Architecture
Image Studies
AIS Scientific Journal

Vol.6, Issue 2, Digital Capture: Advanced 3D Scanning and Architectural Representation, 2025

Article

RGB+D*(t) or the Spatial Manifold Image:
on designing virtual spaces through collective live volumetric video streaming

Me AndOther Me | Cenk Güzelis & Anna Pompermaier

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Abstract
The article explores the evolution of social spaces from physical to digital realms, examining the role of Spatial Montage in creating immersive digital environments in Game Engines through live 3D scanning and streaming. By analysing the transition from traditional 'third places' to contemporary 'fourth places,' we discuss how social media platforms facilitate new forms of community making and social interactions, including the spatial screen dimension and transforming the home into a vibrant hub for online gatherings. Reflecting on a project that explores online streaming culture and the role of moving images in architectural design, we combine theoretical insights with the making of and applications in our project called '*Be My Guest!*' to re-examine the concept of spatial montage as a method for digital placemaking. This approach integrates live volumetric 3D scans into physical spaces using spatial computing and streaming technologies, prompting a discussion on how this could transform architectural environments and influence how we approach architectural design in Web 2.0.

Key Words
Volumetric 3D Scan, Digital Placemaking; Spatial Computing, Streaming Technologies, Web 2.0

Introduction
The campfire has evolved over the centuries as a place for cooking, gathering, and collective storytelling. Historically, the concept of social space was closely tied to public physical environments such as plazas, public gardens, coffee shops, parlours, and clubs - places where people congregate and interact face-to-face. These social spaces are exemplified by the sociological concept of 'third places,' established by Oldenburg as "public places that host the regular, voluntary, informal, and happily anticipated gatherings of individuals beyond the realms of home and work" (Oldenburg, 1989). Third places serve as alternative locations where people can come together to form and maintain communities through informal public social interactions.

Figure 1. Screenshots of social virtual spaces related to food, gathering, and dining on various platforms, such as GTA RolePlay, Roblox, and VRChat.

The World Wide Web as Campfire: Social Media and Virtual Worlds

Today, social spaces are supplemented by and intertwined with social media, streaming platforms, online forums, multiplayer video games, and virtual worlds: the modern-day campfire is the World Wide Web. For instance, you can work in virtual cafes or deliver pizza in games like GTA, run a restaurant business in Roblox, have real guests, dine while watching a Mukbang video on Twitch, or join live fitness classes in VR Chat.

The culture of global interconnectedness - due to our constant connection to the internet through digital devices has also altered the perception and function of the home, transforming it from a private space to one that is increasingly accessible and exposed to the public. The proliferation of video-calling, gaming, and social media platforms has opened up and dissolved the boundaries of domestic interiors to a broader audience, catalysing a trend in the thoughtful design and curation of home environments to be visually appealing for digital displays and introducing new modes of expression, such as posts, tweets, videos, and streaming formats, which have popularised the notion of 'content' and spawned the role of the content creator, prompting significant new inquiries for architecture.

It has become clear that the role of architecture has undergone a profound transformation beyond its original function of providing shelter. With the advent of Web 2.0[1], this evolution is notably influenced by the pervasive expansion of the internet, social networks, and spatial computing technologies, which have collectively redefined our interactions with the environment. Dwelling and operating in digital

1 - Web 2.0, also known as the participative or social web, refers to the second generation of the internet, characterized by user-generated content, social media, virtual communities and interactive web applications.

realms and platforms have significantly altered our conventional notions of spatiality, sociability, identity, and time while becoming, according to Morrison (2017), a more hybrid version of third places that he refers to as 'fourth places', spaces that emerge from the blurring boundaries between traditional social environments - home, work, and community gathering spots - amidst widespread social disruptions. These disruptions have forced us to reevaluate our habitual spaces and how we interact within them, as we have, for example, observed when people adapted to new norms introduced by global challenges such as the COVID-19 pandemic. The process described is already underway, driven by our constant connection to the world through the internet and screens, as discussed above, even from the private space of our homes. Fourth places could be considered as new, hybrid spaces that combine elements of physical and virtual realities, fostering connections that transcend traditional spatial boundaries.

