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## The Built Environment and Universal Design: Are Architectural Competitions a Qualified Instrument to a Better Consideration of the Diversity Dimension Impairment?

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### 1 ABSTRACT

Procedures of building planning and delivery are of crucial importance in generating better and more inclusive built environments (named “architecture” from here on) following the idea of Design for All/Universal Design. In contrast to other “products” of the everyday life, architecture is comparably complex in generation and maintenance, given the multitude of stakeholders involved in generation and operation, the longevity of interventions, the involved cost, and its role in ecological, economical and social dimension of mankind. Needless to say, architecture has a significant impact on society aspects, and thus also on the different diversity dimensions of societies. To ensure high quality in interventions toward the built environment, the instrument “architectural competitions” has been established decades, if not centuries ago. Today, usual architectural competitions target the call for high-quality design ideas or suggestions for specific requirements within the built environment. Architectural competitions differ in their scope, their procedural and organisational structure, the number of competition entries, and other methodological aspects. Typical timeframes for architectural competitions take 6 to 8 weeks of preparation work and 8 to 15 weeks of time for competition entry developments, and – in most cases – the winning project is intended to be realized/built. This paper presents concept, method, and results of an empirical study pertaining to the relation of architectural competitions and the consideration of Universal Design/Design for All aspects within the competition. Thereby, both the call for entries and the overall provided information, as well as a comparable large number of competition entries was examined in a structured process: In a first step, we generated a checklist template that targeted different aspects related to Universal Design/Design for All in the framework of the competition call for tender. The checklist was also adapted for evaluation of aspects of Design for All within examined competition entries. In a second step, recently conducted architectural competitions were selected. For these competitions we collected both the call for tender documents, as well as selected competition entries. Subsequently, the checklist was applied on the collected data, to generate both quantitative results and to identify good and bad practices regarding the consideration of universal design aspects within the competitions.

15 different architectural competitions and 76 competition entries were analyzed. The consideration of Universal Design aspects in the entries happened mostly rudimentary, but some specific best practice and worst practice cases could be identified. A major finding of the overall evaluation procedure is that – disappointingly – there is a lot of improvement potential for a better consideration of Design for All/Universal Design aspects in this early phase of building delivery processes.

Keywords: Empirical Study, Diversity Dimensions, Impairment, Design for All, Architectural Competitions

### 2 DEUTSCHE KURZFASSUNG

Zweifelsfrei sind die Verfahren, die in Bauplanung und Bauumsetzung angewandt werden, von entscheidender Bedeutung für das Erstellen hoch- und höchstqualitativer gebauter Umgebungen (in diesem Beitrag soll dafür – recht ungenau – der Begriff „Architektur“ verwendet werden), die auch den Ideen und Grundsätzen von Design for All bzw. Universal Design folgen. Im Gegensatz zu anderen „Produkten“ des täglichen Lebens ist Architektur in ihrer Entstehung und Instandhaltung vergleichsweise komplex, wenn man die Vielzahl der an der Entstehung und dem Betrieb beteiligten Akteure, die Langlebigkeit der Interventionen, die damit verbundenen Kosten und ihre Rolle in der ökologischen, wirtschaftlichen und

sozialen Dimension der Menschheit bedenkt. Architektur hat einen sehr großen Einfluss auf verschiedenste Aspekte der Gesellschaft, als solche auch auf die Diversitätsdimensionen, die in einer Gesellschaft bestehen. Als ein Mittel zur Sicherstellung hochqualitativer Veränderungen der gebauten Umwelt (sei es „Neubau“ oder „Umbau“/Sanierung) hat sich der Architekturwettbewerb als Instrument über Jahrzehnte, wenn nicht über Jahrhunderte, etabliert. Die heute üblichen Architekturwettbewerbe zielen in ihren Ausschreibungen und Durchführungsverordnungen auf qualitativ hochwertige Entwurfsideen oder Vorschläge für spezifische Anforderungen der gebauten Umwelt ab. Architekturwettbewerbe unterscheiden sich durch ihren Umfang, ihre Verfahrens- und Organisationsstruktur, die Anzahl der Wettbewerbsbeiträge und andere methodische Aspekte. Typische Zeiträume für Architekturwettbewerbe betragen 6 bis 8 Wochen Vorbereitungszeit und 8 bis 15 Wochen Zeit für die Entwicklung und Abgabe des Wettbewerbsbeitrags. In den meisten Fällen wird das Siegerprojekt realisiert oder dient zumindest als Richtschnur für folgende Verfahrensschritte wie Verhandlungsverfahren. In diesem Beitrag werden Konzept, Methode und Ergebnisse einer empirischen Studie zum Verhältnis von Architekturwettbewerben und der Berücksichtigung von Universal-Design-/Design-for-All-Aspekten im Wettbewerb vorgestellt. Dazu wurden sowohl Auslobungsunterlagen wie auch die insgesamt im Rahmen von Wettbewerben untersuchten Dokumente, die den Teilnehmerinnen und Teilnehmer zur Verfügung gestellt werden wie auch eine große Anzahl an Wettbewerbsbeiträgen in einem strukturierten Prozess untersucht: In einem ersten Schritt wurde eine generische Checkliste erstellt, die sich auf verschiedene Aspekte in Zusammenhang mit Universal Design/Design for All bezog. Diese Checkliste wurde in Hinblick auf eine strukturierte Bewertung sowohl von Wettbewerbsauslobung und Wettbewerbsdokumenten einerseits und auf Wettbewerbsbeiträge/ Einreichungen andererseits erstellt. In einem Folgeschritt wurde eine Auswahl an jüngst abgehaltenen Wettbewerbsverfahren ausgewählt. Für diese Wettbewerbe wurden die entsprechenden Unterlagen (Ausschreibungsunterlagen, Wettbewerbsbeiträge) gesammelt und die zuvor erstellte Checkliste darauf angewandt. Hierbei wurden sowohl quantitative Aspekte erfasst, wie auch qualitative Aspekte berücksichtigt, letztere vor allem um „Good“- und „Bad Practise“-Beispiele/Praktiken hinsichtlich der Berücksichtigung von Aspekten des Universal Designs in den Wettbewerben zu identifizieren.

