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Research initiative: THE FUTURE OF BUILDING
On the relationship between quality, the system of awarding contracts and remuneration -
abbreviated version

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I. Planning (and building) as a business model

To allow an objective discussion on the future viability of the HOAI (scale of fees for architects and engineers) it is essential to state that the **HOAI** (and the VOB - awarding and contract system for building services) represent a **business model with a formula-based effectiveness**, with which (if strategically cultivated) it is possible to build up **great trust** between clients and planners.

Paragraph 15 of the HOAI can be applied without any mandatory additional depth to projects of all sizes and constellations, as it includes the well-functioning, measurable business organisation of all planning phases.

The (business) model character offers formula-based possibilities of communication, also for new (business) partners, with a mutually understood vocabulary, agreement with regard to organisational goals – and all at a comparatively low cost.

If one is willing to understand that in business unclear risks, **unclear models** must, in the medium-term, become **part of the price**, then mutual, precisely formulated understanding between the contract partners can make an effective contribution to reducing the costs of drawing-up and administering the contract.

Naturally, models of such complexity should be

- examined periodically to check whether the congruence of interests of the users still exists,
- adjusted periodically to take account of changes in the real situation.

Recently the state, the largest contracting authority in Germany, showed little confidence in the sustainability of HOAI model. When compared with other models (in the banks or IT), it was said, it seemed not to be a successful model. Therefore the necessary priority was not given to its continuous further development.

II. Historical development of the business model

Until into the 18th century building, as a form of directed settlement policy, was the responsibility of the state. Building administration authorities were expected to be efficient and economic but also to delight the "princely" eye.

The increasing privatisation of building commissions (along with the impetus provided by the founding of the German Empire) led in 1871 to the "Hamburger Norm" (Hamburg Standard), the first scale of fees that architects and engineers devised jointly.

This joint voluntary regulation of fees eliminated internal price competition, while ensuring both clients and tenderers a level of quality in planning services that was understood in the same way throughout the country.

In the context of the "mythical" ethos of the Prussian public servant architects and engineers were seen as free professions but with the same obligations in terms of trusteeship of the common good and their clients' interests as state officials. Although they did not serve the prince or the state directly, the client was, so to speak ascribed the same status as these and became the master of the planners. This not only protected the client's specific interests but also meant that the design of buildings was taken seriously as a way of increasing the common good.

The size of the fee obtainable according to the scale of fees was never directed at disadvantaging the client. The intention was that fee should allow the planner to afford an adequate way of life, which, in accordance with his status, should match that of a higher-level public servant.

In 1937 and 1942 (for reasons to do with the wartime economy) the GOA (fee scale) was expanded by the inclusion of a highest price rule. This was retained after 1945 and extended during the reconstruction period. The

HOAI from 1977 is based on values that were calculated by analysing 900 projects in terms of the amount of work they required.

III. Aspects of planning that cannot be described

In deciding upon the procedure for awarding contracts it is important to clarify those engineering and architectural services that can and those that cannot be described:

- **Describable (planner) services** should be awarded by means of price competition, as all the applicants must understand the task in the same way – on account of the fact that it can be described – and by **optimising their means of production** the price can be used as the sole criterion in awarding the contract (where the subject is exactly the same).
- **(planner) services that cannot be described** must be awarded by means of negotiation, as without discussion of the contents, the depth to which they should be dealt with, the approaches etc. all the applicants *do not* all understand the task in the same way or carry it out in the same manner, which would be necessary were the price to be used as the dominant criterion in making the choice.
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From the client's point of view it is understandable that as many services as possible should be regarded as describable, because in this way public clients (often with the intention of saving taxpayers' money) can, at first glance, purchase more cheaply. The disadvantage here is – if the service was not describable – that the quality of whatever is delivered or performed is determined by the contractor / successful tenderer. Gradual but clearly recognisable "lesser quality" can then only be successfully rejected or an improvement brought about when the proper situation is concretely and unequivocally described (in the contract).

