

Summaries

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USING A DIGITAL PARTICIPATORY APPROACH TO FACILITATE INCLUSIVITY IN JORDANIAN HERITAGE SITES: STAKEHOLDERS' REQUIREMENTS AND A PROPOSED SYSTEM

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Keywords: participatory approach, inclusive design, immersive technology, community engagement, built heritage sites

This paper explores the barriers and factors affecting inclusivity in historical sites, focusing on the “Accessible Tourism” national project in Jordan. The paper discusses the importance of inclusive design in built heritage and the positive outcomes it can promote, such as social cohesion, cultural understanding, equal opportunities, empowerment, representation, and economic benefits. The use of digital technologies in cultural heritage projects is highlighted as a significant development, revolutionizing the way people experience and interact with the past. Various applications of digital technologies, including 3D photogrammetry, immersive techniques, virtual reality, and big data analytics, are discussed in the context of architectural and urban environments, archaeological sites, building and site monitoring, mapping, and model making. The paper emphasizes the need for collaborative methodologies and the integration of digital technologies in preserving and promoting cultural heritage. It discusses how digital technologies facilitate digital preservation, interactive display functionalities, virtual restoration and reconstruction methods, and community involvement. Additionally, the paper explores the role of participatory design approaches in enhancing audience engagement and fostering conversations with visitors, as well as the use of technology solutions like Linked Data, crowdsourcing, exergaming, wikis, and virtual reality in community-led cultural heritage initiatives. The research methodology employed in the paper involves interviews with 23 participants involved in the “Accessible Tourism” project. These participants include accessibility consultants, architects, planners, project managers, legal affairs actors, and heritage site staff. The interviews focused on understanding the challenges and requirements faced by these stakeholders in designing and planning inclusive and accessible tourism. The data collected from the interviews were synthesized, coded, and analysed using NVivo software. The findings and discussion section of the paper consists of two parts: Session 1 focuses on understanding user design and planning challenges, while Session 2 discusses participants' views on using digital technologies in the design and development process. Session 1 highlights the common challenges faced in facilitating accessibility and inclusivity at cultural and historical sites. Effective interdepartmental communication is crucial to ensure a shared understanding of goals and requirements. Historic preservation constraints and comprehension of accessibility codes pose challenges. Additionally, difficulties in engaging users with disabilities or from marginalized communities and limited user research hinder the development of inclusive facilities. To address these challenges, the paper suggests allocating adequate time and resources for user research and engagement. Inclusivity can be enhanced by involving end-users from the early stages of the project, conducting focus groups, interviews, surveys, and

usability testing, and prioritizing effective communication methods. Session 1 also identifies role-specific challenges for legal affairs actors, architects, planners, heritage site staff, project managers, and accessibility consultants. These challenges include navigating complex legal frameworks, finding architectural solutions that preserve historical value, balancing competing objectives for planners, training heritage staff members, and lacking comprehensive guidelines for project managers and accessibility consultants. Session 2 discusses participants' perspectives on using digital technologies in the design and development process. The benefits of digital tools include enhanced design visualization, improved remote communication and collaboration, cost and time efficiency, accessible design testing, and preservation of historical integrity. However, there are also concerns raised about integrating technology with historical preservation regulations, technological barriers, learning curves, and the digital divide. The paper concludes by proposing an initial system design diagram to address the challenges discussed. It emphasizes the importance of a user-centred approach, comprehensive user research, and user engagement in achieving true accessibility and inclusivity in historical sites. It integrates 3D capturing technology with interactive crowdsourcing platforms with a particular emphasis on engaging the local community. In conclusion, this research paper provides insights into the barriers and factors affecting inclusivity in historical sites, focusing on the "Accessible Tourism" national project in Jordan. It highlights the role of digital technologies in cultural heritage projects and the importance of collaborative and participatory design approaches. The findings contribute to the understanding of the challenges and requirements in implementing inclusive design principles in built heritage sites.

UNIVERSAL DESIGN AND SOCIAL CARE: ASSISTIVE ROBOTS AS OTHER USERS OF THE BUILT ENVIRONMENT?