Es wurden 15 verschiedene Architekturwettbewerbe und 76 Wettbewerbsbeiträge analysiert. Die Berücksichtigung von Universal-Design-Aspekten in den Beiträgen erfolgte meist lediglich rudimentär, es konnten jedoch einige spezifische Best- und Worst-Practise-Fälle identifiziert werden. Ein wesentliches, wenngleich enttäuschendes Ergebnis des gesamten Bewertungsverfahrens/dieser Studie ist, dass es viel Verbesserungspotenzial für eine bessere Berücksichtigung von Design-für Alle-/Universal-Design-Aspekten in dieser frühen Phase des Planungslebenszyklus gibt.

### 3 INTRODUCTION

In the context of diversity management and diversity of people, the built environment plays a special role: Almost all people spend a large part of their lives in a built reality designed by (other) people, be it for living, working, spirituality, leisure, sport or many other activities. As such, it can be said that "architecture", if one wishes to use this umbrella term for the design of the built environment, concerns all people. As such, the consideration of diversity or an inclusive approach in any design or construction intervention or further development is a necessity and should be considered a non-negotiable principle. While in all four layers of diversity, as suggested by Gardenswartz and Rowe in 2003 (Gardenswartz and Rowe, 2003), architecture and the built environment plays different important roles, e.g. as an interface, spaces for spirituality, etc., the built environment in its physical/material appearance is immanent for some of the inner dimensions (age, gender, sexual orientation, impairments, social origin, and ethnicity). Indeed, the dimensions of age and impairments directly require adequate built environments to be inclusively usable, which is widely known to be addressed in the domain of Design for All. Designing and realizing/changing the built environment is a complex process involving many stakeholders who naturally have not the same or rather different interests, which may even be diametrically opposed (think of costs versus amenities, or competition for space between people who want to get somewhere quickly by car versus people who want to live centrally in a quiet, leafy urban location). Typically, this process takes place at different scales, which must be well coordinated in order to achieve design objectives and which – adding a lot of complexity - must react to each other in mostly iterative and interdependent processes. Interventions in the built environment are usually of a long-lasting nature (i.e. the lifespan of buildings and infrastructures is quite long compared to a human lifespan) and are

considered cost-intensive, both in terms of construction as well as maintenance and upkeep. Especially in Central Europe, or in the German-speaking area, the construction industry is also considered to be highly regulated, euphemistically Germany and Austria (and to a lesser extent Switzerland) are referred to as world standards champions. In order to achieve the best possible architecture and infrastructure that is both useful, attractive and economically viable, the "competition" method has been developed. In the subsequent sections, we discuss some aspects of architectural competitions and Universal Design for the built environment.

### 3.1 Some aspects of architectural competitions

The Chamber of Civil Engineers for Vienna, Lower Austria and Burgenland, Section Architects, provides a comprehensive overview of the background, structure and aim of architectural competitions in Austria (Zt-Kammer 2019). According to this document, an architectural competition is an integral part of the implementation of an architectural project as well as for the tendering process. The lead time for the preparation of such a competition usually extends over a period of 6 to 8 weeks. During this period, the tender documents are drawn up, judges, consultants and preliminary examiners are identified and acquired, and organizational measures are taken. The actual competition regularly takes place over a period of 8 to 15 weeks and includes steps such as the announcement, the processing of the task by the participants, the preliminary examination and the final evaluation. Once a competition has been completed, post-competition steps such as negotiations between the winning participants or the transfer to the realization phase with the winning participant is started. According to the chamber publication, the aim of holding architectural competitions is to generate comparable solutions for a specific project within a short period of time. This process ensures the targeted feasibility of a design, promotes transparency in the decision-making process, supports a high level of innovation and offers a high degree of legal certainty for both participants and tenderers. There are three basic forms of architectural competitions: the open competition, the restricted competition and the invited competition. Public tenderers (in the EU member states) must observe the EU thresholds in accordance with BVergG 2018. The open competition is the standard procedure (which also is the most wished for form by chamber officials) and is suitable for projects of different sizes as it allows an unlimited number of participants. This open format promotes inclusive participation and enables architects to be fully represented, regardless of the size of the project or the number of stakeholders involved. In contrast, restricted architectural competitions are characterized by an exceptional procedure and are intended for particularly demanding tasks. An unlimited number of interested parties are invited to express their willingness to participate. This is followed by a selection process in which certain participants are invited to submit a competition entry. This selective approach enables a targeted approach and participation of professionals in situations that require specific skills. Invited architectural competitions, the third basic type, are used in particular for smaller, very specific tasks and are also characterized by an exceptional procedure. Here, a limited number of participants are specifically invited to submit a design proposal. This selective participation practice enables efficient and focused participation, especially in situations where the task requires a limited number of specialized professionals. Project development, which regularly serves as the basis and prerequisite for the tender, is completed before each competition procedure. In this phase, preliminary technical investigations, user surveys, feasibility studies and clarifications with the authorities are carried out. Architectural competitions in Austria are subject to the Federal Procurement Act BVergG 2018 as amended and the Architecture Competition Rules WOA 2010, which consist of three parts and were formulated by the Chamber of Civil Engineers (Zt-Kammer 2019). If one follows the explanations of the Zt-Kammer (Zt-Kammer 2019), it can be summarized that architectural competitions are an essential procedure for the realization of innovative projects.

