

# Interior Architecture and Humane Design

Elzbieta Trocka-Leszczynska and Joanna Jablonska (✉)

Faculty of Architecture, Wrocław University of Technology, Wrocław, Poland  
{elzbieta.trocka-leszczynska,  
joanna.jablonska}@pwr.wroc.pl

**Abstract.** There is a distinct correlation between the interior design architecture and ergonomic quality of space in hotel rooms. However, is an increase in standard paired with human comfort and safety? Does a higher standard of a hotel unit type, i.e.: Superior, Comfort or Suite, provide optimal spatial solutions? The article presents a continuation of a study on the following elements: design solutions, internal finishing, furnishing and appliances; investigating their influence on the well-being and safety of people with or without any type of disability. Research based on literature and numerous case studies was focused mainly on the needs of independent travelers, who wish to live in a hotel space without a need to rely on help from a third party. The scope of study includes hotel bedrooms, sitting rooms and bathrooms.

**Keywords:** Room standard · Appliances · Ergonomics of a hotel residential unit · Ergonomics of a hotel room

## 1 Introduction

A hotel room is undoubtedly the most significant part of a hotel, as its standard and furnishing determines the guests' level of comfort and safety. Beside objective factors, i.e. fulfillment of one's most important daily and nightly needs, optimal size, adjusted furniture and appliances, quality of finishing materials; a person's quality of stay is ensured by other individual subjective or psychophysical factors, e.g. "coziness", sense of spaciousness, "hominess", "modern style", beautiful interior design solutions or acoustics. Moreover, some of the previously mentioned parameters may be mutually exclusive, while hotels undergo a constant innovative process, understood as development in the area of "productivity, quality, competitive positioning, market shares, etc." [1, p. 702]. The presented variety of factors necessitates a continuous study of hotel rooms in order to determine ever new ergonomic guidelines for the safety and comfort of use.

Another premise for the undertaken study is related to the equally significant commercial aspect of the hotel industry. Room décor and design are crucial factors determining a customer's choice. Cited by various sources, Dube's study from 2000 indicates that the "physical property" and "guest-room design" are, respectively, the third and fourth factors on a 10-point list of attributes used in hotel selection [1, p. 703]. Therefore, the discussed aspects should be designed properly and from good materials,

because, as indicated by Robson and Pullman, [2] even the most insignificant corrections of appliances may prove very expensive for large hotels.

It is worth noting that the above described room features are strictly connected with room type and standard. The same hotel may offer residential units of various levels of comfort, decor and furnishing. A common practice includes also a frequent renovation of interiors of the Suite type in correspondence with the Standard or Economy type.

Thus, considering all of the above, the paper is focused on the correlation between the standard and furnishing of hotel rooms, while taking into account the guests' level of comfort and safety. Additionally, a range of other means facilitating a comfortable usage of space by people with various psychophysical disabilities, such as allergies, arthritis, minor hearing or visual impairments, was examined.

### **1.1 Methodology and Research Aim**

The basis of the conducted research was to establish categories according to which hotel rooms, bedrooms and bathrooms are evaluated. Jaremen D.E. in his work from 2006 suggested the following relatively clear criteria in this aspect: size (subjectively-objective factor), cleanliness (culturally determined objective factor), functionality (culturally determined objective factor), aesthetics (subjective factor), completeness (objective factor), comfortableness (subjectively-objective factor), contemporary style (subjectively-objective factor), basic furnishing (objective factor), additional furnishing (subjectively-objective factor), decorative elements (subjectively-objective factor), lighting and room temperature (objective factor regulated by law, yet dependent on subjective impressions) [3]. Other significant factors are: acoustics (objective factor regulated by law, yet dependent on subjective impressions), fire safety (objective factor), and safety of use (objective factor). At the same time, it should be discussed whether to include the previously mentioned criteria of contemporary style and decorative elements, as, overall, they seem irrelevant to ergonomics. While in the paper, the authors refer to Jaremen's list of criteria, the classification of factors given in brackets is original [3]. Due to the need to limit the scope of the research, the categories of decorative elements (as less significant) together with lighting and temperature (as factors regulated by law) are not discussed in the paper. They have, however, been discussed in detail in literature.

