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Examining the Impact of Female Designers on the Modernist Movement (Lilly Reich, Margarete Schütte-Lihotzky, and Benita Koch-Otte)

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ABSTRACT

Lilly Reich, Margarete Schütte-Lihotzky, and Benita Koch-Otte were three prominent female figures in the fields of design, architecture, and art during the modern era. However, the extent of their influence in this period was not equally distributed. Lilly Reich, in addition to creating architectural works, developed coherent theoretical ideas in design thinking and sought to create form based on her philosophical perspectives while adhering to the principles of modern art. This aspect of her work distinguishes her from the other two designers. Margarete Schütte-Lihotzky's most notable characteristic was her systematic approach to design, which culminated in the creation of the Frankfurt Kitchen—an unparalleled example of integrating the functions of a smaller system, the kitchen, within a larger system, the home. Benita Koch-Otte deserves recognition not only for her unique designs produced during her time at the Bauhaus but also for her later contributions to art education. She stands as a representative Bauhaus artist whose work exemplified the school's aim of merging art with everyday life. Examining successful individuals without analyzing the spirit of the era in which they lived is both difficult and incomplete. Therefore, since these women were all active within the same stylistic and historical period and shared the common experience of being women, this study first explores the social mindset and then the artistic community's attitudes toward women under the overarching themes of modernism and feminism.

Keywords: *Woman Designer, Modernist Movement, Lilly Reich, Margarete Schütte-Lihotzky, Benita Koch-Otte, Bauhaus, Feminism*

Introduction

The Modernist movement in the early twentieth century was a period of significant artistic and cultural transformation. Art, architecture, literature, and design underwent fundamental shifts toward a more abstract, minimalist, and functional approach (1, 2). While many male designers and artists have been celebrated for their contributions to the movement, the role of female designers has often been overlooked (3, 4). The impact of women on Modernism was notable both in terms of artistic participation and in challenging traditional gender roles within the art world (5). By confronting these conventions and advocating for greater artistic freedom and equality, female artists contributed to a more inclusive and diverse artistic community, paving the way for future generations of creators (6).



Female artists played a crucial role in the intellectual development of Modernist thought and in rejecting the traditional styles and techniques of the past (7). Beyond their individual achievements, women designers significantly shaped the broader social and cultural fabric of the Modernist movement (2). Without question, one of the key factors contributing to the growth and enrichment of the design field is the analysis of its social and cultural approaches and the identification of its key indicators (8). The twentieth century, marked by the emergence of Modernism in thought and literature, and consequently in architecture and design, was one of the most dynamic epochs, influenced by two world wars, the rise of feminism, and the increased participation of women across all domains (9).

Numerous designers emerged during this period with innovative ideas that profoundly influenced both their contemporaries and future generations. The phrase “Less is more,” coined by Mies van der Rohe, embodied a cultural, intellectual, and stylistic ethos that transformed architectural and design discourse and even impacted the field of engineering (10). Social and cultural phenomena are vast subjects whose individual developments each warrant extensive study; however, this paper focuses on how these cultural and intellectual currents shaped the identities and works of three female designers during the Modernist period—Lilly Reich, Margarete Schütte-Lihotzky, and Benita Koch-Otte (1, 11).

Definitions

Modernism

Modernism was an era of innovation, invention, new intellectual paradigms, and a sense of liberation (7). It is often defined as a response to the scientific, political, and economic transformations of the time and to how individuals confronted these changes. The tension and anxiety produced by these upheavals were reflected in the arts, influencing music, philosophy, the visual arts, and, notably, literature (8). Writers of the period, preoccupied with these issues, expressed the disquiet and dislocation of the age through their works, giving rise to a new literary genre known as the Modernist movement. Modernism encompassed questions of class, gender, the struggle for knowledge, as well as the absurdity and alienation of the modern age (2). It emerged as a response to the pervasive sense of international melancholy and despair—the feeling that nothing tangible or reliable remained. As Virginia Woolf noted in 1910, Modernism addressed the transformation of human character and embraced disturbance and rejection as necessary steps toward transcending superficial simplicity (8).

Modernism and Women

Gender has always been a central issue in both society and literature; naturally, it became a focal point within Modernism (5). Women’s intellect and judgment were historically dismissed in patriarchal society, and they were often portrayed as subordinate to men rather than as autonomous individuals (3). In literature, women were typically depicted as feminine, weak, dutiful, and naïve, and most male authors perpetuated the belief that women were inherently inferior. For centuries, women were defined by men, and the world functioned within an androcentric, patriarchal order (2). Ellen Glasgow, in her essay *Feminism*, observed that in the past, “men confidently asserted that women existed not as active agents of life, but merely as passive guardians of its forces, destined by nature to sit and watch” (5).

As a result of the new feminist movement, Modernist literature began to portray women as individuals asserting their right to pursue careers, families, or both, according to their own preferences and desires (3). The “New Woman” was represented as one who emphasized the shared human right to self-expression and contribution to society, recognizing that diversity in equality was not inherently gender-based but rooted in each individual’s role within the social fabric (1). Although the “New Woman” was far from perfect, and some of her aspirations and behaviors were controversial, as June West noted, many of these shortcomings stemmed merely from women’s lack of habituation to the freedom of choice (5).

The Bauhaus and Modernism

At a time when women had limited access to public education, Walter Gropius, the founder of the Bauhaus, declared that the school was open to “any person of good repute, regardless of age or gender” (12). Nevertheless, although the movement included many women, the names recorded in history are predominantly male, while female Bauhaus creators were often remembered merely as wives or assistants (13). These pioneering women, instead of being celebrated, were relegated to the background. According to numerous accounts, in its early years, the Bauhaus restricted women to fields deemed appropriate for their gender—such as textiles and weaving—while discouraging them from engaging in architecture, sculpture, or painting, regardless of their talent (14). Women had limited opportunities to teach and were often denied formal apprenticeships, preventing them from earning master’s diplomas and ultimately limiting their career advancement (9).

