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Mayak tape recorders in late socialist Ukraine: Industrial planning, technological constraint, and everyday sound practices

Abstract. *The article reconstructs the lifecycle of Mayak tape recorders in Soviet Ukraine as a socio-technical infrastructure shaped by centralized industrial planning, defense sector priorities, and everyday practices of domestic sound recording in the 1970s and 1980s. The study draws on a broad body of internal ministerial and factory documentation. It uses conjunctural market reviews, calculations of effective consumer demand, economic reports of the household magnetic recording industry, and internal quality analyses. A separate group of sources consists of survey materials and oral testimonies of users of Soviet household electronics, which make it possible to reconstruct everyday experiences of tape recorder use. The research applies infrastructural analysis, source criticism, and historical reconstruction of statistical data. This approach makes it possible to trace the relationship between industrial organization and everyday sound practices. Documentary evidence indicates that technological quality functioned as an economic category. It was measured through defect losses, warranty repair costs, and post-production expenses, linking technological limitations with financial and institutional outcomes. The findings demonstrate that structural shortage, uneven assortment, and dependence on repair infrastructures shaped domestic listening practices. They also facilitated informal sound circulation, including home copying and magnitizdat. The study concludes that Mayak tape recorders functioned simultaneously as planned commodities and as media infrastructures of private sonic life. They defined the material conditions for the formation of the personal acoustic environment in late socialist Ukraine. The analysis also demonstrates the reciprocal relationship between technological systems and user practices, showing how everyday uses of recording technology contributed to redefining notions of quality, functionality, and accessibility within the late socialist industrial framework.*

Keywords: *magnetic recording; Mayak tape recorders; planned economy; shortage; domestic sound recording; personal acoustic environment*



Introduction.

During the 1970s–1980s magnetic tape recording became one of the most influential domestic technologies in the Soviet Union. The tape recorder enabled households not only to listen but also to record, reproduce, and circulate sound independently of official broadcasting institutions. This technological shift transformed the structure of auditory experience, allowing individuals and families to organize their own acoustic environments within domestic space. In Soviet Ukraine, the spread of tape recorders occurred within the institutional framework of late socialist industrial planning. Unlike market economies, where the development of consumer audio equipment was shaped by competition and consumer demand, Soviet recording technologies evolved within a centralized system governed by administrative planning, inter-ministerial coordination, and resource allocation. Civilian electronics production was closely connected with the defense-industrial complex, influencing technological priorities, component availability, and production strategies

The Mayak tape recorder, produced in Kyiv within the Ministry of Communications Equipment Industry, provides a revealing example of this system. Despite its wide distribution, its technological trajectory and reliability were shaped by shortages of electronic components, slow renewal of models, and structural imbalances between planned production and actual demand (see Figure 1).



Figure 1. Quality control inspector of the Kyiv Scientific-Production Association “Mayak,” N. Shatokhina, demonstrating the cassette tape recorder unit “Mayak-231-Stereo” (Kyiv, June 20–21, 1983), illustrating final inspection and presentation of consumer audio equipment in late socialist industry (Central State Audiovisual and Electronic Archive, n.d.).

Internal industrial documentation repeatedly emphasized that decisions concerning consumer electronics were embedded in broader industrial priorities, including defense-related production and resource limitations (Kon'iunkturnyi obzor..., 1975, pp. 5, 43).

This article examines Mayak tape recorders as a socio-technical infrastructure that connected industrial organization with everyday sonic experience. It explores the ways centralized planning and defense industrial priorities shaped the development of domestic recording technology, and how technological limitations were translated into economic and institutional definitions of quality. At the same time, these limitations should not be understood as purely objective technical constraints. Following Science and Technology Studies approaches, technological properties may be interpreted as relational and context-dependent, shaped by intended use, cultural expectations, and institutional frameworks. The study also investigates how structural shortages and distribution mechanisms influenced patterns of access to tape recorders, and how everyday recording practices contributed to the emergence of personal acoustic environments and forms of informal sound circulation.

State of Research.

Research on socialist consumer technology emphasizes the systemic role of structural shortage and centralized planning in shaping production and distribution mechanisms (Chernyshova, 2013, pp. 6–10, 38–45). Broader histories of technology likewise stress that technological change does not necessarily follow innovation-driven market trajectories but may instead develop under institutional and resource constraints (Edgerton, 2006, pp. 3–8, 77–82). Within the field of sound studies, recording technologies are conceptualized as infrastructures that shape listening practices and acoustic environments (Sterne, 2003, pp. 15–22, 223–230; Bijsterveld & Pinch, 2011, pp. 1–12, 55–63). The material characteristics of recording media (including mechanical stability, noise, durability, and accessibility) are understood to influence not only perceived sound quality but also patterns of sound circulation and everyday auditory experience (Birtwistle, 2021, pp. 140–155). Recent studies further highlight the analytical value of technological noise and material degradation as indicators of underlying social and industrial conditions (Kendall, 2023). Comparative research on cassette cultures demonstrates that recording media frequently enabled alternative forms of sound circulation in contexts of media control (Manuel, 1993, pp. 2–8, 21–32; Simon, 2022, pp. 35–52, 167–182).

In addition to these Western approaches, this study engages with Soviet and post-Soviet scholarship on technology, consumption, and everyday life. Soviet-era technical and economic literature conceptualized recording technology primarily within the framework of industrial planning, emphasizing production efficiency, standardization, and the fulfillment of quantitative targets. Within this epistemic paradigm, technological quality was defined through measurable indicators (such as defect rates,

durability, and production costs) and embedded in administrative reporting systems, rather than interpreted through user experience or cultural practice.

