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Living with Smart Technologies: The Changing Dynamics of Digitalized Domesticity

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Editorial

Abstract: This editorial introduces the special issue *Living with Smart Technologies: The Changing Dynamics of Digitalized Domesticity*, which examines how digital technologies are becoming embedded in everyday domestic life and how they reconfigure its socio-cultural dynamics. Developed in connection with the SMARTUP project, the issue approaches the smart home not primarily as a technological artefact but rather as a socio-cultural phenomenon through which everyday domestic life, meanings, and power relations are reshaped. Bringing together the perspectives of sociology and cultural studies, the editorial foregrounds the challenges related to smart domesticity, the plural meanings of "smartness," and the ways smart technologies intersect with axes of difference. In introducing the contributions, the editorial departs from technocentric accounts; instead, it asks how domestic technologies reorganize routines, household coordination, labor, and power relations at home. It also calls for a critical assessment of smartification beyond mere functionality. Such an assessment would remain attentive to the failures and trade-offs of smartification and to its capacity to unsettle assumptions about both homes and technology.

Keywords: sociology of technology, cultural studies, digitalization, domestic space, home smartification, intersectionality, smart home

The Digitalized Home

The increasing smartification of domestic spaces and the growing reliance on intelligent devices in the performance of everyday tasks (e.g., Aagaard 2022; Aagaard and Madsen 2022; Maalsen 2020; Mechlenborg and Gram-Hanssen 2022; Pink et al. 2017; Strengers and Kennedy 2020; Strengers et al. 2019) transform the home into an interconnected and data-driven environment (Furszyfer Del Rio et al. 2021; Spigel 2012), modifying household routines and unquestioned assumptions about domesticity. The interest in smart home technologies has recently been growing both inside and outside academia, and different renditions of the smart home concept proliferate. Although the acronym SMART originally referred to Self-Monitoring, Analysis, and Reporting Technology in hardware failure prediction systems (Hildebrandt 2020), today smart homes are typically defined in terms of boosting automation, convenience, security, and control over private space through the management of technologies within and beyond the domestic environment (Aldrich

2003). However, what currently qualifies as "smart" in smart homes remains a topic of ongoing discussion (e.g., Bowes et al. 2012; De Silva et al. 2012; Marikyan et al. 2019; Frydrysiak et al. 2026). The adjective may be used to refer to the optimization of energy consumption to reduce humans' ecological impact (e.g., El-Azab 2021; Gram-Hanssen and Darby 2018; Reinisch et al. 2011), or to the provision of personalized healthcare support and early detection of medical conditions (e.g., Chan et al. 2008; Deen 2015; Liu et al. 2016; Majumder et al. 2017; Rialle et al. 2002), or to customized and adaptive spaces that enhance comfort and convenience (e.g., Aldrich 2003; Chambers 2020, 2022). These various conceptualizations notwithstanding, the increasing popularity of smart home technologies and the significant expansion of their markets mean that the socio-cultural aspects of home smartification deserve rigorous investigation from a variety of disciplinary angles.

Although scholarly attention has predominantly been paid to the technological and behavioral aspects of intelligent solutions (e.g., De Boer et al. 2024; He and Jazizadeh 2022; Oyinlola Ayodimeji et al. 2021; Pal et al. 2020), the smart home should not be approached solely as a technical infrastructure. It should also be seen as a socially and culturally embedded space in which multi-axial negotiations of power are taking place on an everyday basis (Coolen and Meesters 2012; García 2024; Gruhlich et al. 2025; Hamarowski et al. 2026). However, such an understanding of the smart home requires the adoption of a critical perspective on how smart devices are conceived, produced, and consumed (as well as for and by whom), and an in-depth reflection on what they do to the domestic environment. Research on home smartification conducted in the fields of sociology and cultural studies, though, has only recently acquired some currency in smart home scholarship (Hamarowski et al. 2026). This critical strand offers a broadened view of how smart technologies shape—and are themselves shaped by—the socio-cultural sphere. It enables a better understanding of the consequences of digitalized domesticity and provides information on how home smartification can be handled in more nuanced ways.

