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Comparison of the calculation of habitable dwelling surfaces

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Stephan Kippes

Department of Real Estate, Nürtingen/Geislingen University Parkstr. 4 D-73312 Geislingen/Steige, Germany Tel. +49-7331/22-537 -560 Fax, Mobil +49-1712828133 e-mail: <u>kippes@asg.fh-nuertingen.de</u>, homepage: <u>www.english.fh-nuertingen.de/profhp/kippes/sp_auto_6999.html</u>

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Abstract: In Germany like in other countries floor measurement is a huge problem. While buyers tend to use floor measures as an important parameter for their decision, and have to pay three or four thousand € per square meter – sometimes even more - in most areas there are no binding rules how floors are measured properly. And so it is quite hard to compare the different properties. When selling a property builders and real estate agents tend to maximize the number of square meters. And so the buyer read newspapers ads "House with 230m² - a lot of space for your family" - but properly measured there are only 170m² or even less. This tends to increase the distrust of property people.

In Germany the methods of floor measurement are quite different: There is the DIN 283 which is used despite the fact that it was officially abandoned more than 20 years ago. Then there is DIN 277 which is not very suitable for housing. Another method is based on the so called "II. Berechenungsverordnung", second measurement decree, which is only obligatory for public subsidized housing. Since 2004 the second measurement decree has been replaced by the floor Measurement Act – like its predecessor it officially applies only for public subsidized housing.

That means there are no binding rooms how floors are measured except for public subsidized houses. Therefore, a certain number of dossiers has been analysed on the basis of a random choice in order to determine the method according to which the habitable dwelling surface was determined, what is actually considered as "habit-able" and in how far different calculation methods result in deviations.

Starting point

For a long time already it is criticised in Germany – namely by end consumers – that the entire field of the calculation of habitable dwelling surface is characterised by a chaotic variety of calculation variants hardly comprehensible for the end user - sometimes not even reproducible for the expert. In fact, the result of the jurisprudence of the Federal Court of Justice is that the term "dwelling surface" has to be interpreted on the basis of common language¹.

In this context it is striking that a lot of legal disputes turn around the existence of a certain dwelling surface and considerable deviations which, as a consequence, justifie a claim for damages². It is generally not clearly determined yet what is actually constituting the basis for such a calculation of the habitable surface of dwellings.³

Therefore, a certain number of dossiers has been analysed on the basis of a random choice in order to determine the method according to which the habitable dwelling surface was determined, what is actually considered as "habitable" and in how far different calculation methods result in deviations.

Surface calculation – an international problem

The issue of the "calculation of dwelling surfaces" is not a specifically German issue but occurs in numerous countries and is, therefore, an international problem. The following examples may illustrate this situation:

- In Hong Kong, a share of the Resident's Club is occasionally added to the dwelling surface, resulting in double-digit increases of the habitable dwelling surface.
- In Australia, garages which are adjacent to the house (and perhaps linked by a door) are sometimes added to the dwelling surface.
- In Spain, the equivocal particularity exists to add the square meters of the entire gross usable floor space of the corresponding storey.
- In Spain, also the pool surface is added to the habitable dwelling surface.

¹ BGH, Sentence dated July 11th, 1997, File Reference: V ZR 246/96 = ZMR 12/1997, 633

² For the thematic issue of claims for damages please cf. among others: OLG Celle, Sentence dated January 14th, 1998, File Reference: 6 U 88/96 = Construction Law (*Baurecht*) 98, 805, where such a claim is conceded for deviations of at least 10 percent; a similar decision has been taken by the *Kammergericht Berlin* (KG Berlin, Sentence dated November 24th, 1988, File Reference: 12 U 5553/87 = NJW-RR 1989, 459). The OLG Hamm, however, was more restrictive in ist decision dated September 8th, 1991. OLG Hamm, Decision dated September 18th, 1991, File Reference: 12 W 17/91

³ Thus, the Federal Court of Justice stated that habitual language use does not establish a link between "habitable dwelling surface" and "a certain mode of its calculation". BGH, Sentence dated November 30th, 1990, File Reference: V ZR 91/89, Baurecht 2/1991, 230

There is no non-ambiguous regulation for the calculation of the habitable dwelling surface in a lot of countries. Insofar, this problem is not specifically German but has a global dimension.

Methodology and research design

The aforementioned problem of dwelling surfaces had initiated a research project carried out by the author in an exemplary manner for one German conurbation – the agglomeration of Munich. At present, this project is still under evaluation; but first results are already available and subject of this paper.