Despite these constraints, Bauhaus women transformed such restrictions into opportunities. Under the leadership of Gunta Stölzl, the weaving workshop became one of the most successful departments of the school, producing textiles that achieved significant commercial success (11). Architects like Lilly Reich, metal designer Marianne Brandt, wood sculptor Alma Siedhoff-Buscher, and photographer Lucia Moholy were among the movement’s most iconic figures (12, 15). The majority of these female creators were forced to flee Germany with the rise of Nazism, and many faced greater professional challenges than their male counterparts. Their works, often executed in fragile or ephemeral materials, were left unprotected and undervalued (6). In recent years, however, an increasing number of museums have sought to restore the recognition of these “forgotten” Bauhaus women by illuminating their pioneering works and remarkable legacies. The exhibition *Bauhaus Women* (2019), hosted by the Bauhaus Archive in Berlin, is one of the most recent efforts in this regard (10). This study aims to explore the lives and artistic contributions of three Modernist women—Lilly Reich, Margarete Schütte-Lihotzky, and Benita Koch-Otte—whose influence significantly shaped the trajectory of modern design (1, 11).

Lilly Reich (1885–1947)



Figure 1: Lilly Reich, 1933. Bauhaus Archive, Berlin. Photograph by Fritz Schreiber, Karlsruhe.

Biography

Lilly Reich initially trained in embroidery, but in 1908 she moved to Vienna to join the studio of Josef Hoffmann (4). Upon returning to Berlin, she apprenticed under Else Oppler-Legband, one of the early members of the Deutscher Werkbund. By 1912, she had achieved sufficient recognition as a designer to be accepted as a member of the Werkbund board (7). At the age of twenty-nine, in 1914, she established her own independent studio and, in 1920, became the first woman elected to the Werkbund board of directors (16). That same year, she served as the art director for a fashion exhibition organized by the German Fashion Industry Association and was primarily responsible for selecting 1,600 German design objects to be displayed at the Newark Museum in New Jersey in 1922 (12). From 1924 to 1926, she worked for the Werkbund House in Frankfurt am Main, curating and organizing exhibits (17). These experiences laid the groundwork for the surge of creativity and organizational scale that characterized her later collaborations with the renowned architect Ludwig Mies van der Rohe, beginning in 1924 (1).

The projects Reich completed with Mies featured dynamic use of materials, innovative spatial concepts, and new models of habitation (7). As an exhibition designer, fashion and furniture creator, and architect, Reich emerged during the 1920s and 1930s as one of Germany's most significant pioneers of modern design (16). Nevertheless, until recently, she was primarily known through her association with Mies van der Rohe. Only after the 1996 exhibition of her works at the Museum of Modern Art did her artistic individuality begin to receive due recognition (1). Although political conditions in late-1930s Germany forced her to cease working, she left behind an impressive body of achievements unmatched by any other female architect of her time (4). Despite her active role within the Modernist movement, Reich has not been adequately acknowledged in the history of modern architecture—a neglect that cannot merely be attributed to coincidence (7, 18).

Personal, Cultural, and Artistic Characteristics of the Designer

Reich's role as an artist within the Modernist movement was multifaceted. She possessed expertise in several design disciplines, including textile, furniture, and interior design (1, 7). Her work was characterized by simplicity and refinement, often employing high-quality materials such as leather and chrome to create designs that were both

functional and aesthetically elegant (4). One of Reich's most significant contributions to Modernism was her emphasis on collaboration. Working closely with Ludwig Mies van der Rohe on some of his most celebrated projects—such as the Barcelona Pavilion and the Tugendhat House—Reich's cooperative spirit brought out the best in her peers and led to the creation of genuinely innovative and groundbreaking designs (1, 10).

As a woman working in a male-dominated field, Reich faced numerous challenges, yet her perseverance helped pave the way for future generations of female designers and architects (5). Her disciplined approach to exhibition design established a methodological foundation for modern exhibition design. Reich conceptualized exhibition design not merely as an art form, but as an academic and systematic discipline that defined the standards and essential elements of design (12, 18).

She contributed to the development of functionalist architecture while maintaining harmony, standardization, and individuality (9). In a short essay written for *Die Form*, Reich stated: "Older fashions possessed a distinct style because they were modeled upon the stable conditions of life and society; today, fashion is merely the expression of petty-bourgeois interests. Fashion is the clearest field of work and the most obvious means of expression" (16). She believed design should be observed as it truly is—not solely based on rational functional values or the aesthetic dimensions of life (14).

Reich discussed the economic constraints of industrial production—supply and demand pressures, and the compulsion to constantly introduce new designs across all fields (9). While she described the craftsman in the spirit of William Morris—as an artist who loves the materials he works with and derives joy from creation rather than profit—she criticized the industrial exploitation of both materials and labor (2). She argued that machine production could not aim for the same goals as handicraft; rather, technology and materials must be reconciled, and industrial products should embody their own distinctive appeal (7). Reich invited artisans to collaborate with factories to understand industrial processes and to exert a positive influence on machine-based design (18).

In her article *Fashion Issues* for *Die Form*, Reich introduced readers to recent advancements in clothing design in relation to the challenges of the era (1). Having maintained her own atelier in Berlin, she revisited many of the foundational ideas of the Werkbund, presenting a concise yet vivid picture of the rapid transformations then occurring in industry, finance, and society (17). Many of the ideas in *Fashion Issues* were reflected in her clothing designs—comparatively simpler and sturdier than their Parisian counterparts, yet demonstrating meticulous attention to material and craftsmanship (4). Two years prior, she had embodied these ideas through her curation of the *Fashion Craft* exhibition at the Museum of Arts and Crafts in Berlin, which brought together artisans and industrial firms by showcasing exemplary works of quality and establishing an information office to facilitate communication between them (12).

Reich's writings on fashion and style offered a lucid parallel to the broader cultural condition in which fashion products were reproduced "to the point of mania," leading to exhaustion and the sense of a "hollow spiritual life" where, as Georg Simmel phrased it, "the core of things" had been emptied (8). Like other critics of modern acceleration, Reich called upon individuals to "be what they are," expressing anxiety over the relentless pace of modern life and its implications for identity (7). She sought to determine the objective, spiritual, and national identity of women, and to find forms of dress that authentically reflected these traits (5). Her reflections culminated in a philosophical distinction between *Sein* (being) and *Schein* (appearance): she insisted that a woman "should not appear as what she is not," arguing that true femininity could not be represented by transient fashions or imitation of Parisian trends, but rather through genuine form that expressed authentic being (1, 16). In *Fashion Issues*, Reich

addressed the fields she knew best—fashion economy and production—articulating, in concise and accessible language, perspectives on contemporary issues that carried broader implications for the development of Modernism in 1920s Germany (7, 18).