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Keywords: architecture, built-environment, universal design, assistive robot, butler robot, social care

Population ageing is a serious problem, as confirmed by the results of all known national and international population projections. The negative impact of population ageing is manifested in almost all areas, especially threatening the sustainability of social and economic systems. Therefore, solutions are being sought to help people in need of care while also relieving the burden on care staff through technological innovations, including robots. When investigating the relationship between robots and the built environment, it is necessary to analyse the robots' ability to move in the environment, and also the possible ways of handling various objects, studying the robots' possible actions in the environment in which social services are provided. It is also important to create an infrastructure for locating robots in the indoor environment, recharging them, and ensuring the appropriate type of wireless communication between the robot and the building's infrastructure. A big challenge for the robot is mounting or descending stairs or overcoming other vertical obstacles. Therefore, for the use of a robot as a human assistant in a social services building, it is optimal to ensure a completely barrier-free environment. Another condition for the undisturbed work of assistive mobile robots is the existence of a charging infrastructure. The following research question was hypothesised: Can a building that is designed according to Universal Design principles be suitable for Assistive Robots? For the purposes of the investigation, a building known as supported housing was selected, in which the social service is to be provided. The selected model building, Type B – Family type house, is an adaptable house with a capacity of 4 to 12 inhabitants, depending on the needs of the service provider, location or size of the plot. This building consists of specialised residential placements that provide ongoing assistance and access to as-needed specialised therapies or treatments. In the premises of the selected model project Type B, size "L", the movement and functioning of assistive and butler robots was simulated. Our research investigated the functioning of robots in the selected model building, which, together with digital assistants of other kinds, could also provide people with some forms of social care support. Two selected robot models were researched, whose dimensions and the method of movement were taken into consideration during the investigation: (1) Assistive Robot "RIBA II", and (2) Butler Robot "RELAY+S". The premises of the model building were analysed for the requirements and

functioning of these robots. The analysis is carried out sequentially according to a defined route that passes through all rooms. In each room, the role of the robot is defined, and its space requirements and the required hardware are examined. The location for contact charger spaces in the model home was also investigated. We compare the space requirements in terms of accessibility for people using wheelchairs and accessibility for robots. The major problems associated with the robot operation in the model project are summarised. In the selected model project, the requirements for bed mobility were taken into account in the design of spaces and doors. The manoeuvring space of a person in a mechanical wheelchair has a diameter (\emptyset) of 150 cm, which is significantly more than the assessed robots need. This circle must be planned around objects which are being handled for example in front of a door, a table, a cupboard, or by a bed. The Assistive Robot RIBA II can rotate in around a point, so the manoeuvring circle is \emptyset 110 cm and the Butler Robot RELAY+S rotates around a point, so the manoeuvring circle is only \emptyset 51 cm. The model building project, i.e. Type B – Family type house, is largely suitable or adoptable for the purposes of robot movement and operation. We proposed several modifications to it to enable robots to manoeuvre and be used in all spaces as required. More fundamental modifications had to be made in the bathrooms. We took into account the requirements of people with the greatest need for assistance, for example people with muscular dystrophy who need assistance to be transferred from a wheelchair to a toilet or to a shower chair. Adjustments were necessary because the robot needs more space next to a toilet or a shower than a human assistant does when "operating". We design the charging spots separately for each type of robot to avoid collisions. Catering to all the unique needs of older people can be a difficult task for those providing personal care, especially as they have many other important responsibilities. Many older adults who are cared for feel boredom, illness, sadness, pain, and loneliness. Current research is looking at the extent to which robots could improve the quality of care. The environment also plays an important role in wellbeing. We see interdisciplinary research as crucial because assistive systems that can help people "age in place" in their own homes can increase the wellbeing and independence of older adults and people with disabilities, reduce the societal cost of care, and at the same time solve the problem of workforce shortages in the health and social care sector.