After the evaluation of the remaining data material for Munich, a second conurbation shall be analysed with assistance of GIF – Society for the Economic Research in Real Estate Business. The author has a manifest interest in extending this study to other regions beyond German borders, and he would be glad to meet a corresponding interest of his colleagues from other universities.

The survey was carried out in the conurbation of Munich. A spatial demarcation was made by focusing the city of Munich, the administrative district of Munich (*Landkreis München*) and three other administrative districts (*Landkreise*) on the outskirts of Munich. This should enable to obtain an even more significant picture.

The Munich region was chosen, because the price level for housing – both, owneroccupied and rental dwellings – is the highest in comparison with the rest of the German agglomerations, so that litigious surface deviations there also account for the strongest financial impact.

The dossiers were selected by random choice on the basis of the IMV-programme. This IMV-programme is particularly suitable as basis for such a random choice, because it covers nearly all real estate offers published in the daily newspapers of the conurbation of Munich. And this programme systematically also includes advertisements as published, for instance, in specialised publicity publications. Also private advertisements can be integrated.

The types of objects chosen for this analysis were single-family detached houses, semi-attached houses and terraced houses, because this choice enables to cover the largest spectrum of specifics for the calculation of the habitable dwelling surface. Namely with single-family detached houses, the most various problems arise that can also be detected in fairly similar forms in condominium, terraced houses and semi-attached houses. Especially for single-family detached houses, the basements, attic floors – especially in connection with surfaces under ceilings lower than the 2-meter-line -, balconies and patios / terraces need to be considered for the calculation of the habitable dwelling surface.

The issue of dwelling surface calculation is also very important for condominium flats. In this case, especially the calculation of balconies (and, to a less important extent, of patios / terraces) has to be focused as well as the pitched roof areas and the basements.

143 dossiers have been analysed for this study.

In order to sort out atypical objects likely to inadequately distort the results of the study, a range was fixed for both, the dwelling surface and the purchase price, beyond which the studied properties were not eligible for the study.

Subject of the research project are the brochures and dossiers of developers, real estate brokers and other enterprises working in the real estate business. The vendors had been requested to send in these documents which were then submitted to a document analysis. In connection with the analysis of documents or dossiers, documents provided by a third person about a relevant thematic issue – i. e. sales documents in this special case – are evaluated systematically.⁴

This method is particularly suitable for the preparation and analysis of individual cases in which the calculation of the habitable dwelling surface is envisaged.⁵

Document analysis was chosen, because other – empirical – methods and processes (e. g. written questionnaires, participating observation) are afflicted with considerable problems concerning their validity and reliability, or they are simply not feasible,.

It is obvious that this does not enable to directly identify the actual dwelling surface. The empirical process concentrates much more on the document analysis of the sales brochures with the priority of assessing the methodology of the calculation of surfaces, its transparency as well as the inclusion or exclusion of certain surfaces. To avoid distortions, the owners respectively real estate companies were not informed about the purpose of the request for their dossier / brochure for a research project. They probably would not have sent in documents at all or only reduced dossiers or sugarcoated brochures.

The analysis of the actual habitable dwelling surface on site would have required the approval of the owner respectively the selling real estate company, which would have been difficult to obtain, given the thematic purpose of the research, even with the promise of absolute anonymity. Furthermore, the fairly high number of dates would have required a tremendous effort in time and would have gone far beyond available resources.

In order to render a well-balanced picture of the actual situation regarding the calculation of habitable dwelling surfaces, only dossiers / brochures over a period of three years could be considered for the study. This means that a part of the analysed sales documents had been drafted, before the new regulation for the calculation of dwelling surfaces (*Wohnflächenverordnung - WoFV*) entered into force.

⁴ Cf. Gerth, W. (1975), Fallstudien, in: Friedrich/Hennig (Hrsg. 1975), S. 539

⁵ Cf. Hellstern (1984), Verwaltungsvollzugsdaten und Aktenanalyse - ein tragfähiger Zugang zum Verständnis der Verwaltungswelt, S. 201. For Hellstern the evaluation of dossiers and administrative enforcement acts have shown to be an indispensable source of information for the implementation- and evaluation-studies.

The habitable dwelling surface in the area of conflict between the most different stakeholders

Generally speaking the habitable dwelling surface (or overall usable floor space) is an area of conflict most different stakeholders⁶ and their divergent interests⁷. Those are mainly:

- home owners
- prospective buyers
- tenants
- real estate agent
- developer
- neighbours
- chartered surveyors
- public authorities
- public opinion.

Not seldom owners wish to maximise the actual gross surface of their residential property for understandable reasons, when they want to sell it. Developers also try, for similar reasons, to maximise their surfaces arithmetically.