Post-Soviet scholarship, by contrast, has shifted analytical attention toward everyday life, informal economies, and user adaptation under conditions of structural shortage. Studies of late Soviet consumption and material culture demonstrate that access to technology was mediated not only through formal distribution systems but also through repair networks, personal connections, and practices of modification and reuse (Yurchak, 2006; Ledeneva, 1998; Zhuk, 2010). These perspectives are reinforced by research on Soviet do-it-yourself culture, which highlights the role of technical competence and user intervention in stabilizing everyday technologies and compensating for systemic industrial limitations (Golubev & Smolyak, 2013).

Taken together, these historiographic traditions reveal a significant analytical gap. Western scholarship has tended to conceptualize recording technologies primarily as cultural and infrastructural systems shaping auditory experience, while Soviet-era literature approached them as objects of industrial planning and economic calculation. Post-Soviet studies, in turn, have emphasized everyday practices and informal mechanisms of technological use, often without systematic integration of industrial documentation. This article positions itself at the intersection of these approaches. By combining the analytical reconstruction of Soviet industrial sources with insights from post-Soviet studies of everyday practices, it integrates institutional and user-centered perspectives on technology. In doing so, it bridges the gap between administrative definitions of technological performance and the socially embedded realities of technological use, offering a more comprehensive understanding of recording technology as a socio-technical system in late socialist Ukraine.

Methodology.

The study employs a multi-layered methodological framework. First, source criticism is applied to internal industrial documents, recognizing their administrative and institutional character. Second, statistical reconstruction is used to analyze production, demand, and quality indicators contained in economic reports and conjunctural reviews. Third, institutional analysis examines planning mechanisms and distribution structures shaping technological development. Fourth, an infrastructural approach interprets tape recorders as socio-technical systems linking production, distribution, maintenance, and use. The empirical base includes conjunctural market reviews, calculations of effective demand, economic reports of the household magnetic recording equipment system, internal quality analyses, and related documentary materials. Quantitative indicators such as production volume, inventory levels, defect losses, and warranty repair costs are analyzed to reconstruct the relationship between technological constraints and everyday user experience.

Results and Discussion.

Production, Planning, and Structural Imbalance.

The development of household magnetic recording technology in the late socialist period unfolded within a centrally coordinated industrial system in which technological change was determined primarily by planning priorities rather than market competition. Planning materials conceptualized recording technology as part of an integrated technological complex encompassing tape production, recording equipment, and distribution infrastructure. At the same time, persistent shortages of electronic components and reliance on externally supplied micro-motors constrained technological modernization and affected key performance parameters, including noise level, mechanical stability, and durability (Sopostavitel'nyi analiz i prognozirovaniie..., 1980, pp. 151–152). Contemporary industrial analyses stressed that technological quality depended not only on engineering design but also on patterns of resource allocation and institutional priorities. In practice, modernization generated uneven results, while technological reliability remained unstable under systemic industrial constraints, forming the structural conditions that shaped the everyday use of recording technology.

Conjunctural reviews of the household magnetic recording industry reveal a structural contradiction between planned production and actual consumer demand. The conjunctural review for the first half of 1975 reported continued expansion of output, with 1,226 thousand tape recorders produced, representing a 28.5% increase compared to the same period in 1974 (Kon'iunkturnyi obzor..., 1975, p. 5). Despite this growth, the document simultaneously emphasized a persistent shortage of desirable models and an insufficient assortment structure. Production plans continued to prioritize outdated reel-to-reel and low-quality cassette models, even as consumer demand shifted toward high-quality devices (see Figure 2).

This shift reflected not only a preference for improved sound quality but also changing patterns of use, including the increasing importance of portability, ease of duplication, and compatibility with recorded media circulation. This imbalance between production structure and consumer demand produced a paradoxical coexistence of shortage and surplus. While high-demand models were scarce in retail networks, inventories of technologically obsolete devices accumulated in both wholesale and retail distribution channels. The same review noted that total retail sales remained below supply, leading to the growth of inventories in trade networks, a phenomenon measured through the category of *tovarodni* (inventory days) (Kon'iunkturnyi obzor..., 1975, p. 5).

From an infrastructural perspective, inventory accumulation functioned as a diagnostic indicator of systemic misalignment rather than a temporary logistical issue. Centralized planning prioritized quantitative output indicators, while regional demand structures remained insufficiently reflected in production decisions. As a result, the circulation of tape recorders through the planned economy followed uneven temporal

patterns: short periods of market presence for high-demand models alternated with long phases of scarcity. The conjunctural review further indicated that the production plan for 1976 was lower than the targets previously established by governmental decree, while the rate of model renewal remained insufficient (Kon' iunkturnyi obzor..., 1975, p. 80). This evidence suggests that structural shortage was embedded within planning mechanisms themselves, rather than resulting solely from supply disruptions.



Figure 2. Final adjustment section of “Mayak-305” tape recorders at the Kyiv “Mayak” plant (Kyiv, 1982), illustrating final calibration and preparation of devices prior to distribution within the late socialist production system (Central State Audiovisual and Electronic Archive, n. d.).

Demand, Distribution, and Technological Constraints.

The analysis of commodity flows reveals how centralized distribution shaped the material availability of recording technology. Internal reports repeatedly emphasized that the relationship between supply and retail sales was characterized by uneven temporal distribution. Even when production increased, retail availability remained unstable due to delays in distribution, logistical bottlenecks, and assortment mismatches. Documentary materials from the late 1970s provide further evidence of this phenomenon. A market analysis report noted that tape recorders with high consumer demand were often sold out within hours or days, while the assortment available in retail networks was frequently limited to three or four models, often those with declining demand (Analiz otechestvennogo i zarubezhnogo rynkov..., 1978,

p. 14). This pattern indicates that the effective availability of tape recorders was determined not only by production volume but by distribution structure and assortment composition. In practical terms, the temporal instability of retail presence transformed acquisition into a socially mediated process. Consumers relied on personal networks, informal information channels, and opportunistic purchasing rather than predictable market availability. From an infrastructural perspective, the distribution system thus functioned as a mechanism shaping access to technology and structuring patterns of consumption. Oral testimonies confirm that these structural constraints were directly experienced at the level of everyday use. Respondents consistently emphasized the unpredictability of access to recording devices and the necessity of adapting to available models rather than preferred ones. Taken together, these patterns indicate that availability was not a direct function of production volume but of structural alignment between planning priorities, distribution mechanisms, and consumer expectations.