ARCHITECTURE OF HEALTHCARE AND SOCIAL INCLUSION IN INTERWAR CZECHOSLOVAKIA: PEZINOK PSYCHIATRIC INSTITUTE AND THE MASARYK INSTITUTE FOR YOUNG PEOPLE WITH INTELLECTUAL AND PHYSICAL DISABILITIES IN BRATISLAVA

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Keywords: health, social care, social inclusion, disabilities, psychiatric institute, interwar Czechoslovakia, Frič, Harminc

The formation of an independent Czechoslovak Republic created a space for the institutionalisation of health and social care and the institution of a new legacy as a reflection on the state's social policy. In addition to social and medical work in the field, as well as improvements in housing and hygiene conditions in both cities and the countryside, it became crucial to modernise and expand the network of healthcare and social facilities, including those for the people with disabilities. Although there were medical advancements in institutional care for people with mental and physical disabilities, such as rehabilitation, hydrotherapy, hippotherapy, electroconvulsive therapy, or therapy at work, attempts at social inclusion were rare and the care only improved slightly. There were only a few innovative institutions that pioneered social inclusion of patients, through proper education and adaptable architecture. The paper focusses on the subject of healthcare and social inclusion of young people with intellectual and physical disabilities in interwar Czechoslovakia, presented in the architecture of the Institute for People with Nervous and Mental Health Disorders in Pezinok (1930s–1940s) and the Masaryk Institute for Young people with Intellectual and Physical disabilities in Bratislava (1935). The aim is to identify crucial problems, confront visions and reality, and to prove that, despite difficulties and minor results, even then there were innovative architectural and medical reflections on the needs of people with disabilities. The Pezinok Institute was the first clinic in central Europe to offer treatment of children with epilepsy and mental disabilities. The institute was owned

by the joint-stock company Pezinské železité kúpele (Pezinok Ferrous Spa), established by the construction entrepreneur Rudolf Frič (1887–1975), who redesigned and rebuilt the clinic and added new functionalist buildings (1930s–1940s). In an expert capacity, the project was professionally overseen by Professor Karol Matulay (1906–1998). For chronic child patients with epilepsy and intellectual disability, work therapy and hippotherapy were particularly effective, so that the facilities established workshops, ovens, and greenhouses where patients learnt practical craft skills. The institute believed that elementary education and practical skills would socialise patients, adapt them to general society, and decrease their dependence on the government and their relatives. The early phase of the institution's construction consisted of rebuilding a ferrous iron spa in the early 1930s and its adaptation to a men's ward. In 1940 the campus was expanded by absorbing the neighbouring plot of land with the former antimony factory, the buildings of which were provisionally adapted to a women's ward and the gardens of the two sites were connected. The campus was enlarged in stages by the construction of other ward pavilions, private patient pavilions, an office building, workshops, complementary facilities and others, including landscape redesign and new outdoor facilities such as horse riding. The further planned expansion of the facility, based on the pavilion plan, including the construction of new wards and a school, was halted by the worsening war situation and the increasing social hate and feeling of superiority to any minority, including the one with disabilities, as claimed by the Nazi ideology. The Masaryk Institute, as the first of its kind in Slovakia, aimed not only to establish institutional health and social care, but also to integrate its patients into the society. According to its initiator, professor Karol Koch, it was requisite to adapt the architecture to the needs of the people with disabilities, while not allowing them to feel that their environment differed from that of the others. Therefore, the facilities would include ateliers, workshops, aulas and studies, a theatre hall and library, to educate and socialise the patients. The innovative nature of the institute's program was imprinted in its progressive functionalist design by Milan Anton Pavol Harminc (1905–1974), with a pavilion for people with physical disabilities, another pavilion for people with mental deviations, and one central social and educational pavilion with a hospital ward. The cascading structure of buildings located on a hill made it possible to arrange the buildings in a more concentrated manner, ensuring sufficient ventilation and sunlight, as well as the separation and segregation of patients and facilities. Unfortunately, due to financial shortages, and strategic change in the institutionalisation of government healthcare, the Masaryk Institute for Young People with Intellectual and Physical Disabilities has never been built. It proved that as opposed to the society, the government was not prepared for the ambitious vision of inclusion of people with disabilities. The paper has tried to verify that, despite obstacles and partial achievements, the Czechoslovak interwar architecture managed to reflect the actual demands of health and social care of people with both intellectual and physical disabilities. However, both examples prove only partial fulfilment of the medical and social goals of Czechoslovak interwar health and social care of the people with disabilities.