In this regard, it is interesting to consider that architecture will be increasingly valued not just for its practical utility but for the immersive spatial experience it provides, able to host complex spatial socio-cultural narratives not confined to the tangible, built environment but extended into the virtual spaces where digital and physical materialities intertwine. What new architectural formats might emerge that cater to both the physical and the digital dweller? How might these forms change how we design and interact with our environments?

The Role of Participatory Culture and Digital Literacy in the Web 2.0 Era

An important aspect to consider in this evolution is that digital or online content creation is no longer an external process done by software developers or professional new media players but is increasingly performed by ordinary people. In today's Web 2.0 era, architecture has become faster, interconnected, and increasingly specific and tailored to its dwellers who, in a way, became designers themselves. In that light, participatory culture, as outlined by media scholar Henry Jenkins (2009), emphasises low barriers to artistic expression and civic engagement, support for sharing creations, and informal mentorship where individuals are not sole consumers but also contributors or producers. Jenkins highlights several aspects of participatory culture, including affiliations with both formal and informal online communities such as Facebook, Instagram, or Discord, for example, expressions through creative forms like digital sampling and fan fiction, collaborative problem-solving in teams via platforms like Wikipedia, and influencing media flow through activities such as podcasting, blogging, and live streaming. This democratisation of content production and distribution is closely tied to remix culture or read-write culture, where users are encouraged to modify and share existing materials to create new works. Barb Dybwad (2005) introduces the term' collaborative remixability' to talk about this process:

> "I think the most interesting aspects of Web 2.0 are new tools that explore the continuum between the personal and the social, and tools that are endowed with a certain flexibility and modularity which enables collaborative remixability - a transformative process in which the information and media we've organised and shared can be recombined and built on to create new forms, concepts, ideas, mashups and services." (Dybwad, 2005).

The creation and circulation of memes on the internet is an example of collaborative remixability. Memes involve sampling and altering existing images, videos, or texts to produce new, often humorous or informative content. This practice showcases the principles of read-write culture, where users actively engage in media production and distribution, contributing to a vibrant, participatory online culture and the democratisation of content creation.

Within the realm of remix culture, the internet presents itself as a fertile setting for multitudes of creative remix techniques. Manovich (2001) highlights the significance of RSS feeds and associated readers, which empower users to curate a customised mix from an extensive number of sources. At the beginning of the 21st century, there was a notable change when the term 'remix' started being used to describe other forms of media, not

Figure 2. Screenshots from the In Real Life streaming category of Social Dining on Twitch.

just music. This included visual projects, software, and literary works.

Manovich (2005) emphasises that the advent of software such as Photoshop in 1989 and After Effects in 1993 brought about a significant and profound change in graphic design, motion graphics, commercial illustration, and photography. The World Wide Web redefined digital content as combinations of other documents, signifying the beginning of remix culture. Early in the twenty-first century, remixing had developed from a compositional option to a new cultural norm.

Spatial Montage in Digital Media: *The Twitch Example*

In today's digital landscape, participatory media platforms provide various ways for individuals to create content, connect with others, and share their creations globally, becoming fertile grounds for community building. Twitch, for instance, introduced in June 2011, epitomises the modern conduits of streaming culture, mainly celebrated for its live broadcasts spanning video games, creative content, and 'In Real Life (IRL)' streams. In our research, we specifically look into Twitch, which, through its software design, allows individuals to create live content by employing graphical user interfaces and multiple cameras to share their environments and activities, effectively creating a Spatial Montage where streamers not only host their events but also creatively include their space to the user-generated content through camera angles, overlays of digital elements, and interactive chat functionalities. Complementing the aforementioned 'fourth places,' this content curatorship transforms their living spaces into dynamic and vibrant online hubs, shown as a single moving image through the stream. The streamed content becomes a canvas that creates new relations between real-time interactions and elicits immediate viewer responses through likes, comments, and shares, thereby crafting a multilayered visual narrative.