The calculation of effective consumer demand for tape recorders in 1976 provides a detailed quantitative framework linking production resources, retail supply, and household monetary resources (see Figure 3). The report forecast a substantial increase in retail turnover for tape recorders (approximately 2.5 times higher than in 1971) reflecting growing consumer demand for recording technology (*Otchet. Raschet platezhospobnogo sprosa ...*, 1975, p. 8). However, statistical tables in the same report reveal a structural gap between the growth of consumer demand and the expansion of production capacity. While production was projected to increase modestly, retail sales were expected to grow significantly faster, indicating the persistence of systemic imbalance within the planned economy. The report also identified two principal barriers to acquisition: the absence of desired models in retail and insufficient household financial resources (*Kon'iunkturnyi obzor...*, 1975, p. 80). This dual constraint demonstrates that shortage in late socialist economies operated simultaneously as a commodity shortage and as a constraint of purchasing power. Access to recording technology therefore varied across social groups, producing differentiated acoustic environments.

The problem of assortment imbalance was a recurring theme in industrial documentation. Conjunctural reviews emphasized that the continued production of technologically obsolete models generated inventory accumulation and reduced efficiency within distribution networks. Price reductions were frequently used to stimulate sales of outdated devices, but this mechanism produced only partial stabilization, as demand increasingly shifted toward higher-class models (*Kon'iunkturnyi obzor...*, 1975, p. 5). From an infrastructural perspective, assortment imbalance influenced not only economic performance but also the technological characteristics of domestic sound environments. Lower-class devices offered reduced recording fidelity, higher noise levels, and shorter durability, thereby shaping the sonic quality of domestic recording practices. Survey data from the mid-1970s further indicate that unmet demand resulted not only from a lack of financial resources but

also from the absence of preferred models. (Kon'iunkturnyi obzor: "Sostoianie vnutrennego rynku...", 1974, pp. 4-15). This evidence suggests that consumers increasingly differentiated between technological classes, indicating a shift from basic acquisition toward qualitative evaluation of recording technology.



Figure 3. Radio equipment technicians at the Kyiv “Mayak” plant testing the operation of tape recorders on a testing bench (Kyiv, October 24, 1979), illustrating functional testing procedures within the industrial quality control process (Central State Audiovisual and Electronic Archive, n. d.).

Analytical materials from the late socialist period repeatedly linked technological limitations to shortages of electronic components and dependence on imported parts. Reports on technological development emphasized that the lag of domestic recording equipment behind international standards was primarily due to the absence of a modern electronic component base and long development cycles (Sopostavitel'nyi analiz i prognozirovanie..., 1980, p. 151). This dependence shaped key technological parameters such as mechanical stability, noise level, and durability. As a result, quality constraints were systemic rather than isolated technical failures. The documentary record indicates that technological modernization occurred unevenly, producing cycles of improvement followed by renewed deterioration.

Quality and Social Accessibility.

Economic reports of the household magnetic recording industry indicate that “quality” functioned as a measurable economic category linking technological reliability with financial performance. Internal documentation consistently evaluated quality through three interconnected indicators: defect losses during production, warranty repair expenses after distribution, and post-production costs associated with logistics and servicing. These indicators formed what may be described as the “economy of quality,” in which technological limitations were translated into financial outcomes and institutional performance metrics.

The economic review for 1980 recorded a significant increase in defect-related losses at the Mayak plant, rising from 321.7 thousand rubles in 1979 to 428.7 thousand rubles in 1980 (Ekonomicheskii obzor..., 1980, p. 82). This growth indicates a deterioration in technological stability despite ongoing modernization efforts. Simultaneously, warranty repair expenses increased, reflecting both the expansion of production and the growing proportion of more complex stereophonic models. The same report linked rising warranty costs to higher technical complexity and adjustments in repair tariffs following the State Price Committee decree of September 7, 1979 (Ekonomicheskii obzor..., 1980, p. 56). From an infrastructural perspective, the expansion of technological functionality did not automatically improve reliability. On the contrary, increasing complexity under conditions of limited electronic component quality often produced higher rates of malfunction. Internal quality analyses confirmed that defect losses and warranty repair constituted a significant share of production-related costs, demonstrating the systemic nature of technological instability (Analiz sostoianiia kachestva..., 1981, pp. 147–149, 163). User accounts further indicate that perceptions of quality were shaped not only by technical parameters but by practical usability, including reliability, ease of repair, and stability in everyday operation (see Figure 4).



Figure 4. Quality inspection of a Mayak tape recorder at the Kyiv Scientific-Production Association “Mayak.” Technician Vitalii Solovei is shown calibrating a Mayak-001 tape recorder (Kyiv, March 17, 1976), illustrating factory-level testing and adjustment procedures in Soviet audio equipment production (Central State Audiovisual and Electronic Archive, n .d.).

