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Jai Alive: (Re)locating the Manila Jai-Alai in Contemporary Collective Memory

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Abstract

The Manila Jai-Alai by Wurdeman and Becket (1940), a masterpiece of Streamlined Art Deco in the Far East, was lost to demolition in 2000, creating a void in Manila's urbanscape and cultural memory. The *JaiAlive* project, through digital reconstruction with newly discovered archival materials, is a pilot study that aims to relocate the Manila Jai-Alai in contemporary collective memory. It explores the potential of low-cost immersive virtual reality (iVR) as a tool for participatory heritage, oral history, and heritage education. Through a modified Presence Questionnaire (PQ) supported by spontaneous think-aloud and roundtable dialogues, an assessment of presence, involvement, realism, emotional engagement, memory recall, and knowledge transfer was conducted among participant groups of players, witnesses, and youth. The iVR experience effectively induced a strong sense of presence, nostalgia, and storytelling, especially among participants with lived experience of the Jai-Alai, and validation of explicit knowledge among those unfamiliar with the space. Participants viewed iVR as a strong starting point for renewed interest in the Jai-Alai as heritage, spectacle, and sport. Despite challenges such as environmental distractions, limits in realism, and potential memory distortion which all warrant further study, iVR shows strong potential for enriching collective memory, supporting oral history, and advancing participatory heritage studies within the Philippine context.

1. Introduction

1.1 Heritage Reconstruction and Virtual Reality

Community-based re-creation and adaptation having been established as essential aspects of cultural heritage by UNESCO in the 2003 Convention of the Intangible Cultural Heritage, has led to a democratization of the narratives of identity and culture (Giaccardi, 2012). The shift of emphasis towards processual rather than product-based heritage significance opens the potential for digital and virtual technologies to facilitate these activities of re-creation and adaptation by communities in lieu of non-extant or demolished built heritage. Over the past decade, documentation, representation, and understanding of built and cultural heritage, and architecture in particular, has been enhanced by the advanced sensory processes brought forth by, and increased accessibility of immersive virtual reality (iVR) (Rodriguez-Garcia, et al., 2024). Simultaneously, iVR has the potential to take the concept of defiance towards loss in heritage by recreating not only their physicality, but depict, and/or elicit intangible aspects– presence, emotions, nostalgia, and otherwise inaccessible memories of place (Guo, et al., 2023). Indeed, iVR has seen validation in cultural heritage learning practice as a medium for reconstructions of the ancient past, as an archive for the act of remembering among culture bearers for inaccessible heritage, and as a means for engaging intangible cultural heritage towards the process of creating cultural memory (Ch'ng, et al., 2020; De Paolis, et al., 2023; Veltman, 2017).

In the Philippines, there is potential for the adaptation of iVR for cultural heritage as didactic installations that provoke the community into participatory heritage involvement. This is necessary in Manila as destruction of 20th century built heritage has been rampant, particularly as legal safeguards have been stymied by lack of public interest, communal awareness, and a prevailing erroneous dichotomy of heritage versus development (Villalon, 2012). This issue is embodied by the case of the Manila Jai-Alai, by Wurdeman and Becket (1940), a masterpiece of Streamlined Art Deco in the Far East.

1.2 Background and Significance of the Manila Jai-Alai

Figure 1. Manila Jai-Alai Fronton upon completion (Puyat Furniture, 1941).

The Manila Jai-alai was executed in reinforced concrete by Welton Becket of Wurdeman and Becket to the progressive Streamlined Art Deco style (Figure 1). Inaugurated on October

17, 1940, the fronton was a palatial presence on Taft Avenue (The Hawk, 1940). Its realization was the product of Philippine President Quezon's invitation to Becket and an encounter with the proprietors of the Jai-alai Corporation of Manila, leading to this $ 1 million commission, the first for the firm overseas (Ellerbe Becket, n.d.; Harrison, 2015; The Hawk, 1940).

The four-storey Jai-alai was built on a site of 7,500 sq. meters adjoining the *Casino Español de Manila*— the first such venue in Manila for the *pelota* family of sports (R4, personal communication, May 2025; The Hawk, 1940). A 15-meter-high central cylindrical bay glazed in clear glass welcomes visitors with a lobby adorned with bas reliefs of the game; the Sky Room above affords panoramic views of the Manila Bay sunset (Figure 2). The fully-airconditioned structure housed a 1,400-seater grandstand treating an international clientele of patrons to nightly viewings of the *game of a thousand thrills*, and together with the Sky Room, Crystal Bar, and Keg Room, was the premier entertainment destination in tropical Manila. As a showcase of civilization and progress in the Philippine Commonwealth project, the Jai-alai was the de facto site for high society and official state functions (The Hawk, 1940).

Figure 2. Central façade of the Jai-Alai, the Sky Room is the fourth floor of the circular structure (Jai-alai Weekly, 1940).

A meticulous attention to detail was brought about by the *total design* ethos of Becket entailing a synthesis of transnational imagery in the million-dollar commission: Philippine Narra, rattan, and bamboo furnishings, a *frontis* in Shanghai granite, crystal lamps from Los Angeles, with terrazzo, leather, lucite, and chrome executed by Filipino and Chinese laborers to a modern, streamlined, American vision of a Basque sport (The Hawk, 1940; Hunt, 1971; Puyat Furniture, 1941).