From Kino-Eye to Live Streaming: Evolution of Spatial Montage

This contemporary approach to the creation of social spaces through the live stream of multilayered real-life and digital content and fragments often overlaid in a spontaneous and unfiltered manner echoes the avant-

garde vision of Dziga Vertov Kino-Eye filming technique, which aimed to capture what Vertov called “inaccessible to the human eye” (Bulgakowa, 2008). Vertov’s Kino-Eye sought to transcend traditional films that mimic human vision by utilising montage - a technique involving the assembly of film clips in a sequence to create a new meaning or message. By piecing together film fragments, Vertov aimed to craft “a new filmic, i.e., media-shaped, reality and a message or an illusion of a message - a semantic field” (Bulgakowa, 2008, p.142). Vertov and his team employed various technological innovations and creative filming techniques, such as hidden cameras and experimental editing, to achieve the goals of Kino-Eye, producing an immersive and authentic representation of reality. This method, exemplified in Vertov’s *Man with a Movie Camera*, diverged from narrative or acted films by aiming to capture ‘life unawares’ and edit it to uncover a new, unseen truth. Vertov’s approach aligns with the live streaming culture, especially within the IRL category, where streamers blend their everyday activities with digital overlays, creating new forms of expression and interactive storytelling through arranging or montaging their screen space.

Within this scope, we approach the concept of Spatial Montage, drawing on Lev Manovich’s (2001) framework. He defines Spatial Montage as the “spatial order of layers in a composite, virtual space constructed through the composition, 2-D movement of layers in relation to the image frame, and the relationship between the image and linked information in the adjustment window.” (Manovich, 2001, p. 322). This entails various images appearing simultaneously on one screen, structured by a logical sequence determined by the creator.

> *“In general, spatial montage would involve a number of images, potentially of different sizes and proportions, appearing on the screen at the same time. This by itself of course does not result in montage; it is up to the filmmaker to construct a logic which drives which images appear together, when they appear and what kind of relationships they enter with each other.”* (Manovich, 2001, p. 322).

Manovich introduces this idea through software GUIs[2], marking a departure from traditional film montages. In this new form, multiple visual elements coexist on the same screen, enabling real-time interaction and manipulation.

In the realm of live streaming, the montage of live content through software interfaces is accomplished by strategically layering and integrating visual elements, from live camera feeds to textual overlays. This creates a live-edited, social, and interactive virtual space. During the stream, hosts interact with their guests, sometimes editing the screen to offer gifts or initiate quests that guests respond to in chat. The Kino-Eye technique that aims to capture life unfiltered, as if writing reality with a movie camera, streaming culture, and particularly the IRL category, as “factual film writing” (Vertov, 1984) is reminiscent of the creation of a newsreel. It transforms the screen space into an exposed and authentic immersive storyteller. In this context, the graphical user interface plays a vital role, providing hosts and their audience with new forms of visual expression and interaction.

Rethinking Spatial Montage: From Screen to Space

However, a genuine spatial dimension and the affordances it could offer are still missing from the implementations of Spatial Montage using software GUIs to create screen-based virtual spaces through moving images. Therefore, we conducted a live streaming experiment: in our broadcast, we reimagined the method of the Spatial Montage not merely as a cinematic technique but as a spatial practice that can be used as a design method to edit and remix spaces within virtual, augmented environments. Such a shift in spatial thinking to the virtual reality domain could expand the narrative capabilities of live streaming, enabling more immersive and interactive experiences.

2 - A graphical user interface (GUI) is a type of user interface that allows users to interact with electronic devices through graphical icons, visual indicators, and other visual elements, rather than text-based interfaces or typed command labels. GUIs are designed to enhance usability and efficiency by providing a more intuitive way to control and interact with software applications.

To address these ideas, we sought to explore the concept of Spatial Montage using live volumetric scanning technology, with the motivation to move away from merely 2D screen-based interactions towards a spatial domain that utilises the affordances of both the physical space of the home and the digital three-dimensional space that overlaps onto it.

Within this framework, we posed the following questions: How can Spatial Montage be employed to create a three-dimensional gathering space expanding home? What does it mean to dwell our home spaces as hybrid media remixes? By re-exploring Spatial Montage and remixing media objects in the third dimension, we aimed to understand how creating layered, multi-dimensional augmented spaces can foster interaction and a sense of community, turning home into a ‘fourth place’.

Case Study: ‘*Be My Guest! A Collective XR Dinner*’

Building on these concepts, we initiated a research project named ‘*Be My Guest! - A Collective XR Dinner*’, which explores how streaming culture can extend into a spatial dimension using the cultural software[3] of Unity3D Game Engine, transforming online gatherings into immersive augmented environments where the home becomes an inhabitable hybrid media object.