In regard to methodology, the study was based on the following methods: analysis, graphic and critical analysis, synthesis, comparative synthesis; and sources: literature, Internet and case studies. In terms of furnishing, size and other comfort providing factors, 19 hotel facilities located in Poland and other European countries were comprehensively studied. All researched facilities, including those reconstructed according to national heritage regulations, were adapted to the needs of modern-day guests. Moreover, the research scope included facilities rated from 3 to 5 stars.

The goal of the undertaken study was to establish ergonomic solutions aiming at ensuring comfort and safety of users according to the hotel's type and standard. Taken into account were the needs of a healthy, yet possibly suffering from various temporary or permanent ailments, person. This was due to the fact that deteriorations in one's

psychophysical state, i.e. arthritis, hearing and visual difficulties, heart diseases [4], are not classified as disabilities, however they may hinder normal functioning.

## 2 Discussion

For hotel guests, a hotel room provides possibly the only private zone during the course of their trip. Therefore, its separateness and integrity should be preserved, as it fulfills a basic human need [5]. Moreover, for the room to serve the guests adequately, it needs to provide several activity zones. Among those, Robson and Pullman list: sleep area, workstation, room for clothes changing, and a fully equipped bathroom [2]. This is confirmed by other sources [4, 6], indicating a need to provide room for man's daily and nightly (sleep) activities, as well as entertainment and rest. Additionally, Rutes, Penner and Adams [4] point to the crucial interconnection between the distribution of functions and supplied daylight through the creation of adequate zones, namely: daily rest by the windows (seats), workstation (desk, table), bed and TV in the center of the room, and, finally, changing area by the door, i.e. a wardrobe and clothes rack [6]. The cited authors state further that each of the discussed activities takes up a certain area of floor surface. Hall [5] also draws attention to the need to provide space for additional activities, e.g. stepping away from the desk and stretching ones back. However, in hotels, due to technical and economic factors, all activities are reduced to fulfill the minimal space requirement [6].

### 2.1 Floor Surface and Comfort

Next to legal documents, in Poland it is the Minister of Economy and Labor Regulation of August 19 2004 regarding hotels and other facilities providing hotel services (uniformed text, Journal of Law 2006, No. 22, Item 169) with subsequent amendments, legislation in force as of January 26 2015 (later in the text referred to as Regulation) [7], the minimal size of a room is adjusted according to the projected furniture and free space necessary for the utilization of each appliance. Hall, in regard to the function of providing a workstation zone, defines 3, so called, "invisible" usage zones:

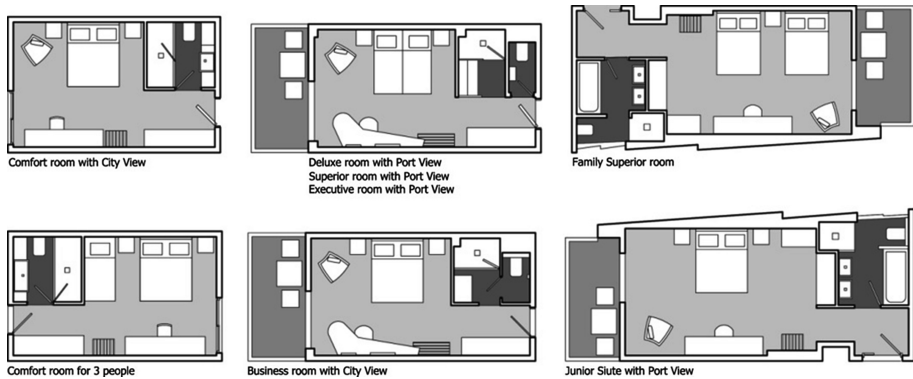
- “1. Immediate workstation area, including a chair and desk;
2. Area located within an easy reach from the desk;
3. Area in which one can move away from the desk and work without getting up from the chair” [5, p. 73].