Unfortunately, this opulence was short lived, as World War 2 transformed the venue into the headquarters of both the American and Japanese forces in Manila; it survived heavy shelling by both armies, a testament to its strong construction (Ellerbe Becket, n.d.). Restored in 1945 as the Roosevelt Club, it was the largest recreational venue for allied forces in the far east. Reverting to civilian use, it continued its primary function as the venue for Jai-alai, thrilling audiences for decades. Regrettably, allegations of match-fixing and the sport's growing association with vice in the last quarter of the 20th century led to the outright revocation of its license and a ban on operations in 1986 (Villalon, 2012). Although the ban was eventually lifted, the sport and venue never fully recovered, ultimately closing its doors in 1994 (Villalon, 2012).

Abandoned, and in a state of disrepair, the City of Manila, under Mayor Lito Atienza, himself an architect, considered the structure an urban blight unworthy of protection. Despite global widespread practice of adaptive re-use for heritage, the building was demolished on the 15th of July, 2000 under the tenuous justification of being a structural risk—notwithstanding international opposition from socio-civic groups concerned with heritage, architecture, and history, spearheaded by the newly organized Heritage Conservation Society of the Philippines (HCS) (R9, personal communication, May 2025; Galicia, 2019; Villalon, 2012). Lacking legal protections, the Jai-alai was ultimately cleared to make way for a proposed Hall of Justice (Figure 3). To this day, the lot remains a vacant monument to this vanished landmark.

The destruction of the Jai-Alai, much like the demolition of Penn Station in the United States, gave birth to the modern heritage conservation movement in the Philippines. Heritage advocates sounded the alarm over the rapid erasure of the nation's built heritage; the Jai-Alai, while a prominent loss, was far from the last. After years of deliberation, the National Cultural Heritage Act of 2009 was enacted, finally arming built heritage with the legal protection essential to their preservation.

Figure 3. Protest action by the Heritage Conservation Society (HCS) during the demolition ordered by Manila Mayor Lito Atienza (Galicia, 2019).

The significance of the Jai-alai is manifold. Architecturally, it was an exemplar of Streamlined Art Deco in Asia and a striking feature of Manila's skyline. For decades since its opening, it was Manila's primary sporting venue and social hub. Historically, it showcased a modern Filipino's aspirations of nationhood, and surviving World War II, as the Roosevelt- the grandest club for servicemen in the Far East. Its demolition and disembodied narrative became a catalyst for the inception of Philippine heritage protection laws, with "Remember the Jai-Alai" continuing to resonate in heritage advocacy. Through the *JaiAlive* project, the authors seek to honor that legacy.

1.3 Objectives of the Study

This study aims to:

1. Be a pilot study exploring the potential of immersive virtual reality (iVR) in presenting digitally reconstructed demolished built heritage structures in the Philippines.
2. Assess iVR's capacity to elicit a sense of presence, emotional engagement, and memory recall among participants, especially those who have lived experience of the built heritage structure.
3. Examine the effectiveness of iVR as a didactic tool for heritage education and enabling knowledge generation about demolished historic structures.
4. Determine the feasibility of digital reconstruction and iVR as participatory mediums for expressing and documenting collective and oral histories of built heritage.

2. The JaiAlive Project

2.1 Archival Background

While photographs of the Manila Jai-Alai exist, copies of the building plans in the Philippines were lost to the destruction of World War II. Its interior configuration was only partially known through limited architectural drawings published in *Architectural Record*. The demolition of the Jai-Alai also forwent any possibility of as-built documentation. An author’s internship, however, newly granted access to the Welton Becket archive at the Getty Research Institute (GRI) Special Collections and its archive comprising more than 500 documents and plans of the Manila Jai-Alai, executed under the architects’ *total design* ethos, allowing for digital reconstruction and presentation with unprecedented fidelity through iVR in the Jai Alive project. Furthermore, sports journals and other collateral material from Philippine and Australian libraries were recently rediscovered and made available to the researchers to support the virtual reconstruction.

For the proof-of-concept for the iVR experience, the main ballroom of the Jai-Alai, the Sky Room, and the adjoining Crystal Bar have been selected owing to their historical significance as a central venue in Philippine social life throughout the many iterations of the structure. The Sky Room’s lesser-seen status in the public imagination and hitherto sparse documentation of the space’s visual and spatial characteristics, contrasts with the deep valuation of those who have experienced the space. Additionally, the new availability of archival materials makes it an ideal setting to evaluate iVR interactions among diverse participant groups.

2.2 Digital Reconstruction and Visualization

Architectural plans and archival illustrations were digitized through in-situ photography at the GRI using both an android phone and a mirrorless camera before being transferred to a computer. All succeeding digital reconstruction stages were implemented on a 4th generation Intel i7 PC (4790k) with a GeForce RTX 3050 graphics card running Windows 10 Home. Selected sheets featuring the Sky Room were selected for further processing including contrast, exposure, and sharpness adjustments, as well as orthorectification in Adobe Photoshop CS2. Next, the processed digital images were then imported into Autodesk AutoCAD 2024 for retracing, resulting in a scaled, vectorized, digital drawing of the Sky Room.