Importantly, the increased digitalization of dwellings triggers a revision of common understandings of domestic space and makes the boundaries between what is inside and outside the home porous and permeable (Søilen and Veel 2025). This revision recalibrates unexamined questions of agency and who owns it, undermines established conceptions of intimacy, introduces new responsibilities (e.g., digital housekeeping), and reinterprets cultural definitions of smartness, efficiency, and convenience in the domestic context (Lucas-Healey et al. 2022; Tolmie et al. 2007; Whiting and Symon 2020). Such transformations restructure the organization of labor in the home. However, while technologization promises liberation from monotonous and time-consuming tasks, whose distribution among family members has typically been gender- and age-based, the technological upgrading of the domestic space frequently deepens these asymmetries rather than flattening them (Chambers 2020; Pink et al. 2023; Sadowski et al. 2024; Strengers et al. 2019; Strengers and Nicholls 2018). At the same time, digitalization mediates new challenges related to, *inter alia*, penetrating mechanisms of surveillance capitalism (Zuboff 2019; see also Kember 2016) or "panopticons of convenience" (convenience underpinned by intensified monitoring via smart equipment) (Ehrenberg et al. 2023), as well as technology-facilitated control within intimate relationships (including forms of abuse enacted through smart devices) (Lopez-Neira et al. 2019; Sovacool et al. 2021).

Moreover, due to the persistence of andro- and ethnocentric bias in their design, smart technologies sometimes exacerbate social hierarchies related to gender, race, and ethnicity, and this phenomenon impinges on equal access and balanced use (Rottinghaus 2021; see also Benjamin 2019a, 2019b; Chen et al. 2025; Dahlgren et al. 2021; Jackson and Moody-Freeman 2011; Lupton et al. 2021; Noble 2018; Noble and Tynes 2016; Phan 2019; Spigel 2010). While these issues are typically sidelined in the mainstream scholarly discourse on smart homes, they feature in investigations with a more sociological or cultural studies orientation (e.g., Dankwa 2020; Dahlgren et al. 2021; Gruhlich et al. 2025; Hamarowski and Golańska 2023; Hamarowski et al. 2026; Pink 2023; Spigel 2012; Strengers and Nicholls 2017). These kinds of studies more comprehensively account for what home smartification brings about. They try to make sense of the experiences co-produced by technology-mediated dwellings and explore how these transformations are negotiated by users of smart devices. As digital technologies become increasingly embedded in domestic life, the expansion of research on smart homes is also becoming essential for understanding the broader social and cultural implications. Such research could influence the design, production, and consumption of smart homes, offering a more sophisticated understanding of intelligent technologies and their more-than-human agencies, and triggering multifaceted reflection on how these advancements are contingent on broader historical, cultural, and social settings.

Introducing the Special Issue

This special issue partly responds to the need to further expand sociological and cultural research on smart homes. It was conceived within the project *SMARTUP: Smart(ening up) the modern home: redesigning power dynamics through domestic space digitalization* (2022–2025).[1] SMARTUP focused on rigorous interrogation of the socio-material effects that smart home technologies generate (Hargreaves and Wilson 2017; Maalsen 2020; Wilson et al. 2017). Bringing together insights from sociology, human geography, cultural studies, gender studies, feminist science and technology studies, and design studies, SMARTUP foregrounded non-technical perspectives to reconceptualize the smart home beyond its purely physical dimensions and to examine it as a fluid and networked space co-constituted by digital infrastructures, economic stratifications, and social power relations. In such an account, the smart home encapsulates social aspirations, desires, and ideals, and molding the dynamics of day-to-day life (Humphry and Chesher 2021). Importantly, as the project was preoccupied with the social and the cultural, it centered intersectionality (Collins 2015; Collins and Bilge 2016; Crenshaw 1991; Lykke 2010, 2011; McCall 2005) as one of its key theoretical frameworks and attended to how smart technologies (re)configure social differences across lines of gender, class, race, ethnicity, age, sexuality, and (dis)ability.

