

# In Praise of Light: Shadowless Construction in Early 20th-Century Germany<sup>1</sup>

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In 1933, Japanese novelist and esthetician Jun'ichirō Tanizaki lamented about contemporary modes of production, writing that they demonstrate disregard for the past. He complained that Western products neglected old habits, elderly, darkness, and, generally, the shadowy "sheen of antiquity" in favor of the new, young, well-lighted, and sanitized. For Tanizaki, the Modernization of Japan was unreasonably biased by the purified *objectivity* of Western enlightenment science which tended to cleanse away cultured Japanese *subjectivity*. Tanizaki did not oppose Modernization per se, but rather the fact that Western science guided the production of Modern household artifacts, including electric lamps and hygienic fixtures. One specific criticism was the failure of product designers and housebuilders to recognize the importance of "shadows." He described household shadows as creating an ambiance that harmonizes wonderfully with all that is Japanese: the soothing cloudy character of miso soup, the smoky patina revered in tarnished saké cups, the murky light of jade, and—perhaps most importantly—the tonality of lightly-cleansed Japanese skin.

Tanizaki's *In Praise of Shadows* speaks generally for any culture—including Western ones—transgressed by Modernization. In the present study, I explore how early twentieth-century German housebuilders attempted to create culturally appropriate constructions for personal hygiene. Tanizaki's consideration of traditional hygienic values in the construction of his own of Modern house serves my study by introducing the broad range of issues subtly linked to hygienic artifacts and spaces. He vividly describes the piercing contrast between traditional Japanese bodily grooming and the Modern hygienic means of white porcelain fixtures and reflect-tiled walls:

Anyone with a taste for traditional architecture must agree that the Japanese toilet is perfection. ...[But it presently] turns out to be more hygienic and efficient to install modern sanitary facilities—tile and a flush toilet—though at the price of destroying all affinity with "good taste" and the "beauties of nature." That burst of light from those four white walls hardly puts one in a mood to relish Sōseki's "physiological delight." There is no denying the cleanliness; every nook and corner is pure white. Yet what need is there to remind us so forcefully of our own bodies. A beautiful woman, no matter how lovely her skin, would be considered indecent were she to show her bare buttocks or feet in the presence of others; and how very crude and tasteless to expose the toilet to such excessive illumination. The cleanliness of what can be seen only calls up the more clearly thoughts of what cannot be seen. In such places the distinction between the clean and the unclean is best left obscure, shrouded in a dusky haze.

Before continuing with the passage, it is useful to stress how

Tanizaki recognized how the contemporary constructional trend towards a hyper-hygienic *objectivity* transgressed traditional values of public decency. In other words, he's correctly pointing to the fact the social sense of propriety in public situations relates to even the most intimate behaviors and, moreover, the built environment should support and control behaviors relative to far-reaching social norms.

Though I did install modern sanitary facilities when I built my own house, I at least avoided tiles, and had the floor done in camphor wood. To that extent I tried to create a Japanese atmosphere—but was frustrated finally by the toilet fixtures themselves. As everyone knows, flush toilets are made of pure white porcelain and have handles of sparkling metal....I would much prefer fixtures—both men's and women's—made of wood. Wood finished in glistening black lacquer is the very best; but even unfinished wood, as it darkens and the grain grows more subtle with the years, acquires an inexplicable power to calm and soothe. The ultimate, of course, is a wooden "morning glory" urinal filled with boughs of cedar; this is a delight to look at and allows not even the slightest sound....It was not that I objected to convenience of modern civilization,...but I did wonder why they could not be designed with a bit more consideration for our habits and tastes.<sup>2</sup>

This description points to the disjunction between the traditional subject of bodily care and the Modern hygienic technological means that emphasize clinical objectivity. The *subjective* situation requests the subtle mediating qualities of light, material, and texture that sensibly correspond to a culturally-constructed poetry of human corporeality. The *objective* situation offers great economy and convenience of standardized fixtures constructed of easily cleaned and hence, germ-controlling surfaces. Yet, in acting critically in the construction of his own home, Tanizaki sought to sympathetically reconcile the subjective and the objective through a mode of building that recognized both value sets.