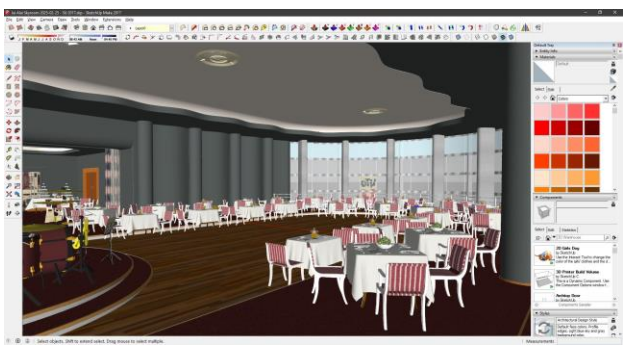

Figure 4. Completed 3D reconstruction in SketchUp.

The .dwg file was then imported into Google SketchUp 8, after which a base 3D model of the Sky Room was developed in SketchUp Make 2017. Owing to the highly detailed drawings, it was possible to reconstruct the Sky Room with a high degree of fidelity. The inclusion of scaled furniture and lighting fixture details further enabled the accurate modelling of these elements. Furniture was drawn to plan and was verified through SketchUp’s photo match function with the architect’s photographs of the completed space. More complex geometries were initially modelled in Rhino 7 Educational, before being imported into SketchUp for integration. Décor, and furniture arrangements were adapted from archival photographs of the Sky Room in active use with the typical dance hall layout reproduced in the final configuration (Figure 4).

Finally, the SketchUp file was imported into Twinmotion 2025.1 for texturing, guided by plan callouts, the building’s schedule of finishes, and written descriptions found in *Jai-Alai Weekly* and other contemporary publications. The color palette was derived from the colorized photo album of the completed structure (Figure 5). Twinmotion’s Path Tracer feature was then used to generate high-quality, photorealistic stereoscopic panoramas at 4K resolution.

Figure 5. Photorealistic render of the Sky Room, composition matched to archival photograph.

Pano2VR 6 enabled the creation of an iVR tour, utilizing four linked panoramas of the Sky Room (three within the main Sky Room, and one in the connected Crystal Bar). Utilizing the hotspot feature of Pano2VR 6, a curated, but freely navigable experience was formulated (Figure 6).

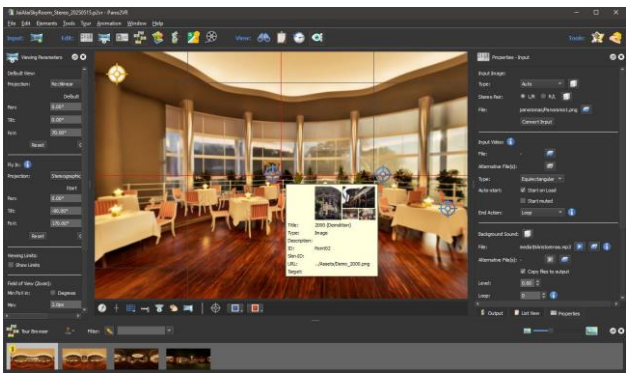

Figure 6. Pano2VR 6 interface depicting the four panoramas and the different triggerable hotspots of the iVR experience.

The audio-visual hotspots narrated key Jai-Alai milestones—from its construction, its period of active use, and its eventual demolition, highlighting aspects of its significance as a social venue, architectural landmark, and sporting facility (Appendix A). The background audio is composed of surviving musical recordings from the original band, while a cinematic excerpt from the 1978 film *Garrote, Jai-Alai King* features the venue and *pelotari* at play. This completed tour was packaged for distribution as a stereoscopic iVR experience in the Garden Gnome Package (.ggpkg) format, optimized for viewing with Google Cardboard (Figure 7).

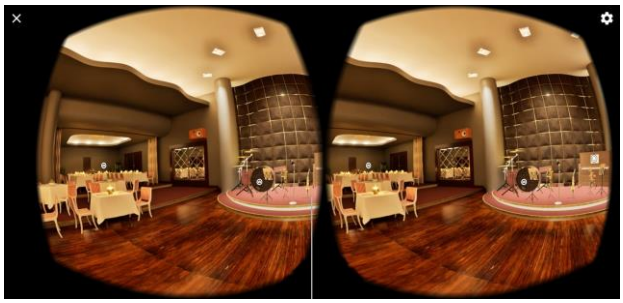

Figure 7. Screenshot of the stereoscopic iVR experience of the Sky Room as seen on an Android mobile phone.

3. iVR Application and User Experience

3.1 Apparatus and Audiovisual Content

The *JaiAlive* project was deployed on an Android 13 mobile phone (Xiaomi Redmi Note 10 Pro) with VR Tourviewer 1.0.222 for Cardboard application. This program was paired with VRGPro Google Cardboard virtual reality goggles as an entry-level, low-cost portable head-mounted display (HMD) solution for the iVR experience. All audio output uses the mobile phone's built-in stereo speakers, and aside from the HMD, participants are uninsulated from their real-world surroundings.