### 3.2 Some general thoughts on Design for All in the built environment

Everding et al. (2015) state that it can be observed that increasingly more cities and community increase their living standards by consequently implementing design-for-all principles. Whereas this sentence draws a positive picture of improved built inclusion, it also underlines the causal connection between living standard quality and inclusive built environments. Obviously, the more people can live their lives free of obstructions in a self-determined way, the more liveable cities and villages are perceived. Grundner (2023) emphasizes that a transition from Integration (adapting of people to fixed environmental settings) to Inclusion (adapting environmental settings to the individuality of people) is a core concept of Design for All, as well as

understanding individuality as a society asset. Grundner underlines that this transition not yet has been conducted. Legal requirements toward Universal Design should be understood as what they are: The lowest but immanent to be fulfilled requirement step. Aspects of building and urban planning that lead to more inclusive spaces include – amongst others - technologies utilizing the 2-senses-principle for informative and orientative systems, tactile guidance systems for the blind, consideration of dimensions of different elements in the built environments (elevator floor space, door widths, ...), and many more. In part, these measures are demanded by legal documents, in part these measures are beyond the minimum requirements, but can be causal for a better inclusive experience for large numbers of people. A wide variety of international and national legal documents stipulate the inclusiveness of the built environment. Thereby, not only specific laws and standards (e.g. ÖNORM B1600, 2023, OIB RL4, 2023) addressing the built environment encompass important aspects, but also more general laws, e.g. laws toward public procurement (BVergG 2018)

### 3.3 Design for All in architectural competitions?

Given the meaningfulness of both Design for All aspects and architectural competition procedures in the early stages of the building planning and delivery processes, one would assume that there are some guidelines how to consider Design for All in Architectural Competitions. The nationwide chamber of architects in Austria did publish back in 2010 (with a novel edition of 2022) a guideline that encompassed holistic recommendations for conducting architectural competitions (WOA 2010). Thereby, Design for All is mentioned once in form of the german term “Barrierefreiheit”, along other dimensions of diversity in the preamble (English translation conducted with DeepL):

<p>Architektinnen und Architekten haben die Aufgabe, bei ihren Arbeiten alle Menschen in ihrer Unterschiedlichkeit und Vielfalt zu berücksichtigen. In der Planung ist auch den gesellschaftspolitischen Ansprüchen der Gleichstellung, Gleichbehandlung und Barrierefreiheit für alle Menschen unabhängig von Geschlecht, Alter, Religion, Ethnie, intellektuellen Fähigkeiten, gesundheitlichen Einschränkungen usw. zu entsprechen. Um die Präsenz von Frauen in technischen Berufen zu erhöhen, sollten insbesondere Gleichbehandlung und Teilhabe von Frauen in Planungsprozessen gestärkt werden. Der Architekturwettbewerb, der Gestaltung und Ästhetik, Ökologie und Ökonomie, soziale Nachhaltigkeit und Partizipation in die Entscheidungsprozesse zur Qualität unserer gebauten Umwelt einschließt, ist ein wesentliches Instrument zur Umsetzung dieser Ziele. Der offene Architekturwettbewerb liefert eine Vielfalt unterschiedlicher Entwurfskonzepte für die Planungsaufgabe. Er zeigt die gesamte Bandbreite möglicher Lösungen für die Aufgabenstellung und schöpft damit das Potenzial, das der Wettbewerb für die Entscheidung von Gestaltungsfragen bietet, maximal aus. Er richtet sich an eine unbeschränkte Anzahl von Teilnehmereberechtigten, die mit der Veröffentlichung des Wettbewerbs zur Abgabe von Wettbewerbsarbeiten eingeladen werden. Die Offenheit im Sinne einer niederschweligen Teilnahmemöglichkeit für Architekturschaffende ist entscheidend für die Qualität des Wettbewerbsergebnisses und mit entsprechenden Rahmenbedingungen zu fördern.</p>	<p>Architects have the task of considering all people in their diversity and variety in their work. In planning, the socio-political demands of equality, equal treatment and accessibility for all people regardless of gender, age, religion, ethnicity, intellectual abilities, health restrictions, etc. must also be met. In order to increase the presence of women in technical professions, the equal treatment and participation of women in planning processes in particular should be strengthened. The architectural competition, which includes design and aesthetics, ecology and economy, social sustainability and participation in the decision-making processes on the quality of our built environment, is an essential instrument for achieving these goals. The open architecture competition provides a variety of different design concepts for the planning task. It shows the entire range of possible solutions for the task and thus maximizes the potential that the competition offers for deciding on design issues. It is aimed at an unlimited number of eligible participants, who are invited to submit entries when the competition is published. Openness in the sense of a low-threshold participation opportunity for architects is decisive for the quality of the competition and must be promoted with appropriate framework conditions</p>
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Diversity is mentioned as a term on other positions in the document, namely in the assembly of juries for competitions and external consultants, which should be chosen under consideration of aspects of diversity. Moreover, the documents suggest “diversity of planning concepts” and “diversity amongst participating planners” as major pillars of architectural competitions. The diversity of the the users of architectural competitions (future dwellers, occupants, neighbours, the general public) is only addressed in the preamble, quoted above.