Lilly Reich as an Artist

Reich's ambition and adaptability also defined her artistic career (1). While collaborating with Mies van der Rohe, she designed several series of tubular steel furniture—one of the few women at the time to do so, apart from Charlotte Perriand (4). Drawing inspiration from modern technology and materials, Reich contrasted the coolness of steel with the warmth of wood and leather, achieving one of her most distinctive creative syntheses (16). Her furniture designs ranged from chairs and tables to bed frames and daybeds (7).



Figure 2: A tubular steel bed designed by Reich and Mies for a client, 1930, Museum of Modern Art (MoMA).

Reich's contributions to interior design extended beyond furniture. In 1931, for the German Building Exhibition in Berlin, she embraced the reformist ideals of contemporary interior design and created an apartment for a single person—an innovative concept for its time (1). The design featured a compact kitchen cabinet that appeared as a wardrobe when closed, but upon opening revealed a sink, shelves, drawers, and ample counter space (17).



Figure 3: Designs for an apartment for a single person, Lilly Reich, 1931, MoMA.

Reich and the Werkbund

Members of the Deutscher Werkbund sought to guide design toward ideals that addressed the realities of their era (7). The ideas Reich advanced in *Fashion Issues* and other works of this period began within the domain of fashion but quickly expanded to encompass the larger Werkbund concerns of production, economy, and design quality in the international market (18). Her theoretical propositions included:

- The use of alternative materials
- Innovative solutions
- Ornamentation through surface embellishment
- Cheap imitation of high-quality designs such as furniture and household objects
- Attention to organic and honest form (2, 14)

Lilly Reich's Activities

At the 1927 Stuttgart Exhibition, Reich's exceptional talent for exhibition design was prominently displayed. She oversaw the overall design of Hall 1, the spatial planning of Hall 6, and the spatial and visual design of Hall 7 as well as an additional exhibition hall (10). Applying her design principles, she utilized white surfaces wherever possible to optimize product visibility and help visitors easily distinguish between exhibited items and spatial background (1). The exhibition decorations and display cases were vertically mounted, and her cost-effective modular connections simplified booth installation and disassembly for manufacturers (12).





Figure 4: Household Equipment Exhibition, Stuttgart, 1927. Main Hall.

In the 1927 Berlin Fashion Exhibition, Reich collaborated again with Mies van der Rohe, using suspended colorful silk fabrics on metal tubes to create layered and circular spatial compositions (7). The same concept of spatial division and textile-based design was applied in the Barcelona Pavilion. Their collaboration continued successfully at the 1929 German Pavilion at the Barcelona International Exposition, where Reich assumed full responsibility for coordinating with over 300 participating companies (10, 16). Additionally, Reich personally designed the exhibition spaces for chemical and silk products, using modern furniture and vibrant colors to add warmth and softness to an otherwise austere industrial setting (4). She also applied her distinctive design ideas to Mies van der Rohe's *Haus Tugendhat*, particularly in curtain and carpet designs and in the color harmony between onyx walls, furniture, and interior composition (1, 7).

Lilly Reich and Architecture

Lilly Reich defined “good materials, proper function, and simple form” as the three fundamental principles of interior architecture, guided by her broader philosophy of “simplicity, low cost, and purposefulness” (1, 7). The height of her artistic career was the 1931 Architecture Exhibition in Berlin, where she designed the interiors of two small rooms in a boarding house, a single-story dwelling, and a materials exhibition (12). Although Ludwig Mies van der Rohe oversaw the overall project, Reich independently completed the interior designs (16). As in her other works, Reich sought spatial flexibility through the combination of various materials—particularly textiles—without compromising the order of functionalist architecture (18).

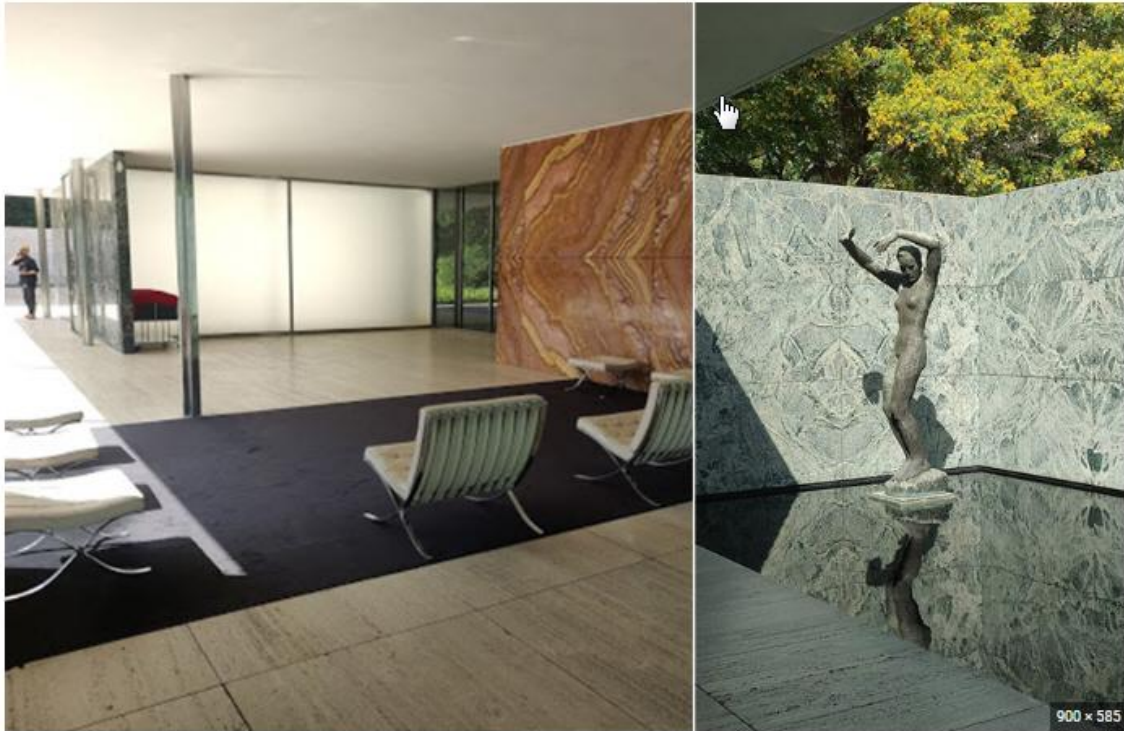
At that time, the atmosphere of interior architecture was described as one in which “modern individuals, now self-aware, seek inner satisfaction; anxiety about the emptiness of the external world signifies inner unrest.” There appeared to be a yearning for openness and brightness—projections of renewed emotional vitality. People experienced this understanding of reality through Reich's interior designs (4). Consequently, the empty sections of her interiors did not reflect external voids of dissatisfaction but instead fostered serenity and affection in the observer. The overarching concept of her designs was that they “contained many open and luminous directions” (7).