The same zones can be established for the bed, i.e. an area enabling the arrangement of bed linen, an area providing sitting space and possibility to maneuver bedside tables and night lamps. Similarly, armchair and closet should be preceded by free floor space, enabling the user to stand before them, change, etc. Failure to provide all necessary zones will result in the impression of a tight area and will obstruct the usage of appliances. This is connected with the so called “kinesthetic space”, i.e. range of human hands. Hall claims that in most American hotels, there is not enough of it, and any try to circle the room would result in collision with furniture [5, p.74].

Therefore, it is not surprising that the accepted floor surface norm (dependent on the construction and floor plan structure) is diverse and adjusted according to the type

of a room. This is clearly visible in the case of suites – the higher the standard, the bigger the residential unit. Moreover, a raise in standard results in the enlargement of a bathroom in order to provide room for deluxe sanitary equipment and inducing a feeling of luxury [2]. In the aspect of room décor it is recommended to provide mirrors in the room and strong lighting in the bathroom so as to optically enlarge space [4].

The interconnection between standard and space management is presented on the following illustration and based on simplified floor plans of the 5\* Aquila Atlantis Hotel in the center of Heraklion in Crete (Greece). With the subsequent standard/size dimensions ratio: Comfort/Business – 24 m<sup>2</sup>, Superior/Executive – 26 m<sup>2</sup>, Junior Suite – 35 m<sup>2</sup>, Family Superior – 36 m<sup>2</sup> (See Fig. 1).



**Fig. 1.** Diverse room configurations in the Aquila Atlantis Hotel in Heraklion, Crete (Greece) – elevated standard visible in the space management method (compiled by J. Jablonska, 2014 based on [8]).

While discussing the interconnection between floor surface and comfort, it is crucial to mention methods of furniture arrangement. Hall talks about 2 basic tendencies in this aspect, indicating cultural differences between Japanese and European culture [5]. While the Japanese place furniture in the center of a room leaving empty peripheries, the Europeans arrange it along the walls. As a result, while in the first instance a feeling of spaciousness is evoked, in the second one may feel overwhelmed. [5].

Moreover, it needs to be noted that space management is only one of the factors creating the sense of comfort, as the latter is further dependent on guests' individual characteristics. For example, some may feel uncomfortable in large interiors, as in such environments there is a risk of disorientation (vision deterioration) or of an excessive reverberation time (hearing deterioration). At the same time, relatively small, but optimally furnished rooms with an interesting interior design may seem "cozier" or more appealing than multi-room presidential suites. This is further confirmed by sources stating that a guest's well-being is determined not exclusively by the size of a residential unit, but also through furnishing, décor, and color [6]. The given set could also be supplemented by the type of surface and its texture (soft, warm, smooth, cold, etc.).

## 2.2 Furnishing and Standard

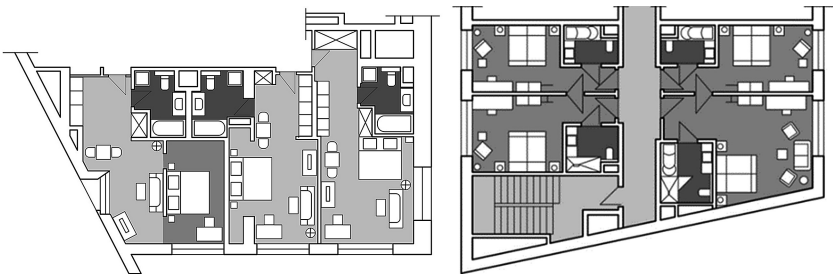
In literature one may find a suggestion to limit the number of furniture items through a skillful process of joining their functions together [4]. For example, a chest of drawers may serve as a TV cabinet and have an additional function of a folding table for working purposes. Seat height adjusted to enable comfortable typing or laptop usage would help to eliminate extra chairs. Finally, installation of night lamps above the bed allows for the use of smaller bedside tables or shelves only, while at the same time installing a wide countertops below the mirror in the bathroom reduces the need to provide additional furniture [4] (Fig. 2).