### 3.4 Research objective, research question, hypotheses

Given the settings described in the subsections above, the major question arises, if architectural competitions today can be considered as a well-suited instrument for ensuring the consideration of the diversity dimension “impairment” or not. In other words, if the “Design for All”-Approach that generally addresses this dimension is a criterion in architectural competitions. Based on the prevalent knowledge of the authors, who majorly have been working in architectural offices and have been involved in competition works, the following hypotheses have been formulated: (i) A minimal consideration of the diversity dimension impairment in tender documents is stipulated by law, and thus can be found in the documents ex lege. A consideration surpassing these legal minima is strongly dependent on the tendering organization (in tender documents) and the architects entering competition entries (in the project entries), but shall not be assumed

as a given feature in these documents. (ii) Per se, terms such as “barrier-free” are considered as important by all stakeholders involved, but it seems that these are majorly utilized as cursory buzzwords, rather than in-depth considered. As a summarizing research question of this contribution, one could reckon the following questions: What can be found in typical case study architectural competition documents about the diversity dimension impairment and its addressing via “Design for All”? To which extent can be said that architectural competitions consider diversity and design for all?

## **4 METHODOLOGY**

To address the named research questions, we deployed the following step-by-step methodology:

### **4.1 Development of a Checklist**

A checklist for a structured, qualitative evaluation of different diversity dimension was considered as a good instrument. While a clear focus was set on the diversity dimension impairment, some other aspects of other dimensions were considered as equally important and thus foreseen for integration. Moreover, as format of the checklist a spreadsheet format was favoured, and both tender documents and competition entries should be evaluated in different sections of the same spreadsheet.

### **4.2 Search and Selection of architectural competitions and their documents/documentations**

The authors utilised different web-resources and available information coming from their employing architectural offices to identify and select competitions suitable for evaluation. Criteria for using the architectural competitions were as follows: (i) a sufficient documentation of the competition documents and entries is available; (ii) the competition as such is a finished and concluded process; (iii) the considered competitions should encompass different clients and different design tasks; (iv) the considered competitions should encompass different scales/extents and different levels of realization/stages of realization (idea competitions, competitions addressing a realization, etc.); (v) the considered competitions should encompass national (Austrian) and international competitions.

### **4.3 Application of the checklist on the selected competitions**

The selected architectural competitions (encompassing both tender documents and competition entries) were subjected to the checklist-based quantitative and qualitative evaluation.

### **4.4 Analysis of the checklist results**

Based on the filled checklists and the source documents of the competitions, a comprehensive analysis was conducted. Thereby, a comparison based both on quantitative and qualitative aspects was done, as well as the identification of good and bad practice aspects of the pertinent competitions.

### **4.5 Non goals and accepted limitations of the methodology**

Given that a certain part of the study has a quantitative character, it seems important to underline that the goal of the study never was to analyze a very large number or even “all” competitions within a certain temporal and spatial extent. Rather, the limited number of competitions and competitions entries was selected as described above and an empirical evaluation approach on this case studies was deployed. This was done to identify trends, and to discuss and illustrate specific aspects of the examined competitions, rather than to address something such a “countable objectivity” (which – as long as evaluation is done on qualitative aspects by human beings anyhow impossible to reach). Toward this end it needs to be stated that the pertinent work in this study was limited in available time and effort, and had to focus on a specific exemplaric number of competition contributions.

## **5 RESULTS AND DISCUSSION**

In the following section, we structure the achieved results into different parts, encompassing the developed checklist, a comparative overview about the selected and analyzed competitions, the aggregated results of the analysis of the competitions and checklists, as well as good and bad practice observations identified in specific contributions.



The Built Environment and Universal Design: Are Architectural Competitions a Qualified Instrument to a Better Consideration of the Diversity Dimension Impairment?