In SMARTUP, the smart home was featured as an object of cultural imagination, a product of design and planning, and a phenomenon emerging from lived experience. The project focused on (1) the *conception* of a smart home (home as an idea and an ideal), (2) its *produc-*

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tion (homes as a matter of design and planning), and (3) *consumption* (homes as practiced, lived, and experienced), while conceiving these dimensions as being entangled. This special issue explores the third line of inquiry along which the SMARTUP project was structured. Based on specific settings and situated case studies, the issue examines to what extent the new technologies applied in the home are capable of shifting established boundaries and thus of dismantling or exacerbating existing inequalities, or creating new ones; how they contribute to redesigning power relations both at and beyond the home; how they change usual routines and habits; and how they affect understandings of domesticity, work, care, and convenience. In line with SMARTUP's orientation, this issue interrogates the different experiences of smart technologies from sociological and cultural-studies perspectives. It looks into the ways people approach, use, rely or depend on, ignore, integrate, criticize, or disregard smart solutions, and how these technological enhancements affect their lives.

It is vital for sociologists and cultural studies scholars to take an interest in the consumption of technologically upgraded domestic spaces. In both the social sciences and humanities, homes are typically recognized to result from—and be repositories for—ideas and practices that may seem mundane but that nevertheless have great socio-political and socio-cultural implications (Saunders 1989, 1990; Boccagni and Kusenbach 2020; Lloyd and Vasta 2017; Mallett 2004). Homes are the outcome of entangled processes of societal transformation, appropriation, and negotiation (Blunt and Dowling 2006; Gibas 2019) at the crossroad of boundaries, polarities, and dichotomies (Cieraad 2006). Within the domestic space, intersecting gender- and age-related dichotomies structure power relations (e.g., Bariola and Collins 2021; Reilchelt et al. 2021), which also play a role in shaping the design and actual usage of home technologies (Aagaard and Madsen 2022; Cockburn and Fürst-Dilić 1994; Furszyfer Del Rio et al. 2021; Ghorayeb et al. 2021; Strengers et al. 2019; Wajcman 1991, 2010). Thus, it seems essential to examine how smart devices participate in either solidifying or redesigning social hierarchies at and beyond the home (e.g., Hargreaves and Wilson 2017). The present special issue expands this body of work, inviting a more thorough understanding of home smartification and how it is entangled with broader contexts, forces, and phenomena. While limited in scope and grappling with only selected aspects of the technologization of dwellings, this collection of articles broadens the debates in sociology and cultural studies on domestic life in an age of increased digitalization and offers new information on user practices. It also uses a diversity of conceptual and methodological tools to capture the experience of living with smart technologies and thereby enhances our understanding of how digital infrastructures shape what home means in the twenty-first century.

Content Overview

An overview of the six contributions comprising this special issue is presented in Table 1. The collection brings together qualitative and quantitative work conducted across four European countries—Poland, Germany, Finland, and the United Kingdom—drawing on a methodological repertoire that spans participatory action research, ethnographic home visits, large-scale cross-national survey design, and secondary qualitative analysis of longitudinal interview data. Empirically, the papers engage with a wide range of

technological settings and populations: from older adults navigating aging in place through the objects with which they share their homes, to university students' trust in AI-mediated systems, to prosumer households reorganizing daily rhythms around photovoltaic energy production. These contributions are organized around three thematic lines of inquiry, each corresponding to a major axis of discussion advanced here in dialogue with the SMARTUP project's agenda of foregrounding dimensions of smart domesticity that have remained underexamined. These are the lived and negotiated character of smart domesticity in specific spatio-temporal circumstances, the contested and expanded meanings of smartness, and the embeddedness of smart technologies within structures of power that operate simultaneously at the scale of the household and of broader social formations.

Situated Lived Experiences

As we mentioned earlier, recent bibliometric reviews of smart home scholarship—whether broad in scope (Choi et al. 2021; Li et al. 2022; Ohlan and Ohlan 2022) or topic-specific (Hamarowski et al. 2026)—have consistently confirmed that the various manifestations of the field have clustered around computer science and engineering. Moreover, the field also remains markedly skewed toward particular geographical contexts of knowledge production and technology adoption, with disproportionate representation of the United States, Australia, China, and other major economic players such as the United Kingdom, Germany, and India. This disciplinary and geographic concentration carries especially consequential implications for the socially-oriented strand of smart home research, which is concerned with the context-specific experiences of those who actually inhabit and make sense of these technologies. Moreover, the prevailing disciplinary emphasis on the "smart" pole of the smart home dyad has long resulted in a systematic under-attention to the "home" (though see Ellsworth-Krebs et al. 2015 and Gram-Hanssen and Darby 2018 for notable exceptions). The household, with its specific spatial arrangements, affective textures, biographical histories, and interpersonal dynamics, has remained far less central to smart home discourse than one might expect given that it constitutes the very site at which these technologies are meant to operate and acquire meaning.

