; Renardy, Adolf: Leitfaden der Radio-Reparatur, 2nd edition, Munich: Franzis 1958, p. 281; Renardy, Adolf: Radio-Service-Handbuch. Leitfaden der Radio-Reparatur für Röhren- und Transistorgeräte, 3rd edition, Munich: Franzis 1963, p. 231.

72 Weber: Heike: Das Versprechen mobiler Freiheit. Zur Kultur- und Technikgeschichte von Kofferradio, Walkman und Handy, Bielefeld: transcript 2008, p. 110.

73 See "Taschenradios", in: DM 50 (1964) p. 41–46, here p. 43.

74 On encasing see Weber, Heike: "Blackboxing? – Zur Vermittlung von Konsumtechniken über Gehäuse- und Schnittstellendesign", in: Bartz, Christina/Kaerlein, Timo/Miggelbrink, Monique/Neubert, Christoph (eds.): Gehäuse. Mediale Einkapselungen, Paderborn: Wilhelm Fink 2017, p. 115–136.

as "barely worth the scrap value".[75] A *Partner N* transistor radio bought in 1961–62 was worth less than a sixth of its original price, and televisions that were more than seven years old were not listed at all. Even devices which were only four or five years old could be sold by second-hand dealers for only small sums of money. Two decades later, this semi-official listing for resellers included only TV, radio, tape and video recorder models from the past six years. By contrast, along with rising wages which were the basis of increasing consumption, professional repair was becoming more expensive. One hour of television repair work amounted to 9 DM in labour costs in 1962, 18 DM in 1971, 40 DM in 1980 and even 50 DM in 1984 – not including materials or call-out fee.[76] A 1972 handbook on the professional repair of electrical appliances suggested that there was no point in troubleshooting in cases where repair costs would exceed the costs of buying a new model or where replacement parts would soon no longer be available; according to this professional handbook, "the throwaway method already applies to many components today".[77]

CRITICISING THE THROWAWAY SOCIETY AND THE 1970S PLANNED OBSOLESCENCE DEBATE

This last section focuses on the 1970s consumer criticism, and more specifically on the reproach that industry willingly shortens product lifespans.[78] As will become clear, these debates placed obsolescence and throwaway habits in their wider economic and sociocultural contexts, incorporating factors such as economic competition, innovation politics, securing or endangering jobs and economic growth respectively, and consumer behaviour.[79] On the other hand, the discourse barely mentioned the environmental potential of reuse and repair; it failed to give consumers a voice of their own and to elucidate the critical issue of how producers and users co-determine the length of time for which products are

75 Döpke, Heinrich (ed.): Bewertungsliste für gebrauchte Rundfunk-, Fernseh- und Tonbandgeräte 1964/65, Munich: Franzis 1964, p. 3 (foreword); for the following: Taxliste 86. Bewertungsliste für gebrauchte Fernseh-, Rundfunk-, Tonbandgeräte und Videorekorder, 33rd edition, Munich: Franzis 1986.

76 Teupe, Schaffung, p. 127.

77 Eiselt, Josef: Fehlersuche in elektrischen Anlagen und Geräten, Munich: Pflaum 1972, p. 27.

78 See in more detail: Weber, Made to Break?

79 See also Schlotter, Hans-Günther: "Geplante Obsoleszenz als Gegenstand der Wirtschaftspolitik", in: Das Wirtschaftsstudium 5 (1976), p. 65–70.

used. Moreover, the frequent calls for enhanced product repairability were never answered.

Many prominent post-war writers expressed their indignation at mass consumerism and fashion. In the late 1950s, the Austrian philosopher Günther Anders, for instance, debunked serial products as incorporating intentional "frailty" or even having a planned "expiration date, at least approximately, and always as early as possible".[80] Writing in the mid-1960s, the German sociologist Hans Freyer defined the industrial system as surging flows of consumption in need of regular discharge, meaning that having things repaired amounted to a "sabotage" of the "production apparatus".[81] The broad take-up of Vance Packard's work also resulted in the popularisation of his distinction between three variants of product obsolescence, namely functional, qualitative and psychological obsolescence. By the early 1970s, in addition to the more traditional consumer criticism, the Marxist position denounced consumer fashion and obsolescence. For the philosopher Wolfgang Fritz Haug, for instance, commodities came "into the world with a kind of time fuse that will trigger their inner self-destruction in a calculated length of time".[82] Even a folklorist writing about German material culture noted that contemporary inventories were becoming increasingly short-lived and aligned with technological progress: instead of pianos, households owned jukeboxes, which in turn were already obsolete and would soon be replaced by the latest electronic device.[83] The subject of household effects discarded too early via bulky waste collections also made it into a children's book in 1973: the title described a "Mr Kringel" who rescued reusable items, much to the delight of the kids in the neighbourhood.[84]