Haus Tugendhat Project

The Haus Tugendhat project was not conceived as a single private residence but as a type of dwelling that promoted close interaction between individual homes and shared spaces (10). In the main floor layout, Reich's interior design emphasized functional spaces as poetic expressions of daily life. Her commitment to simplicity, ease, and efficiency reflected the core ideals of modern design (1). The kitchen furniture she designed became a prototype for modern kitchen sinks—an efficient space including two cooktops, dual-purpose drawers, a sink, a utensil hanger, and two storage shelves (19). The sink design, featuring a roll-top closure when not in use, allowed optimal utilization of limited kitchen space. Adjacent to the sink was a folding table, opposite which stood a chair designed by Reich herself.

The *LR 120 Chair* featured a distinctive cantilevered structure with integrated arms and seat length. Whereas Mies van der Rohe's furniture was often considered less functional, Reich's pieces were appreciated for their functional elegance (14). Although she lacked formal architectural training, Reich's interior and furniture designs were regarded as more practical and contextually appropriate than those of Mies (17). Contemporary critics noted: "In Mies van der Rohe's spaces, luxury is evident, but the thought of real cost makes one's heart race... By contrast, Reich's spaces possess greater visual clarity and restraint" (1).





Figures 5 & 6: Villa Tugendhat.

Summary of Lilly Reich's Design Characteristics

- She regarded design not merely as a general art form but as an academic discipline emphasizing fundamental elements of presentation and products that fulfill design standards (18).
- Rather than adhering to civic ideals grounded in rational functional values or aesthetic concerns, her designs sought to express individuality clearly, giving each situation its most appropriate visual identity (2).
- Her exhibition design followed the principles of “simplicity, economy, and purpose,” prioritizing good materials, sound workmanship, and simple form as the essence of interior architecture, while emphasizing user needs and contextual appropriateness over rigid formal standards (7).
- Her approach enabled viewers to perceive the relationship between the displayed object and the exhibition’s conceptual purpose (12).
- By using unconventional materials such as fabric, color, and mirrors—rarely employed in exhibitions at that time—she succeeded in creating spatial dynamism previously thought impossible in exhibition design (1, 4).
- The central tenet of Reich’s design process was to provide comfort and tranquility within space through individual experiential elements while maintaining functionalist architecture grounded in the aesthetic of simplicity, efficiency, and utility (7).
- Reich believed that design should center on human values rather than self-referential artistic ideals (9).

Margarete Schütte-Lihotzky (1897–2000)



Figure 7: Margarete Schütte-Lihotzky

Biography

From 1915 to 1919, Margarete Schütte-Lihotzky studied architecture at the School of Arts and Crafts (Kunstgewerbeschule) in Vienna (4, 6). She was one of the pioneers of social housing design and the first female student ever admitted to this institution—a distinction she achieved only after obtaining a letter of recommendation from the artist Gustav Klimt, who at the time directed the Vienna Secession movement (8, 12).

After completing her studies, she began working in 1921 at the Municipal Housing Department of Vienna under Adolf Loos (20). In January 1926, she was invited to Frankfurt to join Ernst May's team at the Municipal Building Department (*Hochbauamt*), contributing to the comprehensive social housing and urban renewal initiative known as *Das Neue Frankfurt* ("The New Frankfurt") (10, 13).

Schütte-Lihotzky's most memorable and influential work is the Frankfurt Kitchen (*Frankfurter Küche*), an integrated kitchen system made of prefabricated materials and designed rationally according to the principle of labor efficiency (5, 19). This innovative model was installed in approximately 10,000 new homes as part of a postwar minimal-housing project launched in 1926 to address widespread housing shortages caused by poverty (9).

In October 1930, Schütte-Lihotzky and her husband, architect Wilhelm Schütte, joined Ernst May in emigrating to the Soviet Union to participate in the design of new industrial cities under Stalin's first Five-Year Plan (1928–1932) (17, 21). Among their notable projects was the construction of Magnitogorsk, located in the southern Ural Mountains, which housed roughly 20,000 steel industry workers. The city's master plan followed the concept of the linear city, consisting of parallel rows of superblocks separated from industrial zones by green belts (20).

While Ernst May left the Soviet Union in 1933, Schütte-Lihotzky remained there until 1937, when Stalin's purges rendered life for foreign architects intolerable (10). After brief stays in Paris and London, she relocated to Istanbul in August 1938, where she taught at the Academy of Fine Arts alongside Bruno Taut. During her years in Turkey, she developed an enduring interest in the design of schools and kindergartens and became an active member of the anti-fascist resistance (16).

In 1940, while living in exile, she joined the Communist Party of Austria and returned clandestinely to Austria in December to collaborate with the resistance. Shortly after her arrival, on January 22, 1941, she was arrested by the Gestapo. Although many of her associates were executed, she was sentenced to fifteen years in prison (5).

Liberated by American forces at the end of April 1945, she resumed her architectural career, first in Sofia, Bulgaria, and from 1947 onward in Austria (12).

Her steadfast political convictions, hardened by her wartime experiences, limited her eligibility for major governmental or civic commissions. Nevertheless, she continued working on small projects and frequently traveled to Communist-bloc countries, where she served as an architectural consultant (6, 9).