Consulters, lawyers, and auditors say that only 60% of the hours they work are billable hours that they can realistically charge for and can presented plausibly as such to the client in terms either of physical presence or documentation produced. 40% of the hours they work are not billable and therefore cannot be charged for directly.

In planners' offices this relationship is also 60:40. The 40 % includes, for example.

- entering competitions,
- considering the possibilities of optimising concrete project solutions,
- researching specialist literature,
- working on updating requirement profiles,
- generating knowledge, storing knowledge for the purpose of internal quality improvement (further training).

Therefore, awarding contracts on the basis of a competition for services is in the interest of the client and the planner, as it allows the relationship of 60:40, which makes sustainable work affordable, to be (approximately) re-established. So far the well-considered use of scales of fees has neutralised this problematic moment. "Good" clients are aware of this fact.

However increasing pressure to use price competition as the basis for awarding contracts to planners produces, at the decisive point of awarding the contract, the apparent (?) advantage of "savings" of 20-30 %. And indeed savings are made, but they are in the number of staff used, trusteeship, and in those intellectual resources urgently required for the projects.

A view of the planning world from a legal, business organisation viewpoint assumes that all planning (and construction management) services should be allotted to the **sphere of the client**. From this perspective they are needed only to make concrete the initially unclear, and in terms of competition law not completely unambiguous, describability of the future building to such an extent that the end results in the LPH (services phases) 5+ 6+7 reach the level of describability that is an essential legal requirement for holding price competitions among the "material" building trades.

Consistently, the discussion on procurement law begins from the standpoint that the major part of the planning services should be regarded as not clearly and exhaustively describable. This approach opens up the path towards negotiation procedures that is unique in EU procurement law.

Indicators of non-describability

differ in their intensity and impact, e.g.:

- non-calculable environmental influences (from the building ground to EIA - environmental impact assessment),
- planning and functional circumstances and constraints that are impossible to define exactly,
- manifold approaches / individual decisions that have to be made,

- high level of complexity of the services specified,
- no standardisation of the performance of those involved,
- the combination of several / different specialised areas
- unifying different interests to achieve a solution,
- project size,
- variety of special aspects,
- the number of building parts, functional areas, different contents,
- the number of those involved in the planning, construction management (building supervision),
- the number of documents, intermediate results, items in the specifications,
- the number of processing phases, coordination rounds,
- multiple-stage coordination of users that is possible only after the presentation of solution concepts, in addition the reaction of the client to the solutions,
- several optimisation phases,
- unclear distribution of risks,
- etc.

A point system that can be used to classify the describability of architects and engineers services can be worked out employing the parameters listed below:

- (A) Complexity of the project organisation:** a number of different clients, users, planners, executing firms, keeping the business running during construction, conversion to existing fabric etc. When, on the basis of the definition of the work (even where concrete), expert applicants do not have the same understanding of the work stages, the intermediate results, the requisite number, man-hours and quality of the staff to be used.
- (B) The number of special aspects in the particular project:** difficult equipment conditions, combination of different production areas / standardised production; also the number of building parts, implementation stages, complexity of the tasks, requirement for contribution by contractor to the future solution. User coordination on the way to finding a solution e.g. when users only have to agree to the solution in stages.
- (C) Risk in realising the project:** carrying out projects with a high level of innovation or risk potential, monument conservation, working with a cost limit, new functional solutions, but also objections to awarding of contracts, repeating tender documentation, local citizens' action groups, EIAs etc, these kind of multiple optimisations cannot be individually forecast and to be avoided they require a situative competence that is beyond previous describability.
- (D) Number of procedural phases:** extensive individual steps (partial services, phased services) with a high configuration influence of the investors/users or the possibility of standardised implementation without the need for adaptation.
- (E) Repetition of project types:** projects with a high degree of uniqueness, high level of innovation and design quality, or projects with a clear repetition factor (standard projects).
- (F) Routine factor:** client and contractor are an experienced team, or the selection of all those involved by means of separate procedures, ability to collaborate and experience in doing so (soft skills), trust and routine experience in project work, e.g. from work already carried out together.