The architectural desire to sympathetically reconcile traditional and modern values demands thoughtful construction. In an effort to describe the range of scales and issues involved in the hygienic construction of the Germanic household, it is useful to begin by exploring Germanic corporeality.

In contrast to Tanizaki's lament of the over-cleansing of culture, Richard Neutra followed Adolf Loos in arguing that hygienic objectivity is central to the idea of Germanic culture.<sup>3</sup> In *Survival Through Design*, Neutra juxtaposed the indigenous Germanic aim to precisely distance the body from the un-hygienic with the "dirt"-cohabitating Eastern cultures. Neutra maintained,

To us, cleanliness is not merely a matter of visual appearance, as it was, for example, in the past to the Japanese. Under their

spotless floor mats, the *tatami* on which they eat and sleep, small refuse could accumulate for months and feed vermin....Here cleanliness is purely visual, while a Hindu may conceive it mostly in spiritual terms. In India, thousands of the faithful cleanse their bodies by submerging them in waters that seem polluted to Western tourists.

Our own concept of cleanliness, imparted in kindergartens and elementary schools, through parental admonition and pamphlets of public health departments, is neither merely visual nor spiritual. It has a biological basis and is conceived almost as a scientific survival aid. We often act to protect ourselves against agents of uncleanness which cannot be detected without a microscope. In no case are we really satisfied with merely concealing dirt. From this point of view, a surface that shows clearly any undesirable accumulations of dirt is superior to one that does not.<sup>4</sup>

Neutra expressed a sense that the hygienic should have science-like precision, aimed at a penetrating and encompassing sense of environmental fitness. Western hygienic "science" insured cultural survival by carefully excluding pollution, thus maintaining the basic conditions for health. In contrast to Tanizaki, Neutra praised *lightness* as a body bathed in light allowed for the clear differentiation between the clean and the dirty. While the Western science of hygiene appears to be entirely supportive of Germanic esthetics, actual Germanic hygienic construction evidences subtleties of the cultural body and its cleanliness.

For instance, the precise integration of objective hygienic and subjective beauty is evident in eighteenth-century *bourdaloues*, the conveniently-shaped receptacles for ladies to slip between their legs to relieve themselves. Although these earthenware or porcelain devices were being made all over Europe and even Japan and China, some of those made at Meissen in Germany were unique with mirrors on the bottom, allowing definitive objective hygienic control and intimate subjective knowledge.<sup>5</sup> The *Flachspüler*, the twentieth-century "flat flushing" toilet, continues the traditional desire for intimate body knowledge as afforded by the German *bourdaloues*. The unique toilet bowl construction of the *Flachspüler* holds excrement in the flattened area well above the water trap and presents it for inspection as an indicator of *internal states*.<sup>6</sup> As cultural artifacts, both the *Flachspüler* and the Meissen *bourdaloues* are shadowless devices that welcome light to those normally shaded aspects of body functioning. Unlike in the traditional Japanese hygienic setting, here the light of hygiene provides the means to discreetly and shamelessly ascertain detailed bodily knowledge. In the Germanic context, this intimate self-knowledge clarifies and secures a health checkup, providing the natural basis for the consideration of well-being.

The conditions requested for the social sense of well-being extend beyond artifacts to include the construction of the hygienic household. Only that type of household construction that secures the societal sense of appropriate *privacy* between intimate and public realms can uphold and serve hygienic well-being. In *Community and Privacy*, Christopher Alexander and Serge Chermayeff presented a thoroughly-considered argument on the underlying principle and the architectural means to achieve privacy.<sup>7</sup> They argued that hygiene-related privacy is necessary in order for individuals to gain philosophical perspective, allowing them to engage in a society's existential construction. Their observations—especially regarding house construction—provide the basis for my analysis of Germanic housebuilding.