3.2 Participants

This study involved the participation of twenty (N=20) participants categorized as follows:

1. *Players* (n=7) including current and former pelotari who have played at the Manila Jai-Alai, all members of the Casino Español Amateur Pelotari Association (seven participants aged 60 or older).
2. *Witnesses* (n=8) of the Jai-Alai, that is, they have attended games at the Jai-Alai, visited the Sky Room, and/or were heritage advocates present at the site during its demolition, in varying capacities (six participants aged 45–59; two participants aged 60 or older).
3. *Young Heritage Advocates/ Youth* (n=5) who are interested and have secondary knowledge of the Jai-Alai but otherwise have not visited the structure (three participants aged 15–30; two participants aged 31–44).

3.3 Experimental Procedure

Figure 8. Player-participant experiencing the iVR experience as deployed at the *cancha* of the Casino Español de Manila.

The researchers visited the participants and conducted the study on-site at each participant's location. Participants were provided with background information about the Sky Room and the *JaiAlive* reconstruction project, including the need to answer a Presence Questionnaire (PQ) immediately following the experience. They were then briefed on the control interface of the iVR tour and how to adjust the HMD. Participants were subsequently asked about any underlying health or motion-related concerns, and, finding none, were directed to stand in a space free of obstructions. Once prepared, participants donned the HMD and were free to explore the iVR experience at their own pace (Figure 8).

This process was documented through video recording for later analysis. Although participants were not initially prompted to discuss their experiences during the iVR session, participants spontaneously began to share their thoughts and reactions while immersed in the experience. This participant verbalization in real time is referred to as the think-aloud method, and allows researchers to gain insights into cognitive processes, decision-making and user experience while they interact with systems or interfaces (van Someren, Barnard, and Sandberg, 1994). At the same time, interaction of these participants with the system of the digitally reconstructed heritage site through this method evoked personal recollections, perspectives, and memories of place.

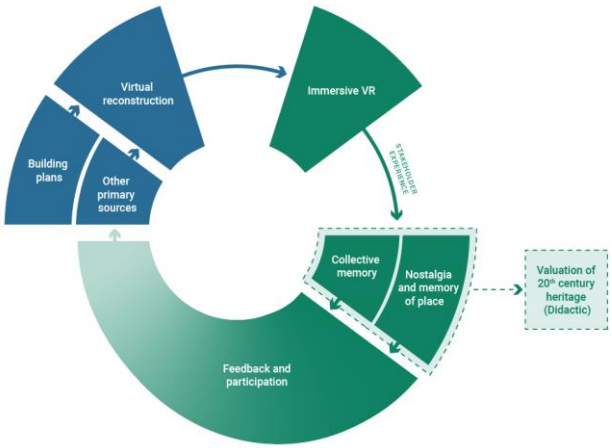

Figure 9. Feedback spiral of the iVR Participatory Heritage Process.

After completing the iVR experience, participants were directed to answer the modified Presence Questionnaire (PQ). The groups were then invited to add their annotations, completing the virtual repatriation process, and expanding the narrative of the building through collective memory of place thus increasing the accuracy of the virtual reconstruction and repeating a cycle of learning and sharing the narratives of the Jai-Alai (Figure 9).

3.4 Measures and Feedback

Presence is a psychological phenomenon that can be defined as a subjective state of consciousness of being in an environment, in this case a virtual one (Schubert, et al., 2001). It is seen as an outcome of cognitive processes involving immersion and stimuli perception (Schubert, et al., 2001). This study makes use of a presence questionnaire adapted from igroup to measure this phenomenon (igroup Project Consortium, 2016a). PQ is a tool that addresses the different components of presence and originally contains 14 questions. To aid in the facilitation of the questionnaire, three questions (SP3, INV2, and REAL3) were

replaced with five new items (KNOW1-2, FEEL1, MEM1-2) in line with the objectives of this research for a total of 16 questions, and an additional question for participant feedback, memory, and knowledge generation. The PQ has also been translated into the Filipino language and adapted to a five-point Likert scale (Appendix B).

The igroup PQ was developed as a scale to determine the sense of presence experienced in a virtual environment and contains four subscales: General Presence (GP), Spatial Presence (SP), Involvement (INV), and Realism (REAL). GP evaluates the overall sense of "being there" in the virtual environment; that one is located inside and part of a mediated world rather than a physical one (Schubert, et al., 2001). SP gauges the sense of being physically present in the virtual environment; that the environment surrounds and contains the user, and that sensory input aligns with virtual feedback (igroup project consortium, 2016). INV measures the degree of attention and interest a participant allocates to the virtual environment, how mentally engaged they are and how well they block out distractions from the real world (Witmer and Singer, 1998). REAL evaluates perceived fidelity of the virtual environment with the real world including the alignment of virtual interactions with real-world expectations (igroup project consortium, 2016b).

The study also builds on the feasibility of the iVR experience as a tool for emotional engagement and memory recall, in addition to serving as a means of knowledge transfer on the reconstructed built heritage structure, with contemporary participants engaged in the remembering of this lost space. Five additional questions form three new thematic subscales tailored to the context of the virtual heritage experience: Knowledge (KNOW), Feeling (FEEL), and Memory (MEM). KNOW pertains to the didactic capacity of the virtual environment, and the extent by which the virtual environment can disseminate added information about the digitally reconstructed heritage site, or validate existing information known to the participants. FEEL determines the emotional resonance elicited by the virtual environment, and how effectively the digital reconstruction enables affective engagement with the heritage site. MEM assesses the capacity of exposure to the virtual environment to trigger participants' recollections of their memories of the place, and in turn, to share them through the so-called "think-aloud" process (van Someren, et al., 1994).