For these criteria a suitable point model can be devised that allows planners to develop arguments for the describability / non-describability of the required planning services. This evaluation method represents progress in making the performance-based competition plausible of, as generally speaking even simple calculations are more convincing than mere assertions.

IV. Double asymmetry

On the basis of the information under heading III planning services should, essentially speaking, be qualified as non-describable:

This means that both partners who conclude a contract (client and contractor) cannot, before they work together, know the future solution, i.e. the real technical form.

Unlike the purchase of ready-made products the planner can provide his services only after "sale" (the contract) and only given the qualified collaboration of his client (in the later realisation stage also with the qualified collaboration of the building contractor).

From the assumption that the client does not know beforehand what the planner will subsequently do a number of problems arise for the client:

- if I don't know what he is going to do then it is better to pay only half, so that ...
- I want everything to be simple, really simple and I will bring this about by paying less ...
- if I can't tell the better from the good, then the cheapest is good enough.

This **asymmetry of information** (*Asymmetrische Information after Akerlof/Stiglitz*) also works in the opposite direction, **from the client to the planner**. If one filters individual expectations out of the project work, one sees real problems for architects and engineers:

- the client is not sufficiently integrated in the project work,
- when the contract is signed the contractor (agent) does not know how the client will behave during the project work. The discrepancy often experienced between competence in formulating requirements and in approving a project can triple the amount of work for the planner,
- switching between demands, threats of cancellation, and the use of inappropriate instruments of power can lead to blockages in the project work,
- while obtaining information about the qualification of architects and engineers is regulated in the VOF no routine for evaluating future clients has (so far) been established. However suitability in specialist areas, knowledge about project experience, assessing project work performance have a major impact on the amount of work the planner must do.

For planners this could mean that earlier parameters used to determine the fee, namely

- **fee zones**, with reference to the different requirements of building types,
 - **chargeable production costs** i.e. building parts that the planner designs or supervises,
- must be augmented by adding further parameters that, from a current viewpoint, represent significant expenditure factors but have historically never been referred to, these include:

- the complexity of the client's organisational system,
- the complexity of the project organisation,
- numerous special aspects of the project, e.g. the amount of building and special services, not only those that reduce fees, but with regard to increased need for coordination, also those that increase fees,
- working under strict deadline and cost constraints, optimisations,
- dividing up services within planning area,
- interruptions, delays, hindrances to the provision of services.

The asymmetry of the information also impacts from the client to the building firms! One of the reactions of the building industry to this asymmetry is the **methodical selection of tenders** in which "unpleasant" clients are sent a polite refusal before the tender is prepared.

Asymmetrical information – HOAI

Those who devised the HOAI envisaged an "informed" client who would have the necessary specialist competence to lead a building project and a planning and construction team. Under these premises the state was able to devise remuneration regulations (or "collective agreements") that are not only valid for state projects but also ensure consumer protection in the private sector. So far neither planners nor clients have devised a better system. The HOAI has always been an unimpeachable substitute for the individual specification of every project.

V. Relationship between quality and price

Consumer protection and competition in all areas of life are buzzwords currently popularly used by politicians, but do not always result in the appropriate activities. Where the difference between the two fundamental terms **price competition** and **performance competition** is not recognised it is hardly surprising that scales of fees are seen as being "inimical to competitiveness". It is therefore important that these terms be used in a differentiated and strategically correct way.

Each of these competition procedures has its own particular measures:

- In the **price competition** figures generally suffice, as the value is an inherent part of the concrete product or can be expressed in a calculable manner in the tender price. The products offered by the tenderers must be identical. The quality of the product is not subject to comparison, but has been precisely defined before the start of the procedure. This allows tenderers to optimise their production means so that the **price, as the sole essential criterion for the awarding the contract**, leads to the decision.
- **Performance competition** means that it is not the price of the competing planning proposals (planning offices) that is compared, but their **inherent quality**, which can be discerned only by specialists. Here the price of the planning proposal (the overall price that can be forecast) should all the same be integrated in

the decision-making process. The price of the intellectual service must be the same for all competitors - e.g. in relation to the project costs, calculated on the basis of an objective instrument, for example the scales of fees (otherwise breach of contract procedure).