Enquirers interested in buying, however, want to get a realistic appreciation of the actual habitable dwelling surface and gross usable floor space.

For neighbours, the issue of the habitable dwelling surface is not so much an arithmetical issue. For them it is much more important to know which construction volume will be built near to their own home, at what distance, eaves-height and what are additional obligations for the developer.

In the ambit of his activity as an expert, the chartered surveyor has the task to furnish an opinion in line with the market and on the basis of a realistic assessment of the

⁶ Mitroff defines the term of stakeholder as follows: "Each Stakeholder is a distinct and distinguishable entity, that has resources, purposes, and a will of its own." Cf. Mitroff (1983), Stakeholders of the Organizational Mind - Toward a New View of Organizational Policy Making, San Francisco, Washington, London 1983, S. 36

⁷ For the issue of stakeholders and stakeholder-analysis see especially Mason/Mitroff (1981), Challenging Strategic Planning Assumptions. Theory, Cases and Techniques, New York, Chichester, Brisbane, Toronto 1981, Challenging Strategic Planning Assumptions. Theory, Cases and Techniques, New York, Chichester, Brisbane, Toronto 1981, Scholz (1987), Strategisches Management: Ein integrativer Ansatz, Berlin, New York 1987, S. 24 f., Janisch, M. (1993), Das strategische Anspruchsgruppen-Management: vom Shareholder Value zum Stakeholder Value, Bern 1993, Pickle/Friedlander (1967), Seven Societal Criteria of Organizational Success, in: Personnel Psychology, 2/1967, S. 165 - 178.

surface. Insofar, he has to apply transparent and reproducible rules for the calculation of dwelling surfaces.

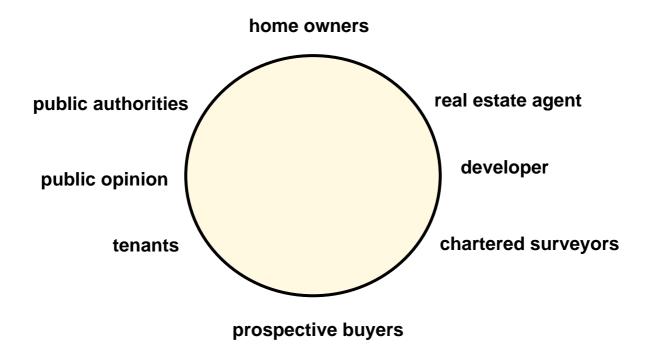


Illustration: The dwelling surface in the area of conflict between most different stakeholders

By means of precise obligations with a direct or indirect sustainable impact on the realisable dwelling surface, public authorities strive to implement their objectives for urban development and land use. The target profiles, however, of different public institutions often show divergent interests.

The dwelling surface issue is in the very heart of these often conflicting interest.

Dwelling surface

Until 1983, the calculation of the dwelling surface was regulated, in Germany, by the German Industry Standard DIN 283. When this DIN 283 was abrogated, a lot of confusion arose.⁸

This ended up in a situation, where the DIN 283 no more in force continued to be used, whereas, simultaneously, the Second Rent Calculation Regulation (*II. Berechnungsverordnung*) applied. The DIN 277, which was still in force, did not contribute to a solution either, because it is not designed for the specific aspects of the

⁸ cf. Noack, B., Westner, M. (2003), Betriebskosten in der Praxis, Freiburg 2003, S. 68

calculation of dwelling surfaces but much more for the needs of the commercial real estate business, architects and developers.

"While the indication of surfaces in the lease contract has generally no legal impact at all on the rent level, the correct dwelling surface has to be indicated for the service charges. If the actual surface is smaller than stipulated in the lease contract, the tenant has the right to claim the back payment of the overpaid service charges according to articles 812, 818 Civil Code (*BGB*). For bigger surfaces than stipulated in the lease contract, the landlord can adjust his service charge statement only for future statements. Anyway, the landlord has the burden of proof for the actual dwelling surface."⁹

Thus, it is required anyway "to use the same method of surface calculation for "all dwellings in the same building". If, for instance, a residential property has several flats with balconies of different sizes, the scale of the surfaces is arithmetically correct only, if the dwelling surfaces are limited to the built surfaces or the surfaces of the dwelling with, for instance, the smallest balcony. In general practice, "wrong indications of the dwelling surface … usually do not constitute any fault of the dwelling, and the agreement of a dwelling surface is, in itself, not a guarantee of a specific feature of the dwelling."¹⁰

The reason for these dwelling surface problems is obvious. Apart from the field regulated by the Federal Public Housing Funding Act (*Wohnraumfördergesetz*), a legally binding method to calculate the dwelling surface does not exist – similar to the commercial real estate business, where, in spite of the laudable efforts of the GIF – Society for the Economic Research in Real Estate Business (Gesellschaft für Immobilienwirtschaftliche Forschung e.V.) most diverging calculation methods are used, e. g. according to BGF (*Bruttogeschoßfläche* - gross residential surface). But there is a decisive difference: In the commercial real estate business, professionals respectively businessmen are confronted with these surface questions, and one can expect – even if it is annoying sometimes – that they are able to convert surfaces or to have them converted. But in residential property, it simply means asking too much to the layperson to do the homework that should be done by the real estate companies.