Alexander and Chermayeff argued that traditionally human settlements (towns or cities) were organized into various *activity-places* (commerce, manufacturing, entertainment, neighborhood) so that the elements are *related* according to whether the activities are public or private. Similarly, within the private area of a neighborhood, for example, the house was organized into *activity-places* according to required levels of privacy. Alexander and Chermayeff contend that the *intimacy gradient* is a systemic aspect of society with diverse types of

"joints" between the various elements serving to maintain the public/private structure. "Terms like baffle, barrier, buffer, screen, filter, transfer point, lock, junction, terminal, serve to distinguish [the joint types] roughly."<sup>8</sup> The *joints* are poly-functional devices of technological discourse, controlling levels of privacy between various *activity-places*. With constructional devices aimed at securing privacy, the *plumbing of architecture* depends upon the *privacy of architecture*, as without the latter the former is inadequate.

In their chapter "Anatomy of Privacy," Alexander and Chermayeff extend their analysis to the specific consequences of house construction entailed in the *idea* of hygiene-related privacy. In terms of the house's relation to the society/nature continuum, privacy is maintained through critical joints along the intimacy gradient. An example of such critical joints would be those controlling the relation of the house's *private interior domain* to the *public realm* (at the street) and to "the outdoor room" (the dwelling's private representation of *nature*).<sup>9</sup> The house entrance is the joint which separates, filters, and/or links family life *activity-places* to the public realm. Alexander and Chermayeff note that:

Outdoor clothes might in their turn be shed at the entrance to the dwelling, thereby leaving external dirt and infection behind before proceeding to the interior, controlled environment, for the enjoyment of which other appropriate private garb might be put on as in the most excellent Japanese tradition.<sup>10</sup>

The entrance threshold provides the critical transition leading from the public (worldly) activities and their "dirt" to the domestic, private realm of hygienic comfort. To be more specific, the entry threshold of the early twentieth-century German households typically consisted of three activity places: the vestibule or *Windfang* (the *lock* between the interior and exterior), the coat room (the *lock* to shed outdoor clothes and dirt and which usually contains a lavatory), and the toilet room. In terms of Germanic expectations for privacy and propriety, this joint—referred to as *Wirtschafts- und Nebenräume*—is not part of the main living areas of the house, *Haupträume*. Both Schwaab and Muthesius specifically stress that the entry "joint" is not part of the living areas which begin at the hall (*Diele*). The most critical aspect of the hygienic threshold to be separated from the living spaces is the toilet room—a realm where the most fundamental of self/other distinctions are made.

According to the 1905 *Encyklopadie der Hygiene*, the toilet and its room "should be built following hygienic concerns so that under no circumstances is it possible to transmit diseases such as cholera, typhus, or ruhr, or to offend esthetic sensibilities."<sup>11</sup> The prevention of disease transmission requires constructional circumstances separating body and pathogen, self and other. Similarly, the prevention of esthetic impropriety requires constructional circumstances separating the toilet user from others, an aspect of self/other distinction entailing visual, olfactory, and acoustic joints. (i.e. *filters* or *barriers*). These anthropomorphic self/other distinctions conceptually guide not only the construction of the toilet and toilet room but, as we shall see, serve as a more general construction model. The violation of this model, especially in regard to the entry joint, is a matter of tremendous significance.