3.5 Results and Discussion

This pilot study of twenty participants (N=20) is a preliminary exploration of the iVR experience in virtual reconstruction of lost heritage within a Philippine context. The modified PQ results are exploratory, with the small sample size acknowledged as a key limitation. Logistical challenges were encountered with the identification and selection of viable player and witness groups, due to the advanced age or passing of many potential respondents. Accordingly, the researchers opted for a mixed-method approach combining qualitative data, descriptive statistics, and interviews, to explore variances in subscale scores across participant groups, and facilitate access to oral history accounts.

The modified PQ measured the original subscales of general presence (Cronbach's α = n/a), spatial presence (Cronbach's α = 0.85), involvement (Cronbach's α = 0.67), and realism (Cronbach's α = 0.82); it also measured the additional subscale categories of knowledge (Cronbach's α = 0.63), feeling (Cronbach's α = n/a), and memory (Cronbach's α = 0.81) introduced in this study (Wessa, 2023).

3.5.1 Modified Presence Questionnaire: For the following discussion on the subscales of the modified presence questionnaire, please refer to the summary of data in the box and whisker diagrams (Figures 10 and 11).

General Presence (GP) was rated highly across all groups (M = 4.50; SD = 0.83) suggesting that iVR elicited a keen sense of being in the Sky Room. Players unanimously gave the maximum rating (M = 5.00). Witnesses (M = 4.38) had more variation, with one citing HMD discomfort, and another remarking that the experience is "still existing within the realm of the mind and imagination" (Respondent 9 (R9), personal communication, May 2025). Youth (M = 4.00) reported a slightly lower GP, likely reflecting unfamiliarity with the original space.

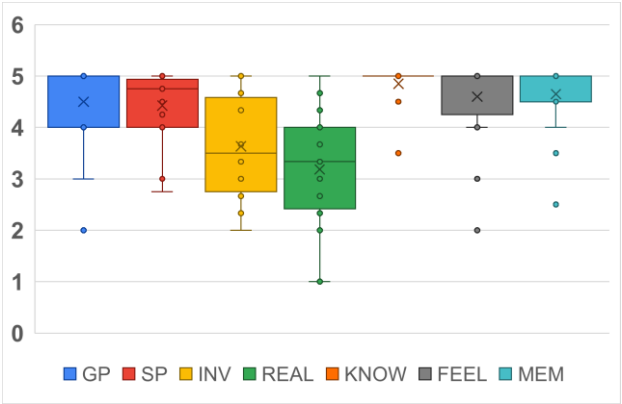

Figure 10. Total scores on modified PQ subscales aggregated across the three participant groups.

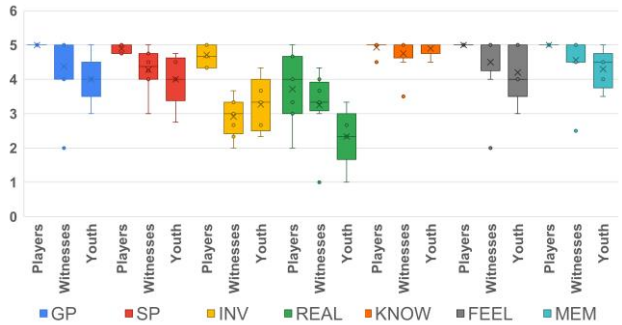

Figure 11. Breakdown of modified PQ subscale responses per participant category.

Spatial Presence (SP) was similarly rated with GP (M = 4.43; SD = 0.64), confirming the presence of participants in the Sky Room's reconstructed environment. Again, players (M = 4.89) reported the strongest spatial presence, remarking on the accuracy of the reconstruction with their memories of the space. *"Parang nandoon pa ako noong araw* (It is like I am [still] there, in the olden days)" (R4, personal communication, May 2025). Youth (SP2 M = 3.67) reported lower spatial presence on this item relative to players and witnesses indicated that they felt as if they were viewing static images rather than being surrounded by a virtual environment. While a downward trend in both GP and SP exists in proportion with the age of the participants and prior familiarity with the Jai-Alai, the iVR nonetheless produced a nearly universal sense of "being there" at the space (GP, SP % above midpoint = 90%).

Involvement (INV) ratings exhibited greater variability than other subscales (M = 3.63; SD = 0.98). Players reported high

involvement scores (M = 4.71; SD = 0.30; % above midpoint = 100%) supported by the quiet and consistent setting of the Casino Español de Manila which allowed for the full engagement with iVR audiovisual cues. Witnesses (M = 2.92; SD = 0.56) and youth (M = 3.27; SD = 0.80) participants in contrast consistently reported low involvement with the iVR and strong awareness (INV1 M = 2.46) and attention (INV3 M = 2.92) to the real environment suggesting impact by environmental distractions during testing, breaking their immersion (Figure 12).

Figure 12. The former site of the Jai-alai along the busy Taft Avenue is a challenging environment for iVR.