Recent years have seen a gradual reorientation toward studies more closely attuned to the lived realities of smart domesticity. Drawing on ethnographic home visits, in-depth interviews, and longitudinal engagement with households, this growing body of work has been developed within single national contexts (e.g., Kennedy et al. 2020; Mechlenborg and Gram-Hanssen 2022; Pink et al. 2023; Strengers et al. 2019; Strengers et al. 2022) and, more recently, across multiple countries (e.g., Gruhlich et al. 2025). Together these studies have revealed the topic's considerable complexity, which is often obscured by aggregate data. They show the uneven and often ambivalent processes by which smart technologies are incorporated into domestic life, the active negotiations by which their place and status in the home is defined, and the ways in which self-perception and relations between household members shift in response to their presence. They also demonstrate how the home itself is reconstituted as a meaningful space through these encounters.

In developing this line of inquiry, the contributions to the present issue use a varied methodological repertoire to interrogate the everyday realities of smart technology adop-

Table 1

An overview of the contributions

Author(s)	Article Title	Methodology	Material / Data	Geographical Context	Smart Home Understanding	Primary Power Axes
B. Mateja-Jaworska & M. Skowrońska	*Digital Kinwork, Gender, and Micro-Power in Polish Families*	Qualitative interviews; secondary analysis integrating two independently conducted studies through a shared coding framework.	Approx. 120 interviews across two studies: tri-generational families with children, parents, and grandparents (Study 1, 2024–25; 11 families) and empty-nest couples in their 50s–60s (Study 2, 2018–20).	Poland	Treats everyday communication platforms (WhatsApp, Messenger, Facebook, Life360) as a domestic digital infrastructure that reorganizes family coordination and care. "Smartness" is located not in devices but in the relational work these platforms enable—and in who performs that work.	Gender is central: women—especially mothers and grandmothers—perform the bulk of digital family coordination. Generational position also shapes who does what. Family structure and relationships status (e.g. divorce, custody arrangements) can reshape the "balance" of the digital emotional labor.
L. Schmitz	*Simply Convenient? The Justification of Convenience in the Digital Transformation of Domestic Life*	Qualitative; Combines semi-structured interviews with ethnographic home visits (including technology tours). Analysis follows Grounded Theory principles with two-stage coding (open, then focused).	22 home visits (90–120 minutes each) conducted between 2021 and 2024. Households varied in age, composition, income, and intensity of smart speaker use. All owned at least one smart speaker for between six months and five years.	Germany	Focuses on smart speakers as the paradigmatic smart home device. The home is understood as a socio-material assemblage that achieves stability through ongoing everyday work. The key argument is that "convenience" is not a built-in feature of smart technology—it is a social achievement that households must actively justify and maintain.	Power inequalities are not a primary analytical focus. The article is nonetheless attentive to how age, household composition, and economic resources shape who benefits from smart home "convenience" and under what conditions.
J. Kozak, M. Choroszewicz, & S. Fel	*Trust and Social Control in Domesticating Smart Technologies: Understanding Smart Technology Use Among Students in Poland and the UK*	Quantitative, cross-national comparative survey. Statistical analysis using t-tests, robust ANOVA with post hoc comparisons, and nine-step hierarchical linear regression.	2,098 university students surveyed in 2023–24: Poland (N = 1,088, recruited via respondent-driven sampling with field-of-study quotas) and the UK (N = 1,010, drawn from the Savanta national student panel).	Poland, UK	Adopts a broad definition of smart technologies covering voice assistants, biometric wearables, health monitoring tools, location apps, recommendation systems, and telemedicine. Treats them as elements of a digitally transformed everyday life where the boundaries between home, body, and public infrastructure are increasingly blurred.	National and institutional context is the key differentiator: UK students use smart technologies significantly more than Polish students, which is explained by differences in welfare regimes and how deeply digital tools are embedded in higher education. Gender, age, urban/rural location are also significant predictors.
E. Alhroos & N. Ehrenberg	*Communal Technologies and Sharing in Urban Cohousing*	Qualitative, exploratory. Three-method design: semi-structured interviews with guided home and building tours, ethnographic field visits, and a participatory ideation workshop. Analysis combined affinity diagramming and thematic analysis.	Five interviews with residents of three cohousing buildings in inner-city Helsinki: two resident-owned cooperatives and one mixed-tenure building for artists and designers aged 55+. Also includes shared resident documents and a two-hour ideation workshop.	Finland	Does not explicitly theorize "smartness." Instead examines communal technologies—internet-connected platforms used collectively by cohousing residents for communication, coordination, and shared resource management. Shifts the unit of analysis from the individual household to the multi-household residential community.	Intergenerational relations: cohousing can enable mutual support between older and younger residents, but imposed generational mixing is fragile. The balance of power between residents and external actors (platform providers, housing managers) is a key concern. Digital exclusion through information overload or platform inaccessibility is also noted.