‘Be My Guest!’ delves into the real-time capabilities of volumetric video streaming within a performative, collective context—a dinner party held in a networked digital space, allowing multiple participants to connect simultaneously from anywhere in the world. The project imagines a speculative living scenario and proposes a mixed-reality dinner event where friends from distant locations can come together through the spatial internet[4]. We specifically focused on the sub-category of In Real Life (IRL) streaming, known as Social Dining, as the practice of sharing meals online has gained significant importance as a communal activity, especially during the restrictions imposed by the COVID-19 pandemic, which allowed individuals to overcome the isolation typical of our digital age by facilitating gatherings with others while dining in a digital setting. The idea of basing the project on the concept of Social Dining stems from the observation that watching others dine live while eating alone at a distance creates a new ritual of participation in an activity and social engagement.

As previously noted, due to the lack of spatial dimension in 2D image-based gatherings, we shifted towards live 3D imagery. Our experiments used live volumetric scanning to create a social and spatial dining scenario. Commonly applied in cinematic content creation for VR productions, volumetric video enables capturing and viewing 3D content in 6DoF[5] environments. This

3 - Manovich (2013) discusses the concept of remixing made possible by various media software, such as Microsoft Word, Adobe Photoshop, Final Cut, Mozilla Firefox, and many others, enabling the creation, sharing, and remixing of diverse media combinations, including websites, interactive applications, motion graphics, and virtual globes, incorporating text, maps, videos, 3D models, and interactive elements. He further introduces the notion of cultural software, which enables what Manovich terms media hybridity. He provides an illustrative case of media hybrids by citing Google Earth, where aerial photography, satellite imagery, 3D computer graphics, still photography, and other media converge to form a novel hybrid representation, referred to by Google engineers as a 3D interface to the planet. Manovich posits that these emerging new media gestalts arise when various media interfaces, techniques, and underlying assumptions from different media forms and traditions are merged, and instead of experiencing each element in isolation, they amalgamate to offer a completely fresh and integrated experience (Manovich, 2013).

4 - The spatial or immersive internet refers to a hybrid environment that integrates the physical and digital worlds, allowing users to interact with three-dimensional, sensory-rich virtual spaces within the actual world.

5 - 6DoF, or Six Degrees of Freedom, refers to the movement of an object in a three-dimensional space. It includes three translational movements (forward/backward, up/down, left/right) and three rotational movements (pitch, yaw, roll). This concept is essential in fields like robotics, virtual reality, and aerospace, where precise control and freedom of movement are critical.