As regards both these procedures the conclusiveness lies in the avoidance of criteria that eliminate comparisons: either **product quality** or "**identical price**". A conclusive procedure can have only one point of comparison. A mix would be detrimental to product quality, as when there is no lowest price limit this can only be compensated for by reducing the service.

Planning quality arises through a sequential planning process in which the demands made on a building are worked through in a number of phases, repeatedly and in increasing detail. Here different tasks must be taken into account in each phase, focussing on the planning goal of providing a functional, economical and well-designed building. Here the planner is required to adopt a strategic approach and ask the right questions. This means that a planner must be able to examine the task at sufficient depth and this in turn requires that he be given the economic basis to do this.

Larger areas of architects and engineers services, such as intelligent tender documentation, well considered awarding of contracts, consistent invoicing, construction management consist primarily of services provided in trust, representing the standpoint of the client by

- committed avoidance of extras,
- in depth examination of tenders,
- qualified knowledge of the 1200 page commentary of the VOB,
- complete auditing, etc.

Many clients regard these important "services reserves" with suspicion. That 40 % of a fee cannot be checked is at variance with the world of quarterly reports and constant efficiency of resources.

With few exceptions saving has become today a kind of reflex. Savings of 30 % in architects' fees reduces the overall cost of a building by 1 % but adds to the overall costs between 5-10 % for contracts for additional work because the strength and resources to oppose such claims are missing.

VI. The relationship between the method of awarding contracts and remuneration

In price competitions it must be possible to examine and check the object of the contract and this object must be understood in the same way by all competitors (globally). In the case of intellectual services this is practically never the case.

Building design, calculations and supervision of construction represent a complete entity that demands

- not merely specialist interaction between client and planner but rather,
- interaction between the planners that extends across several specialised areas (integration and coordination).

Hence the attempt made to take **the path of falsification**, using the example of a related model:

In 1991 Austria left the path of binding tabular values. The price competition was introduced as quickly as possible into the field of specialist planning for building services. Today we find that hardly any qualified building services offices can be found for commissions above the level of housing. The result is extreme difficulty in carrying out complex projects, aggressive claims by the executing firms, and weakness in arguing against HVAC systems, and often double extra costs in carrying out the work.

The cultivation of the market by client has failed. This wrong approach began by combining specialist trades that should to be remunerated separately. As a result of degression higher assessment bases produced fees that were too low for the individual work that remained necessary. The first failures led to a negative spiral. At times planning services were provided for 30 % of the proper fee (2 % of the costs for the building trades) while on the other hand 150 -200 % of the budgeted costs for the building trades were paid to the executing side.

The use of price competition leads to a clear reduction of quality. In the short term quality planning work in general requires an increased use of resources so as to compensate for deficits in training and incentives, and inadequate management of knowledge in recent years, and to bring about an improvement in quality in these service-based professions.

Performance based competition for awarding contracts for engineering services can be well organised (also without design competitions), if specialist criteria are applied and the wide range provided by a consensual fee scale can be used to assess the prices tendered.

VII. Advantages / disadvantages of the business model of the HOAI

The changeability of planning and continuous construction is anchored in building contract law and in the HOAI model:

- in LPH (services phase) 2 (preliminary draft) variations are called for, as the optimal solution is not decided upon immediately, certainly not without interactive discussion of differentiated proposals,
- VOB contracts are (within limits) open with regard to the amounts ordered and daywork. There exists a right for the client to make alterations during the execution of the works.
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- If the planning cannot be 100% complete by the time contracts are awarded, as the client needs the freedom to make changes while processing the contract with the executing firms, this makes
 - the non-describability of planning all the easier to grasp,
 - it more clear that the bonds of trust between the description of services and their remuneration (arrived at by means of a services competition) must have significant importance for both client and planner,
 - it more clear that the hypothesis of a price competition for planning services must be wrong, as the determination of the services that planner should provide under the contract can take place only where there is mutual agreement on a business model.