Table 1 (continued)

Author(s)	Article Title	Methodology	Material / Data	Geographical Context	Smart Home Understanding	Primary Power Axes
J. Gądecki & S. Medoń	*Routinised Causality: How Domesticated Technology Shapes the Everyday Energy Practices of Prosumers*	Qualitative; 39 in-depth interviews. Analysis combines Actor-Network Theory (ANT) with social practice theory to capture how human and non-human actors together produce habitual routines.	39 interviews in spring–summer 2022, Lesser Poland (Małopolska)—the Polish region with the highest per-capita solar capacity at the time. All participants had used PV for at least one year (installed 2018–2022). Sample structured by social class following Bourdieu.	Poland	Treats the home as a socio-technical arrangement in which humans and technologies jointly produce everyday life. Photovoltaic (solar) systems are analyzed as a "low-visibility, high-impact" technology: largely invisible at the interface level yet deeply transformative of household rhythms, economic relations, and domestic identity.	Gender is central: men tend to act as remote "production managers" (monitoring apps, tracking output data) while women adjust household routines to match energy production windows. Class shapes digital competence: middle-class prosumers integrate monitoring tools more fluidly than working-class counterparts.
M. Romanowska & P. Pustułka	*Smart or Wise? Exploring (Technodigital) Domesticity in Home Environments of Seniors*	Qualitative, multimethod (participatory action research). Combines in-depth interviews, photographs taken by participants of their own homes, and VR/3D home scans. Data analyzed thematically and through visual content analysis.	Older adults aged 66–90 living in their own homes in Warsaw. 10 in-depth interviews (2023), 6 VR home videos (2024), 180 participant-generated photographs from 8 participants (2025).	Poland	Challenges the assumption that a "smart home" must be digitally equipped. Introduces the concept of "wise objects"—ordinary, familiar items valued through habit, memory, and experience—as equally important for supporting older adults living independently at home.	Age and generation are central: older adults' evaluations of technology are shaped by life experience and cohort. Bodily health and mobility also matter, as physical limitations determine what counts as useful. Housing conditions, gender, and class play secondary roles.

tion. Several combine multiple data-collection approaches within a single study design. For example, Romanowska and Pustułka bring together in-depth interviews, participant-generated home photography, and VR-based spatial documentation to access the layered ways older Warsaw residents relate to the objects—technological and otherwise—that sustain their independent living. Likewise, Alhroos and Ehrenberg pair semi-structured interviews with guided building tours, ethnographic field visits, and a participatory ideation workshop to trace how communal digital platforms are woven into the shared life of co-housing residents in Helsinki. Similarly, Schmitz conducted extended ethnographic home visits in Germany that combined technology tours with in-depth interviewing, allowing the everyday justification work through which "convenience" is—or fails to be—produced to emerge from the situated details of domestic practice.

Other articles work through interview-based designs that nonetheless attend closely to context and materiality: Mateja-Jaworska and Skowrońska draw on a substantial corpus of qualitative interviews with Polish couples and tri-generational families to show how digital communication platforms become part of the infrastructure of kinship and household coordination, while Gądecki and Medoń's in-depth interviews with prosumer households in Lesser Poland document the quiet but far-reaching reorganization of domestic rhythms that photovoltaic adoption sets in motion. These studies, with all their methodological and thematic diversity, share a commitment to follow smart technology into the specificities of its domestic habitation—to take the home and its inhabitants seriously, as more than just a backdrop for technological adoption.