Figure 3. Be My Guest! A Collective XR Dinner Event

Figure 4. Be My Guest! A Collective XR Dinner Event

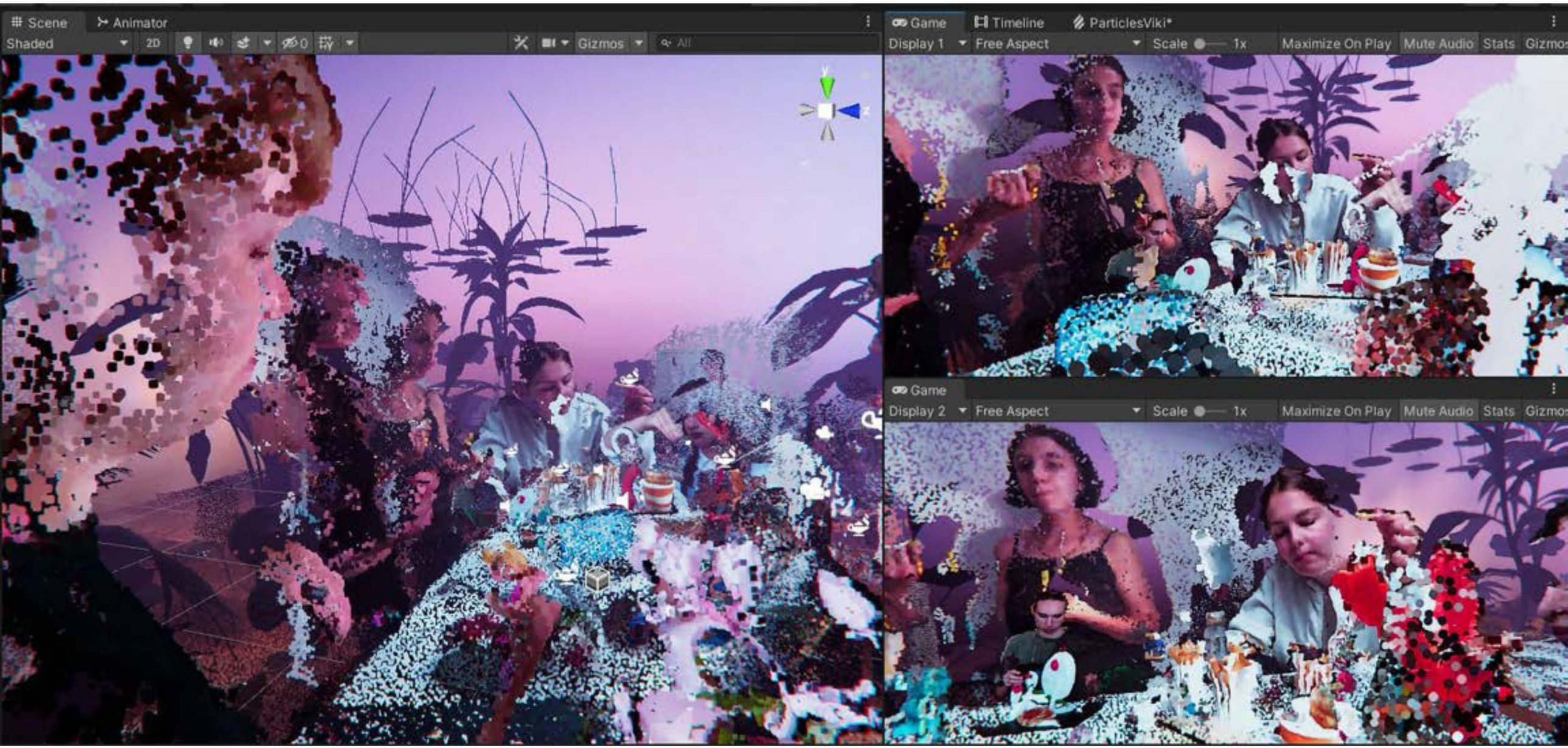

Figure 5. Creating a collective virtual table in the Unity Game Engine by stitching together volumetric video recordings - Experimental Architecture Seminar 2023 at ./studio3, the Institute for Experimental Architecture of Innsbruck University.

method captures cinematic content from all angles using a number of depth-sensing cameras stitched together to create an immersive three-dimensional moving image.

Depth-sensing technologies, particularly those based on infrared light, are crucial to this process. Infrared-based volumetric capture emits infrared light and analyses its reflection from surfaces to produce detailed 3D data. Whether using, for example, Microsoft Kinect Cameras or iPhone or iPad front (Face ID)[6] or rear (LiDAR)[7] cameras, the camera eye captures depth images at 60 frames per second. This setup reconstructs spatial information similar to moving images but enhanced with depth data - represented as an additional D channel to the traditional RGB - allowing for the detailed mapping of a scene or object's structure in three dimensions. Therefore, we decided to implement this expanded digital image production method for our spatial design practice in the '*Be My Guest!*' project.

Live Volumetric Scanning and Streaming as a Design Method

Our design method leverages time-based volumetric scanning as a technique for real-time digital space-making. Our experiment began with equipping a home, specifically focusing on the table setting, with multiple synchronised Kinect Azure depth cameras. These cameras spatially capture the host's home, integrating their lived space into the shared virtual experience as a real-time updating digital point cloud environment in the Unity Game Engine.

Here, the table and the lived experience around it become the foundation of the live-stream environment, upon which the host adds digital objects and, more importantly, invites friends to join them at the table remotely using a custom mobile app.

In this scenario, to invite remote guests into the environment, we opted for a lightweight and distributable volumetric scanning method using mobile phones' TrueDepth camera technology, enabled by an app called Record 3D. This app streams volumetric video and can, therefore, send live point clouds from guests' iPhones or iPads into a shared virtual space—our real-time captured home environment in Unity.