Economic reports from the late 1970s reveal cyclical fluctuations in quality indicators, suggesting that technological stability was shaped not only by engineering factors but also by institutional interventions. The economic review for 1979 recorded a nationwide increase in defect losses of 40.2% compared to 1978, while the Ministry of Communications Equipment Industry reported a reduction of 26.2%, including a substantial decrease at the Mayak plant (Ekonomicheskii obzor ..., 1980, p. 72). This temporary improvement likely reflects intensified quality-control campaigns rather than structural technological stabilization. Subsequent reports documented renewed growth in defect losses, indicating that quality management functioned as a cyclical process influenced by resource constraints, workforce discipline, and production pressures. From an institutional perspective, quality was not a stable technical parameter but a dynamic outcome shaped by administrative priorities and planning pressures.

Analytical and forecast materials consistently identified the limited electronic component base as a primary factor constraining technological quality. Reports emphasized that the technological lag of domestic recording equipment behind international standards resulted from shortages of modern electronic components and long development cycles (Sopostavitel’nyi analiz..., 1980, p. 151). These constraints affected core performance parameters such as noise level, mechanical stability, and durability. The reliance on imported micro-motors and critical components created

additional vulnerabilities, linking technological performance to external supply conditions. Efforts at import substitution were initiated but produced uneven results, further contributing to cyclical quality fluctuations.

Economic reviews provide quantitative insight into the relationship between technological constraints and economic performance. The 1980 report recorded a reduction in average production cost per tape recorder by 5.4% compared to 1979 (Ekonomicheskii obzor..., 1980, p. 56). From the perspective of industrial policy, this reduction represented an apparent success in cost optimization. However, consumer accessibility was determined not only by production cost but by the interaction of retail price, availability, and household purchasing power. Documents repeatedly emphasized that acquisition was constrained both by absence of desired models and by insufficient financial resources (Kon'iunkturnyi obzor..., 1975, pp. 34–39). This dual constraint demonstrates that technological accessibility was socially differentiated and structurally embedded within the planned economy.

The economy of quality redistributed technological risk across the production-consumption chain. Defects and malfunctions increased warranty repair costs, while dependence on repair infrastructures affected the continuity of user experience. Documentary materials indicate that the average lifespan of a tape recorder was estimated at approximately ten years, with repair systems playing a critical role in maintaining long-term functionality (Kon'iunkturnyi obzor..., 1975, p. 36). From an infrastructural perspective, repair networks constituted an essential component of the technological system, extending device lifespan and stabilizing domestic recording practices despite systemic technological instability.

The documentary evidence suggests that technological quality in late socialist industry cannot be reduced to engineering design alone. Instead, it emerged from the interaction of multiple structural factors: component shortages, production pressures, institutional quality campaigns, and planning priorities. As a result, quality functioned as a dynamic institutional variable linking technological constraints with financial and social outcomes. Calculations of effective consumer demand reveal that access to tape recorders in late socialist Ukraine was shaped by the interaction of commodity availability and household purchasing power. The demand forecast for 1976 projected substantial growth in retail turnover for tape recorders, increasing approximately 2.5 times compared to 1971 (Otchet. Raschet platezhesposobnogo sprosa ..., 1976, p. 8).

However, the same report emphasized that rising household income did not eliminate structural constraints on acquisition. Statistical tables demonstrated that projected growth in retail sales exceeded planned production growth, implying persistent shortage embedded within the planning system (Otchet. Raschet platezhesposobnogo sprosa ..., 1976, p. 13). Consequently, technological access was constrained simultaneously by commodity scarcity and uneven income distribution. Internal conjunctural reviews identified two primary obstacles to acquisition: the absence of preferred models in retail networks and insufficient financial resources

among households (Kon'iunkturnyi obzor..., 1975, p. 39). These dual constraints indicate that shortage operated both as a material limitation and as a socio-economic filter, producing differentiated access to recording technology across social groups.

Distribution reports repeatedly documented persistent assortment imbalances within retail networks, where lower-demand devices accumulated while preferred models remained scarce (Analiz otechestvennogo i zarubezhnogo rynkov..., 1978, p. 14). As a result, the retail availability of tape recorders remained unstable, reinforcing periodic shortages of the most desirable models.) This pattern produced a distinctive temporal structure of technological availability: brief windows of market presence alternated with extended periods of scarcity. Acquisition therefore depended on timing, personal networks, and informal access rather than predictable market supply. From an infrastructural perspective, the distribution system functioned not merely as a logistical mechanism but as a structure shaping social practices of acquisition and technological access.

Price adjustments constituted one of the principal administrative tools used to manage inventory imbalances. Price reductions were applied to technologically obsolete models in order to stimulate sales and reduce accumulated inventories (Kon'iunkturnyi obzor..., 1975, p. 5). While this mechanism improved circulation of outdated devices, it also contributed to differentiated technological access. Lower-cost models became more widely available but often provided lower recording fidelity, higher noise levels, and reduced durability. Consequently, price regulation influenced not only economic efficiency but also the acoustic characteristics of domestic recording environments.

Repair, Substitution, and the Continuity of Technology.

Oral testimonies in this study are not used merely as illustrative material but as analytical evidence of user interaction with technological systems. They provide insight into how technological instability was experienced, interpreted, and practically managed in everyday contexts. Survey data indicate that consumers adapted to shortage through substitution and improvisation. When preferred models were unavailable, households often purchased alternative devices of lower class or relied on secondary markets, repair networks, and collective access arrangements (Kon'iunkturnyi obzor..., 1975, pp. 35–36). From an infrastructural perspective, these adaptive strategies represent forms of technological mediation. Access to recording technology was shaped not only by industrial production but also by social networks, repair infrastructures, and informal circulation. The resulting acoustic environments varied across households depending on technological class, reliability, and recording quality (see Figure 5).