The significance of these studies is inseparable from their spatial location. As they were conducted predominantly in Poland, which is markedly underrepresented in smart home scholarship relative to its significance as a site of technological adoption and its distinct sociocultural formation, they open questions that more familiar research geographies have had limited occasion to pose. The post-communist trajectory of Polish society, its specific patterns of housing and urban development, and the particular historical relationship between domestic space, private life, and the state in Poland may all provide conditions for smart domesticity that differ consequentially from those foregrounded in Anglophone or Western European research. At the same time, the Finnish and German contributions included here allow for productive juxtapositions. They raise the question of whether—and to what extent—the experiences of people adopting smart technology reflect nationally and historically specific configurations, or whether the transnational logics of platform capitalism and consumer technology tend to flatten such differences, producing convergent domestic arrangements across divergent social contexts.

Smartness Otherwise

Even before the term "smart home" was coined—a designation commonly attributed to the American Association of Home Builders in 1984 (Aldrich 2003: 21)—imaginaries of future domesticity were consistently organized around the material and technological properties of the dwelling itself. To appreciate how durable this equation between the domestic future and technological content has proven, it is sufficient to trace the arc from the unconventional building materials and experimental forms showcased at the 1933 Chicago

World's Fair "Home of Tomorrow" exhibition, through the technological metaphors of the 1960s space age and the progressive domestication of appliances such as the dishwasher and microwave, to Roy Mason's Xanadu project of the early 1980s (a computerized house whose ambitions remain strikingly familiar). "Imagine a house with a brain," Mason wrote, "a house you can talk to, a house where every room adjusts automatically to match your changing moods […] a house that is not just a backdrop but an active partner in your work, your family life, and your leisure activities" (Mason 1983: 11). It should come as no surprise then, that academic smart home discourse has largely reproduced the technocentric logic already embedded in this longer cultural lineage. To be "smart," as the literature's taxonomies have repeatedly defined it (e.g., Bowes et al. 2012; De Silva et al. 2012; Marikyan et al. 2019), is to possess certain technological qualities, and although these qualities shift historically (as yesterday's innovation becomes today's default), they consistently anchor the degree of smartness to specific functional capacities: either the domestic space is managed remotely by users or it is managed nearly autonomously, with minimal human intervention.

The recent, if numerically modest, countercurrent emerging from the humanities and social sciences has worked steadily to expose the limitations of techno-reductionist conceptions of smartness, insisting on the relational, co-produced, and culturally saturated character of domestic technologies. Theorized variously as "socio-technical assemblages" (Maalsen 2020), "constellations" (Heckman 2008), or "nexuses" (Strengers 2020), smartified domestic spaces are understood within this intellectual strand as integral to a broader turn toward digital modernism, opening onto new forms of post- and more-than-human domesticity (Heckman 2008; Herwig 2022). In this view, smart homes function as culturally charged sites in which desires and anxieties about the future are simultaneously expressed and contested (Chambers 2020; Hamarowski and Golańska 2023), and the potential exclusion of particular social groups is inscribed in the very design choices through which these technologies are imagined and built (e.g., Benjamin 2019b; Rottinghaus 2021). More recently, these critiques have begun to coalesce into an explicit call for the pluralization of smartness as a concept—on the grounds that more plural imaginaries of what "smart" might mean are a precondition for more diversified, and more equitable, modes of shaping technological futures (Frydrysiak et al. 2026).

The contributions gathered in this special issue are, in substantial measure, aligned with these critical reframings. What binds the majority of them—whether through explicit conceptual argument or through the logic of their empirical design—is a shared refusal of technological determinism and a commitment to frameworks in which smartness is never pregiven but is emergently co-produced through the interplay of objects, practices, social relations, and material environments. Schmitz makes this case most directly, proposing that "convenience," the master promise of smart home technology, is not a built-in feature of the device but a social achievement that households must actively justify and continuously maintain through relational work. Mateja-Jaworska and Skowrońska push the boundaries of the concept in a different direction, extending the notion of domestic smartness to encompass the digital communication infrastructures (messaging platforms, photo-sharing applications, location-tracking tools) that structure household and kinship dynamics without intervening in their material substrate at all. Together, these two

contributions press the question of where, precisely, smartness resides: in the technology, or in the social arrangements through which it acquires, or is denied, its effects?

