Assemblage and Immersion in the Archive: New Formats for Architectural Education

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Abstract

The recently established Architecture Archives of the Future group at TU Delft explores new educational formats to activate architectural archives as sources of design knowledge and traditions. To this end, it collaborates with the Nieuwe Instituut in Rotterdam, which holds the Dutch national collection of architecture and urban planning. By combining methods of comparative plan analysis and digital VR and XR technologies, students learn how to operationalize historical data and knowledge, curate these, and present them to a larger audience. Two courses serve as examples: one is a history and theory course, and the other is an experimental research and design studio. Through assemblage (the history and theory course) and immersion (the studio), the students learn to synthesize their findings into a critical narrative, assessing data, cultural and social values, and speculative questions about future knowledge and design production.

Keywords: Virtual Reality; Augmented Reality; Critical Pedagogies

1. Curating the Past

Traditionally, architectural historians have used archives as repositories of disciplinary knowledge, with texts, drawings, and photographs as the focus of their analyses. However, new technologies greatly improve the accessibility to these collections and are already changing how architectural history is produced, learned, and experienced. The pandemic and its concomitant lockdowns have accelerated this process, forcing schools, museums, and archives to move their activities to the online realm. In this paper, we argue that integrating digital and curatorial practices into architectural education can transform how history, theory, and design are taught in the classroom. We share two experimental courses at TU Delft that explore new pedagogical formats that approach archives not as static knowledge repositories but as an active, generative space where history is interrogated, reinterpreted, and projected through new media.

The first course, *Housing Studies: An Open Intersectional Archive*, is a history and theory seminar where we use the format of the exhibition as a pedagogical tool. Here, students work with historical records in architectural archives, using them to situate past housing projects within contemporary debates on social and spatial justice. Rather than studying these projects as isolated cases, we invite students to construct layered analyses to understand the social, political, and material conditions that produced the buildings. Through a process of selection, interpretation, and curation, students assemble the historical materials into a collective exhibition that juxtaposes drawings, media representations, policy documents, and oral histories with an awareness of how histories are constructed, contested, and reactivated in contemporary discourse. The final exhibition, which is their primary assignment, becomes a site of engagement with a public audience. In this place, architectural history is received as an accessible, discursive space where knowledge is co-produced. For this course, we use the concept of *assemblage* as an active process of reconfiguration, where students, as both historians and curators, perform a form of historical construction, revealing absences, mapping multiple sources, and producing new relationships.

The second course, *The Virtual Architecture Museum*, is a research and design studio that investigates the intersections of the virtual and the real, the physical and the digital. While *Housing Studies* reworks the archive through *assemblage* and curation, this course explores how digital tools can mediate architectural history. Students employ Virtual Reality (VR) to translate archival research into immersive environments, a process that requires analyzing original architectural drawings and reconstructing historical buildings that no longer exist or were never built. Beyond the reconstruction of the historical designs, however, the course asks students to rethink how architectural history is presented and experienced. The immersive nature of VR distances it from traditional representation techniques, emphasizing storytelling, embodiment, movement, and atmosphere. Moreover, the course also proposes a dialogue between virtual and physical space. Students need to design physical structures —a media pavilion in public space— as entry points to their virtual museum, thresholds between the material and the digital. In this manner, the studio explores how virtual and material spaces co-produce meaning. We approach this course through the concept of *immersion*, not only a technological effect but an epistemological condition that allows students to inhabit history as it were, moving from observation to experience and interpretation.

Despite their differences, the courses rethink architectural pedagogies through new formats of engagement with architectural history and archives. *Housing Studies* examines how exhibitions can help students construct historical narratives, and *The Virtual Architecture Museum* explores the potential of immersive technologies to reinterpret and spatialise architectural history. They share a triangulated methodological approach —historical research, critical reinterpretation, and audience engagement— to interrogate how architectural knowledge can be actualized, curating the past and projecting speculative futures.