The Western European transition to a mass consumer society was accompanied by steady intellectual and conservative criticism of mass consumption and wastefulness, often making use of the despised term "throwaway society". When

80 Anders, Günther: "Die Antiquiertheit der Produkte", in: id.: Die Antiquiertheit des Menschen, vol. 2: Über die Zerstörung des Lebens im Zeitalter der dritten industriellen Revolution, Munich: Beck 1987, p. 38–57, quotes: p. 38 and 42.

81 Freyer, Hans: Schwelle der Zeiten. Beiträge zur Soziologie der Kultur, Stuttgart: Deutsche-Verlags-Anstalt 1965, p. 223–252.

82 Haug, Wolfgang Fritz: Kritik der Warenästhetik. Gefolgt von Warenästhetik im High-Tech-Kapitalismus, Frankfurt a. M.: Suhrkamp 2009 (completely revised edition, first published in 1971), p. 64.

83 Freudenthal, Herbert: "Volkskundliche Streiflichter auf das Zeitgeschehen", in: Beiträge zur deutschen Volks- und Altertumskunde 10 (1966), p. 119–133.

84 See Mitgutsch, Ali: Warum macht Herr Kringel nicht mit? Ravensburg: Ravensburger-Buchverlag 1973.

the Club of Rome's *Limits to Growth* study (1972) disclosed the scarcity of global resources and the oil price crisis shattered the Western belief in unlimited economic growth, this was supplemented by environmental arguments. Only from the 1980s onwards was mass consumerism evaluated in novel terms and appreciated as a source of meaning or identity formation and a basis for national economic well-being.[85]

With regard to planned obsolescence, the 1970s public discourse saw both consumers complaining about consumer durables that did not live up to expectations[86] and technicians reporting that the service life of durables had become "shorter compared to past experience".[87] The car industry was even openly reproached for incorporating predetermined breaking points such as overly thin and corroding body sheets. These vague reproaches culminated in an academic debate following the publication of two officially commissioned studies on the issue. The "Commission for Economic and Social Change", a think tank set up in 1971 to guide the social-liberal West German government in its future economic and social policies, commissioned these studies to elucidate the matter and to settle the question of whether planned obsolescence represented a real problem.

The first study interviewed scientists, managers and engineers as well as sales clerks in the electrical, automotive and aviation industry on the subject.[88] Many of them saw planned obsolescence as an excessive phenomenon of the market economy and industrial interests, but also as a result of producers' alignment to consumer behaviour. As one manager stated, consumers did not want a product "for their lifetime". Sales clerks in particular emphasised the role of obsolescence in maintaining economic growth and thus jobs.

It was the second report, authored by the economist Burkhardt Röper, which sparked off an intense debate inside academia which extended to the public, but

85 Trentmann, Frank: "Unstoppable. The Resilience and Renewal of Consumption after the Boom", in: Doering-Manteuffel, Anselm/Raphael, Lutz/Schlemmer, Thomas (eds.): Vorgeschichte der Gegenwart. Dimensionen des Strukturbruchs nach dem Boom, Göttingen: Vandenhoeck & Ruprecht 2016, p. 293–307.

86 Mentioned e.g. in Schlotter, Obsoleszenz, p. 68

87 Mentioned e.g. in Upmalis, Lebensdauer, p. 389.

88 Barck, Klaus/Mickler, Otfried/Schumann, Michael: Perspektiven des technischen Wandels und soziale Interessenlage. Eine empirische Untersuchung über die Einstellung zum technischen Wandel von Spitzenmanagern, Naturwissenschaftlern und Ingenieuren aus industrieller Forschung und Entwicklung und kaufmännischen Angestellten der Industrieverwaltung, Göttingen: Schwartz 1974, in particular p. 79–89, 95–107; quotes: p. 95 and 102.

less so to the political sphere. According to that report, planned obsolescence only existed in the eyes of a few social critics; rather, current lifespans were seen to correspond to consumers' wishes, industry's need for novelty and a fading object stewardship.[89] The study had many flaws, however; it lacked distinct methodology or definitions and failed to deliver adequate empirical details on prospective or real service lives.