Name of the competition	Year Location Gross Area cost frame	Type of Building	Typ of Competition	Prize money (agg.)	Eval. Comp. entries
Former Swimming Pool Hall, Klagenfurt	2023 Klagenfurt(AT) GA:17.325m <sup>2</sup>  n.a.	Multipurpose (Education, Commerce, Services) & residential (150 residential units)	invited, single-stage realization competition	135.000€	9
Square Design Domplatz . Innsbruck	2023 Innsbruck(AT) GA:3.800m <sup>2</sup>  3 Mio €	Place in front of Innsbruck Dome including Church entry	open, single-stage realization competition in the sub-threshold area	47.100€	6
Education Center Brückl	2023 Brückl(AT) GA:1.760m <sup>2</sup>  10,5 Mio €	Retrofit and Extension, New Gymnasium Hall, barrierfree connection between old and new part	EU-wide, open, single-stage realization competition in the upper threshold range	64.500€	7
Neues Landgut – Baufeld 11	2022 Wien(AT) GA:14.800m <sup>2</sup>  n.A.	Residential Building	open, single-stage realization competition in the upper threshold range	120.000€	3
Retrofit/in-Part new erection of School in 10th Vienna district.	2023 Wien(AT) GA:6.345m <sup>2</sup>  7,6 Mio €	Secondary School with 32 classes	EU-wide open, single-stage, anonymous realization competition	134.000€	3
New Building of a School	2023 Baden(AT) GA:n.a. 26,5 Mio €	Secondary School with 32 classes	EU-wide open, single-stage realization competition	111.000€	3
Areal Hotel InterContinentalVienna	2013 Wien (AT) GA:max.62.500m <sup>2</sup>   n.a.	Conf. Center Hotel, Sport & Spa	Non-open, two-stage realization competition, upper thresh. range	324.000€	3
Klinik Hietzing Gesamtentwicklung	2023 Wien (AT) GA:n.A. n.A.	Hospital	open, two-stage realization competition(upper thresh. range)	500.000€	3
Kranebitter Allee 16, Innsbruck	2021 Innsbruck(AT) GA:1.770m <sup>2</sup>   n.A.	(New) residential Building	invited, single-stage realization competition	52.000€	3
Neubau Bildungseinrichtung	2021 Wien(AT) GA:n.A. n.A.	Bildungscampus	open, single-stage, anonymous realization competition	142.000€	5
Kinderhaus Bürs	2023 Bürs(AT) GA:1.300m <sup>2</sup>  5,9 Mio €	Leisure (multifunctional for children and adults, education)	open, single-stage, anonymous realization competition	51.000€	3
Neubau Police Detention Center, Klagenfurt	2023 Klagenfurt(AT) GA:3.000m <sup>2</sup>  5,9 Mio €	Temporary Detention Center	open, single-stage, anonymous realization competition	77.000€	1
Rehab.C. for Terrorism Victims/ Iraq	2022 Firdos Par (IRQ) GA:n.A   n.A.	Rehabilitation Centre	International annual open ideas competition	10.000\$	10
Daycare centre for autistic children	2022 NewHaven (USA) GA:n.A. n.A	Daycare Center for autistic children	Open idea competition, architectural design competition	6.000\$	4
Zero Threshold	2019 OldBrooklyn (USA) GA:n.A. n.A.	Residential Building & Square Design	Open idea competition	9.000\$	4

Table 1: Overview about the evaluated competitions.

## 5.1 Finalized Checklist

The spreadsheet-based checklist was designed to encompass two sections for each competition. The first “general” section addresses general information of the competition and the tender documents. Important means of data in this part include an identification name of the competition, key information about the competition (name and type of the competition, form of conduction, objective of the competition, target audience of the to be-developed architecture, year and duration of the competition, location and adress, size of

the site, envisioned floor areas and room programmes, type and name of the client), followed by specific information on the diversity dimension impairment if available in the tender documents. Moreover, the composition of the jury (gender, domain expertise and background), prize money and distribution of prize money, number of participants in the competition, and – as an evaluation – if aspects of Design for All are sufficiently considered in the tendering documents, or if there is potential for improvement. In the “specific” section, analyzed competition entries are repetitively evaluated by the following structure: Achieved rank of the competition entry, authors (including team composition and consultants), Consideration of Design for All aspects in the competition entry, addressed other diversity dimensions, jury comments on aspects of Design for All in the specific entry (if available), plus a subjective evaluation by the authors of this contribution if and to which extent the competition entry sufficiently, good, excellent or insufficiently considered aspects of Design for All. Moreover, in case any problematic suggestions interdicting an inclusive environment were identified, these also were commented on in the checklist.

## 5.2 Selected and analyzed competitions

All together 15 competitions were considered in this study, and 76 competition entries were evaluated. The sources of the data were in part the still existing web repositories of the competition tender documents and websites denoting the outcomes. Moreover, the business networks of the authors of this contribution were used to acquire missing data. Table 1 illustrates the evaluated architectural competitions, Table 2 comments on the consideration of Design for All and the diversity dimension impairment in the tender documents and the evaluated competition entries.

It can be seen in the tables that the consideration of aspects of Design for All varies amongst the different competitions.

## 5.3 Aggregated results from analysis

The following general observations could be derived from the checklist-based analysis:

- In the international competitions, the number of linked or cited guidelines and directives was marginally small in comparison to competitions advertised in Austria (where these were cited as essential literature), nevertheless a very strong interest in diversity and consideration of aspects of universal design could be found in many contributions from architects, which in some cases represented a core element of the respective contribution. This may also have something to do with the objectives of these competitions, some of which are very social in nature.
- In some of the competitions, quite specific requirements for accessibility were even mentioned in the title of the competition (e.g. “barrier-free connection between old and new building”), but it was left to the planners to decide how to achieve this in addition to the usual guidelines and standards. However, no consideration was given to this in the jury-evaluation of these competitions.
- In other competitions, e.g. the Police Detention Center in Klagenfurt, part of the “creative performance” was taken away from the competition participants by including specifications for interior design (see Best/Worst Practice below) in the invitation to tender.
- The competitions examined were all of a comparatively recent nature (most of them within the last few years) and are therefore all subject to the same level of knowledge and standardization with regard to accessibility and diversity dimensions. The competitions differed significantly in terms of the area program (size and content), but also in terms of the monetary order volume and the prize money. Nevertheless, no causal or correlative link between the amount of prize money or the monetary volume of the respective competition and increased or more stringent accessibility requirements can be established on the basis of the competitions examined.
- It is noteworthy that among the 15 competitions, there were specific building uses that required consideration of the diversity dimension impairment (DDI), particularly in terms of building use (e.g. hospital, rehabilitation center, public squares), but here too, no mention/reference was made in the competition brief that went beyond the other competitions. On the one hand, this speaks for the high standard in the standards and guidelines, especially in Austria, but on the other hand, it suggests that the DDI is only one of a large number of requirements for the buildings, which is not overly emphasized. It might also be possible to detect a certain “technocratic” attitude towards the content