The guests' attendance becomes active participation through their time-based spatial presence - RGBD - enabled by the depth cameras on their mobile devices, functioning as either a 'window on the world' or a 'mirror to the self.' These new time-based spatial contents appear in the digital overlay of the hosts' home, where they can place their guests' streams around their table. In this immersive setting, guests communicate not by typing but through their physical presence, voice, and gestures. At the same time, every distant app user receives real-time visual and audio feedback from the live virtual space on their mobile phones, as illustrated in Figure 6.

Figure 4 shows the first guest joining the digital gathering from a park in Italy. Their table, the food being prepared, their actions, movements, conversations, and the surrounding sounds are spatially streamed into the hosts' home table in real-time. This immersive experience directly brings the ambience and charm of the Italian picnic into the host's physical dining environment. Simultaneously, the host can move in their space and anchor their guests' RGBD video presence around the table, sharing the space and event seamlessly.
Suddenly, another guest joins the semi-public space by having lunch from his home. The guest's table is adorned

6 - Face ID is a facial recognition system developed by Apple for the iPhone and iPad, using infrared and depth perception technology originally developed by PrimeSense, which Apple acquired in 2013. The system creates a 3D map of the user's face to seacurely unlock devices, authenticate payments, and access sensitive data.

7 - LiDAR (Light Detection and Ranging) is a remote sensing method that uses laser light to measure distances to a target. It works by emitting laser pulses and measuring the time it takes for the reflected light to return. LiDAR can generate precise, three-dimensional information about the shape and surface characteristics of objects.

with a magazine, a cactus, and a bowl of muesli. The guest seems to pop up in the middle of the table, and the host grabs and moves the guest onto an empty spot, integrating them into the shared space.

Thus, by transforming remote guests into live camera operators, the '*Be My Guest!*' setup grants them control over the digital content that enters their space. This transformation merges the roles of creator and viewer, enabling individuals to shape their environment in real-time, collaboratively remixing their spatial experience.

Therefore, we view volumetric technology not just as a way to capture space but as a means for collaborative and participatory world-making in virtual environments that allow online and spatial modes of designing social spaces. These environments build upon the participants' social and spatial presence, including elements of their tables and backdrops that embed cultural codes of their individual contexts. Our method, centred on the concept of the table as an expansive and exploratory virtual space, allowed us to examine how integrating the live scanning and streaming social and spatial presence of others into our lived environments can alter how we perceive and design spaces combining physical and digital materialities. What does it mean to move from the GUI to the SUI[8], where the space becomes the medium of communication, the image frame or screen is replaced by the space, and the home turns into an envelope for hosting virtual events? What does it mean to be at home, or to be a host, when remote places are live-remixed into your intimate, dwelled spaces? How can a host orchestrate such environments?

The shift from having passive attendees present through 2D communication methods, such as chatting, to having fully present live guests within the inhabited space of the home has significantly altered the host's relationship with their physical space. This transformation is due to the affordances provided to the host for real-time spatial reconfiguration, newly apprehended spatial montaging, the placement of live digital content in the space, and interaction with virtual visitors. We will explore this transformation in the next chapter.

***Be My Guest!* Host as a Live-editor of Spatial Montage**

At times, using the previously mentioned setup of live streaming into a single virtual space, we hosted dinner parties where friends and strangers entered the setup using head-mounted displays. These events occurred in specific physical locations, allowing participants to gather around a shared table while simultaneously immersing themselves in a mixed-reality environment where other participants remotely joined the dinner.

In our *'Be My Guest!'* project, we reimagine the concept of a 'host,' drawing parallels with roles seen on platforms like Twitch or YouTube Live. Unlike these platforms, the host in *'Be My Guest!'* actively participates in and edits the mixed reality space in real-time using a Meta Quest 3 headset with Passthrough features coupled with hand-tracking models that allow grabbing, moving, and positioning of the digital content through digital hands overlapping onto the actual hands. This enables a so-called remote touch, allowing the host to curate a physical-virtual overlap space and manipulate the world coordinates of live-streamed content from guests.

This live editing technique utilises human gestures and the physical space to curate virtual content within a spatial user interface. As shown in Figure 9, the host can integrate virtual guests around a physical table, where they can arrange the proximity between guests, crafting social and affective experiences within the home space. This approach emphasises tactile and haptic spatiality, focusing on the sense of touch to enhance presence and interaction in a digital space. Here, the touchscreen evolves from a flat interface to a broader touch space, enriching the tactile interactions with the virtual world and other people.