Röper reassured industry that, by and large, it was developing optimal lifespans according to economic needs and future technical and social changes. His enquiries among manufacturers, authorities and associations had not revealed any curtailing of lifespans to the disadvantage of consumers. Remaining in the realm of hearsay, he referred to car lifespans that had risen to eight to ten years, even if consumers drove more and cared less about car maintenance, or to ephemeral nylon tights favoured by women for their superior fit. When it came to electrical appliances, Röper noticed that producers valued "technical refinement" more than long lifespans; cheap or simple models were throwaway articles since repair was too expensive. The author underlined producers' interest in frequent model changes because of the high rate of innovation and advised them to communicate the advantages of new models more explicitly to consumers. Curiously enough, Röper also listed some measures that could prevent "undesirable" psychological obsolescence, i.e. items considered as obsolete due to changes in consumer fashion: tax incentives could promote second-hand markets and discourage nondurable products or environmentally harmful designs; research incentives could stimulate repairable designs. Consumer organisations should provide more information about product quality, and ample consumer education should guide users towards "careful handling", "beginning with cars' maintenance and ending with care for shoes".

Critics insisted that a "desirable" obsolescence – in the name of technical progress – could not be discerned on objective grounds from an unethical, "wasteful" obsolescence. Others remarked that different interests were at stake for different people. While middle-class consumers, for instance, had the economic means to substitute durables according to style and fashion tastes, low-income households depended on affordable basic equipment; planned obsolescence would hit them harder, but cheap or second-hand offers also enabled them to participate in consumption. From a Marxist perspective – which we might re-

89 Röper, Burkhardt: Gibt es geplanten Verschleiß? Untersuchungen zur Obsoleszenzthese, Göttingen: Otto Schwartz & Co. 1976 (Kommission für wirtschaftlichen und sozialen Wandel, Bd. 137). For the following quotes see: p. 250–251, 327 and 329–330.

late to today's degrowth position –, obsolescence and a "hypertrophy of durables' production" inevitably resulted from capitalism.[90] The consumer sociologist Karl-Heinz Hillmann discussed obsolescence in the context of future societal and environmental challenges:[91] short product lives would result in higher material extractions and cause more waste and toxic emissions. Moreover, they would exacerbate existing societal crises: employment and creativity would be misdirected and financial resources would be channelled into production rather than to the economic growth of developing countries and more global social justice.

To fight obsolescence, Hillmann insisted that consumers needed to be empowered.[92] Institutionalising consumer advocacy and consumer education could help buyers to value quality over price. He encouraged sociology experts to analyse how obsolescence relates to society's values, interests and needs and to gather data on lifespans. But just as consumers would have to change their choices, producers would have to assume more environmental and social responsibility. Moreover, the state should act against market concentration and implement tax incentives to steer the environmental impact of consumption and product lifespans. The author called for fixed minimum quality standards and mandatory product testing of any new products. Like other authors, he also called for a product labelling system that would indicate tested durabilities.

Calls for long-lasting and repairable designs were widespread in the 1970s, but they never became more than a sideline in late 20th-century environmental policies. The *Limits to Growth* study identified enhanced durability of consumer durables as a way of achieving enhanced resource efficiency; West Germany's ambitious national waste policy programme in 1975 spoke in favour of durable and repairable products; the journalist and futurologist Robert Jungk pushed scientists to make science and technology work for thrift.[93] Within the field of de-

90 Bodenstein, Gerhard/Leuer, Hans: "Obsoleszenz. Ein Synonym für die Konsumgüterproduktion in entfalteten Marktwirtschaften", in: Zeitschrift für Verbraucherpolitik 5, 1/2 (1981), p. 39–50, here p. 47.

91 See Hillmann, Karl-Heinz: "Das Obsoleszenzproblem in einer Zeit der Wachstums- und Umweltkrise", in: Jahrbuch der Absatz- und Verbrauchsforschung 21/1 (1975), p. 21–45; see also id.: "Geplante Obsoleszenz. Bemerkungen zu Burkhardt Röper", in: Zeitschrift für Verbraucherpolitik 1, 1 (1977), p. 48–61.

92 See also Hillmann, Karl-Heinz: "Das Problem der geplanten Obsoleszenz aus soziologischer Sicht", in: Bodenstein, Gerhard/Leuer, Hans (eds.): Geplanter Verschleiss in der Marktwirtschaft, Frankfurt a. M./Zurich: Harri Deutsch, p. 107–178.

