DR GEORGES KACHAAMY

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SAMPLE SENIOR STUDIO SUPERVISION

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Designing the Future: Immersive Technologies transforming architectural learning

Interview with Georges Kachaamy

In the realm of immersive architectural education, The Metaverse, coupled with Virtual Reality (VR), unlocks a realm of transformative possibilities. In this captivating virtual landscape, architecture students transcend physical constraints, finding themselves transported to virtual classrooms that redefine traditional learning environments. Here, they embark on interactive learning journeys, immersing themselves in lifelike simulations and practical scenarios that revolutionize architectural education.

Immersive virtual classrooms offer architecture students a remarkable opportunity to step inside their designs and experience spaces in ways that traditional flat pages cannot rival. VR empowers them to visualize and interact with three-dimensional models, fostering a profound understanding of spatial relationships, proportions, and design elements. This hands-on approach ignites creativity and critical thinking, empowering students to manipulate and experiment with architectural concepts in real time, cultivating practical skills alongside theoretical knowledge.

Beyond the boundaries of physical reality, the Metaverse becomes a gateway to architectural wonders of the world. Architecture students embark on virtual journeys, traversing renowned landmarks, walking through ancient temples, iconic skyscrapers, and celebrated architectural masterpieces. This digital exploration enriches their architectural vocabulary and historical knowledge, inspiring innovative design ideas rooted in the wisdom of the past.

Design critique and collaboration assume new dimensions within these immersive virtual environments. Architecture students present their projects in VR, facilitating dynamic discussions with professors and peers. Here, they explore alternative design solutions, iteratively refining concepts, and receiving real-time feedback in a collaborative setting. This interactive critique process fosters a profound engagement with the design process, nurturing a deeper understanding and honing architectural visions through collective insights.

Furthermore, the immersive virtual realm becomes a canvas for architectural experimentation, empowering students to create and personalize virtual spaces. These virtual environments serve as extensions of their architectural identity, acting as showcases for design portfolios and envisioning future projects. Architecture students can even extend virtual invitations to potential clients or employers, showcasing their skills and creative vision with an immersive and impressive impact.

The seamless integration of VR in architectural education empowers students to transcend traditional boundaries, elevating their learning experience to new heights. This synergistic fusion bridges the gap between architectural theory and practice, enabling students to explore and comprehend architectural concepts with unprecedented realism and immersion. As these technologies continue to evolve, the future of immersive architectural education holds the promise of shaping a new generation of architects equipped with a profound understanding of spatial design and an unwavering passion for pushing the boundaries of architectural innovation.

VR stands for Virtual Reality, which is a computer-generated simulation of a three-dimensional environment that can be interacted with by using special equipment, such as a headset, controllers or gloves. VR is designed to simulate the user's presence in the environment, creating a sense of immersion and allowing them to interact with the environment as if it was real.

We are meeting with Dr. Georges Kachaamy, Director of the Center for SAAD Research, Innovation and Design (CRID) and Professor of Architecture at the American University of Dubai to ask him some questions on this topic.

MG: What are some of the applications of VR technology?

GK: VR technology has emerged as a transformative tool in various disciplines, offering immersive and interactive experiences that bridge the gap between the real and virtual worlds. There are many applications that support VR systems and many more are being created as we speak. Some facilitate social interactions, others focus on a specific discipline. Some are limited to navigation and virtual interactions; others are specific for the creation of assets and virtual worlds. Here are some of the diverse applications of VR technology:

Architecture and Design. Architects and designers can leverage VR to create, visualize, and present their projects. VR allows clients and stakeholders to virtually walk through buildings, experience interior designs, and assess the functionality of spaces before construction begins. This immersive experience enhances communication, reduces errors, and facilitates better decision-making. At the CRID, we had clients who asked for their designs to be accessible through VR to understand better the proportions and quality of space inside their proposed designs.

Education and Training. VR allows students to dive into virtual simulations that enhance their learning experience. Also, it can be used as a tool to augment creativity in design. For example, at the CRID we delivered courses such as "*DDFT 473 – Virtual Environments*" that uses VR to help students create, design, and visualize their concepts, scale one to one, in an immersive manner. Another discipline deals with medical students who can practice complex surgical procedures in a safe and controlled virtual environment. In addition, VR can simulate historical events, archaeological sites, existing architectural masterpieces, and scientific experiments, providing students with hands-on learning opportunities that were previously inaccessible.