Results

In practice, there are different methods of calculation. Fairly widespread is the German Industry Standard DIN 277, abrogated a long time ago, the Second Rent Calculation Regulation (*II. Berechnungsverordnung*), applicable, in general, only to social housing. Since January 1st, 2004, the new regulation for the calculation of dwelling surfaces (*WoFV*) and/or other individual approaches – whatever that means for the individual case – apply to publicly funded housing. The owner, developer or real es-

⁹ dv. Noack, B., Westner, M. (2003), Betriebskosten in der Praxis, Freiburg 2003, S. 79 10 Hix, G. (2002), Wohnflächenberechnung - 2. Berechnungsverordnung, DIN 283 und 27; Rechtsfragen und Methoden der Wohnflächenberechnung, 2. Ed., Essen 2002, S. 3

tate broker just selects the most suitable and helpful rules of these regulations for their argument and mix them up with DIN 277, the Second Rent Calculation Regulation (*II. Berechnungsverordnung*) and own methods in order to obtain the largest or smallest number of square meters – whatever they need in their specific case.

The study revealed considerable deviations for the offered habitable dwelling surface and the overall usable floor space:

- Fairly often, it was not even or not precisely distinguished between the habitable dwelling surface and the gross usable floor space. A house was offered, for instance, with "197 square meters habitable dwelling- / usable floor space" without further explanation or indication what was precisely the habitable dwelling surface. Sometimes, there were indications of square meters in the architects' plans

 but this informs insufficiently about what was considered as precise habitable dwelling surface.
- Often it is not clear which method was used for the calculation of surfaces or which surfaces actually were included in this calculation.
- In certain cases, terraces / patios, often generously dimensioned but uncovered, were added to the habitable dwelling surface in order to "generate" more square meters.
- In the extreme case, 100 percent of the surface of a balcony were added to the habitable dwelling surface.
- Also surfaces below the 1- or 2-meter-line under pitched roofs were added disproportionately, or the entire floor space of the attic floor up into the most inaccessible corners.
- In some documents, also the basement is added to its full extent to the habitable dwelling surface as well as the landing of the basement stairs.
- In one case, the calculation was based on the outside dimensions of the building shell, resulting in a 3 percent increase of the habitable dwelling surface. Although a small footnote indicated that the calculation was based on the shell dimensions, the impact of this method on the calculated surfaces is hardly clear to the end consumer.
- In individual cases, the garage was considered as usable floor space, given the fact that the regulation of the term of "usable floor space" is even more ambiguous and worse.

A central analysed hypothesis was in how far the actual state of development of the building – the question whether only the building permit was issued or whether the house was already under construction or even finished and offered as stock dwelling – has an impact on the clear statement of surfaces.

Hypothesis 1: There are differences regarding the comprehensibility and reproducibility of calculated surfaces between new buildings and existing stock dwellings.

But the result showed that there is no significant difference regarding the development of construction. The indication of the dwelling surface for 20 percent of the objects with a building permit already issued was transparent, for houses under construction the habitable dwelling surface was indicated in an recognizable manner in 32,1 percent of the cases, only in 21 percent for finished houses.

The Mann-Whitney test resulted in a value below 0,398; insofar the hypothesis was not confirmed.

In addition to that, the hypothesis was verified in how far the method of calculation of the habitable dwelling surface can be verified easier in the developers' dossiers than in those of real estate brokers.

Hypothesis 2: There are differences between developers and real estate agents regarding the reproducibility of dwelling size calculations.

The idea on which this hypothesis was based is that the brochures of developers mainly refer to new homes, whereas the main activity of real estate brokers concentrates on the existing dwellings for which the owners often do not have consistent surface data and where no new calculations of the habitable dwelling surface are made.

The study showed that the calculation of the dwelling surface is comprehensible and reproducible in 32,4 percent of the developers' dossiers compared with only 25 percent in those of real estate brokers, thus more often. But the statistical analysis revealed that this difference is not significant.