For instance, Wilhelm Schwaab, in *Entwässerung und Reinigung der Gebäude mit Einschluß der Abortanlagen* (1921), condemns an example where the toilet room is directly off of the hall leading to living areas, calling the arrangement "outrageous (unmöglich)."<sup>12</sup> Similar sentiments regarding faux pas of architectonic etiquette are expressed by Muthesius in the following critique of contemporary building practices:

The examples are not seldom that a door from the hall leads directly to the toilet room so that the insides (dessen Inneres) are exposed to the seated group in the hall after every opening of the door. Such an orientation can only be called one of the biggest design mistakes.<sup>13</sup>

This harsh assessment is offered in Muthesius' *Wie Baue Ich Mein Haus?* (1917), a text beginning with Goethe's pronouncement, "Everyone is allowed to make mistakes, you are not allowed to build them." The author argues that the door to the entry toilet room should be located off of the coat room (Kleiderablage) which serves as a buffer between coat room and the hall. Yet, we find that in both large and small houses, the toilet room's preroom (Vorraum) serves as an added buffer zone between the toilet room and the adjoining space. Schwaab suggests that the toilet room's preroom is used "so that the [toilet room] user cannot be seen by the people who are passing by."<sup>14</sup> This is a curious statement as the door to the toilet room already shields the user from sight, but Schwaab apparently refers an added level of acoustical shielding. That is, Muthesius recommends the quiet, new toilets where the water tank is located immediately above the seat as compared to earlier models where the wall-mounted tank produced a loud noise during flushing. The preroom also serves for olfactory privacy with Schwaab cautioning that the preroom door should open in because outward opening doors produce a vacuum, drawing odors into the living spaces.

The entry threshold detail most clearly relating to the household's presentation of intimate bodily privacy is the toilet room window. This telling detail links, filters, and/or separates the private from the public at the joint where these two realms intersect. Most generally, the window is a part of what Alexander and Chermayeff call the "skin of the dwelling" (the wall or building envelope). As described earlier, the house's public "skin" (the front elevation) is the boundary condition with joints (doors and windows) serving to control the undesirable aspects of the public world, including noise, violence, and dirt, along with the natural aspects of sunlight and wind. Directly related to these controlled phenomena is the representation of what Bloomer and Moore called the "public face."<sup>15</sup>

German empiricists in the first quarter of the century correctly argued that the window of hygienic spaces (toilet or bath rooms) was a device best serving daylight needs but not ventilation, as changing wind directions could force odors into the living spaces. Although building codes allowed other means of ventilation as early as the 1920's, the window remained the prevalent means of hygienic space ventilation in the single-family residence.<sup>16</sup> In other words, the operable window is a part of society's general expectations for the intimate hygienic space.

The interruption of this expectation pattern through the use of a non-operable window or even no window must be offset by a new condition of equal or superior merit. This new redefinition of the *traditional* hygienic space and household offers—as an experiment—the possibility for the *Modern Solution*. Consider, for example, Adolf Loos' Moissi and Venedig House (1923) where the bath/toilet room is a windowless, internal space with ventilation provided by a stack vent with heat borrowed from the chimney to increase its effectiveness. Yet, here the alternative approach raises a much more complex issue than ventilation alone. According to Herbert Lachmayer and Christian Gargerle, Loos redefined the conventional boundaries between men and women, commonly represented by separate sitting rooms for each sex, when he linked the otherwise separate spheres of the husband and wife's bedrooms through the bath/toilet room, thus allowing this *joint* to symbolize a shared territory.<sup>17</sup> Later at both the *Ground Floor House* (1931) and the Ulrich Lange House (1935), Mies proposed shared husband/wife territories. The *Ground Floor House* included an expressive, free-standing module, while the Ulrich Lange House was equipped with a world-within-world space for the husband and wife (i.e., shared toilet and bidet, realm was within the outer realm of tub and lavatory which, in turn, was within the bedroom realm).