In her autobiographical book *Why I Became an Architect*, Schütte-Lihotzky recounts her personal and professional journey (13). She describes meeting Ernst May in 1922 and the subsequent collaboration that shaped her career. While working at the Vienna Municipal Housing Association, she received a call from Hans Kampfmeyer, the director who admired the English “Garden City” movement, announcing that Ernst May from Breslau wished to study Vienna’s housing settlements (20). May, a leftist modernist city planner influenced by the Garden City movement, had extensive experience in large-scale residential design.

Since Adolf Loos, then the chief architect of Vienna’s municipal housing department, was unavailable, Schütte-Lihotzky took charge of hosting May, introducing him to her private studio, where she showcased her drawings on household labor rationalization and related theoretical writings (19). Impressed by her functional clarity, May invited her to contribute an article to *Das Schlesische Heim*. By 1925, May had joined the Frankfurt planning team and declared that Vienna’s housing experiments had demonstrated the close relationship between domestic economy and labor organization—a principle that would guide one of the most radical and systematized housing programs of the next five years (10, 20).

As scholars began rediscovering her work, Schütte-Lihotzky’s reputation grew steadily. In 1980, she received the City of Vienna’s Architecture Prize (4), and in 1985 she published *Memories of Resistance*, a memoir of her political activism (22). In 1990, she served as an advisor to the Vienna Museum in creating two reconstructions of the Frankfurt Kitchen, one of which became part of its permanent exhibition (19). Margarete Schütte-Lihotzky passed away on January 18, 2000, at the age of 103 (6).

The Frankfurt Kitchen

The Frankfurt Kitchen embodied the synthesis of ideas influenced by both Benita Koch-Otte—whose approach drew upon Le Corbusier’s concept of the house as a “machine for living”—and by Frederick Taylor’s principles of scientific management (1, 11). Schütte-Lihotzky’s primary source of inspiration came from the compact dining-car kitchens on trains, which served as models of maximum efficiency within minimal space (19). Each of the approximately 10,000 installed Frankfurt Kitchens included a rotating stool, a gas stove, built-in cabinetry, a foldable ironing board, an adjustable ceiling lamp, a removable waste drawer, and labeled aluminum containers for storing foodstuffs such as sugar and rice. Special attention was given to material functionality—for example, oak containers that protected flour from pests and beech countertops resistant to stains and knife marks (9).

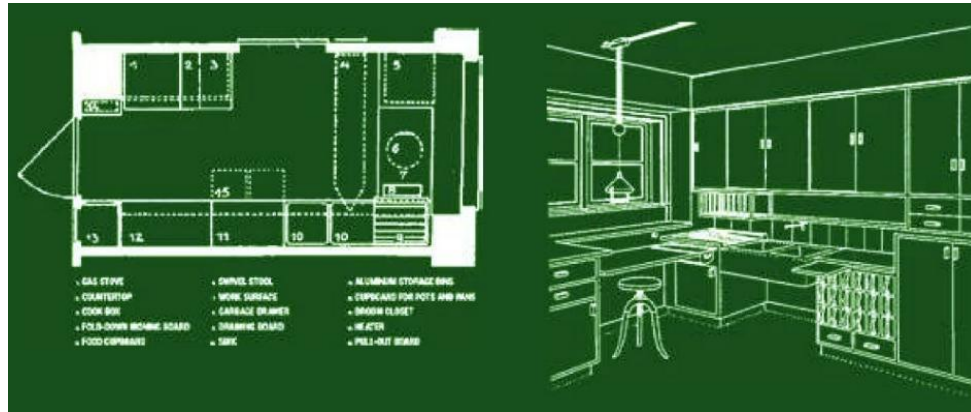


Figure 8: Plan and Perspective of the Frankfurt Kitchen.

Schütte-Lihotzky's concept prefigured the work of American designers Norman Bel Geddes and Raymond Loewy, who in the 1930s would also draw inspiration from trains and automobiles to design streamlined, space-saving kitchen appliances (10, 21). The railway dining-car kitchens developed by the Mitropa Catering Company demonstrated that even within small volumes, one could achieve a high degree of functionality and efficiency—an observation that directly informed her design thinking (20).

In the iconic Frankfurt Kitchen, Schütte-Lihotzky's deep engagement with Modernist architectural ideals was clearly visible (13). At that time, the foremost task facing modern architects was to construct affordable housing. Early in the *Das Neue Frankfurt* collaboration, Ernst May encouraged Schütte-Lihotzky to concentrate on the standardization of floor plans by rationalizing domestic labor, and he introduced her to Eugen Kaufmann, head of the typology division for Frankfurt's housing program (10, 20).

As architects promoted the idea that “housework should be minimized,” the project turned its focus to redefining the “living kitchen”—an inquiry into whether the kitchen should serve as a workspace or a dining space (5). Traditional kitchens, once combined with living areas, had become impractical due to gas heating replacing wood and coal, as well as issues of odor and spatial inefficiency. Consequently, the kitchen was re-conceptualized as a separate yet closely integrated functional zone (19).

The Frankfurt Kitchen design established seven principal requirements:

1. The distance between the stove, countertop or sink, and dining area must not exceed three meters.
2. The layout should allow the homemaker to supervise children in the living room while cooking; thus, the passage between the kitchen and living room should be at least three feet wide and closable with a sliding door.
3. The kitchen should have direct access to the entrance hall.
4. Daylight must enter through an exterior window, supplemented with artificial light that casts no shadows on work surfaces (stove, preparation area, sink).
5. Steam and fumes should be ventilated through an exhaust duct to the roof.
6. Circulation space must be minimal to economize movement, yet wide enough for two people to work side by side without obstruction.
7. Kitchens would only enhance domestic efficiency if fully equipped; thus, integrated appliances and built-ins were essential. Prefabrication achieved two key benefits: it reduced occupied floor area and enabled cost savings so that homes could be delivered to tenants fully organized and ready for use (9, 20).