2. Housing Studies: an open intersectional archive

Our intention with *Housing Studies*, an elective for 1st year master's students in Architecture, is to approach history as a dynamic field (re)produced by an assemblage of documents, voices, and perspectives. This course aims to introduce students to architecture archives, not as fixed repositories but active sites of investigation where historical knowledge is constructed through research and curation.[1] We understand the role of researchers/students as disruptors of such sites, reconfiguring knowledge to offer new narratives. As a pedagogical tool, the exhibition allows students to engage directly with archival materials to assemble them into new constellations that re-examine housing projects with broader social, political, and spatial concerns. A key theoretical foundation of the course is that of intersectionality.[2] Students are asked to reappraise, through such an intersectional lens, collective housing projects and their histories, from the commissioning and lives of their architects to their design, construction, and material afterlives, as well as the appropriation by inhabitants. Through this approach, the course invites students to question who has historically been included or excluded from architectural discourse, and how spatial practices reflect and reinforce broader structures of inequality. Students are thus introduced to collective housing projects and epistemological bases for debates over the nature of historical, oral, and archival research and curatorial practices.
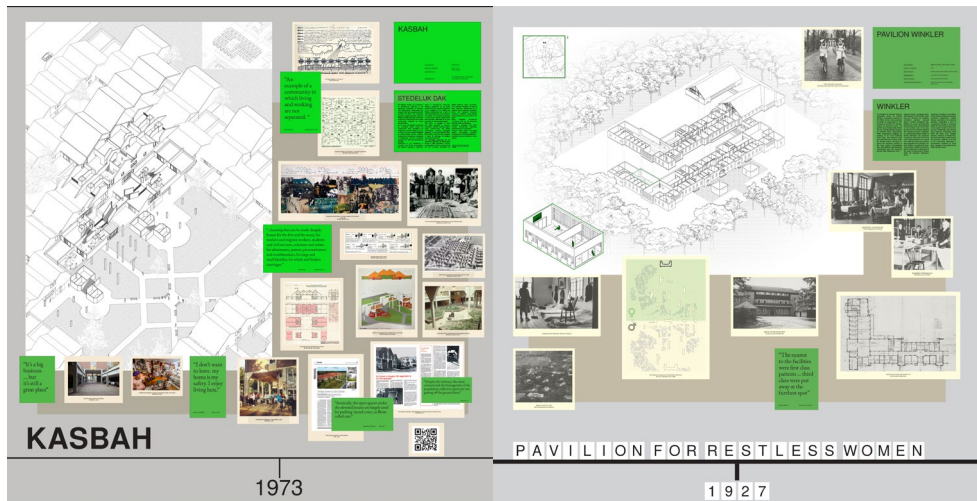
Figure 1. Examples from the second edition's exhibition. Work by Mathew Senarta, Emina Šehmehmedović , and Ana Poenariu; Mascha Gerrits, Robin de Wilde, and Axelle Maasen. 2024.

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[1] There have been three editions of the course, with different teaching teams. The first edition was organized by Vanessa Grossman, Dirk van den Heuvel, Paula Lacomba-Montes, and Elena Martínez-Millana. The second, by Dirk van den Heuvel, Alejandro Campos-Uribe, Paula Lacomba-Montes, and Elena Martínez-Millana. The third, by Dirk van den Heuvel, Eytan Mann, Fatma Tanis, and Carla Sentieri-Omarrementeria.

[2] A framework of analysis originating in black feminism to consider the ways in which different forms and norms of social stratification —such as class, race, disability, migration status, or sexual orientation— interlock with gender as systems of power and inequality.

Housing Studies has been structured around thematic editions, connecting to intersectionality through different curatorial lenses. The first edition of the course (2023) focused on Dutch female architects, examining how gender shapes architectural production, both in terms of recognition and the kinds of spaces designed. The second edition (2024) continued within the framework of intersectionality to explore the notion of the non-compliant, a term used to describe individuals and communities who do not conform to normative expectations.[3] This second edition focused thus on housing projects for groups often overlooked in mainstream narratives, -- from psychiatric patients to single, older adults, to students, to community living -- looking at how their spatial needs challenged existing models of domesticity, accessibility, and public space. The exhibition, which the students titled "Beyond the nuclear family", highlighted alternative ways of living, emerging from these non-compliant positions.