Real Estate, Tourism, and Hospitality. VR is transforming the way real estate properties are showcased and experienced. Potential buyers can take virtual tours of properties from anywhere, saving time and travel expenses. Similarly, the tourism industry utilizes VR to offer virtual travel experiences, allowing individuals to explore popular destinations and attractions without leaving their homes. Even hotels are utilizing VR technology to showcase their lobbies and rooms by creating immersive virtual tours that allow potential guests to explore and experience the accommodations from the comfort of their own homes.

Engineering and Manufacturing. VR technology enables engineers to create virtual prototypes and simulate product designs, leading to faster and more cost-effective development cycles. Manufacturers are also using VR for training purposes, allowing employees to practice complex assembly processes or operate machinery in a virtual setting without the need for physical equipment.

Gaming and Entertainment. VR has revolutionized the gaming industry by providing unparalleled immersive experiences. Users can fully engage with virtual environments, enabling them to explore fantastical worlds, participate in simulated adventures, and experience realistic gameplay. VR also extends to other forms of entertainment, such as virtual concerts, 360-degree images, videos, and virtual theme park experiences.

Healthcare and Therapy. VR technology has found valuable applications in healthcare and therapy. It can be used to treat phobias, anxiety disorders, and post-traumatic stress disorder (PTSD) through exposure therapy in controlled virtual environments. Additionally, VR is being used as a tool to practice mindfulness and learn meditation techniques which has tremendous benefits on the wellbeing of individuals.

Security and Safety. VR plays a crucial role in military training and simulation. It helps soldiers practice tactical scenarios, simulate combat situations, and improve decision-making skills. VR training environments can replicate real-world conditions and provide a safe space for military personnel to learn

and prepare for challenging situations. Also, governments are providing training exercises for their personnel in situations such as fire drills, toxic spills, and high or crammed spaces.
As the technology continues to advance, we can expect to see even more innovative and transformative uses in various industries and sectors.

MG: How does VR compare to other immersive technologies, such as augmented reality (AR) and mixed reality (MR)?

GK: All of the above falls under immersive technologies, but they differ in their level of immersion and the extent to which they blend the virtual and real worlds. If you look at the *Virtuality Continuum* adapted from Milgrim and Kishino, AR and AV (augmented Virtuality) fall under MR. However, the virtual world is at the extreme opposite of what is considered to be the real (physical) world. The best way to understand it is to think of where the main interaction is happening; on one hand, VR creates a simulated environment that immerses users in a virtual world, typically but not exclusively through head mounted display (HMD), isolating them visually from the real world. On the other hand, AR overlays virtual elements onto the real world, enhancing the user's view of their surroundings using immersive or non-immersive devices like smartphones or smart glasses. AR allows users to see and interact with virtual elements while maintaining awareness of the real world. VR is often used for gaming, simulations, training, education, and entertainment, providing users with a sense of presence in a virtual environment. To put it in a simplified matter, in relation to a future metaverse, we define VR when the user is inside the metaverse vs AR is when the metaverse is extracted and brought to life overlapping the real physical world. The latter would merge with the philosophical ideas of hyperreality.

MG: How does VR impact the way we experience entertainment, education, and training? You mentioned "DDFT 473 - Virtual Environments", can you please tell us more about it?

GK: Fundamentally and unlike previous non-immersive flat mediums, it is for the first time in human history that we have a tool that allows virtual immersive experiences. VR surpasses flat screens and flat pages by its ability to provide enhanced engagement, interactivity, and a multi-sensory three-dimensional experience. It creates a heightened sense of presence and immersion, allowing users to actively participate, manipulate virtual objects, and navigate virtual spaces. By engaging multiple senses and overcoming physical limitations, VR offers a more vivid and impactful experience. It excels in a 1 to 1 scale about spatial awareness, contextualization, and personalization, providing users with a deeper understanding and tailored experiences. It goes beyond traditional mediums by offering a richer, more interactive, and adaptable way of experiencing contents.
The School of Architecture, Art, and Design (SAAD) at the American University in Dubai (AUD) is capitalizing on immersive technologies by implementing state-of-the-art workstations at the core of the CRID, along with a VR system that allows 6 degrees of freedom for all users inside a virtual realm. Due to the implementation of these hardware and software, the school in collaboration with the CRID managed to create and evolve courses that allow the creation of immersive environments, designs, and art. *DDFT 473 – Virtual Environments* focuses on the discipline of Architecture and Interior design. It is a professional elective under Digital Design and Fabrication Technology with 5 contact hours. The course debuted in 2021 and has been delivered for the past 3 years. Students end up working in VR for more than 50 hours and, since the CRID is the first and only center in the MENA region to be VR Sketch certified, their all who finish the course can obtain a VR certification (fig. 15). The course is structured to have in class coursework and one main design project. Each semester, the course tackles a unique design brief: for example, in summer 2021 it was "Free Space New Space," in fall 2021 it was "VIRTUAL PHENOMENOLOGY," in Summer 2022 it was the "METAHAUS," and