Realism (REAL) was rated the lowest and exhibited the greatest variability (M = 3.18; SD = 1.07) among all the subscales. Players (M = 3.71; SD = 1.03), all aged over 60 and unfamiliar with iVR but deeply familiar with the space, appreciated the rendition of the Sky Room and its similarity (REAL2 M = 4.29) to the real, however the absence of motion and the crowd they remember when the space was active was raised by all (n=7) participants, reducing their sense of realness. R2 noted that the space felt "too new" and without the "age" or wear and tear of the Sky Room as they remembered it (personal communication, May 2025). Witnesses (M = 3.25; SD = 1.00) were also critical of the absence of entourage, "back in the day, I couldn't get in at times" (R17, personal communication, June 2025) and motion. Youth participants (M = 2.33; SD = 0.85) found it hard to equate realism in iVR, having not seen the real space. Some participants dwelled instead on the capacity of iVR for photorealism or the technical limitations of the medium (R8, personal communication, May 2025). REAL4 (M = 2.8; SD = 1.20), the VE *wirklich* or authenticity of the virtual (stated as "more realistic than the real"), received low scores from all groups, suggesting that iVR reconstruction did not surpass their sense of reality (igroup Project Consortium, 2016a).

Knowledge (KNOW) was rated highly by all participant groups (M = 4.85; SD = 0.37; % above midpoint = 100%), with universal agreement on the didactic potential of iVR for reconstructed built heritage. The youth (M = 4.90; SD = 0.22) consider iVR highly informative, despite having no direct experience of the Jai-Alai or the Sky Room. R3 notes the potential for future improvement as "more discoveries are to be made," highlighting the processual nature of the *JaiAlive* project (personal communication, May 2025).

Feeling (FEEL) likewise measured highly (M = 4.60; SD = 0.82), with the VR experience evoking strong emotional responses across all participant groups. Players (M = 5.00) were deeply moved by the iVR. Two respondents began to tear up, and all (n=7) immediately began narrating their experiences within the Sky Room. R1 describes an *"intense nostalgia talaga, flashback e* (it's really intense nostalgia, [really] a flashback)" while R4 claimed that "it was really like this [when I was a *pelotari*], wow, you got this exactly, I miss this (personal communication, May 2025)." Witnesses (M = 4.50) and youth (M = 4.20) felt similarly, though a critical comment was raised by R9: "[The iVR feels] too good to be true — phantom nostalgia. Am I making up memories as I re-experience this space again after 25 years (personal communication, May 2025)?" While there is a consensus that the digital reconstruction allows for feelings of nostalgia for the lost heritage, further studies must be conducted on the nature of these feelings, as at present the category only has one question (Cronbach's α = n/a), and whether these correlate with the degree of presence within virtual environments. Additionally, analyses of spatial fidelity in reconstructions must be weighed against the time-bound nature of witness experience (such as R9), and conducted on the amount of distortion idealized models have as compared to the experienced real structure.

Lastly, the iVR's capacity to trigger memory (MEM) generation, reflection, and oral history was validated across participant groups (M = 4.65; SD = 0.65). As mentioned in chapter 3.3, players (M = 5.00; SD = 0.00) immediately connected with their memories of the Sky Room, and spontaneously initiating a think-aloud process. Players were able to point out specific areas and associated personal memories, beyond the bounds of the digitally reconstructed environment. R1 shared that the "flashback" may have "not returned the building, but it returned the memory" of the Jai-Alai (personal communication, May 2025). In fact, players and witnesses remembered the prices of drinks, the menu, singers at the venue, and even the exact location one player would date his future wife, underscoring the strong capacity of iVR in initiating personal recollections of space. For the youth (M = 4.30), the experience validated stories passed down by elders or those seen in archival images, connecting personal and collective heritage (R8, personal communication, May 2025; R10, personal communication, May 2025).

3.5.2 Sharing of Oral Histories: Participants saw the iVR experience as an initial step in a participatory process toward the reemergence of interest in the Jai-Alai, as heritage, spectacle, and sport. The sharing of oral history either through the think-aloud process, the PQ, or impromptu interviews are contributions to a richer collective memory as cultural afterlife of the lost structure. The impact of spatial reconstruction, particularly with the high fidelity afforded by original documentation has allowed the iVR experience to be particularly successful in initiating a reflection on personal memories by the participants.

Figure 13. Sharing of oral history- interview with the CEAPA.

For players (n=7), now in their late 70s, all of which had spent decades playing at the Manila Jai-Alai, the experience provided a rare opportunity to share their deep and mostly unrecorded narratives of the space that goes beyond archival documents

towards the authenticity of lived experiences. To illustrate the richness of these conversations, while wearing the HMD and immersed in the iVR environment, many participants had already begun the think-aloud process as mentioned earlier, with R1 validating the furniture layout and color palette to his experiences when he was active in the 1980s. Following the iVR experiences an unprompted roundtable discussion emerged (Figure 13): R2 added to the conversation with his knowledge of the many concerts and performances he attended at the Sky Room during his breaks and appreciated the archival recording playing in the background (personal communication, May 2025). R3 pointed out that while the Sky Room was active, it was the most popular venue of the day, and the future revision of the iVR experience should reflect that with a livelier entourage which is more "true to reality (personal communication, May 2025)." R4 while not able to enter the Sky Room as "it was only for the rich," caught glimpses of its interiors "from the stairwell," however, he appreciated the excerpt from *Garrote, Jai-Alai King*, having met the cast on the day of filming (personal communication, May 2025). R5 and R6 hoped that more spaces would be made available for viewing, with R7, a generational *cestero* or racquet maker, specifically requesting for their stories to be recorded and told in subsequent editions (personal communication, May 2025).