But also at stake is the issue of the elevation (the building skin) providing the *joint* between the activity place and the world beyond. There are numerous possibilities in terms of the size, shape, placement, orientation, and treatment of the toilet room windows—all potentially impacting the house's *public face*. Twentieth-century

architects proposed a range of experiments, offering possible solutions to expectations regarding the public face formality and discrete bodily functioning. One experiment entailed the use of the typical large window on the facade for the toilet room, thus, disregarding the expectations for the small, private window in this room. An alternative to this solution involved vertically dividing the standard opening to use one half of it for the toilet room, another half for a more public space. This solution approximates the expectation for a small, private window, but does so at the expense of the conventional one-to-one correspondence of wall opening to room. Other strategies entail the use of the conventional small window placed, for instance, near the entrance and symmetrically balanced with a window to the coat room. But here the liability stems from the direct association of the *public* entry with the *private* room—a potential propriety clash. One alternative to this strategy required that the dwelling plan be re-configured so that the small toilet room window could be located on the side elevation leaving the front elevation compositionally free. A second alternative consisted of greatly reducing the size of the toilet room window to make it virtually disappear. Of course, this solution sacrificed the expectation regarding the window's linkage to the outside as the radically down-sized window cannot provide much ventilation. A third alternative entailed the masking of the service-character of the toilet room window by constructing it as just one of a series of windows in a group. Each of these strategies reflects a different balance of concerns affecting the construction of the formal face and hygienic privacy; but moreover, each hints at more extensive experiments relating the household to the intimacy gradient.

Further experiments encompassed the relation among the interior activity realms (e.g., living and sleeping areas) and between these realms and "the outdoor room." Alexander and Chermayeff refer to the living areas as "the family hearth" and the activity-complex of sleeping-dressing-hygiene as "a room of one's own."<sup>18</sup> They argue that privacy and propriety expectations demand that floor plan *joints* (e.g., doors, walls, and plan zoning) be carefully constructed so as to allow each to satisfy public/private expectations. More precisely, the joints defining the *family hearth* support a realm of "voluntary communality," while those defining the *room of one's own* support "concentration, contemplation, and self-reliance" thereby forming "a realm of solitude, for rest, sleep, and love."

Elevational *joints or apertures* also support the living and sleeping activities. For example, one "public face" convention is the employment of taller (and occasionally wider) window openings for the lower level living realm than the upper level sleeping realm. This size difference reflects the general idea of propriety that demands connecting living areas to the public realm while filtering the sleeping areas from it. By contrast, the joints at the rear or private elevation generally link both the living and sleeping areas to the *outdoor room*. This linkage is supported by large windows as well as doors leading to balconies and terraces which encourage interior activities to move out-of-doors. Mies's proposal for the Esters House (1927) provides a Modern interpretation of closed public front and open private back.

In beginning this discussion with the bedroom, we take note that traditionally this was a hygienic zone, with the washstand being standard bedroom furniture and serving the sponge bath. The window, door, and balcony render sunlight, wind, and garden sounds as part of this body regenerating activity. This traditional pattern was slightly modified when the lavatory replaced the washstand, but was more radically affected when the hygienic activity of the separate bedrooms were centralized in the bathroom or bath/toilet room.<sup>19</sup> According to Giedion, "Around 1900 it became clear that the bath cell with hot and cold running water was the type upon which our period had set its mind."<sup>20</sup> But Giedion is quick to point out that centralization of the hygienic realm *interrupted* the traditional hygienic rituals that the sensible, traditional plan provided.

The bath cell quite rapidly attained its standard form, especially

in the country that was most eager for a democratized comfort. This was a time of full mechanization. Straightway the two foci of mechanization, the bathroom and the kitchen, come to dominate, perhaps even tyrannize, the plan of the house.<sup>21</sup>

Thus with the standardization of plumbing, hygiene no longer took place in association to the outdoors, but rather in the closed off, sterile mechanized room. This interruption required builders to offer details and floor plans as alternative *plans of action* for satisfying society's expectations.