The business model of the HOAI, used in Germany is compared below with models from other countries: Denmark, France, Russia, USA, Austria, and Switzerland.

Denmark

Dominant in the market: general contractors, additional charges (in comparison to Germany): 30-35%

France

Dominant in the market: contractors who provide a package of services, planners reduced to area of preliminary design / design

USA

Architects frequently work as general contractors with the requisite additional charges for risk and profit, planning costs "disappear" in construction costs

Austria

Scale of fees suspended currently efforts are being made to establish a fee information system according to values for the hours of work

It has already been possible to gain some experience, both positive and negative, of the system based on the number of actual hours worked that is to be used in Austria:

- + the planner is "equipped" with arguments, more assertive presentation of all planning problems during the negotiation procedure,
- + better arguments for the need to increase remuneration in projects under €5 million,
- statistics as "proof" of the amount of work show great margin of fluctuation,
- problems for smaller offices in calculating services as a means of backing up the rates for hours worked taken from the formulas (table replacement),
- problems in calculating costs, so as to work out the proper (person related) hourly rates from the tax balance sheets,
- + clear increase in the discussed hourly rates to man rates of 90 €/h, as opposed to earlier (emotional) rates of ca. 40 - 65 €/h (cost transparency!),
- it is extremely difficult for both client and planner to estimate the actual billable project hours for building project work (over a number of years) ,
- comparisons with budgeting methods used in business management (e.g. the IT branch) reveal aberrations of up to 100 % for projects with a duration of 1 year (but medium length building projects run for 5 or more years),
- no consideration of the necessary acquisition work / competitions which make up 5-10% of office costs.
- no incentive for business optimisation in the offices, the hours are used up strategically,
- this organisational model contains no clear liability to integrate and coordinate specialist planner services, these have no suitable interface-free fee information system for structural design, HVAC, medical technology; they continue to use the "old" scales of fees.

Where then do the advantages / disadvantages of a scale of fees lie?

A scale of fees, irrespective of for which profession, defines services and establishes a regulated relationship between service and price used in calculating remuneration for such services. Such a regulation can never cover all possible cases, but can only attempt to reduce the diversity to the lowest common denominator. For the broad mass of projects the result is an appropriate, adequate fee. At the extremes, both at the top and the bottom, distortions can occur.

On looking at an architect's professional life in the final costing of all the projects he has carried out one notes that in each project the profit is different or that in a number of projects the fee received was inadequate and a loss

resulted. In the ideal case losses ought to be balanced by profits made in other projects, which is standard business practice.

Advantages of a scale of fees for the client:

- Information about the nature of services provided, procedure, fees, warranties and liabilities
- Appropriate remuneration for the amount of work done, minimum and maximum fee
- Legal security

Disadvantages of a scale of fees for the client:

- Lack of transparency, lack of an overview
- Linking of the fee to the building costs

Advantages of a scale of fees for the contractor:

- The scope of services dictates the business organisation
- Existence minimum

Disadvantages of a scale of fees for the contractor:

- Too many different possibilities of interpretation (opulent commentary)
- Restriction of room for negotiation regarding the fee
- Coupling of the fee to the construction costs
- Scale of fees "conceals" the true value of planning services

Disadvantages of the scale of fees for clients and planners:

- Insufficient reflection and updating

Synthesis

In cases where the planning business has not developed a comparable interactive business model and clearly works in a less profound way,

- costs and profits of those executing the works clearly exceed comparable values in Germany
- the level of as-built quality declines noticeably,
- the overhead costs (of the general contractor), which amount to 20-35%, are noticeably higher than the planning costs for LPH (services phases) 3-8, which are between 11 and 13 %.

The building industry pushes partnership models (PPP, GMP) so as to allow it enter projects at an earlier stage and to claim for itself and economically exploit a precision of planning not as yet achieved (and with this concrete targets). While this is a legitimate approach by the building industry an attempt should be made to bring own profits into line with those of international competitors.

The decision on the further development or abandonment of the business model HOAI is a political one, and should be arrived at openly using qualified arguments.