93 Jungk, Robert: "Das Ende der großen Verschwendung", in: Manager Magazin 6 (1974), p. 100.

sign, Victor Papanek and others called for ecologically sound construction, and some West German initiatives promoted longevity, such as the Werkbund's "Long-lasting Product Foundation" (Stiftung Langzeitprodukt) or the Berlin "International Design Centre".[94]

In the 1980s, these demands from various stakeholders fell silent. When the OECD commissioned a more detailed investigation into obsolescence in the context of the waste crisis, the study, published in 1982, was unable to gather information from producers on expected lifetimes, and consumers also obviously lacked interest in the issue.[95] Although the authors were unable to retrieve information about the planned obsolescence of current consumer products, they did remark an increase in unrepairable and throwaway designs and a clear avoidance on the part of producers to actually extend product lifetimes. Indeed, product engineering in the 1980s and 1990s focused on reducing energy consumption or recyclable designs and materials rather than repairability and durability.[96] Even consumer tests barely reviewed a product's repairability and durability.[97] It was not until 1993 that the Stiftung Warentest finally started to test the durability and lifespans of washing machines.[98]

94 See Papanek, Victor: Design for the Real World. Human Ecology and Social Change, New York: Pantheon Books 1972; Madge, Pauline: "Design, Ecology, Technology: A Historiographical Review", in: Journal of Design History 6 (1993), p. 149–166; for the West German initiatives see Hirtz, Georg/Klose, Odo: "'Modern' als Handelsware. Plädoyer für Langzeitprodukte. Qualität statt Quantität", in: Werk und Zeit – Forum 1 (1976), p. 1–3; Anon.: "Umweltfreundliche und rohstoffbewußte Produktgestaltung", in: Städtetag 1979, p. 210–212.

95 Organisation for Economic Co-operation and Development, Product Durability, p. 24.

96 Wölfel, Weiße Ware.

97 When designers and the Stiftung Warentest were involved in product quality testing in the late 1970s, they agreed that designers were not responsible for a "better environment". In that series, only pocket cameras and portable radios were tested for "durability" and whether casings could be opened easily. See Stiftung Warentest/Rat für Formgebung (eds.): Warenqualität – Technik und Form geprüft und bewertet, Berlin/Darmstadt: Stiftung Warentest 1977, p. 16.

98 See Prakash, Siddharth et al.: Einfluss der Nutzungsdauer von Produkten auf ihre Umweltwirkung. Schaffung einer Informationsgrundlage und Entwicklung von Strategien gegen 'Obsoleszenz'. Zwischenbericht: Analyse der Entwicklung der Lebens-, Nutzungs- und Verweildauer von ausgewählten Produktgruppen, Dessau-Roßlau: Umweltbundesamt 2015, p. 71.

CONCLUDING REFLECTIONS: LESSONS FROM THE PAST FOR AN ECOLOGICAL FUTURE FOR REPAIR AND REUSE

In the 1960s and 1970s, practices of mending and ending changed substantially, along with consumer offers, product designs, and values and norms associated with consumption and wastage. In affluent societies, mass production and mass consumption led to ever increasing domestic acquisitions and a rise in personal belongings. The total number of goods in circulation increased hugely. This spurred the second-hand trade, kept repair services alive and enabled lower-income households to participate in mass consumption. When it came to disposing of these objects, municipal bulky waste services eventually became widespread, despite constant criticism of the "throwaway society". Introduced from around 1960 onwards, bulky waste services contributed to high volumes being wasted, and they soon also served as a means of discarding functional yet supposedly "obsolete" objects. Currently, around a third of large domestic appliances that are replaced by a new model in Germany are still operational.[99] The disposal of growing quantities of increasingly heterogeneous objects and materials had an environmental impact which became clear in the 1980s. It was only in the early 21st century that electrical appliances began to be increasingly channelled back to producers, and a current EU framework (2020) calls for the recycling of bulky waste.

Repair, reuse and resale – temporal interventions that prolong the usage life of objects – have not disappeared in mass consumer societies, but their meaning and their share in relation to the overall volume of domestic products have changed. Strategies for the storage, repair, reuse or resale of a household's effects, previously driven by economic reasoning, have gone from being a necessity and a norm to a deliberate decision to preserve or hand down selected items. Buying new equipment eventually became cheaper than having the old equipment repaired; only some rare personal belongings are kept for a lifetime or beyond, while private, informal resales are thriving in niche areas. For most consumers (except those without the means to choose), the choice between ending and mending has come to depend on meanings and mentalities rather than on economic considerations: the symbolic meaning of the artefact or the owner's wish to make an environmental statement. And while sewing boxes and toolboxes are still passed down from one generation to the next, the objects to be repaired with the tools they house are hardly passed on any more. Self-repair has

99 Prakash et al.: Einfluss der Nutzungsdauer.

not vanished, but at the same time, there is no direct link between well-equipped sewing boxes and toolboxes and self-repair routines.