These principles were financed through the public construction budget, with rent levels adjusted accordingly. Although including kitchens increased monthly rents slightly, this was offset by the spatial and temporal efficiencies they provided. Through empirical research, Schütte-Lihotzky determined that the optimal kitchen dimensions were 1.9 meters wide by 3.4 meters long—approximately 6.5 square meters—with a 90-centimeter door and a 1.4-meter exterior window. This prototype became the standard model for all subsequent installations, whether in apartments or single-family dwellings (10, 19).

In her memoirs, Schütte-Lihotzky later expressed regret that later generations misinterpreted the original concept. She criticized the “Frankfurt Kitchen” reproductions built in West Berlin fifty years later, calling them a distortion of her original intent (22). She clarified that it was misleading to attribute the invention of the “living kitchen” to any single individual, noting that the form of a home always arises collectively from its social context (20).

In early twentieth-century Austria, working-class families lacked separate spaces for communal living and dining, whereas in Germany, where living standards were somewhat higher, the functions of “eating” and “living” gradually diverged (5). The so-called “best room,” adjacent to the kitchen and heated only on special occasions, had become an imitation of bourgeois domestic models.

The Frankfurt Kitchen, in contrast, was conceived as a laboratory—an efficient, hygienic, and ergonomic workspace grounded in the contemporary ideals of functionality and workflow (19). Schütte-Lihotzky’s primary objective was to reduce women’s domestic labor. To achieve this, she conducted time-motion studies and interviews with housewives and women’s organizations (5, 9).

She emphasized the interrelationship of the three core domestic functions—cooking, eating, and living—and noted that although there was initial resistance to separating these zones, the idea eventually became widely accepted as both practical and progressive (10, 20). The Frankfurt Kitchen thus marked a major advancement in domestic design, inspiring transformations in living spaces across Europe. The prototypes improved countless lives, particularly empowering women to pursue employment, gain financial independence, and devote more time to personal development and child education (1, 19).

Schütte-Lihotzky also described the term “Frankfurt Kitchen” as somewhat misleading, as it referred not merely to the physical arrangement of appliances and installations but to an entire system of rationalized domestic life. She remarked that Ernst May had used the term primarily for publicity purposes, frequently emphasizing that the kitchen was “designed by a woman for women” (5, 13). Reflecting on this misconception, she wrote:

“This notion arose from the petty-bourgeois belief that women, by nature, belong beside the household stove. Thus, it was assumed that a female architect would best understand what a kitchen requires. It was clever marketing—but the truth is that before designing the Frankfurt Kitchen, I had never managed a household, never cooked, and knew nothing about cooking. Yet throughout my career, I approached every project with systematic precision—that, I believe, is what truly defined my design process.” (22).

Characteristics of the Frankfurt Kitchen

The Frankfurt Kitchen featured an electric stove, a window above the sink, and numerous innovative built-in storage solutions, including custom-made aluminum containers with openings at one end (19). These containers could be used for storing rice, sugar, or flour, and were designed to slide out easily so their contents could be poured directly into mixing bowls. Although the kitchen lacked a refrigerator, it was otherwise entirely modern. It

replaced the clutter of cast-iron stoves and mismatched wooden furniture with a compact, rationally organized workspace (10, 20).

Beyond its theoretical and ideological foundations, Schütte-Lihotzky herself identified two primary reasons for the Frankfurt Kitchen's mass reproduction. First was her recognition that, in the near future, women would have independent careers rather than waiting for their husbands, which convinced her that women's struggle for economic independence and personal development made the rationalization of domestic labor an absolute necessity (1, 5). Second, she saw the Frankfurt Kitchen as a project deeply integrated with the architectural and urban planning fabric of its time. The interior layout of the units made possible a new way of living—simultaneously practical and symbolic of a modern lifestyle and a new form of residential construction (9).

Under Schütte-Lihotzky's vision, the kitchen evolved into a highly specialized piece of equipment—a workstation where every tool functioned as a seamless extension of the user's body (12). Another key factor behind the project's uniqueness was that, among all proposals for modernizing the kitchen, hers was the only one that transformed it into a consumer product. The Frankfurt Kitchen was a factory-produced module, delivered to construction sites and installed by crane, symbolizing the commodification of the domestic sphere (10, 20).

The Frankfurt Kitchen embodied the concept of an autonomous woman, liberated from domestic servitude. Although such an idea may today appear overtly feminist, Schütte-Lihotzky later admitted that, at the time, such independence was so limited that she ultimately had to navigate and adapt within a patriarchal culture (5, 6). Her ideals—both personal and professional—rejected the confinement of women to domesticity, favoring their participation in public life. Yet even with modern domestic conveniences, this remained unattainable for most German wives. The Frankfurt Kitchen thus became a symbolic representation of a cultural paradox: a tension between feminist emancipation and the utopian promise of technological progress (1, 13).

Schütte-Lihotzky introduced design principles that continue to influence modern living spaces. Although her recognition grew gradually, the Frankfurt Kitchen toured exhibitions across Germany in the 1920s (19). Like many modernist designs, however, its influence was curtailed by the collapse of the Weimar Republic, the global economic depression, the rise of Nazism, and World War II (20). During this period, Schütte-Lihotzky was an active member of the anti-Nazi resistance and was arrested by the Gestapo in 1941, spending the remainder of the war imprisoned in Bavaria (6, 22).



Figures 9 & 10: General view of the Frankfurt Kitchen.



Figure 11: Dish rack and support structure, designed by Schütte-Lihotzky.



Figure 12: Aluminum container, 1926–1927.



Figure 13: Swivel stool, manufactured by Grumbach, Frankfurt, 1929.



Figure 14: Gas stove, manufactured by Grumbach, Frankfurt, 1926.

Architecture

Influenced by the ideology and politics of the Werkbund movement—which emphasized the concept of unity and the integration of all elements of a dwelling—Schütte-Lihotzky believed that every project, whether residential, institutional, public, or private, should be conceived as a coherent whole, from the structural framework of the building down to the smallest household object (4, 18). Her architectural approach was intrinsically tied to both programmatic function and human experience (20).

Beyond her kitchen innovations, Schütte-Lihotzky also contributed to the design of schools, daycare centers, and student housing as part of broader civic development initiatives (9). Among her built works, the semi-detached house in the Werkbundsiedlung settlement stands out as an exemplary model of modern domestic architecture—one that profoundly influenced future housing reform movements worldwide (10, 17). This type of dwelling not only represented an innovation in modern living through industrialization but also provided a practical solution to housing shortages by uniting form, function, economy, and automation of domestic labor (5).