Housing Studies, then, provides critical tools for analyzing non-normative collective housing projects and their hidden or overlooked histories, while examining the relevance and applicability of intersectionality to housing design. The activities are based primarily on group work and presentations of case studies, drawing on different research methods like literature study, plan analysis, archival research, site visits, and oral history interviews. Students begin with an exploratory phase in which they conduct archival research at the Nieuwe Instituut, selecting materials related to their case study. This initial exploration, however, is not limited to architectural drawings. We encourage students to consider a range of sources, from planning reports to letters, newspaper and journalistic articles, interviews, and popular media, recognizing that the production of housing is as much social and political as it is spatial. At this stage, *assemblage* becomes central to the pedagogical approach. Students learn to read materials relationally, how they intersect, or contradict, reveal biases and absences. Using hard and soft forms of evidence —from technical drawings to oral testimonies—they expose how histories are constructed, with decisions that are not neutral but interpretative, opening new perspectives on the housing projects. Through these assemblages, students reflect on the socio-economic, political, urban, and territorial contexts from which these case studies emerged, including governance frameworks and policymaking processes.

The outcome of the course is an exhibition collectively curated and designed by the students themselves, that showcases the analysed case-studies through research-based documentation, including drawings, models, or other objects, audiovisuals, and textual resources. This exercise complements traditional academic outputs, such as essays or reports, focusing on audience engagement and knowledge dissemination. The exhibition, physically held at the Faculty for the whole educational community, functions as a pedagogical and historiographic experiment, opening multiple entry points into the case studies through the narratives constructed by the

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[3] The term 'non-compliant' was introduced into the architectural discourse by the American architect and queer theorist Joel Sanders. Sanders, J. (1996). Stud: Architectures of Masculinity. Routledge.

students. Simultaneously, it spatializes architectural histories and serves as the stage for the students' works and presentations, including a catalogue containing their essays. In this manner, the course reinterprets architecture archives as generative spaces for reflection and debate, inviting students to see the archive and the exhibition as spaces of production, where knowledge is assembled, reframed, and made public.

Figure 2. Assemblage of materials: newspaper articles, historical photographs, drawings, and quotes from interviews with inhabitants. Work by Bas Jonker, Paulina Düchting, and Yishu He, 2024.

Figure 3. Exhibition opening, April 2024.

3. The Virtual Architecture Museum: reconstructing history through immersion

If *Housing Studies* pushes students to construct historical narratives through *assemblage*, the *Virtual Architecture Museum* goes from curating archival materials to inhabiting history through *immersion*. In this course, structured as both a research and design studio, students use digital tools —specifically Virtual Reality (VR)— to reinterpret and reconstruct architectural history, but also to project and design new architectural devices that mediate between past and future, digital and material, archival knowledge and design speculation. Students do not merely reconstruct historical projects, but reinterpret them through spatial storytelling, creating VR experiences that communicate architectural ideas to a public audience. Rather than aiming for realism, we invite students to critically examine the cases to expand and transform them through digital media. In this manner, the course questions how immersive technologies can be used for historiography and spatial invention, developing new architectural interfaces.

The course is structured with two design assignments: the digital reconstruction of historical projects, reinterpreted through an immersive VR experience, and the design of physical media pavilions that function as entry points to this virtual world. Students begin by selecting a case study —often unrealized— and conduct archival research to gather plans, sections, elevations, and textual descriptions. This phase requires careful analysis to reconstruct fragmented realities and make decisions about spatial and material aspects of the design that remained unsolved. Once the research is finished, they must translate their findings into a storyboard for an immersive and interactive VR experience as a curated sequence of spaces, atmospheres, and interactions that communicate the project's ideas.

Figure 4. Exhibition with students' results, November 2024.
A digital version of the exhibition is online here: https://virtual-architecture.cargo.site/

The results from the first edition of the course illustrate how VR serves as a pedagogical tool and a historiographic intervention. For instance, *Echoes of Time* by Ziyue Yu reconstructs Aldo van Eyck's unbuilt *Wheels of Heaven* (1963), a church that was never realized. Her VR experience is structured around three levels: the archival level, where users visit a virtual exhibition of historical documents about the project —drawings, videos, texts…—; the realistic level, which reconstructs the design based on archival materials; and the imaginative level, where speculative interpretations expand on the building's original concept. Through this approach, Ziyue Yu invites visitors to the Virtual Architecture Museum to think of history as a multi-perspectival experience, blending research with spatial storytelling. This approach shows one of the main potentials of immersion: the ability to simulate lived experience.