In the case of electrical appliances, the progressive miniaturisation of components, increasingly short innovation cycles and the proliferation of models have challenged not only self-repair but also professional repair, and with it, reuse and resale. Moreover, the case of television and radio repair also shows that the popular assertion of a universal decline in the repair business should instead be considered on a case-by-case basis: individual product categories had specific phases of growth and decline in repair, as also seen in the current business of mobile phone repair and resale.[100]

Product obsolescence has been criticised since the early days of mass consumption. But at the same time, producers and users alike have defined and co-shaped consumer durables as "finite" artefacts, even if their views have obviously differed time and again in respect to what exactly might constitute an optimal period of use. The 1970s debate on planned obsolescence reproached producers for short lifespans or intentional breaking points. It touched upon the larger contexts of product obsolescence – the paradigms of producing, using, repairing and wasting – and resulted in consumer policy and consumer research being strengthened. But it did not clarify the questions of how producers manage product lifespans and what product durability means for users and the environment. Calls to regulate product durability or to require formal product testing or labels for repairability and product lifespans were not answered. As a consequence, we still lack any reliable knowledge on the shaping of lifespans – and such knowledge is needed to make a convincing case for enhanced repairability and durability.[101] We know virtually nothing about how prospective lifespans are projected by industrial research, material testing, construction, or marketing or by consumer associations' product testing, nor about average usage times in households or repair and second-hand markets.

Past environmental policies and civic environmental activism have concentrated on household waste recycling and energy consumption – standard labels indicating the power consumption of electrical appliances, for instance, were in-

100 Nova, Nicolas/Bloch, Anaïs: Dr. Smartphone: An Ethnography of Mobile Phone Repair Shops, Lausanne: IDPURE 2020.

101 A few recent studies have tackled the issue, see Brönneke, Tobias/Wechsler, Andrea (eds.): Obsoleszenz interdisziplinär. Vorzeitiger Verschleiß aus Sicht von Wissenschaft und Praxis, Baden-Baden: Nomos 2015; Poppe, Erik/Jörg Longmuß (eds.): Geplante Obsoleszenz. Hinter den Kulissen der Produktentwicklung, Bielefeld: transcript 2019.

troduced in the late 1970s –,[102] but they have failed to explore the potential of repair, reuse and resale for "greening" mass consumption. As a result, the recent discussions on short-lived products and the environmental potential of repair and product durability can only enumerate positions, problems, arguments and potential solutions, most of which also figured prominently in the 1970s debate. While previous debates centred around cars and household appliances – consumer technologies which had recently been widely adopted –, the focus has now moved to smartphones and digital appliances. In the past, local bulky waste piles served as a contested icon; today, these have been replaced by globalised media images of toxic e-waste piles and their scrapping in the Global South.

"Don't end it, mend it!" proclaims the recent repair movement.[103] In 2021, the European Parliament voted in favour of establishing the "right to repair" and was considering a "product pass" to clarify the lifespan and repairability of products.[104] Looking to the past shows us that the right to repair is but one element in an intricate web which determines the length of time for which a product is kept in use. Choices on mending and ending are closely entwined with the economies, systems and practices of producing, using, reusing and reselling as well as discarding. Sociocultural values and norms regarding novelty, obsolescence and what objects are worth being preserved also play their part. "Repair" is not simply about repairing technology, but about "repairing" and reassembling society and consumer culture at large.

102 Weber, Heike: "Europe's Consumer-Recyclers: The Hope to 'Green' Mass Consumption by Recycling", in: Wöbse, Anna-Katharina/Kupper, Patrick (eds.): Protecting the Environment (forthcoming); Wölfel, Weiße Ware.

103 Platform21 (2009): Repair Manifesto, http://www.platform21.nl/page/4375/en (accessed 22.12.2017).

104 Mikolajczak, Chloé: European Parliament calls for ambitious right to repair, https://repair.eu/de/news/european-parliament-calls-for-ambitious-right-to-repair (accessed 18.03.2021).