In addition to that, it was analysed in how far there is a link between the type of sales documentation – brochure, dossier or property description summary – and the criteria of reproducibility of the dwelling size calculation.

Hypothesis 3: The type of the used sales documentation has an impact on the reproducibility of the calculation of habitable dwelling surfaces.

The result showed that in 44,8 percent of the brochures the calculation of dwelling surfaces was transparent and reproducible; for dossiers, this value was 25,9 percent and for property description summaries only 10,7 percent. Here, one has to consider that property description summaries are not only used by real estate brokers and mainly for second-hand properties, but also by developers. But the extent of the difference between brochures and dossiers regarding the reproducibility of surface calculations is striking.

The Mann-Whitney test resulted in a value below 0,004; insofar the hypothesis could only just be confirmed.

The next step was the examination of the link between the numbers of pages of a brochure / dossier and the reproducibility of the method of calculation.

Hypothesis 4: The number of pages has an impact on the reproducibility of the calculation of surfaces.

In general, it could be stated that in brochures / dossiers with few pages the calculation of the surfaces tended to be less precise than in more substantial sales documents. In none of the brochures / dossiers with only two pages, the calculation method was reproducible. In those with three to five pages, this value reached also only 14,3 percent, in those with six to ten pages 17,4 percent. On the other hand, a value of 31,6 percent was found out for more substantial brochures / dossiers with 11 to 20 pages, and dossiers with more than 20 pages even reached 75 percent.

The Mann-Whitney test resulted in a value below 0,000; insofar the hypothesis was confirmed.

As already mentioned, the study is just in its initial stage. The fact that there are no significant differences for a certain number of hypothesis regarding the transparency and reproducibility of habitable dwelling surface calculations, indicates that – subject to the further development of the research – unclear presentations of the habitable dwelling surface in real estate sales document are not a singular phenomenon and not a problem that occurs only in some or few market segments, but that they are a general problem.

Due to the aforementioned divergences of the methods of surface calculation incomparability and intransparency are produced, and the customer's deception is preprogrammed. This is approximately as if you told the baker to pack ten rolls into a bag and, depending on his mood in the morning, one day you get nine, sometimes eleven or only eight rolls – with the delicate difference that this can hardly be verified precisely for the habitable dwelling surface and that for the square meter people do not pay 50 cents like for the roll but just 3,000 or 4,000 or more \in .

The customer is happy, for instance, about a single-family home with a considerable habitable dwelling surface. The headline of the newspaper ad or the offer on the internet may read: "240 m² habitable dwelling surface – finally enough space for the whole family, your hobby and lots of free space left!" But if one looks a little closer at it, the 240 square meters are melting down to, let's say, 170 square meters of "actual" habitable dwelling surface – like ice under the Australian sun, to put it in clear words.

It is to fear that the new regulation for the calculation of dwelling surfaces (*WoFV*) will not really help to solve this problem, because, as already said, it only applies to the cases stipulated in the Public Housing Funding Act. We have rather to presume that

this additional method of calculation will initially increase the confusion even more for the private customer.

Thus, the following recommendations for further action are resulting from the study: First of all, owners, developers and real estate companies should calculate their surfaces according to the DIN-standard, the regulation for the calculation of dwelling surfaces (*WoFV*) or the Second Rent Calculation Regulation (*II. Berechnungsverordnung*) and make that clear, too. Whenever there is a deviation from those methods, it has to be stated clearly, why and which surfaces are subject of the final indications – without obliging the customer to sum up all individual positions and assess properly, which surfaces exactly are part of the calculation and which are not. And then, it should be distinguished between habitable dwelling surface and gross usable floor space.

For the rest, it is high time for the real estate business to agree upon a reasonable regulation or a "Code of Conduct" and not to wait until the legislator detects another need for action. Because let us make one thing really clear: The private customer will agree with nearly any calculation method – even on the basis of the gross residential surface (*Bruttogeschoßfläche – BGF*) – if only he gets comparability. He does not want to carry out these unusual calculations himself, and he does not want to run into a situation where he has to charge the architect to recalculate or even to check the measurements again on site.

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			clear statement of surfaces		
			1	2	Total
	brochures	Count	13	16	29
		% within	44,8%	55,2%	100,0%
	dossiers	Count	22	63	85
		% within	25,9%	74,1%	100,0%
	property descrip-	Count	3	25	28
	tion summaries	% within	10,7%	89,3%	100,0%
Total		Count	38	104	142
		% within	26,8%	73,2%	100,0%

Hypothesis 3 - type of the used sales documentation vs. clear statement of surfaces?