Although an important teaching time of the course is dedicated to technical training —how to use VR tools, create interaction, apply textures, etc.— we don't understand digital

reconstruction as a purely technical exercise. Rather than producing exact replicas of historical projects, we believe that students should approach VR modeling as a curatorial act: choices about materials, textures, spatial sequencing, and interaction actively produce the historical reinterpretation. Digital reconstructions are never neutral; they are always mediated by the present conditions and require critical reflection on how history is narrated.

The course's second component is intended to explore the relationships between the virtual and the real, requiring students to design physical structures that act as thresholds between material space and the virtual museum. The students work within a real site (the Lijnbaan shopping street in the inner centre of Rotterdam) where they must design media pavilions that are not just functional interfaces for VR access, but themselves architectural statements. Located within an urban context, the pavilions should serve as functional and symbolic entry points, showing the tension between physicality and digitality and a new, immersive way of approaching architectural history.

Figure 6. Virtual session in Spatial.io, May 2024.

Figure 5. Students during the "Embodied virtuality" workshop led by Paula Strunden, May 2024.

Apart from these two assignments, we organized different kinds of explorative workshops and lectures by scholars and artists to help students engage with the potential and limitations of VR. Paula Strunden's workshop on 'Embodied Virtuality' introduced multisensory spatial perception in XR, using tools like Gravity Sketch and full-body motion capture to experiment with virtual avatars and performative digital spaces. Another workshop was conducted as a collaborative design environment using the Spatial.io virtual platform, with students and professors represented through their avatars, allowing them to place images on virtual walls, present their projects in a digital lecture room, and explore a shared virtual model of the studio's site. In addition, guest lectures offered different perspectives on VR as a historiographic tool by

researchers and professionals. Eytan Mann, for instance, who researches contested sites, integrating oral histories and archival materials within VR point-cloud models, lectured on how digital reconstruction intersects with memory and spatial politics. *The Virtual Architecture Museum* thus proposes again a triangulated methodological approach —archival research, digital reconstruction, and spatial storytelling. Here, immersion is not only a technical feature of VR but a pedagogical and epistemological condition, inviting students to inhabit history, moving from observation to experience, interpretation, and speculation.

4. New formats for Architectural Education

We believe that these pedagogical experiments can contribute to innovative architectural education in the digital age. Both courses show that historical materials can be approached as tools for speculative design and experimentation, responding to contemporary debates and global challenges, while grounded in historical analysis. In other words, architectural archives are conceived as generative memory spaces, as data producers themselves, and as an interface between publics and professionals. Historical knowledge is not only studied, it is activated. In addition, both courses also show how curatorial and digital practices complement traditional architectural methods focused on drawing. These were important reasons for creating the Architecture Archives of the Future group within the Department of Architecture at TU Delft.

Beyond archives, the courses raise awareness on the role of media technology in architectural pedagogy. Digital tools like VR and XR especially require a reflection on how space and history are mediated. The explorations of embodied virtuality and research on contested sites and oral histories demonstrate that students should not just uncritically use digital tools, but rather interrogate their epistemological and political implications. Through *assemblage* and *immersion*, we aim to open disciplinary boundaries between history, theory, and design. We seek to integrate curatorial, digital, and narrative methodologies to bypass traditional models and bridge past and future through creative engagements.

References

Bond, J. (2021). Foundations of Intersectionality Theory in *Global Intersectionality and Contemporary Human Rights*. Oxford: Oxford University Press, 6-26.

Keller, E.; Jarzombek, M.; Mann, E. (2021) Site-Archive-Medium: VR, Architectural History, Pedagogy and the Case of Lifta. *Footprint*, 14(2), 11-30. doi: 10.7480/footprint.14.2.4553

Mbembe, A. (2002). "The Power of the Archive and Its Limits". In: Hamilton, C., Harris, V., Taylor, J., Pickover, M., Reid, G., Saleh, R. (2002). *Refiguring the Archive*. Springer.

Strunden, P. (2023), Touching, Licking, Tasting: Performing Multisensory Spatial Perception Through Extended-Reality Models. *Architectural Design*, 93, 48-55. doi: 10.1002/ad.2993