A complementary form of revaluation is at work in Gądecki and Medoń's analysis of photovoltaic systems as domestic technology. By casting solar panels as a "low-visibility, high-impact" infrastructure—largely absent from the domestic interface yet deeply transformative of household rhythms, economic relations, and prosumer identity—their study redirects attention to forms of domestic transformation that rarely occupy the symbolic center of smart home discourse. Smart environments are conventionally imagined as being populated by devices over-hyped by marketing, whose actual transformative power—as ethnographic research has repeatedly demonstrated—is considerably more modest than their promotional framing suggests. Here, the relationship is reversed, as an object rarely included in the cultural imaginary of the smart home turns out to be one of its most consequential inhabitants. The boldest reorientation, however, is offered by Romanowska and Pustułka, whose concept of "wise objects" severs the link between smartness and technological mediation altogether. These authors compel a reconsideration of the "smart" component in domestic life by demonstrating that ordinary, familiar items, which are valued through habit and embodied memory, can be as enabling for the aging in place of older adults as any digital device. They thus implicitly weave their argument into the emerging debate on the very terms by which smart living in later life is defined (Duque et al. 2021; Ghorayeb et al. 2021; Strengers et al. 2022). In this debate, the uncritical scaling-up of technological objects in the home may itself be among the assumptions most in need of revision.

Axes of Difference

The road from early conceptions of technology as transparent and socially neutral to contemporary acknowledgements of its constitutive entanglement with structures of power and inequality has been neither short nor straightforward. At a minimum, smart home scholarship today appears aware that identity-related factors substantially condition how domestic technologies are taken up and experienced—even if this awareness does not always translate into concrete decisions regarding study designs, topical orientations, or the systematic refinement of analytical categories. To some extent, a degree of sensitivity to axes of difference was built into the field's academic lineage from the outset. The intellectual genealogy of smart home research traces back, in part, to assistive technologies (see Ohlan and Ohlan 2022: 12), which are inextricably coupled with questions of bodily difference and physical limitation. Despite this inheritance, however, explicit and sustained engagement with these axes remains comparatively rare in the broader field, while work that places them at its analytical center is even rarer and falls predominantly into the critical niche of feminist and critical science and technology studies. These have addressed dimensions of difference such as gender, race, class, disability, and age (e.g., Aagaard and Madsen 2022; Dankwa 2020; Duque et al. 2021; Ghorayeb et al. 2021; Gruhlich et al. 2025; Rottinghaus 2021; Strengers et al. 2022), as well as their intersections (e.g., Sharma 2023, 2025; Sinanan and Horst 2021), with considerably more theoretical ambition than mainstream smart home scholarship has thus far exhibited. Every such contribution is

therefore genuinely valuable and adds—we hope—to a critical mass that might one day render the smart home field sufficiently sensitized to these concerns that their presence no longer warrants special acknowledgement. Until that threshold is reached, however, we are more than glad that the contributors to this special issue do not remain impassive to these matters but make substantive efforts both to engage with the axes of difference that structure domestic technological life and to attend to those whom these axes spin toward various forms of disadvantage.

While the contributions gathered here are attentive to multiple such axes and their intersections, gender and age are the dimensions that are most persistently and substantively addressed. The centrality of gender is nowhere more apparent than in the articles by Mateja-Jaworska and Skowrońska and by Gądecki and Medoń, who approach it from complementary angles. Mateja-Jaworska and Skowrońska demonstrate that the coordination of family life through digital communication platforms—the scheduling, emotional management, and maintenance of connection across generations—constitutes a form of labor that falls overwhelmingly on women, and particularly on mothers and grandmothers, who function as the primary architects and administrators of family digital life. This "digital kinwork," as they conceptualize it, extends and reproduces longstanding gendered divisions of domestic labor into new technological registers, while remaining largely invisible and unrecognized as such. Crucially, their data also suggests that younger women are already being socialized into these patterns and that an intergenerational reproduction of gendered digital responsibility is occurring rather than its erosion. Gądecki and Medoń arrive at a structurally similar finding on the basis of very different empirical material. In prosumer households organized around photovoltaic energy production, a systematic gendered division of labor emerges in which men assume the role of remote "production managers" while women absorb the practical consequences of this energy logic into their domestic routines, rescheduling household tasks to align with production windows.