Within the structural conditions of a shortage economy, malfunction and repair formed an intrinsic phase in the life cycle of technical artefacts rather than an exceptional breakdown. This situates Soviet household electronics within a regime of

permanent technical negotiation, where reliability was not guaranteed by design but achieved through continuous user intervention. Practices commonly associated with do-it-yourself culture can therefore be interpreted as a historically specific mode of late Soviet subject formation, in which technical competence operated as a stabilizing response to unstable material and industrial environments (Golubev & Smolyak, 2013, pp. 519–521, 532–540). The acts of assembling, adjusting, and repairing devices functioned simultaneously as technological practice and as a form of everyday adaptation to systemic uncertainty.



Figure 5. Adjustment and testing section of tape recorders at the Kyiv “Mayak” plant (Kyiv, 1980), illustrating the organization of calibration and quality control procedures in late socialist industrial production (Central State Audiovisual and Electronic Archive, n. d.).

Repair systems played a critical role in stabilizing domestic recording practices. Documentation indicates that the average operational lifespan of tape recorders was approximately ten years, with maintenance and repair extending functional use despite technological instability (KNPO “Maiak”, 1975, p. 43). The economic significance of repair is evident in warranty repair expenses, which formed a substantial share of production-related costs. From a socio-technical perspective, repair infrastructures

constituted an essential component of the recording system, ensuring continuity of domestic recording practices and shaping user experience.

The persistence of technical instability in serially produced equipment was partially mitigated by the extensive circulation of specialized technical literature devoted to Soviet magnetic recording technology (Anisimov, 1986). Manuals and technical handbooks issued between the 1960s and the 1980s provided detailed circuit diagrams, calibration data, functional descriptions of core assemblies, and procedural instructions for maintenance and modification (Samodurov, 1971; Kolosov, 1974; 1977; Pocheпа, 1979; Vasilevskii, 1989). Importantly, this corpus addressed not institutional repair services but technically literate users capable of direct engagement with device operation. In this technical discourse, the tape recorder appeared not as a closed consumer commodity but as an open and adjustable system whose performance depended on user-mediated calibration and modification. Such representations contributed to the formation of a distinct operational culture in which the user simultaneously occupied the roles of consumer, technician, and partial designer. Domestic repair, experimentation with recording parameters, substitution of components, and fabrication of auxiliary devices became normalized elements of everyday technological practice.

A key mediating role in this configuration was played by the Massovaia radiobiblioteka series, which functioned as a distributed infrastructure of technical knowledge. Rather than producing professional repair specialists, these publications equipped users with practical competencies for diagnosing faults and stabilizing device performance in domestic settings. Alongside general explanations of tape recorder construction and operating principles, they provided detailed guidance on correcting typical malfunctions, fine tuning tape transport and recording circuits, and constructing supplementary modules and attachments (Bozdekh, 1981; Shiyanov, 1988). Through this literature, technical literacy was standardized and embedded in everyday practice, effectively extending the site of technological maintenance from institutional workshops into the domestic sphere.

Oral testimony reveals how this domestically embedded regime of technological competence operated in practice. A recurring feature in user narratives is the necessity of continuous intervention in the functioning of tape recorders. In these accounts, the tape recorder rarely appears as a finalized and self-sufficient technical object but rather as a device existing in a state of ongoing modification, ranging from routine cleaning of recording heads to replacement of mechanical assemblies and rewiring of circuits. Respondents describe these actions as ordinary and expected components of use: “you replace the heads, replace the tape transport mechanism... you did it for your own goals and tasks” (Interview with Respondent No. 1 (2025), DELS Archive, Fond 61, Opys 3, Sprava 42, fol. 22); “with reels you had to clean the head so that the sound would be good” (Interview with Respondent No. 1 (2025), DELS Archive, Fond 61, Opys 3, Sprava 42, fol. 23). At the same time, technically experienced users emphasized the

structural limits of improvement. One informant directly associated the instability of household electronics with the quality of the civilian component base and the selective allocation of higher-grade elements to the military sector: “we made some improvements, but still it never improved to the level of branded equipment, which cost tens of times more at the time; it was still not that. Our component base, especially the capacitors, was of very low quality. That was in all devices except military ones, where there was military acceptance and different parts. For household equipment, everything went that wasn’t used for the military, everything that got rejected. That’s why it wasn’t as reliable” (Interview with Respondent No. 2 (2025), DELS Archive, Fond 61, Opys 3, Sprava 42, fol. 7).

Technological Quality, Use, and Social Construction.

The empirical evidence presented above suggests that technological quality in late socialist industry should be understood as a relational category shaped by institutional and social contexts. From an STS perspective, qualities such as reliability, fidelity, and functionality may be interpreted as affordances rather than inherent properties of devices. This perspective highlights a reciprocal dynamic: while industrial planning and resource allocation structured technological possibilities, everyday practices of use contributed to redefining what counted as acceptable performance. Users adapted to noise, instability, and mechanical limitations, integrating them into normalized listening practices. Oral testimonies demonstrate that users actively interpreted and redefined technological limitations, integrating them into routine practices and thereby contributing to the social construction of technological quality. At the same time, demand for specific functionalities (portability, reproducibility, ease of circulation) shaped expectations toward recording technologies.

Consequently, technological development did not follow a linear trajectory of improvement but unfolded through continuous negotiation between institutional production regimes and socially embedded practices of use. This interpretation is supported by the empirical evidence presented in the preceding sections, which demonstrates that fluctuations in quality indicators, uneven distribution, and reliance on repair infrastructures directly shaped user experience. In this context, technological limitations were not simply constraints but conditions that structured patterns of use, adaptation, and evaluation. From a broader perspective, this case suggests that late socialist consumer technologies should be understood as dynamic socio-technical systems in which institutional structures and everyday practices were mutually constitutive. Such an approach contributes to bridging the gap between industrial history of technology and studies of everyday life in socialist societies.