In Poland the law [7, Appendix I, Chap. 2] specifies the standards of equipment, providing minimal dimensions of basic hotel furniture items. For a single bed it equals  $90 \times 200$  cm, and for a double bed  $140 \times 200$  cm. Other listed basic furniture equipment includes: bedside shelf or table, table, wardrobe and separate clothes rack, desk or table, luggage rack, mirror, at least one chair, sofa and sofa table for 4 and 5\* hotels, or at least one seat (chair) for lower standards. In the aspect of furnishing, every hotel room should contain the following: general lighting, desk and night lamps, power socket by the workstation, telephone, consumer electronics. Correspondingly, basic requirements in the field of interior design include full carpet flooring, alternately bed rugs, two types of window shades or curtains, i.e. light permeable and impermeable (infrequent in foreign hotels). For more luxurious hotels additional furnishing includes a safe for a 5\* hotel and a minibar with a fridge for both 4 and 5\* hotels [7, Appendix I, Chap. 2]. This data should be completed with other items, which seem basic and present in all of the researched facilities, namely: headrests, TV sets, bed linen, curtains, customized lighting also in the sitting room zone, mirrors and paintings [4] (Fig. 2).

Furthermore, according to Polish regulations a telephone set is a mandatory device in all hotel rooms [7, Appendix I]. An interesting discussion regarding the best placement of this appliance took place in the US, suggesting either a place on the desk or by the bed. At first, high class hotels provided telephone sets in both places, but later resorted to a telephone headset with a docking station [4]. In the mobile phone era this problem may be perceived as outdated and the presence of a phone set in the room as questionable. Nevertheless, for a person with any type of psychophysical disability a possibility to quickly connect with the reception desk in order to obtain information, request service or medical help, proves absolutely crucial. In this case, a telephone set should be located by the bed as well as in the bathroom, always in a clearly visible and easily accessible place. In life threatening situations one should not rely strictly on wireless appliances, which may run out of battery or have no signal.

It is worth noting that sanitary facilities should be present in all hotel rooms. Polish building law [7] regulates basic bathroom equipment, listing an all in one bathtub with shower or shower cabin, bathroom sink with a cabinet or shelf with adequate lighting, and a toilet. Other elements include a bathtub shield, bath mat by the bathtub and shower cabin, handles by the bathtub and shower cabin (for all interiors, not only the adapted ones), clothes racks, toilet roll holder, and a soap dish. Mandatory furnishing items include electrical sockets with safety covers, hair dryers (not for 3\* hotels), wastebasket and a telephone (the latter only for 5\* hotels) [7].

Conducted case studies illustrated that an upgrade in a hotel room standard (especially for Economy, Standard and Comfort), even with the same floor surface, is clearly influenced by additional or more luxurious furnishing. In the aspect of furniture this included: customized furniture, beds with an increased width or length or fitted with spring mattresses, ergonomic chairs, armchairs and beds. Among the appliances were: flat-screen TVs of various size, designer coffee makers, high end sound systems, tablets, docking stations for iPods, and, finally, lighting adapted to individual activities. In sanitary facilities the standard upgrading furnishing comprised of separate bathtub and shower cabin with a shower rain head. The equipment facilitating a more comfortable use of a hotel room for all guests included: floor level shower trays, extended horizontal door and balcony window handles, handheld shower heads (in place of permanently mounted and rain shower heads), supporting handles in slippery and exposed to moisture areas, a supporting handle by the toilet, large and visible device buttons and light switches [4]. Moreover, sound insulation and allergy friendliness are seen as additional factors creating a more attractive environment for prospective visitors [2, 8]. Other solutions increasing the comfort of utilizing a room include the possibility to control lighting and bed curtains, fast Wi-Fi and touch panels enabling the control of various parameters, i.e. lights, temperature [4].



**Fig. 2.** Furnishing and standard – on left: InterContinental Hotel in Warsaw – the scheme of layout part with double rooms of a higher standard, typical for levels VIII-XXII; on right: Kraków Park Inn – double rooms with twin option (compiled by J. Jablonska, 2014, based on: [6, p. 321, Fig. 2 and p. 316, Fig. 2]).