8 - SUI, or Spatial User Interface, refers to an interface that allows users to interact with digital content in a three-dimensional space. It leverages the physical environment, enabling more natural and intuitive interactions through gestures, movements, and spatial awareness. This type of interface is used in virtual reality (VR), augmented reality (AR), and mixed reality (MR) applications, enhancing user experience by integrating digital objects seamlessly into the physical world.

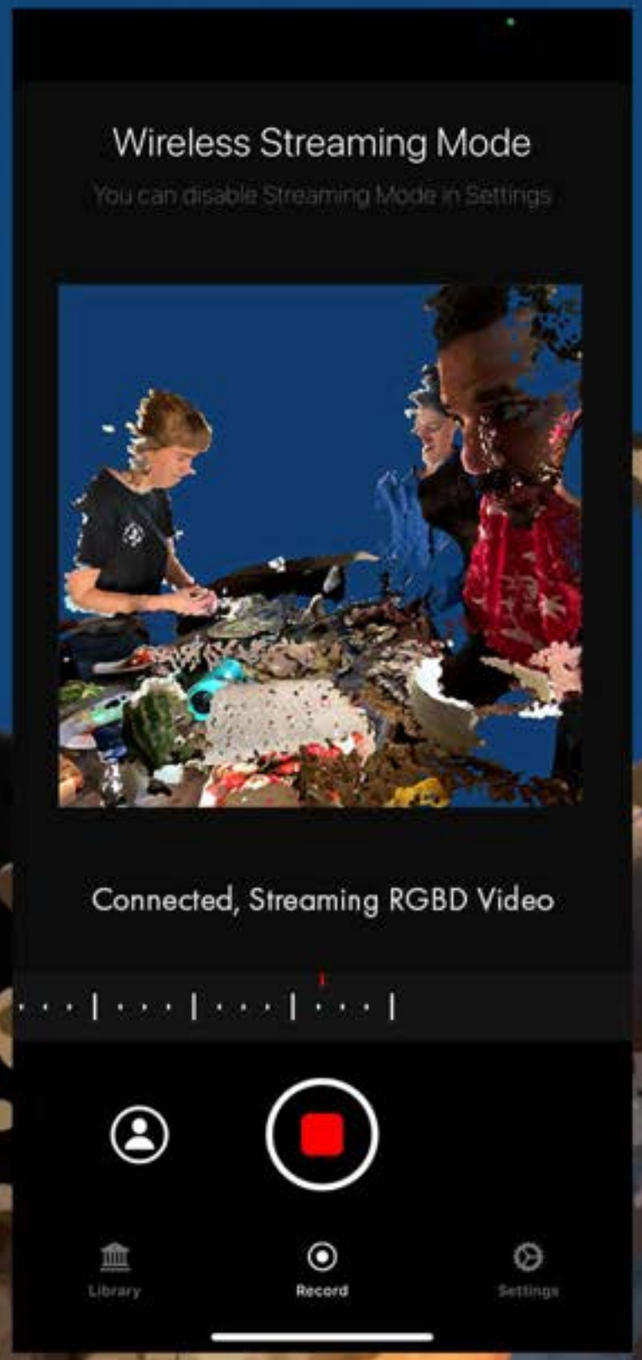

Figure 6. Real-time visual and audio feedback from the live virtual space into mobile phones of remote participants via Record 3D App.

Figure 7. Be My Guest! live public collective performance at IMPAKT, Centre for Media Culture in Utrecht (NL) (https://meandother.me/Be-My-Guest-IMPAKT-2024)

Figure 8. Be My Guest! A Collective XR Dinner Event

Thus, '*Be My Guest!*' expands the Spatial Montage into a fully three-dimensional interaction space. Unlike conventional graphical user interfaces with flat arrangements of windows and icons, this immersive environment enables live editing of 3D scan sequences within the host's physical space using mixed-reality technology.