in Spring 2023, it was "GAMIFITECTURE". One of the main aspirations of the course was to empower students' creativity and to allow them the opportunity to explore a different process and outcome that can only be applied inside virtual reality and dedicated to a virtual architecture in a virtual setting rather than a real project in the real physical world.
There are 2 main ways to work inside VR using VR Sketch application, individually and collaboratively. There is a clear correlation among the students in the physical classroom and the green capsules in the virtual one. Each capsule represents one student and simulates all movements that are being done by using the HMD and the controllers (figs. 1-2).
In the design brief that dealt with virtual phenomenology, students were tasked to design a virtual architectural space that can celebrate the human experience. And since these experiences are connected to the human sensory perception, the design must highlight three selected senses in a sequential manner dedicating to each space one sense that can be explored inside VR (figs. 3-4).
Students were asked to design a virtual home in the Metaverse in the design brief titled "METAHAUS: The Virtual Home". The project was for a client who is a surrealist art collector and is specifically fond of Salvador Dalí's work. The aim was to use the digitally built environment as a social hub where one can invite other avatars to experience an unconventional home and provide the opportunity to see the art collection displayed at a digitally private gallery.

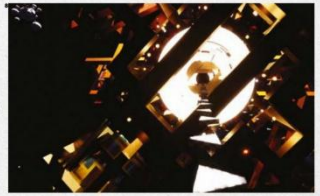
Each space of the house was supposed to reflect a human activity that is usually done in a real physical home (figs. 5-9). Celebrating the fact that AUD became the first and only University in the GCC to become academic partner of Unreal Engine through Twinmotion, the most recent design brief added a gamification of virtual architecture. It was dedicated to games and the focus was on creating a virtual space of playfulness. Titled "GAMIFITECTURE: The Virtual Space of Playfulness", students were tasked to create and gamify a virtual environment inspired by one of the games that are available in the market. The spectrum of selected games was quite broad, so we got inspiration from a quite sophisticated game such as God of War to simpler ones in nature such as Tetris (figs. 10-14).

MG: What are some of the potential applications of the Metaverse and VR, and how might they change the way we live and work?
GK: First, it is imperative to mention that the "Metaverse", as defined by the experts on the topic, is not available yet and it is a work in progress to be evolved with technologies, network infrastructure and computing power, in addition to affordability and inclusivity. Perhaps, metaverse platforms or virtual worlds might be a much more appropriate terms to use at the moment.
The second significant aspect is the mean by which the metaverse platforms are accessed. This can happen in 2 ways, using non-immersive tools (e.g., screens of computers, tablets, smart phones etc.) and/or through immersive tools (e.g., HDM of HTC Vive, Oculus, Hololens and so forth). Personally, I believe that a more engaging and impactful unique experience of future metaverse would include immersive tools rather than non-immersive ones and this will bring us to your question.
When the Metaverse gets combined with VR or AR, it will hold an array of potential applications that have the