Mayak as a Socio-Technical Infrastructure.

The expansion of domestic recording technologies facilitated informal sound circulation beyond official media channels. Home recording enabled copying of radio

broadcasts, duplication of phonograph records, and circulation of recorded materials through personal networks. These practices formed part of the broader phenomenon often described as *magnitizdat* (informal circulation of audio recordings through privately copied magnetic tapes), in which magnetic recording technologies supported decentralized sound distribution. Documentary evidence suggests that shortage and uneven technological access reinforced the importance of informal circulation. When desired recordings were unavailable through official channels, domestic recording provided alternative means of access. From an infrastructural perspective, the tape recorder functioned not only as a consumer device but as a medium enabling decentralized sound exchange (see Figure 6).



Figure 6. Tape recorder adjustment section at the Kyiv “Mayak” plant (Kyiv, October 24, 1979), illustrating calibration and fine-tuning procedures within the industrial production process (Central State Audiovisual and Electronic Archive, n. d.).

The interaction of technological access, distribution mechanisms, and domestic recording practices contributed to the emergence of individualized acoustic environments. The personal acoustic environment may be understood as the configuration of listening, recording, and reproduction practices within domestic space, shaped by technological capabilities and social conditions. In this context, the Mayak tape recorder functioned as an infrastructural device mediating access to sound, memory, and social communication. The acoustic characteristics of domestic environments (noise levels, recording fidelity, durability, and continuity of access) were determined by technological parameters shaped by industrial planning and systemic constraints.

The documentary record allows Mayak tape recorders to be interpreted not merely as consumer devices but as components of a broader socio-technical infrastructure linking industrial production, distribution systems, maintenance networks, and

everyday sound practices. Within this framework, the tape recorder functioned simultaneously as a planned commodity and as a medium structuring private sonic life. Industrial documentation repeatedly demonstrates that technological parameters (mechanical stability, durability, and noise level) were shaped by systemic constraints of centralized planning and component shortages. These parameters directly influenced user experience, determining the reliability of recording, the continuity of device use, and the quality of reproduced sound. Consequently, technological characteristics cannot be understood independently of institutional and economic structures (Sopostavitel'nyi analiz i prognozirovanie..., 1980, p. 151). The infrastructural perspective highlights the interconnectedness of production, quality, distribution, and consumption. Technological instability increased warranty repair and defect losses, while uneven distribution shaped patterns of acquisition and access. Together, these factors formed a system in which industrial organization significantly structured everyday auditory experience, without fully determining it, as users actively adapted technologies to their needs and contexts of use.

Documentary evidence indicates that the relationship between industrial production and domestic recording was reciprocal. Industrial planning shaped technological availability, while patterns of use influenced institutional responses. Conjunctural reviews repeatedly emphasized the importance of aligning production structure with consumer demand, noting that insufficient assortment and slow model renewal generated both shortage and inventory accumulation (Kon'iunkturnyi obzor..., 1975, pp. 56-58). The shift toward higher-class and stereophonic models reflected both technological modernization and changing consumer expectations. However, increased technological complexity often produced higher rates of malfunction, reinforcing the cyclical nature of quality fluctuations. From a socio-technical perspective, technological modernization did not eliminate instability but reconfigured its forms. Domestic recording practices further shaped technological meaning. Tape recorders were used not only for listening but for recording broadcasts, copying music, preserving speech, and circulating sound through personal networks. These practices transformed the tape recorder into a medium of everyday communication and memory, extending its function beyond industrial design.

Informal Networks and Social Mediation.

The infrastructural analysis of distribution and repair reveals that technological access followed specific temporal rhythms. Short periods of availability in retail networks alternated with longer phases of scarcity, while repair cycles interrupted and restored device functionality. These rhythms shaped the continuity of domestic recording practices and contributed to the formation of individualized acoustic environments. Repair networks played a stabilizing role within this temporal system, extending the operational lifespan of devices and mitigating technological instability.

From this perspective, technological access was not a static condition but a dynamic process structured by production cycles, distribution flows, and maintenance networks.

The scarcity of desired models and uneven distribution encouraged the development of informal acquisition networks (Analiz otechestvennogo i zarubezhnogo ..., 1978, pp. 29–30). Consumers relied on personal connections, opportunistic purchasing, and secondary circulation when preferred devices were unavailable. These informal networks constituted an extension of the technological infrastructure, mediating access to devices and recordings. The tape recorder thus became embedded within social relations, functioning as both a technological object and a social resource (see Figure 7).



Figure 7. Mentor of young workers, Mayak plant employee A. B. Yurkevych, sharing work experience with junior workers (Kyiv, 1982), illustrating the transmission of technical skills and workplace knowledge in Soviet industrial production (Central State Audiovisual and Electronic Archive, n. d.).

The material characteristics of tape-recording technology shaped everyday sonic experience, while evolving patterns of use simultaneously influenced how these characteristics were perceived, evaluated, and normalized. Noise levels, mechanical instability, and variability in recording quality influenced listening practices and user perception of sound. Documentation demonstrates that these characteristics were

shaped by systemic industrial constraints, linking sensory experience with institutional and economic structures. In this sense, the personal acoustic environment cannot be understood solely in cultural or psychological terms. It emerged from the interaction of technological materiality, industrial organization, and social practice. The Mayak tape recorder functioned as a mediator between these domains, structuring the sonic conditions of everyday life in late socialist Ukraine.

The combined analysis of production, quality, distribution, and everyday use suggests that Mayak tape recorders constituted a key infrastructural element of late socialist domestic life. Their technological trajectory was shaped by systemic constraints rather than linear innovation, producing a dynamic interplay between technological instability and everyday adaptation. From a broader perspective, the study demonstrates that socialist consumer technologies cannot be understood solely through production statistics or cultural analysis. Instead, they must be examined as socio-technical systems linking industrial organization with everyday practice.