of the competition itself (e.g. hospital), while there is no need to consider DDI aspects beyond the minimum.

Name of the competitor	Comment on diversity dimension impairment in tender documents (“requirements”)	Comment on diversity dimension impairment in competition entries
Former Swimming Pool Hall, Klagenfurt	Escalator/Lift for the Supermarket, minimum floor areas for barriere-free toilets in the center for kids.	+: outdoor surfaces optimized for easy accessibility. -: long and contorted access corridors; Relax areas unreachable for wheelchair users.
Square Design Domplatz . Innsbruck	Accessibility of both square and the church needs to be guaranteed, as well as for the adjacent Herrengasse; tactile orientations system is required.	+: Ramps to church portal; Accessibility routes majorly short -: lack of handrails and tactile orientation systems for the blind, despite explicit requirement in the tender documents
Education Center Brückl	All Entrances need to be free of barriers; Additional specifics for different parts of the complex.	+: Kiss & Ride – Zone of limited size ensures walking paths for children; All projects completely free of barriers in the principle outline. -: Only one project encompasses parking lots for people with disabilities; difficult, contorted Geometry of existing structures hampers orientation.
Neues Landgut – Baufeld 11	Parking lots for people with disabilities demanded in the garage.	+: one nivellement of street level; barrierfree storage rooms. -: in general lack of integration of design for all parameters amongst all projects.
Retrofit/in-Part new erection of School in 10th Vienna district.	Old and New Part need to be connected one one nivellement, main entrance to be free of barriers, outdoor and indoor infrastructure need to be free of barriers everywhere.	General observation: Minimum requirements are fulfilled, but amongst the evaluated projects specific aspects of Design for All can not be found.
New Building of a School	n.A.	Focus on barrierfree entrances and toilets; Minimum requirements have been widely fulfilled.
Areal Hotel InterContinental Vienna	n.A.	Design for All Aspects: little niveausteps, barrierfree access/entrances, sufficient number of elevators. Challenges connected to the interior staircases, as well as the Design-for-All-Performance of the main entrance.
Klinik Hietzing Gesamtentwicklung	n.A.	-: While the project addresses different occupant groups, all measures toward Design-for-All are just integrated on a superficial level.
Kranebitter Allee 16, Innsbruck	All floors need to be accessible without barriers. Privacy of the flats as well as being free of barriers in all residential units is required.	+: Elevators, barrierfree access; Challenges: Small Sanitary-rooms; usability for young persons and children
Neubau Bildungseinrichtung	n.A.	-: Parking lots rather far away from the building; Entrance for employees is suboptimal.
Kinderhaus Bürs	Minimum requirements names, other than that, just keywords.	The little complexity of the building contercarates some suggested Design-for-All solutions.
Neubau Police Detention Center, Klagenfurt	Design for All is named only indirectly in textual descriptions, but the tender documents include schematic room setups that strongly include design for all Aspects.	Some competitions entries strongly rely only on the schematics of the tender documents (used as placeholders).
Rehab.C. for Terrorism Victims/Iraq	Requirements for future occupants described in detail	Clever solutions for offering one-level accessibility.
Daycare centre for autistic children	Requirements just described in keywords.	Projects utilize materials and topology for future occupants.
Zero Threshold	Requirements are described generally in text form (to allow different approaches)	Design for All is considered as design element by many projects. In one project a “garden of ramps” is integrated as central element.

Table 2: Aspects of Design for All in tender documents and different competition entries of the examined competitions.

- In the jury statements that were also studied, accessibility was used as an “argument” on one or two occasions, but to a negligible extent compared to the number of competition entries. Furthermore, in most cases it was not directly argued whether something was accessible or not, but merely that an

accessible solution could potentially be better relocated to another place of execution/design. In most jury statements, however, accessibility was not even mentioned as a term or justification.