As it was previously mentioned in the “Floor surface and comfort” paragraph, next to furnishing, furniture arrangement is equally crucial. Robson and Pullman [2] point to the need of providing a possibility to watch TV from the bed, a comfortable usage of one’s own laptop in the workstation, or collision free deposition and storing of clothes in the wardrobe. Research conducted by Robson and Pullman confirms that guests expect an ergonomic but also an interesting interior [2]. In one of the studied hotels the guests were asked to choose the best and most interesting room furnishing and listed the following: adequately located soap dispensers in the shower cabins, paintings hanging over the bed and view outside the window. It is noteworthy that in the same study customers also identified inconveniences, i.e. bathroom headphones easily falling to the floor, lack of a shelf for cosmetics over the bathroom sink, tangled electrical

wires under the desk, faulty wardrobe doors [2]. The latter issue is connected with another crucial element ensuring the users comfort, i.e. the need of efficacy of all devices located in a residential unit [6, 7].

### 2.3 Atmosphere and Star Rating

Citing Countryman and Jang (2006) [1, p. 703] sources indicate three elements creating atmosphere: light, color and style (Figs. 3, 4). Texture, often neglected by designers or chaotically applied, could also be added to the list [5]. All these factors are elements of interior design and are distinguishable based on the standard of a given hotel room:

For rooms:

- floors – carpets, carpet flooring, tiles (warm climate), wooden flooring with rugs (suites),
- walls – painted plaster, wallpaper, stucco, wall paneling and baseboards (high standard),
- ceiling – painted plaster, acoustic materials (rarely),
- doors – acoustic panels or wooden (high standard),

for sanitary facilities:

- floors – ceramic or stone (high standard) tiles,
- walls – ceramic or stone (high standard) tiles in the wet zones and painted plaster and wallpaper in the dry ones,
- ceiling – painted plaster (water resistant paint),

electrical and mechanical appliances:

- sockets – at least 2 by the bed, 1 by the desk, 1 by the closet and 1 in the sitting room zone (for computers and vacuum cleaners),
- cable system – TV, 2 phone lines, Internet (wireless or cable), fire alarm,
- air-conditioning (for 4 and 5\* standards) and air supply exhaust system in bathrooms,
- fire detectors and sprinklers (according to local regulations) [4, 8].

Ambience may be influenced also by other factors. For example, Robson, Pullman [2] indicate two tendencies in creating interiors of modern-day hotel rooms. The first one is directed at enlarging space, mainly by broadening rooms in order to create interesting furnishing arrangements, while the second is creating small, but very cozy areas in the existing buildings, characteristic especially for boutique hotels. In Poland, facilities of this type are located usually in the existing building stock and may fall under certain exemptions according to Sect. 3. 1. of the Regulation [7]. The referenced paragraph indicates that in the aspect of facilities on the national monument list certain exceptions from the building regulations are acceptable. For example, rooms 32 m<sup>2</sup> large “with a garden view” in The Granary La Suite Hotel (located in the ruins of an old granary), situated in the historical part of the building allow guests to admire the 17th century ceilings, parts of original walls and especially customized furniture. Undoubtedly, original building features are very attractive for customers.



**Fig. 3.** Atmosphere of the Aquila Atlantis Hotel in Heraklion, Crete (Greece) is created by simple but high-quality materials (photograph by J. Jablonska, 2014) (Color figure online).



**Fig. 4.** Atmosphere of the Hotel Yasmin in Prague (The Czech Republic) is created with the use of color, textures of materials and mirror effects (photograph by J. Jablonska, 2013) (Color figure online).

On the other hand, it is proved that innovative solutions may also draw clients. This was exemplified by findings from research conducted in the 5\* Granada Hotel in Alanya in Turkey, particularly popular among guests from Germany and Russia [1]. The cited researched involved a questionnaire distributed among 200 guests and 97 hotel employees. Undoubtedly, the findings indicate a significant role of architectural innovations in fighting competition on the market [1].