Conclusions.

This article has approached Mayak tape recorders not simply as consumer devices but as a socio-technical infrastructure formed at the intersection of centralized planning, technological constraint, and everyday practices of domestic sound recording in late socialist Ukraine. By combining industrial documentary materials with an infrastructural perspective, the study shows that the trajectory of Mayak technology cannot be explained through technical evolution alone. It must be understood within the broader institutional and economic environment of late socialist industry, where production, distribution, and use were closely interwoven. The analysis demonstrates that shortage was not a temporary disturbance but a structural feature of the planned economy. Conjunctural reviews consistently recorded the coexistence of scarcity and surplus, where high-demand models remained unavailable while technologically outdated devices accumulated in storage. This imbalance reflected the dominance of quantitative production targets over demand sensitive assortment planning and shaped not only the volume of available technology but also the timing and rhythm of its acquisition.

Our study highlights the importance of what may be described as an economy of quality. Economic reports reveal that technological reliability functioned as a measurable financial category expressed through defect losses, warranty repair expenditures, and post-production costs. In this framework, quality was not a fixed technical attribute but a variable outcome shaped by component shortages, production pressures, and institutional quality campaigns. Engineering limitations were thus translated into economic and administrative decision making. The findings show that technological accessibility was determined by the combined effects of commodity scarcity and uneven purchasing power. Demand calculations and conjunctural reviews indicate that access to tape recorders varied significantly across social groups,

producing differentiated domestic acoustic environments. Recording technology was therefore distributed not only through production systems but also through broader social and economic structures.

The article demonstrates the infrastructural role of distribution and repair networks. Uneven commodity flows generated temporal scarcity, while repair systems extended the operational life of devices and stabilized everyday recording practices. From a socio-technical perspective, repair was not a secondary service but a constitutive component of the recording system, enabling technological continuity under conditions of instability. The spread of domestic recording technologies facilitated decentralized forms of sound circulation. In an environment shaped by limited official media access and material shortage, home recording enabled copying, preservation, and exchange of sound, contributing to the formation of informal sonic networks and everyday media practices. Tape recorders thus functioned as infrastructures of communication and memory as much as tools of reproduction.

Taken together, these findings support a systemic interpretation of Mayak tape recorders as infrastructural devices linking industrial organization with everyday auditory experience. Their development was shaped by the interaction of planning mechanisms, resource constraints, and user adaptation. More broadly, the study suggests that late socialist consumer technologies should be understood as dynamic socio-technical systems in which technological materiality, institutional structures, and everyday practices were mutually constitutive. The Mayak tape recorder illustrates how industrial planning influenced not only production and distribution but also the sensory, temporal, and cultural dimensions of everyday life. At the same time, this relationship was not unidirectional. Everyday practices of recording, listening, and circulation contributed to shaping technological expectations and, indirectly, production priorities. The Soviet tape recorder thus functioned within a reciprocal socio-technical dynamic in which industrial systems and user practices continuously interacted.

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Conflicts of Interest.

The author declare no conflict of interest.

References

- Analiz otechestvennogo i zarubezhnogo rynkov bytovoi apparatury magnitnoi zapisi. (1978, June–July). [Analysis of domestic and foreign markets of household magnetic recording equipment]. *Internal analytical report No. 57; Ministry of Communications Equipment Industry of the USSR system; typescript*. MRT Museum, Kyiv, Ukraine (hereafter MRT Museum) [in Russian].
- Analiz sostoianiiia kachestva bytovoi apparatury magnitnoi zapisi (magnitofonov) i kassetnykh magnitofonnykh izdelii. (1981). [Analysis of the quality status of household magnetic recording equipment (tape recorders) and cassette tape-recorder products] *Research report (“Kontrol’-80”); typescript*. MRT Museum, Kyiv, Ukraine [in Russian].
- Anisimov, N. V. (1986). *Tranzistornye radiopriemniki, radioly, elektrofony, magnitofony: Spravochnik* [Transistor radio receivers, radiograms, record players, and tape recorders: Handbook] (6th ed., rev. and enl.). Kyiv: Tekhnika [in Russian].
- Bijsterveld, K., & Pinch, T. (Eds.). (2011). *The Oxford handbook of sound studies*. Oxford: Oxford University Press.
- Birtwistle, A. (2021). Sounding the materiality of the compact audio cassette. *Resonance*, 2(2), 192–217. <https://doi.org/10.1525/res.2021.2.2.192>
- Bozdekh, I. (1981). *Konstruirovaniye dopolnitel'nykh ustroystv k magnitofonam* [Designing additional devices for tape recorders] (B. Ya. Meerzon, Trans.). Moscow: Energoizdat [in Russian].
- Chernyshova, N. (2013). *Soviet consumer culture in the Brezhnev era*. London & New York: Routledge.
- Edgerton, D. (2006). *The shock of the old: Technology and global history since 1900*. Oxford: Oxford University Press.
- Ekonomicheskii obzor No. 20 po itogam raboty predpriatii-izgotovitelei bytovoi apparatury magnitnoi zapisi za 1979 god.* (1980). [Economic overview No. 20... for 1979]. NPO “Maiak”, Kyiv. MRT Museum, Kyiv, Ukraine [in Russian].
- Ekonomicheskii obzor po BAMZ za 1980 g.* (1980). [Economic overview of BAMZ for 1980] [Internal report; typescript]. MRT Museum, Kyiv, Ukraine [in Russian].
- Golubev, A., & Smolyak, O. (2013). Making selves through making things: Soviet do-it-yourself culture and practices of late Soviet subjectivation. *Cahiers du monde russe*, 54(3), 517–541. <https://doi.org/10.4000/monderusse.7964>
- Interview with Respondent No. 1.* (2025). [Unpublished interview transcript]. DELS Archive, Taras Shevchenko National University of Kyiv, Fond 61, Opys 3, Sprava 42 [in Ukrainian].
- Interview with Respondent No. 2.* (2025). [Unpublished interview transcript]. DELS Archive, Taras Shevchenko National University of Kyiv, Fond 61, Opys 3, Sprava 42 [in Ukrainian].