- With regard to the composition of the juries, it can be noted that they were predominantly male-dominated. If only the judges and substitute judges whose professional background was “architecture” are taken into account, the ratios are slightly better balanced, but still heavily male-dominated. Dedicated judges or consultants who would have assessed accessibility could not be identified in the jury compositions.
- Based on the competition entries submitted and analyzed, it can be stated that the consideration of aspects of DDI and accessibility is usually always the responsibility of the architectural designers and is almost never carried out externally by consultants (who usually cover technical or landscape design aspects).
- When analyzing the competition entries, the impression predominantly arose that the entries or their authors had made an effort to meet the necessary minimum in terms of accessibility (so that the competition entry would not have been rated lower as “not barrier-free”), but in almost all cases the textual and in some cases graphic application of the usual minimum requirements remained. It was very often noticeable that “barrier-free” was used as an adjective or attribute for other information (e.g. barrier-free access, barrier-free lift) and was not the subject of the design itself. In other words, it was often used “brick-like” as an attribute (comparable to the “yellow Lego brick”), but no “innovation” or particularly “creative” approach to DDI was proposed. The question arises as to whether the effort of a “special” consideration, the special design – going beyond the minimum standard specifications – can or should be expected of competition participants at all, if one thinks of open competitions, where sometimes a large number of participants take part and the chances of success are comparatively low. Of course, this idea also means that if “better consideration” is given in the requirements documents, better consideration could also be given in the competition entries.
- Fundamentally, it is very difficult to compare competition entries due to the complexity of building and plaza design. However, this of course does not only apply to the aspects of accessibility: as early as 2012 and 2017, Pont et al. (2012) and Pont and Mahdavi (2017) noted that “numerically” determinable performance data of competition entries and “rankings” do not necessarily correspond directly, even if experts would rank these competitions differently. The aforementioned publications used aspects of sustainability and energy performance. It seems quite clear that this is no different with the diverse and complex integration of the DDB. Ultimately, the question also arises as to whether and how people who do not have an internal view of a diversity dimension (and most architecture professionals are probably not equipped with an internal view of “disability”) can achieve sufficient consideration of this. This last point in particular shows why “self-awareness” can be an important aid.

## 5.4 Best and Worst Practice of the analyzed case study competitions

### 5.4.1 Worst Practice 1 – Platzgestaltung Domplatz Innsbruck

In this competition, the tender documents demanded a tactile orientation system and barrierfree access. Moreover, a detailed plan illustration including the tactile orientation system in scale 1:50 or 1:20 was demanded by the tender documents. All together, 36 competition entries were delivered. Thereby, only two entries illustrated the tactile orientation system, although that was demanded (less than 5%). These two entries were amongst the 6 awarded projects, and included the winner project and a runner-up project (rank 4-6). Projects without a detailed plan view were not amongst the awarded ones. Figure 1 illustrates the winning projects’ detail plan view (top) and one of the ranked projects, which does not really consider any aspects of Design for All within its plan.

Furthermore, the jury protocols just focus on the general morphology of the corresponding design suggestion and do neither in general nor in detail state anything about Design for All.

### 5.4.2 Worst Practice 2 – Neubau Bildungsreinrichtung Hinaysgasse

In this competition, one of the awarded projects (3rd rank) showed serious flaws in the consideration of Design for All aspects. Parking lots for persons with mobility impairments had been situated on the opposite site of the main entrance, so that people with mobility impairments had a considerably longer way from parking lot to the entrance than all others, and were forced to use public street sidewalks in order to reach the main entrance. Moreover, such positioning of relevant infrastructure for the disabled could cause serious issues pertaining to orientation. While the jury again did not mention any aspects of Design-for-All consideration in the protocol, one could get the impression as the planners tried to hide away “unwanted” parking lots for disabled in their concept. Generally speaking, it can be observed in many architectural designs that the additional waylength for people with disabilities is not sufficiently considered.

### 5.4.3 Best Practice 1 – Polizeianhaltezentrum Klagenfurt

This competition needs to be mentioned as a best practice project for its excellent tender document descriptions and pre-definitions of spaces: Here, schematic plans of arrest cells were provided and additionally the tender document demanded of the planners that multi-person arrest rooms should allow a modular transformation to a 1 person barrierfree detention space. Moreover, for specific spaces and details of the to be designed building, clear requirements, such as barrierfree furniture, a rich-in-contrast orientation system, and a barrierfree courtyard design, were defined as mandatory. Figure 2 illustrates the two person detention room schematics as provided in the tender document.

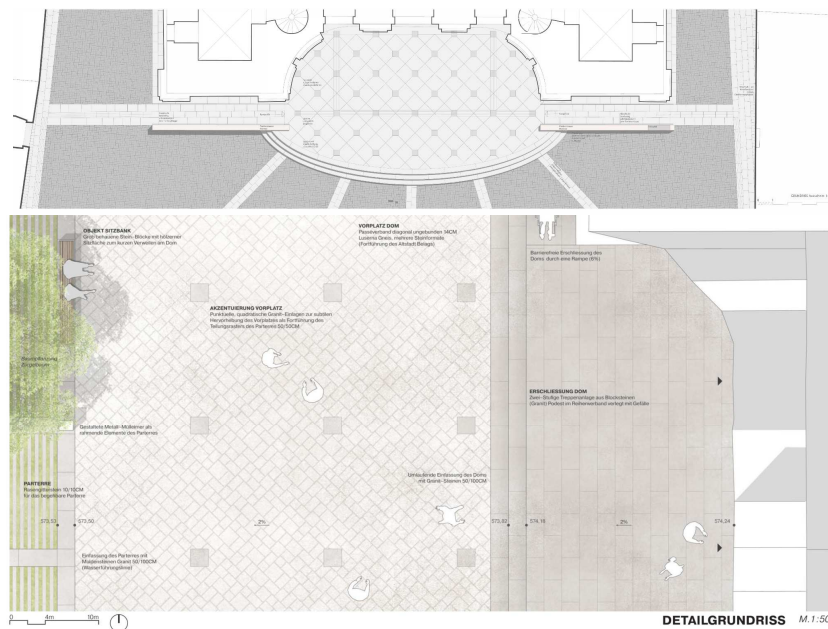


Fig. 1: Top: winning project of the Domplatz competition encompassing a tactile orientation system; bottom: awarded project of the Domplatz competition widely ignoring any general accessibility aspects.