Based on the cited source materials as well as case studies, it becomes clear that creating hotel ambience is not just about referencing tradition, maintaining a classical style, or blindly following trends. On the contrary, it is considerably more important to create an original offer which would “stand out from the crowd”. In conclusion, interior design should always provide an ergonomic décor and not overwhelm the user (Figs. 3, 4).



## 2.4 Other Comfort Ensuring Factors

Internet sources indicate that the basis for a well-designed hotel is comfort: comfort of use, sanitary and acoustic [6]. Factors determining a comfortable use of a residential unit were listed above.

In the sanitary facility it is important to provide hotel guests with a sense of cleanliness and freshness [6]. Next to providing proper service, finishing materials resistant to cleaning processes and able to maintain immaculate appearance in the course of use are absolutely crucial. Their aesthetics and durability are therefore essential. Yet, it is worth noting that certain materials popular in contemporary interior design, i.e. raw concrete, scratch coat plaster, stone vein ceramic tiles, old-styled wood, may reduce the feeling of cleanliness and freshness.

Another aspect of sanitary hygiene is smell. “Olfactory space” in architecture, a term coined by Hall, influences the feeling of comfort as well as memories from a given environment [5, pp. 64-65]. “Smell invokes far deeper memories than image or sound” [5, p. 64]. Designing space in the aspect of smell may seem difficult, however, in choosing finishing materials it is crucial to pay attention to the scent they emit. Rather dangerous in this aspect are all types of textiles and carpet flooring, as artificial glues and water-proofing substances are often used in their production. Hence, it is also crucial to evaluate the risk of emitting unpleasant odors by this type of materials.

Acoustics is a crucial element of a hotel’s space. Properly soundproofed interiors eliminating noise from the outside as well as other rooms and halls, provide the guests with necessary privacy and rest. Hall, in his book “Ukryty wymiar” (English: “The Hidden Dimension”), cites examples of complaints regarding a certain manager’s qualifications, which came to a halt when the acoustic environment of the conference room, where the meetings with employees were held, was corrected [5, pp. 62-63]. The sound proofed walls eliminated traffic noise and the manager’s assessment among employees was greatly improved. Except from isolating outside noise, it is necessary to provide acoustic comfort related to interior design.

Large areas of the suite type are especially at risk of the echo effect. Sound reproduction (e.g. of impact noise) may lead to a feeling of confusion and general anxiety. In contrast, small rooms (Single, Double type) are in danger of excessive absorption of acoustic waves, which may results in a guest feeling overwhelmed, entrapped or generally claustrophobic. The simplest method of sound adjustment in both rooms is an adequate distribution of soft (upholsteries, textiles, curtains, carpet flooring, carpets, etc.) and hard (plastered and painted walls, wooden, ceramic or stone cladding tiles, etc.) materials and surfaces. A more sophisticated method includes an additional optimization of acoustic structures, for example on the ceilings (Fig. 5).



**Fig. 5.** Interior sound adjustment with a proper layout of materials in Sofitel Chicago Water Tower, Chicago IL. (USA) (photograph by J. Jablonska, 2013).

### 3 Conclusion

Comfort in a hotel room is provided by the following: floor surface, functionality (including completeness), standard of furniture and appliances, atmosphere, cleanliness and hygiene, equipment efficiency, interior design aesthetics, acoustics, lighting and room temperature, etc. Certain solutions favorable for hotel guests, i.e. handles by sanitary appliances, wide handles and door knobs, lowered shower trays, are characteristic for all hotel rooms. However, based on case as well as literature studies, it is very clear that the level of functionality in a residential unit is strictly intertwined with its standard. For example, comfortable mattresses, ergonomic seats and office chairs, as well as healthier finishing materials (natural, noble) were present in rooms with higher standard such as: Comfort, Executive, Superior, Exclusive, and Suite.

Therefore, we would like to conclude by stating that optimal design requires the use of safe ergonomic solutions in all types of hotel interiors. The standard should be raised by providing more luxurious appliances, furniture, and finishing materials, however not at the expense of hotel guests' health.

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