Romanowska and Pustułka, in turn, take age (as both a biological condition and a social category), as their central analytical lens. Their study of older adults living independently is most directly concerned with how the experience of aging shapes what counts as useful, enabling, or indeed "smart" in the domestic environment. Their findings complicate straightforward narratives of technological adoption and resistance among older populations. What older adults find enabling is not reducible to digital literacy or openness to innovation but is constituted through decades of embodied habit, biographical attachment to familiar objects, and the specific bodily limitations and affordances that shape everyday domestic navigation. The built environment and housing infrastructure emerge as equally consequential, insofar as architectural barriers can undermine the practical value of even the most sophisticated in-home technologies. Age and generation also animate Alhroos and Ehrenberg's study of Helsinki co-housing, though in a more relational register. Their analysis of intergenerational residential settings reveals both the genuine potential of co-housing design to foster mutual support between older and younger residents, and the considerable fragility of this potential when generational diversity is administratively imposed rather than organically cultivated—as the high turnover among younger residents in one of their case buildings illustrates with particular clarity. Intergenerational dynamics

are similarly present, if differently configured, in Mateja-Jaworska and Skowrońska, where the grandmother-mother-daughter axis of digital kinwork transmission is revealed as a structuring principle of domestic digital organization, through which both responsibilities and their associated invisibilities are passed on.

The most consequential engagement with axes of difference in this collection is perhaps that of Kozak, Choroszewicz, and Fel. Their comparative survey of university students in Poland and the United Kingdom reveals that national and institutional contexts—operationalized through the lens of welfare regime theory—might be the salient predictor of smart technology use, with UK students scoring significantly higher than their Polish counterparts across both dimensions of the authors' Smart Technology Frequency Scale. The authors attribute the difference to the varying embeddedness of digital technologies in the infrastructure of higher education and its broader regulatory and institutional environment. They resist the pull of oversimplified explanations that would invoke national character or technological disposition. Their structural account is further enriched by their integration of a wider set of differentiating factors (gender, age, urban or rural origin, English language proficiency, and field of study) into a multi-step regression model. This model illuminates not only the existence of effects but their relative magnitudes and interactions. Thus, the study avoids the well-known trap of essentializing geographical difference. Instead, it offers a structurally grounded account of why the same technologies are taken up differently across distinct social and institutional contexts. This analysis, we suggest, carries considerable generalizability well beyond the specific comparison at hand.

Closing Remarks

Given that both production and consumption of smart home technologies will likely continue to grow, this special issue, we believe, participates in advancing our knowledge of how digital upgrades to the domestic space are experienced. We hope these evidence-based accounts will increase the level of socio-technological literacy among the designers, producers, and users of such upgrades. As the articles in this issue demonstrate, the smart home is far more than a technological artefact with predetermined agencies and functions, or a site of innovation uptake. Therefore, we need critical and empirically grounded information on how to handle home smartification, as well as how to turn it into an essential tool in the struggles for equality, sustainability, and social justice, as these remain important to many scholars working in sociology and cultural studies. Rather than leaving technology entirely to market-oriented agents, whose actions are predominantly guided by techno-capitalist logic and its associated pursuit of income, such knowledge could productively intervene upstream, where common sense ideas of home technological enhancement emerge and solidify. Thus, we need to anticipate and carefully examine the diverse consequences that the digitalization of domestic spaces produces for users and their wider social environments, including the implications for their lifestyles, beliefs, and values. At the same time, it is important to explore how smart technologies could be most wisely exploited, in order to conceive more sensitive and sensible futures and examine what technologization does to our ways of thinking and how it potentially dislocates the ideas we

take for granted and rely upon. Rigorous investigation of the lived experiences of people in regard to smart home technologies, as well as to the trade-offs that are made in this connection, and to the failure of devices, enables a more critical assessment of domestic technological innovation beyond mere functionality. Such information reopens issues that have been considered settled, allows for more reflective and informed engagement with smartification, and sabotages—at least to a certain extent—the capitalistic underpinnings of this technology, while strengthening its users' politics of choice.

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