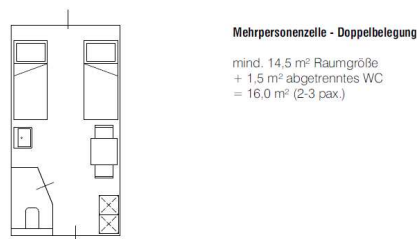


Fig. 2: Suggested detention room schematics as provided in the tender documents of the Detention Center Klagenfurt competition.

### 5.4.4 Best Practice 2 – Retrofit and NewBuilding in Vienna, 10<sup>th</sup> district

This competition has to be mentioned as inclusion was a big topic in the tender documents which was emphasized throughout general description and detailed requirements. Detailed descriptions of what is awaited by the planners regarding consideration of inclusion are provided and by far surpass the minimum requirements.

## 6 CONCLUSION

Participation in international architectural competitions, which are freed from strict specifications, opens up a rich playground for creative development. However, this freedom brings its own challenges, particularly with regard to the comprehensive consideration of accessibility - a challenge that exists at various levels of planning and execution. In the specific "competitions" stage of the process, there is a clear reduction of accessibility to mobility impairments, with the focus primarily on people with wheelchair dependency. However, this limited perspective neglects a number of other, equally important aspects such as visual accessibility, people with mental impairments, guidance systems and multi-sensory principles. The balance between the freedom of specifications and the necessary consideration of different dimensions of accessibility becomes a central dilemma. A striking disparity also emerges in the discourse on accessibility. While the term is used in (many) written contributions, this is often not reflected in graphic representations or even the opposite (representations of structural conditions that are decidedly not barrier-free). The boldness with which accessibility is implemented in certain areas such as entrances and sanitary facilities is at odds with a consistent concept that often takes little account of accessibility and should fundamentally consider the needs of permanently affected user groups, especially in educational facilities such as schools or building uses whose purpose is to care for or look after people. The analysis of jury statements reveals a further challenge. These are often focused on specific architectural aspects and only superficially or not at all address the various dimensions of diversity, in particular the dimension of "disability". This deficit continues in numerous international tenders and planning processes, in which accessibility is often reduced to merely meeting minimum standards, such as the minimum number of accessible parking spaces. The route from parking spaces to the main entrance becomes a metaphorical mirror image for the limited perception of accessibility, which focuses on structural access. In reality, however, accessibility extends beyond the physical dimension and includes visual guidance systems, acoustic signals and places of rest. However, the pragmatic usability of these elements often remains unclear, reinforcing the superficial focus on accessibility as a buzzword. In Austria, the situation with regard to standards and guidelines may be comparatively favourable, but internationally there is often a "freestyle" approach, which poses a challenge for the global standardization of accessibility. The focus here should not only be on scale, but also on a comprehensive presentation of all relevant aspects in order to fulfill the basic principles of inclusive design in the 21st century. Only through an in-depth and holistic approach can the vision of truly accessible and diversity-oriented architecture become a reality worldwide. To summarize, the overarching question of this work ("Are architectural competitions a good means of ensuring the consideration of diversity dimensions, in particular the "diversity dimension of disability" (DDI)?") will be addressed and the hypotheses verified/falsified. Based on the competitions examined, it can be said that on a superficial level, it appears important to both the competition organizers and the participants to integrate accessibility. However, there is hardly any in-depth discussion of accessibility or the diversity dimension of disability, which is probably due on the one hand to the "comparatively" early phase in the construction planning process, and on the other hand to the fact that there seems to be comparatively little space in competition entries for what is required in the tender, or that the consideration of DDI does not seem "relevant" enough. The hypotheses were: #1: The DDI is generally mentioned *ex lege* in design briefs; a more in-depth implementation is heavily dependent on the awarding authority and competition participants and cannot be assumed *per se*. Unfortunately, it should be noted that this hypothesis - at least as far as the competitions examined are concerned - hits the nail on the head. #2: Fundamentally, the term accessibility is considered important, but is very often only used as a superficial buzzword. This hypothesis can also be classified as "correct", as can be seen in the comments already made in this paper.

### 6.1 Future research and limitations of this study

In the preparatory efforts to produce this work, it became apparent that there is comparatively little work on the "diversity dimension of disability" and competitions. It is therefore advisable to further refine the methodology presented and to apply it broadly to the documentation of competitions in order to gain a meaningful picture of the impact dimension of the competition as an instrument in the genesis of architecture with regard to accessibility. Once a larger database on the subject is available, it can be used to analyze which competitions have achieved particularly good and stringent consideration of these and other diversity dimensions. This in turn could be used to develop better methods for taking these and other diversity dimensions into account in the genesis of architecture. Corresponding analyses could be carried out in detail

with the help of descriptive statistics. The results shown in this document originate from an empirical, largely qualitative analysis. Naturally, aspects of (unconscious) bias cannot be ruled out. Due to time and effort restrictions, the competition evaluations were only carried out by one person at a time, which means that subjective bias cannot be ruled out. Although an attempt was made to work with a standardized procedure (checklist), there is naturally room for interpretation both in the understanding of the source documents and in the analysis work.

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