MENTAL HEALTH AS DETERMINING FACTOR OF URBAN DISTRICT'S CHARACTER: CASE STUDY BRATISLAVA – THE PENTAGON

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Keywords: mental health, urban design, crime prevention, drugs, addiction, segregated urban areas, design for health

The topic of mental health is on the fringe of the interest of architects and urban planners. But the physical environment in which we live is one of the strongest determinants of our health (United Nations, 2015). Sometimes, we overlook these issues – or they remain unobserved behind more visible phenomena. On a case study of the urban district Medzi Jarkami in Bratislava, Slovakia, particularly a block called the Pentagon, this article argues that drug addiction, as a mental health disorder, determines the character of a whole spatial entity, according to which a locality is hugely stigmatised and segregated. Mental health as a factor defining the architectural characteristics of a building or space is a topic viewed mainly through the lenses of health institutions. Extending the topic to a urban scale to provide guidelines on designing a space that supports good mental health is a relatively new research focus, yet without a robust

base for architectural and urban design approaches. On the other hand, the literature is solid in environmental psychology determining environmental factors affecting mental health, known as environmental stressors. Research suggests that the environment a person lives in can protect from or catalyse the development of a mental disorder. Its direct or indirect influence depends on the exact environmental stressor. These factors, or stressors of a place, affect mental health both at the psychological and physical level. The psychological level is affected by raising or lowering stress levels (Helbich, 2018); while the physical level is demonstrated through changes in brain structure and function (Bick, Nelson, 2016). Based on these theories, the goal of our study is to understand the connection between and the impact of the mental health of residents and the urban structure they live in through the identification of particular physical aspects representing these stressors. The complexity of the situation required continuous data collection. Apart from the literature review, the analysis of the case study of the Pentagon was elaborated at two levels: on-site participant observations in three phases during 2022 and 2023 in parallel with structured interviews. The Medzi Jarkami housing estate lies on the Bratislava's outskirts. The entire locality is deeply rooted in the minds of many Slovaks as a drug ghetto. The infamous reputation is also underlined by the data on the crime rate, which annually show the highest figures within the city in these parts of the capital. The stigmatisation and reputation of the locality has several underlying effects, including notably lower real estate values as compared to any other Bratislava's urban districts and diminished educational opportunities and possible achievements. As an experimental residential complex, Medzi Jarkami was built in the 1970s. The smallest unit of the complex, the Pentagon, comprises five objects connected through vertical cores based on an initial intention to provide temporary housing for employees of large state-owned companies. The social intention led to filling all five objects with only two types of small apartments (a total of 450 flats) with an overall size of an apartment of 38 square meters (Varga, Kvitkovský, 2023). The lack of diversity of the flats predestined the locality to only be interesting to specific social-income groups, mainly with low economic status. After 1989 when the flats became owned by individuals, drug activity gained its place, and the locality started to be seen as problematic. Through complex research, several environmental stressors were detected in the area. The most evident proved to be the acoustics of the Pentagon's inner block. The internal facades of the building's half-circle-like composition reflect all the sounds from the inner block causing acoustic pollution, which is reinforced by other elements (e. g. absence of doorbells). The second environmental stressor present here was characterised by low social control. This is caused by the low utilisation of the parterre floors, but also by the material base of the lower floors, which does not allow visual connections. Other elements lowering the social control are neglected greenery and ruined elements of public spaces. Lastly observed are the dark and "invisible" corners referring mainly to the built-in staircase in the terrain break. All these are supported by the evident need of residents to address these problems through self-help solutions, such as to protect themselves using CCTV cameras or covering spaces or openings with metal sheets. Overall, the research proved that there is a direct correlation between a urban structure and the mental status of its residents. A number of environmental stressors were detected to be still present in the built structure. Furthermore, there is the stigmatisation of whole urban districts caused by high incidence of drug addictions as a mental disorder that, in the bigger terms, influence the "image" of the area. The drug problem in the Pentagon marked the whole urban district of Vrakuňa, reducing the resident's quality of life significantly over the years. Even though many measures to prevent drug activity in the locality have been taken, the situation in the area did not improve radically. In this urban district, behind the high crime rate lies drug addiction as a mental disorder that has its direct connections with the surrounding built environment. So, to propose a sustainable solution, parallel to "soft" interventions (medical, social help), the above-mentioned environmental features must also be addressed in an architectural way.