This spatial thinking—the transition from 2D to real-time 3D environments streamed into cohesive virtual spaces signifies a major development in our interaction with virtual spaces. The juxtaposition of live digital scans within a physical room redefines how we may inhabit and interact with our homes. By allowing dynamic editing and reconfiguration, living environments become fluid interfaces for new modes of sociability and design, oscillating between physical and digital spaces without hierarchy. This challenges traditional notions of interior and architectural design, suggesting a speculative future where our living spaces are as mutable and responsive as the screens of our devices.

Reflections on the Spatial Manifold Image and Media Hybrids

As we navigate the era of remix culture and the interconnected landscape of Web 2.0, our physical and virtual spaces, societal interactions, and even our personal identities are evolving. The spatial implications of our increasingly networked society must be thoroughly explored as a crucial element of what could be considered a new typology of architecture for the future.

This transformation signifies a new era in the production of online and hybrid spaces, laying the groundwork for innovative approaches to spatial telecommunications and enhancing sociability in physical environments through spatial computing and live editing of 3D scanned content at home. In this evolving landscape, architecture is increasingly appreciated for its practical utility and the immersive spatial experiences it provides. This reflection also offers an opportunity to consider the emerging role of images and their production in architectural spatial design.

Once seen as representations of reality or tools of speculating architecture, images have extended into their own operative modes, becoming integral to the digital social fabric. Enabled by software and graphical user interface design, images now serve as mediums for artistic expression and storytelling due to their real-time operativeness. Harun Farocki's strategic understanding of operational images[9] highlights how these images begin to define what an image is for us. In one of his last interviews, Farocki expressed that images are no longer about representing the world but about intervening in it. They are no longer mere reproductions, even in Walter Benjamin's sense, but have become realities in their own right.

In the context of the *Be My Guest!* project, the novel concept of the Spatial Manifold Image emerges as a profound reflection on the evolving role of images in contemporary space-making. As we delve into the hybrid condition facilitated by volumetric filming, RGBD data streaming, networking, and the spatial computing technology of VR, which further extends into MR through passthrough image overlays, it becomes evident that images are no longer static representations but dynamic elements integral to creating new realities. This transformation is accentuated through image-based hand-tracking, enabling seamless interactions between the physical and virtual realms.

For Manovich (2002), augmented space research introduces new perspectives on traditional spatial practices. Previously, we might consider an architect, a fresco painter, or a display designer as professionals combining architecture with images, text, or various

9 - Harun Farocki introduced the concept of "operational images" to describe images created not for human consumption, but for machines to process. These images are used in automated systems and industrial processes, where their primary function is operational rather than representational. Farocki's work highlights how such images, generated by surveillance cameras, military technology, or medical devices, shift the role of images from passive observation to active participation in controlling and shaping reality.

Figure 9. Host Live-editing the space by grabbing the spatiotemporal volumetric footage and positioning them in space.

Figure 10. Be My Guest! A Collective XR Dinner Event - Unity Editor

Figure 11. Be My Guest! A Collective XR Dinner Event, hosts POV from Mixed-Reality

Figure 12. Be My Guest! A Collective XR Dinner Event, hosts POV from Mixed-Reality hosts POV from Mixed-Reality

symbolic systems within a single spatial framework. In this research, we re-examine how architects could adapt to the new media landscape and Web 2.0, using new tools of expression and design to create social and spatial environments. We can describe their work as addressing the challenge of augmented space—the task of overlaying physical space with layers of data. This shift heralds an era where the design of virtual spaces leverages the physical attributes of the environments they represent, ensuring that virtual experiences are expansions of, rather than isolated from, our physical reality.

The '*Be My Guest!*' project exemplifies how images, traditionally confined to two-dimensional planes, have transcended their conventional boundaries to become vital components of spatial experiences. Employing advanced technologies, images now possess the capability to augment our living environments, challenging our understanding of the architectural design practice towards an online socio-spatial approach that considers the inclusion of virtual communities, domestic space, social media platforms, high-bandwidths, spatial computing devices, game engines, and open-source culture.

Ultimately, the Spatial Manifold Image is a testament to the evolving nature of images and their critical role in contemporary space-making. It highlights the transformative potential of integrating digital and physical realms, paving the way for a new socio-spatial architectural practice that redefines how we perceive, create, and inhabit spaces.

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AIS - Architecture Image Studies Scientific Journal Vol.6, Issue 2, Digital Capture: Advanced 3D Scanning and Architectural Representation, 2025