Figure 15: Borg Company Housing Estate, Bayreuth, Germany.

The discourse on housing reform originated in the nineteenth century not within the public sector but through private initiatives producing workers' settlements. Thus, it began as a social movement rather than a government-led policy (20). Early reforms primarily aimed at eradicating slums and other unhealthy urban areas. In comparison with France and England—countries with established urban traditions—Germany's response was more innovative and distinctive, particularly in the exemplary works of Frankfurt and Berlin (10).

In Frankfurt, the *New Frankfurt* program (1923–1930) was directed by architect and urban planner Ernst May, a leading figure in the dissemination of modern architecture (20). Several residential neighborhoods—Römerstadt, Praunheim, Westhausen, and Hohenblick—emerged from this social policy, each serving as a pioneering experiment in applying the principles of *Existenzminimum*, the concept defining the minimum standards for adequate housing (9).

These settlements were designed to create semi-autonomous, well-equipped communities built with prefabricated elements, prioritizing functionality and emphasizing health, ventilation, and light (19). In 1926, Schütte-Lihotzky joined the Frankfurt team to design the kitchens for these housing units (13). Following Taylorist principles, she conducted detailed ergonomic studies of users' movements to maximize efficiency in domestic tasks. Consequently, no kitchen in Frankfurt could be designed otherwise (20). A training program was even developed to educate residents on how to adapt to the features of these new dwellings. However, high rental costs made them unaffordable for the working class, and the homes were eventually occupied by the lower middle class and white-collar employees (10).

In Berlin, similar *Siedlungen* (settlements) were designed by Bruno Taut for employee cooperatives. Although he employed prefabricated components as well, Taut sought to imbue his designs with a distinct local identity, offering residents a sense of place and belonging (4, 16).

Benita Koch-Otte (1892–1976)

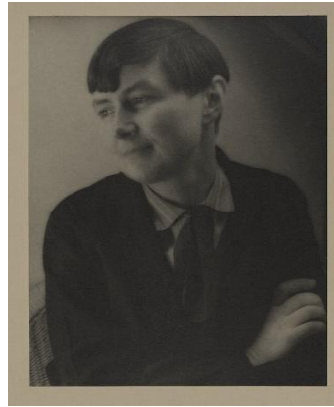


Figure 16: Benita Koch-Otte

Designer Biography

Benita Koch-Otte (née Otte) enrolled at the Bauhaus in Weimar in 1920, after completing her teacher training and working for five years as an instructor (11, 14). She attended the preliminary course taught by Johannes Itten and later participated in the first class conducted by Paul Klee, whose theories on color she would later adapt for her own artistic purposes (18). She also studied figure and life drawing with Oskar Schlemmer, and her work reflected the influence of Theo van Doesburg, the Dutch artist who introduced De Stijl principles to the Bauhaus (12).

In October 1920, Koch-Otte was admitted to the weaving workshop as an “older apprentice without certification.” Because of her remarkable talent, she was awarded a scholarship and, beginning with the winter semester of 1923–1924, was appointed as an assistant instructor in the weaving studio (7). When the Bauhaus relocated to Dessau in 1925, she participated in establishing the new weaving workshop before leaving the institution later that same year (1).

That same year, Paul Thiersch, director of the School of Applied Arts in Halle (*Kunstschule Burg Giebichenstein*), appointed Koch-Otte as head of the weaving workshop, entrusting her with both artistic and technical direction (4). At the Bauhaus, instruction in design principles had been distributed among several teachers, but in Halle, Koch-Otte had to assume this responsibility alone. Drawing from the pedagogical models of her Bauhaus mentors Itten and Klee, she incorporated rigorous training in “order, proportion, color, form, and composition,” complemented by intensive studies of nature (11).

The school's aim was to achieve the “unity of form, color, structure, material, texture, application, and economy in every piece of work.” The curriculum also included the study of “the relationship between textile objects and human needs—both psychological and biological—as well as their connection to space, fashion, and economics.” The workshop produced a wide range of items, including knotted carpets, upholstery fabrics, clothing textiles, curtains, and wall hangings (14).

In 1929, she began collaborating with the Czech photographer Heinrich Koch, a former Bauhaus classmate, and later that year the two married (1). Following the rise of the Nazi regime in 1933, Koch-Otte and other avant-garde faculty members were dismissed from the school. She and her husband moved to Prague, but after Heinrich Koch's death in an accident in 1934, she returned to Germany (7).

In Germany, she joined the Bethel Foundation in Bielefeld, where she established a weaving workshop for hospital patients and taught textile design until her retirement in 1957 (11). Koch-Otte passed away on April 26, 1976, in Bielefeld, Germany.

Fields of Activity

Although Koch-Otte was primarily known as a textile designer and weaver, she also worked in several other design fields (12). Notably, she designed the kitchen for the *Haus am Horn* in Weimar (1923), which was inspired by Margarete Schütte-Lihotzky's Frankfurt Kitchen (19, 20).

During the Nazi period, Koch-Otte continued her pedagogical mission by teaching weaving to individuals with disabilities. Even under these oppressive conditions, she quietly carried forward the Bauhaus ideals of integrating art into daily life and merging creativity with functionality (11, 18).

Koch-Otte deserves recognition not only for her exceptional design work during her Bauhaus years but also for her later educational contributions, which embodied the Bauhaus philosophy of art serving everyday life (4, 14).

Works

Among Koch-Otte's most celebrated works is the custom-designed carpet for Walter Gropius's director's office (1923), which has since been lost (11). Another well-known piece is her *Children's Room Carpet* (1923), a playful and educational design that combined aesthetic value with pedagogical function. The rug's geometric shapes and colors encouraged children to learn about form and hue while serving as a space for play activities such as jumping or tossing coins (12).

Other notable works include:



Figure 17: Costumes for the Bauhaus Ballet — reflecting her experiments with color and movement.



Figure 18: Children's Room Carpet (1923) — her most iconic surviving work.