In "Inszeniertes Wohlbehagen," Lachmayer and Gargerle explored several of the alternatives to centralization of hygienic rituals, studying the floor plan implications. They effectively argue, for instance, that the tendency to wall off the personal hygiene *activity-place* implied that the body and its hygiene were sources of shame.<sup>22</sup> They suggested that although Otto Wagner used the conventional cellular bathroom form in the Köstlergasse House (1898), his construction of an elegant glass bathtub symbolically exposed the nude, hygienic body for its natural graceful beauty. Similarly, Josef Hoffmann opposed the tendency to support hygiene in a confined sterile environment by rendering an open realm including both dressing and partially-tiled bathing areas with the qualities of a living space. Alternatives offered by other architects included schemes coupling hygiene with the outdoors. This included continuing the tradition of locating the lavatory in bedrooms or by locating a lavatory in the hallways linking sleeping areas to outdoors. Others used the bath/toilet room as the *joint linking the room of ones' own* to the *outdoor room*, or as the joint linking the house's entire sleeping level to a balcony. Occasionally, the balcony itself includes a bathtub or sink which explicitly associates bodily regeneration with Nature. The indoor equivalent of this is Walter Gropius' construction, in 1925, of the large bathroom window allowing bathers to enjoy nature while bathing. But, it is convenient to note that Gropius' construction of a house in 1927 entailed two windowless bath/toilet rooms, as windows here would have opened on the entry elevation.

The joint linking the *family hearth* or main living area to the outdoors usually does not entail plumbing fixtures. Conceptually, this arrangement suggests that the entrance threshold satisfied practical needs but also served as a cathartic joint between the "dirty" worldly realm and the hygienic household. Although plumbing fixtures were not usually desired, occasionally ornamental devices were used at the joint linking the family hearth to the Nature representation. These ornaments include the use of fountains and/or sculptures of nude figures on the terrace or in the garden which are gentle abstractions connecting the hygienic family life to socially-grounded expectations that nature is indeed a part of this hygienic household. The hygiene-related joints of the entry threshold, elevations, and floor plan are all part of the housebuilder's desire to construct family life in a manner appropriate to culturally-sensitive expectations of the subjective and objective body. This sensitivity entails a sense of the anthropomorphic light constructed to be evident at intimate hygienic situations but not at the more explicitly public situation of the house's skin.

## NOTES

- <sup>1</sup> This paper explores the general Germanic context in which Ludwig Mies van der Rohe's scrupulous hygienic Modern Households were built, a topic explored in an article presented at the 1997 ACSA International Conference held in Berlin. Both studies are part of a larger inquiry. See the author's "A Topical Analysis of Personal Hygiene in Ludwig Mies van der Rohe's House Building as a Prolegomena to the Study of Pragmatic Building," (Ph.D. Dissertation, University of Pennsylvania, Michigan: UMI, 1996).
- <sup>2</sup> Tanizaki, Jun'ichirō, *In Praise of Shadows* (New Haven: Leete's Island Books, 1977) p.5.
- <sup>3</sup> See Adolf Loos, "Plumbers" in *Neue Freie Presse* July 17, 1898, translated by J. O. Newman and J. H. Smith in *Spoken into the Void* (Cambridge: 1982).