Players, witnesses, and youth alike expressed awareness of the site's heritage value and lamented the destruction of the building at the hands of the local mayor with R19 suggesting iVR could "help explore the motivations behind the demolition (personal communication, June 2025)." Youth participants felt satisfied in seeing the stories of their seniors validated and expressed excitement for the continuation of this narrative, as well as potential applications for other heritage sites (R8 and R9, personal communication, May 2025).

Portions of these oral histories have been incorporated into Chapter 1.2 of this essay, demonstrating the value of this process in the completion of the historical record, with potential for further inclusion in future editions of the *JaiAlive* project (Figure 9).

4. Conclusion and Future

Digital reconstruction is a viable participatory medium for documenting and preserving the collective histories of built heritage, and through iVR offers new ways of experiencing, remembering, and understanding complex but meaningful spaces otherwise lost to time and memory. The *JaiAlive* project has demonstrated the significant potential of immersive virtual reality in presenting high-fidelity digital reconstructions of demolished heritage structures while highlighting both the importance of strong archival documentation in enabling such reconstructions, and the need to explore alternate source of information to fill gaps in local heritage records. Using low-cost iVR technologies such as Google Cardboard-based head-mounted displays combined with still-image stereoscopic panoramas capable of being generated by and run on low-end hardware, the *JaiAlive* project shows that digitally assisted exploration of lost heritage and oral history in-situ can be viable in the Philippine context with minimal equipment and cost.

Preliminary data from the modified Presence Questionnaire (PQ) reveal the capabilities of iVR in eliciting strong senses of presence and emotional engagement, with strong nostalgia and memory recall correlating to distance in time or familiarity with the original structure. The experience triggered storytelling, memory sharing, and validation of prior knowledge, demonstrating iVR's value as both a teaching tool and catalyst for oral history. Challenges encountered include environmental distractions, accuracy of memories elicited, potential distortions of the depicted environment, and the limits of selected technologies such as the lack of motion freedom, entourage, animation, and photorealism, which warrant further study.

The researchers recognize this paper as an introduction to the ongoing work of the *JaiAlive* project and the expansion of the shared histories of the Manila Jai-Alai. Future works target the full reconstruction of the venue, along with a thorough validation and application of this paper's methodology to other parts of the structure. Likewise, there is strong potential for additional archival and social research to inform future interactive revisions of the *JaiAlive* project.

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Appendix

Appendix A. List of Panoramas, Hotspots, and Their Descriptions for the iVR Tour Experience:

