Healthy Architecture Applied to Inclusive Design for People with Cognitive Disabilities

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Abstract: The recent digital revolution, together with modern technologies, is changing the environment and the way people interact with inhabited space. However, in society, the elderly are a very broad and varied group that presents serious difficulties in understanding these modern technologies. Outpatients with cognitive disabilities, such as those suffering from Alzheimer's disease (AD), are distinguished within this cluster. This population group is in constant growth, and they have specific requirements for their inhabited space. According to architecture, which is one of the health humanities, environments are designed to promote well-being and improve the quality of life for all. Buildings, as well as the tools and technologies integrated into them, must be accessible, inclusive, and foster health. In this new digital paradigm, artificial intelligence (AI) appears as an innovative resource to help this population group improve their autonomy and quality of life. Some experiences and solutions, such as those that interact with users through chatbots and voicebots, show the potential of AI in its practical application. In the design of healthy spaces, the integration of AI in architecture will allow the living environment to become a kind of 'exo-brain' that can make up for certain cognitive deficiencies in this population. The objective of this paper is to address, from the discipline of neuroarchitecture, how modern technologies can be integrated into everyday environments and be an accessible resource for people with cognitive disabilities. For this, the methodology has a mixed structure. On the one hand, from an empirical point of view, the research carries out a review of the existing literature about the applications of AI to build space, following the critical review foundations. As a unconventional architectural research, an experimental analysis is proposed based on people with AD as a resource of data to study how the environment in which they live influences their regular activities. The results presented in this communication are part of the progress achieved in the competitive R&D&I project ALZARQ (PID2020-115790RB-I00). These outcomes are aimed at the specific needs of people with cognitive disabilities, especially those with AD, since, due to the comfort and wellness that the solutions entail, they can also be extrapolated to the whole society. As a provisional conclusion, it can be stated that, in the immediate future, AI will be an essential element in the design and construction of healthy new environments. The discipline of architecture has the compositional resources to, through this emerging technology, build an 'exo-brain' capable of becoming a personal assistant for the inhabitants, with whom to interact proactively and contribute to their general well-being. The main objective of this work is to show how this is possible.

Keywords : Alzheimer's disease, artificial intelligence, healthy architecture, neuroarchitecture, architectural design **Conference Title :** ICHH 2024 : International Conference on Health Humanities

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Conference Location : Nicosia, Cyprus **Conference Dates :** June 27-28, 2024