POSITIVE EFFECTS OF WOOD IN VORARLBERG'S (AUSTRIA) TIMBER KINDERGARTENS

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Keywords: well-being, wood impact, kindergarten, New European Bauhaus, Vorarlberg, Austria

The topic of implementing sustainable materials and integrating them into newly constructed, valuable, and cultural architecture is currently often mentioned in connection with the new initiative of the New European Bauhaus. The aim of this article is to highlight the impact of wood as a material used in the interiors of kindergartens on the development of children and inclusivity in education. The use of wooden furniture and wooden structural elements in kindergarten interiors opens up a new area of research and interest in the context of supporting diversity and accessibility for every child, regardless of their abilities or limitations. The article analyses the timber architecture of kindergartens in the Vorarlberg region, which, thanks to the use of natural, local, and especially sustainable material such as solid wood, serves as an excellent reference example for creating new school projects. The partial research focused on existing wooden kindergartens in Austria, as one of the Alpine countries where wooden kindergartens are relatively widespread. The study interprets the results of practical research conducted in eight selected kindergartens (Kindergarten Am Schlatt - Lustenau, Kindergarten Am Engelbach - Lustenau, Kindergarten Hatlerstraße - Dornbirn, Kindergarten Wallenmahd - Dornbirn, Kindergarten Muntlix - Muntlix, Kindergarten Altenstadt - Feldkirch, Kindergarten Susi Weigel - Bludenz, Kindergarten Mellau - Mellau) in the Vorarlberg region. The visual-haptic-olfactory contact with solid wood elements in kindergarten environments undoubtedly affects the emotional and physiological well-being of children. Wood material in kindergarten interiors can improve the educational processes, contribute to inclusive education for children, influence their cognitive abilities, reduce their stress, and ultimately positively influence their overall quality of life. This article aims to emphasize the effect of solid wood material (structural elements, furniture, toys and play elements) on the development of children and inclusivity in education. The presence of solid wood can have an aesthetic and psychological effect in kindergarten interiors and exteriors, providing children with direct contact with nature, which has become increasingly less frequent due to the modern urban lifestyle. The wood material, as characterized in this research, is presented as a visual, solid, interior substance. Its execution is authentic, with little or no surface treatment that could degrade its visual-haptic-olfactory qualities. The authors raise questions as to how such architectural and design thinking can help in providing inclusive education for children and whether it can positively influence children's cognitive abilities, ultimately improving their overall quality of life. The selected analyses and comparisons focused on whether the presence of wood material can positively influence the well-being of children in the physical environment of kindergartens. The article aims to demonstrate that interiors with visible wood can help to improve teaching processes, promote social interaction, and foster playful learning in children. The results of this study can serve as a strong argument for the New European Bauhaus initiative supporting the implementation of renewable materials such as wood in accordance with the principles of biophilic, restorative environmental and salutogenic design in practice. The presented paper is a partial result of doctoral research focused on studying the positive influence of wood on children's psyche and educational processes in general. One of the research goals is to identify and summarize the opinions of teachers and educators, present information about the educational potential of these institutions, assess their atmosphere as perceived by the recipients, and evaluate to what extent wood as a material has the potential to positively influence the educational process. The obtained results have the ambition to inspire the creation of new recommendations, guidelines, and solutions for the design of kindergarten architecture that would create an inclusive environment for children offering space where could expand their knowledge, gain experiences, thus applying design thinking in practice.