- <sup>4</sup> Richard Joseph Neutra, *Survival Through Design* (New York: Oxford University Press, 1954).
- <sup>5</sup> Lucinda Lambton, *Temples of Convenience* (New York: St. Martin's Press, 1978), p.90.
- <sup>6</sup> Alexander Kira notes that this practice of examining stools "is still considered a sound and common health practice, as it was in Pliny's time." Alexander Kira, *The Bathroom: Criteria for Design* (Ithaca: New York, Cornell University, 1966).
- <sup>7</sup> Christopher Alexander, and Serge Chermayeff, *Community and Privacy*, (New York: Anchor Books, 1965), p.209-246.
- <sup>8</sup> *Ibid*, p.213.
- <sup>9</sup> *Ibid*, p.214. Alexander et al. define "the outdoor room" as the domestic place of natural tranquillity. The outdoor room is described by landscape features as well as by the dwelling's overall figure/ground configuration which also serves as buffer or barrier separating the outdoor room from urban traffic and its noise allowing for the "enjoyment of sun, air, and light, so that...the smallest desired sound can be heard and enjoyed."
- <sup>10</sup> *Ibid*, p.216.
- <sup>11</sup> Richard Pfeiffer, *Encyklopadie der hygiene* (Leipzig: F.C.W. Vogel, 1905), p.3.
- <sup>12</sup> Wilhelm Schwaab, *Entwässerung und Reinigung der Gebäude mit Einschluß der Abortanlagen* (Berlin: W. de Gruyter & Co., 1921), p.51-53.
- <sup>13</sup> Hermann Muthesius, *Wie Baue Ich Mein Haus?* (München: F. Bruckman, 1917), p.690.
- <sup>14</sup> Schwaab, p.191.
- <sup>15</sup> Charles Moore and Kent Bloomer, *Body, Memory and Architecture* (New Haven: Yale University, 1977), p.120-121.
- <sup>16</sup> The fact that builders generally do not adopt the Empiricists' recommendations for the superior, alternative means of ventilation suggests that the society generally agrees that the performance benefits of the alternative means do not offset their liability. The liability could simply be added costs or, more likely, society's general expectation that this *activity place* be connected to the exterior with an operable window, and not be hermetically sealed.
- <sup>17</sup> Herbert Lachmayer and Christian Gargerle, "Inszeniertes Wohlbehagen: Function und Luxus des privaten Bades," in *Das Bad: eine Geschichte der Badekultur im 19. und 20. Jahrhunderts* (Salzburg: Residenz Verlag, 1991), p.64-65.
- <sup>18</sup> Alexander et al. (1965), p.214-215.
- <sup>19</sup> A variety of factors converged leading to centralization, not the least of which was the growing health consciousness and the accompanying construction methods which were promoted by the nineteenth century Domestic Hygiene Movement, consisting of housewives as well as concerned medical and building professionals. While the movement led to increased awareness of medically-sound hygienic behaviors, it recognized the liability of pipes as potential sources of dangerous leaks and plumbing fixtures where splashing caused unsanitary surrounding wall and floor surface (Figure 19). For a study of the nineteenth-century Domestic Hygiene Movement see Anmarie Adams's *Corpus Sanum in Domo Sano*, (Montreal: Centre Canadian d'Architecture, 1991); Wolfgang Krauss's "Zur Hygiene-eine medizinisch-geschichtliche Betrachtung" and Stephan Muthesius's "'The Sanitary Revolution'—englische Badekultur als Vorbild im 19. Jahrhundert" in *Das Bad: eine Geschichte der Badekultur im 19. und 20. Jahrhunderts* (Salzburg: Residenz Verlag, 1991). The *Encyklopadie der Hygiene* offers clinically-minded recommendations including: making the space well-lighted by both natural and artificial light to prevent the room from becoming dirty; using ventilation systems to "fight against the bothering bad smell," yet doing so without creating a draft during toilet usage; and using a flushing toilet with water trap and constructed of materials that are washable and resistant to disinfectants; or, in cases where there is no canalization of supply and waste waters, using a peat closet which are also capable of preventing bad smells if well maintained. The International Housing Association efforts in 1930's are directed towards improving old construction, not new buildings, see *Slum Clearance and Reconditioning of Insanitary Dwellings* (Frankfurt: Julius Hoffmann, 1935), p.xi.
- <sup>20</sup> Siegfried Giedion, *Mechanization Takes Command* (New York: Norton, 1969), p.682. Thus, offsetting the liabilities of the traditional approach was the centralization of plumbing fixtures in one room (a bathroom or the combination bath/toilet room) with easily-maintained, protective tiles on the floor and walls. Also see Hermann Muthesius, *Kann ich auch jetzt noch mein Haus bauen?* (München: F. Bruckmann, 1920), p. 60.
- <sup>21</sup> *Ibid*, p.682.
- <sup>22</sup> Herbert Lachmayer and Christian Gargerle, p.60-62.