The planning business must however prepare itself for a change of paradigms in the allocation of spheres, representation of clients' interests, protection of interests. It will be certainly able to change over to a different model, if the service of trusteeship is no longer required.

VIII. Further development of the HOAI

CAD work

The use of CAD systems has resulted in what is apparently a reduction of the planner's workload, particularly at the detail design stage. The amount of manual work in drawing and making alterations to detail plans has been reduced. However the splitting up of buildings trades has levelled out this advantage.

The reduction in the number of work hours required by the draughtsman should be balanced against the purchase costs of hard and software, cost of training staff etc.

Depth of planning at LPH (services phase) 5

The erosion of skills on the building site inevitably leads to a situation in which working drawings, descriptions and personal involvement of the site supervisors must attempt to compensate for this deficiency. This leads to a situation where working drawings today contain far more information than 20 years ago. Consequently the working drawing design phase has acquired a greater importance in the overall planning of a building. This fact should be reflected in the percentages used in the scale of fees for the different phases of the planning services.

(too) stable building prices since 1990

Building prices remained stable in Germany from 1990 to 2004. The building industry drastically reduced its staffing costs by letting go highly qualified core staff or pensioning them off. Therefore on building sites today one finds almost exclusively foreign temporary staff, directed by a number of native foremen.

On the other hand the cost of running a planning office (staff, rent, operating resources) have clearly increased since 1990. As the fees that can be charged are oriented according to the building costs, and these are more or less stagnant, the difference between fee turnover and active costs in the planning office is practically zero. The potential for making savings, which the building industry has openly implemented could not be passed on the planners as more detailed plans, specifications/bills of quantities, building supervision are necessary to conform with the regulations of VOB/C. Attempts at purchasing planning services in low-wage countries have regularly failed to provide satisfactory results due to the additional time required for quality control.

Project organisation

Quite obviously the organisation of projects has become more complex, the need to comply with the requirements of laws and standards, which have increased excessively in number, is not taken into account in the regulations dating from 1977.

Suggestions for a general revision

- analysis of expenditure, breakdown of the service phases according to percentages, new tabular values,
- simplified, graduated, description of services required for small projects,
- improved description of services required for medium size and larger projects,
- "defusing" or abandonment of the degression tables (RifT), large projects are more demanding as they are more complex,
- obligatory periodical further development in consensus,
- reestablishment of a broad specialist understanding, resetting the (EU) law discussion.

IX. Summary

The HOAI was developed in the 1970s following the *Gesetz zur Verbesserung des Mietrechts und zu Begrenzung des Mietanstiegs, sowie zur Regelung von Ingenieur- und Architektenleistungen* (Law to improve tenancy legislation and to limit rent increases and to regulate engineers and architects services) from 4.11.1971:

Art.10 § 1+2: Ermächtigung zu Erlass einer Honorarordnung für Ingenieure bzw. Architekten (...). Dabei ist den berechtigten Interessen der Ingenieure (bzw. Architekten) und der zur Zahlung der Honorare Verpflichteten Rechnung zu tragen (...)

Authorisation to determine a scale of fees for engineers and architects (...) whereby account should be taken of the legitimate interests of engineers (and architects) and of those obliged to pay such fees (...)

The current financial crisis shows clearly that unregulated economy leads to extreme over-control and crass amplitudes. The model of the social market economy cultivated in Germany (and Austria) has always attempted to even out these amplitudes. In the context of such endeavours the HOAI is a particularly successful example of how to regulate complex, partly unformulated relationships between business partners. Particularly with regard to the VOB/C it was a guarantee for quality and sustainability of real estate.

The call for new regulating mechanisms for the finance market shows clearly where the chances for the HOAI as an instrument to establish trust could lie.

The legislator can recognise that:

- excessive economic liberalism does not have positive or sustainable effects in all areas,
- preserving the value of real estate is an important factor for the stability of national wealth,
- the creation of affordable residential and business spaces is still in the strategic public interest; to achieve this end the trusteeship model of the HOAI produces better and more balanced results,
- the appropriate updating and further development of the HOAI is in the interest not only of those directly affected but also of the public good.