- Kendall, M. (2023). Room for noise in Soviet sound recording. *Slavic Review*, 82(4), 865–873. <https://doi.org/10.1017/slr.2024.5>
- Kolosov, V. V. (1974). *Sovremennyi liubitelskii magnitofon* [The modern amateur tape recorder]. Moscow: Energy [in Russian].
- Kon'iunkturnyi obzor: "Sostoianie vnutrennego rynka bytovoi apparatury magnitnoi zapisi za I kvartal 1974 g."* (1974). [Market conditions review...] [Typescript]. MRT Museum, Kyiv, Ukraine [in Russian].
- Kon'iunkturnyi obzor: Sostoianie vnutrennego rynka bytovoi apparatury magnitnoi zapisi v I polugodii 1975 goda.* (1975). [Market conditions review...] [Departmental report; typescript]. MRT Museum, Kyiv, Ukraine [in Russian].
- Ledeneva, A. V. (1998). *Russia's economy of favours: Blat, networking and informal exchange*. Cambridge: Cambridge University Press.
- Manuel, P. (1993). *Cassette culture: Popular music and technology in North India*. Chicago: University of Chicago Press.
- Otchet. Raschet platezhesposobnogo sprosa naseleniia na magnitofony...* (1975). [Report on effective consumer demand...] [Analytical report; typescript]. MRT Museum, Kyiv, Ukraine [in Russian].
- Pochepa, A. M. (1979). *Magnitnaia zvukozapis'* [Magnetic sound recording]. Minsk: Belarus' [in Russian].
- Samodurov, D. V. (1971). *100 voprosov i otvetov po liubitelskoi zvukozapisi* [100 questions and answers...]. Moscow: Energy [in Russian].
- Shiyanov, N. V. (1988). *Ustroistva dlia nastroiiki magnitofonov* [Devices for tuning tape recorders]. Moscow: Radio i sviaz' [in Russian].
- Simon, A. (2022). *Media of the masses: Cassette culture in modern Egypt*. Stanford: Stanford University Press.
- Sopostavitel'nyi analiz i prognozirovaniie razvitiia otechestvennoi i zarubezhnoi tekhniki magnitnoi zapisi.* (1980). [Comparative analysis...] [Unpublished report; typescript]. MRT Museum, Kyiv, Ukraine [in Russian].
- Sterne, J. (2003). *The audible past: Cultural origins of sound reproduction*. Duke University Press. <https://doi.org/10.1515/9780822384250>
- Vasilevskii, Iu. A. (1989). *Nositeli magnitnoi zapisi* [Magnetic recording media]. Moscow: Iskusstvo [in Russian].
- Yurchak, A. (2006). *Everything was forever, until it was no more: The last Soviet generation*. Princeton: Princeton University Press.
- Zhuk, S. I. (2010). *Rock and roll in the rocket city: The West, identity, and ideology in Soviet Dnipropetrovsk, 1960–1985*. Baltimore, Maryland: Johns Hopkins University Press.

Ростислав Конта

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Магнітофони «Маяк» у пізньосоціалістичній Україні: Промислове планування, технологічні обмеження та повсякденні практики звукозапису

Анотація. У статті реконструйовано життєвий цикл магнітофонів «Маяк» у радянській Україні як соціотехнічної інфраструктури, яка формувалася під впливом централізованого промислового планування, пріоритетів оборонного сектору та повсякденних практик домашнього звукозапису у 1970–1980 х роках. Дослідження спирається на широкий комплекс внутрішньої міністерської та заводської документації. Використано кон'юнктурні огляди ринку, розрахунки платоспроможного попиту населення, економічні звіти галузі побутового магнітного звукозапису та внутрішні аналізи якості. Окрему групу джерел становлять матеріали опитувань і усних свідчень користувачів радянської побутової техніки, що дозволяють відтворити повсякденний досвід експлуатації магнітофонів. У роботі застосовано інфраструктурний аналіз, джерелознавчу критику та історичну реконструкцію статистичних даних. Це дало змогу простежити взаємозв'язок між організацією промисловості та повсякденними звуковими практиками. Архівні матеріали показують, що технологічна якість функціонувала як економічна категорія. Вона вимірювалася втратами від браку, витратами на гарантійний ремонт і післявиробничими витратами, поєднуючи технологічні обмеження з фінансовими та інституційними результатами. Результати дослідження свідчать, що структурний дефіцит, нерівномірність асортименту та залежність від ремонтної інфраструктури формували практики домашнього слухання. Вони також сприяли неформальній циркуляції звуку, включно з домашнім копіюванням і магнітздатом. Зроблено висновок, що магнітофони «Маяк» функціонували одночасно як планова продукція і як медіаінфраструктура приватного звукового життя. Вони визначали матеріальні умови формування персонального акустичного середовища в пізньосоціалістичній Україні. Аналіз також демонструє взаємозв'язок між технологічними системами та практиками користувачів, показуючи, як повсякденне використання технологій запису сприяло переосмисленню понять якості, функціональності та доступності в умовах пізньосоціалістичної промислової системи.

Ключові слова: магнітний звукозапис; магнітофони «Маяк»; планова економіка; дефіцит; домашній звукозапис; персональне акустичне середовище

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