Figure 19: Applied Color Theory: Kitchen Towel — a current Bethel workshop reproduction based on her watercolor studies of red and blue pattern compositions.



Figure 20: Water Lilies (ca. 1930) — an abstract textile study demonstrating her synthesis of natural form and geometric rhythm (11, 18).

Through her pedagogical and artistic career, Benita Koch-Otte exemplified the Bauhaus mission of merging craftsmanship, technology, and social purpose. Her works not only preserved the legacy of Bauhaus design but also extended its influence into therapeutic and educational contexts well beyond the 1920s avant-garde (7, 14).

Table 1. Common Indicators of the Three Designers

No.	Indicator
1	Functionalism
2	Simplicity and avoidance of ornamentation
3	Design aimed at broad and public use
4	Affordable and practical design
5	Creation of motivation, optimism, and forward-looking spirit
6	Attention to social aspect of the user – culture of use
7	Creative, functional, and daring approach
8	Focus on human values
9	Design reflecting social and political contexts of the time

Table 2. Common Impacts on Design

No.	Impact
1	Shift in aesthetic perspective from decorative structures toward simple and pure forms
2	Transformation in gender perspectives by redefining the role of women as designers
3	Standardization of design thinking
4	Creation of a modern lifestyle emphasizing the user's social context
5	Establishing the modern principle that "form follows function"

Table 3. Comparison of Approaches and Design Concepts of Three Female Modernist Designers

Designer	Key Characteristics
Lilly Reich (1885–1947)	• Simplicity in composition and material use without unnecessary alteration • Innovative and visionary outlook; emphasis on spatial harmony and connection between object and space • Commitment to the principle of comfort and ease for the user
Margarete Schütte-Lihotzky (1897–2000)	• Emphasis on maximum efficiency for minimal space; compact spatial design • Functionality accessible to all social classes • Analytical approach focused on practicality and ergonomic efficiency
Benita Koch-Otte (1892–1976)	• Strong adherence to artistic fundamentals • Boldness and innovation grounded in curiosity and experimentation • Sensitivity to materials and creative exploration of texture and composition

Discussion and Conclusion

Three pioneering women of the modernist movement—Lilly Reich, Margarete Schütte-Lihotzky, and Benita Koch-Otte—significantly influenced contemporary lifestyle through their design philosophies and principles.

Functionality was one of the key tenets of their design thinking, emphasizing the creation of practical and useful products and spaces. Reich, Schütte-Lihotzky, and Koch-Otte all shared this conviction that design should serve a purpose beyond mere aesthetics. For example, Reich's design of the Barcelona Pavilion was not only an exhibition of modern design and materials but also functioned as a meeting space for international dignitaries. Likewise, Schütte-Lihotzky's Frankfurt Kitchen was one of the first truly modern kitchens—compact, efficient, and designed to improve the workflow of domestic labor. Koch-Otte's furniture and household objects, similarly, reflected her focus on utility and affordability, bringing design into the realm of everyday life.

Another common theme among these designers was minimalism, which emphasized simplicity and clean lines over ornamentation and decoration. All three rejected the elaborate decorative language of Art Nouveau, focusing instead on the inherent beauty of pure forms and materials. Reich's work in the Barcelona Pavilion displayed elegant linear precision and minimal aesthetic harmony, while Schütte-Lihotzky's Frankfurt Kitchen was a model of spatial efficiency and restraint. Koch-Otte's designs, too, reflected this minimalist approach through simple forms and functional compositions that balanced clarity and purpose.

A shared commitment among these women was their desire to make design accessible to a broader audience. They believed that design should be practical and affordable for everyday people, not reserved for the wealthy elite. Reich, for instance, participated in several social housing projects in Germany, such as the Dammerstock Housing Estate in Karlsruhe, which provided affordable and efficient housing for working-class families. Schütte-Lihotzky's Frankfurt Kitchen was similarly conceived as a cost-effective and functional solution for daily use, and Koch-Otte's furniture and household goods were designed to be both economical and widely available.

The core principles of Reich, Schütte-Lihotzky, and Koch-Otte's design thinking have left a lasting impact on modern life and continue to shape how we understand and engage with design today. By emphasizing functionality, minimalism, and accessibility, these women helped democratize design—making it more inclusive and relevant to diverse social groups. Their legacy can be seen in everything from furniture design to architectural layouts, testifying to the enduring power of their ideas.

A deeper examination of their biographies, works, and philosophies reveals that despite the rise of modernism and the emergence of feminist movements, the social, political, and professional environments in which these women lived were far from conducive to their creative expression. For decades, their contributions remained obscured behind the names of their male modernist counterparts. Moreover, their differing personalities and perspectives shaped distinct approaches to design. Reich, more than Koch-Otte or Schütte-Lihotzky, displayed a sociological and stylistic awareness that she consciously embedded in her design practice. Through her systematic approach to exhibition design, the establishment of the Lilly Reich Foundation for Exhibition Design, and her interior projects grounded in functionalist architecture, she turned designed space into a fluid and psychological experience—an aspect of design history that still warrants further study. Reich's ability to infuse rational architectural design with emotional vitality and integrate scientific and technological advances into her creative process elevated her position to that of a thinker within the field of design.

In contrast, Schütte-Lihotzky's focus lay primarily in architecture and the behavioral modification of users through spatial organization. Her Frankfurt Kitchen redefined domestic behavior, particularly among middle-class women, marking a subtle yet transformative step within modernism that later influenced postmodern domestic design. She can justifiably be regarded as a founder of modernist kitchen and interior design. Koch-Otte, meanwhile, played a crucial role in bridging traditional craftsmanship and modern aesthetics. Her innovative approach revitalized textile and carpet design, merging traditional motifs with modern forms. The incorporation of her handmade carpets into modern homes stands as a testament to this synthesis—a model that contemporary designers, especially in the field of carpet and textile design, can continue to draw inspiration from.

In sum, these three women not only challenged the gendered limitations of their time but also laid the groundwork for modern design thought. Their collective legacy endures as a vital part of the modernist narrative, reminding us that design, at its best, is both a cultural and humanistic pursuit—functional, democratic, and profoundly reflective of the times in which it is created.

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All authors equally contributed to this study.

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The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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