Section	Title	Description	References
Sky Room (Ball Room)	Sky Room (Ball Room)	A rendering of the typical Sky Room configuration as a ballroom, with seating along the sides and with a central open dance floor. Note the panoramic view of Rizal Park and the Manila Bay sunset.	Welton Becket Collection Job 827 (Jai-Alai, Manila), Getty Research Institute
	Construction (1940)	Colorized photograph of the Jai-Alai Fronton façade right after construction as seen from across the street.	
	Roosevelt Club (1945)	A series of three photographs from the post-war restoration of the Jai-Alai as the Roosevelt Club for allied servicemen (L-R): “A Nation's Tribute" opening program for the Roosevelt Club, October 17, 1945; GI's Biggest Club Opened in Manila by Robert Trumbull for the New York Times; Colorized photograph of the Roosevelt Club as seen from across the street.	American Red Cross (1945). A Nation’s Tribute. Manila: American Red Cross; Trumbull, R. (October 18, 1945). GI’S Biggest Club Opened in Manila. New York: The New York Times; Roosevelt Club, John Tewell Photographic Collection
	Demolition (2000)	A series of three photographs from the demolition of the Jai-Alai in 2000 under orders from then Mayor Lito Atienza	Photographs used with permission from Architect Dominic Galicia, 2000.
Sky Room (Ball Room- Orchestra)	Sky Room (Orchestra)	A rendering of the typical Sky Room showing the Orchestra and bandstand set up for the performances of the Kings Orchestra. To the left facing the orchestra is the private dining room; to the right, is the Sky Room Bar.	Based on the architectural plans and photographs from the Welton Becket Collection Job 827 (Jai-Alai, Manila) Getty Research Institute
	Center of Manila's Social Life	“Jai-Alai as Center of Manila's Social Life" an article by the Imp for the Jai-Alai Weekly Magazine’s First Anniversary Issue.	The Imp. Jai-Alai Weekly (vol. 3, no. 1; October 17, 1941)
	Sky Room High Society	Jai-Alai Weekly Magazine’s First Anniversary Issue featuring photographs from the luncheon by Mr. and Mrs. Haig Assadourian on New Year's Eve, 1940.	Photograph from Jai-Alai Weekly (vol. 2, no. 1; January 6, 1941), endsheet photograph
	Kings Orchestra	Introducing the musicians of the Kings Orchestra.	Kings Orchestra Supplement. (April 25, 1941). Kings Orchestra Composed of Expert Musicians. Manila: The Tribune (pp. 9 & 23)
	Kings Orchestra	Kings Orchestra advertorial introducing the musical group formerly from the Sta. Ana Cabaret	
Sky Room (Orchestra-Right)	Sky Room (Orchestra-Right)	This extension of the Sky Room has moveable curtain partitions built into the ceiling. Doors access the stairwell to the lobby and balconies overlooking the games. A decorated portal with chromed stylized ionic columns leads to the Sky Room Bar.	Based on the architectural plans and photographs from the Welton Becket Collection Job 827 (Jai-Alai, Manila) Getty Research Institute
	Contract	Cover illustration of the façade and the conceptual sketches of the main lobby and ballroom by Architects Welton Becket and Walter Wurdeman of Wurdeman and Becket for the Proposed Sports Auditorium of the Jai-Alai Corporation of the Philippines	Jai-Alai Corporation of the Philippines. (n.d.). Proposed sports auditorium for the Jai-Alai Corporation of the Philippines. Manila: Jai-Alai Corporation of the Philippines.
Sky Room Bar	Sky Room Bar	This render of the Sky Room Bar depicts the circular configuration of the bar counter and its luxurious finishing. Of note are the wall murals depicting nymphs set within a tropical jungle, and the panoramic window commanding a view of the play area.	Based on the architectural plans and photographs from the Welton Becket Collection Job 827 (Jai-Alai, Manila) Getty Research Institute
	Pelotari	The current roster of pelotari	Jai-Alai Weekly (vol. 3, no. 1; October 17, 1941)
	1st Anniv.	First Anniversary cover	
	The Sky Room Bar	Photograph from the second issue of Jai-Alai Weekly showing the Sky Room Bar packed with patrons.	Photograph from Jai-Alai Weekly (vol. 1, no. 2; November 25, 1940)
	Video	Garrote, Jai-Alai King by Manuel Cinco was filmed at the Jai-Alai and stars pelotari Oyarzabal, Manu, Fernandez, and Lorenzo.	Selected excerpts from the film “Garrote, Jai-Alai King” (1978)
	Background Music	The musical overlay is a medley of songs and arrangements by surviving members of the Kings Orchestra including Narding Aristorenas with Status Quo, and Anastacio Mamaril with Cha Cha No. 1.	Aristorenas, N. (2004). Status quo. Moonlight Serenade. Quezon City: University of the Philippines; Mamaril, A. (1971). Cha Cha No. 1. Anastacio Mamaril and his Orchestra. Philippines: Pioneer.

Appendix B. The questions for the modified PQ as translated into Filipino are found below:

1. (GP) Naramadaman ko na “naroon ako” sa Jai Alai habang nasa VR. (modified from Slater & Usoh, 1994)
2. (SP1) Tila pinapaligiran ako ng mundong birtwal. (IPQ)
3. (SP2) Para lamang akong nagmamasid ng mga larawan. (modified from IPQ)
4. (SP4) Pakiramdam ko na ako ay talagang nasa sa loob ng birtwal na espasyo, sa halip na gumagamit lamang ng aparato mula sa labas. (IPQ)
5. (SP5) Naramdaman kong tunay akong nasa birtwal na espasyo. (IPQ)
6. (INV1) Habang suot ang salaming VR, gaano ninyo namamalayan ang inyong totoong kapaligiran? (hal. Mga tunog, temperatura ng silid, ibang mga tao, atbp.) (Witmer & Singer, 1994)
7. (INV3) Habang suot ang salaming VR, patuloy ko pa ring napapansin ang aking totoong kapaligiran. (IPQ)
8. (INV4) Lubos akong nahumaling sa birtwal na mundo ng VR. (IPQ)
9. (REAL1) Gaano kapareho sa inyong karanasan ng totoong mundo ang naging karanasan ninyo sa VR? (Witmer & Singer, 1994)
10. (REAL2) Gaanong kalapit sa totoong buhay ang inyong mga nakita at naranasang espasyo sa VR? (modified from Carlin, Hoffman, & Weghorst, 1997)
11. (REAL4) Tila mas totoo ang karanasang birtuwal sa totoong buhay. (IPQ)
12. (KNOW1) Ikinabuti ng aking kaalaman tungkol sa Jai Alai ang karanasang VR na ito.
13. (FEEL) Bumugso ang damdamin ko nang maranasan ang VR nitong makasaysayang gusali.
14. (MEM1) Mas luminaw ang ala-ala at pag-unawa ko sa espasyo gawa ng VR experience kumpara sa dati kong pagkakatanda o imahinasyon.
15. (MEM2) Ang pagkaranas ng Jai Alai sa pamamagitan ng VR ay nakatulong sa akin na ipamahagi ang aking mga kwento at alaala nitong makasaysayang lugar.
16. (KNOW2) Mabisang pamamaraan ang VR para sa pagpapalawak ng pagbibigay-halaga ng ating mga nawalang pamanang kultura.

Kung ang karanasang VR ay nagdulot ng mga alaala na nais ninyong ibahagi, mangyari po lamang na ipagbigay-alam sa amin. Ikinagagalak naming itala ang inyong kasaysayang pasalita upang mapalawig ang kuwento ng Jai Alai. Maraming salamat po!