power to fundamentally transform the way we live and work. Imagine stepping into a virtual workspace where physical boundaries vanish, and collaboration knows no limits.
Within this immersive Metaverse, professionals connect and collaborate seamlessly, transcending geographical constraints. They gather in virtual meeting rooms, where lifelike interactions and engaging discussions unfold. Through the power of VR, remote teams feel as if they are physically present, fostering a sense of connection. Education takes on a whole new dimension within the Metaverse. Students find themselves transported to virtual classrooms, where they can explore subjects through interactive simulations and practical scenarios. Learning becomes an immersive adventure, enhancing understanding and retention. No longer bound by physical constraints, virtual field trips take them to historical events and distant places expanding their horizons like never before. Conferences and events enter a new era with the Metaverse. Instead of traditional gatherings, attendees join immersive virtual environments where they can network, join talks, and experience interactive exhibitions. From virtual trade shows to concerts, these events unfold in vivid, engaging spaces accessible to anyone, anywhere. The possibilities for reducing costs, increasing accessibility, and revolutionizing the event industry are immense. From a commercial and real-oriented perspective, virtual storefronts and marketplaces offer immersive shopping experiences where customers can interact with products in virtual environments and try-on features using AR which enable them to visualize how clothing or accessories look and fit. Interactive demonstrations enhance their decision-making process, leading to more satisfying purchases.
Beyond work and commerce, the metaverse provides spaces for social interaction and entertainment. For example, virtual entertainment venues offer immersive experiences, blur the line between reality and the digital world where individuals connect with friends and communities, attending virtual parties or engaging in shared activities ranging from simple gatherings to e-sports and gaming. Another massive entertainment is immersive game like metaverse, which has an immense potential that would require us to write a separate article to deal with it.
Moreover, the metaverse allows individuals to create and personalize their virtual spaces, reflecting their unique tastes and interests. These virtual environments become extensions of identity, providing a canvas for self-expression such as, for example, Spatial or Sansar where users can showcase their art, achievements, or personal collections, curating digital realms that truly embody their individuality.
The potential of the Metaverse using immersive tools is vast. It transforms remote collaboration, reimagines education, reinvents events, revolutionizes commerce, enhances social interactions, offer unparalleled entertainment, and provides limitless possibilities for personalization. As this evolving concept continues to push boundaries, we can anticipate a future where the metaverse seamlessly intertwines with our lives, enriching and expanding our experiences in unprecedented ways and perhaps reach the level of hyperreality where we will no longer be able to differentiate between what is physical and what is digital.

Progettare il futuro: Tecnologie immersive che trasformano l'apprendimento in architettura Intervista a Georges Kachaamy

Nel campo della formazione architettonica immersiva, il Metaverso, combinato con la realtà virtuale (RV), apre a un regno di possibilità trasformative. In questo accattivante panorama virtuale, gli studenti di architettura trascendono i limiti fisici, venendo trasportati in aule virtuali che ridefiniscono gli ambienti tradizionali dell'apprendimento. Qui intraprendono viaggi formativi interattivi, immergendosi in simulazioni ispirate alla vita reale e scenari pratici che rivoluzionano la formazione in architettura.
Le aule immersive virtuali offrono agli studenti di architettura un'opportunità significativa per catapultarsi nei loro progetti e sperimentare gli spazi attraverso modalità che i muti fogli tradizionali non possono rivelare. La RV gli consente di visualizzare e interagire con modelli tridimensionali, promuovendo una comprensione profonda di relazioni spaziali, proporzioni ed elementi progettuali. Questo approccio partecipativo accende la creatività e il pensiero critico, consentendo agli studenti di manipolare e sperimentare i *concepts* architettonici in tempo reale, sviluppando le competenze pratiche di pari passo con la conoscenza teorica.
Oltre i confini della realtà fisica, il Metaverso diventa un varco di accesso per i quesiti architettonici del mondo. Gli studenti di architettura si avventurano in viaggi virtuali, attraversano templi antichi, grattacieli iconici e celebri monumenti architettonici. Questa esplorazione digitale arricchisce il loro lessico architettonico e la conoscenza storica, ispirando idee progettuali innovative che derivano dalla sapienza del passato.
La critica e la collaborazione progettuale assumono nuove dimensioni all'interno di questi ambienti virtuali immersivi. Gli studenti di architettura presentano i loro progetti nella realtà virtuale, agevolando discussioni dinamiche con docenti e colleghi. Qui, esplorano soluzioni progettuali alternative, perfezionando i *concepts* in modo iterativo, e ricevendo feedback in tempo reale in un ambiente collaborativo.
Questo processo critico interattivo promuove un intenso coinvolgimento con il processo progettuale, coltivando una comprensione profonda raffinando visioni architettoniche attraverso intuizioni collettive.
Inoltre, il regno virtuale immersivo diventa una tela per la sperimentazione architettonica, consentendo agli studenti di creare e visualizzare spazi virtuali. Questi ambienti virtuali fungono da estensioni della loro identità architettonica, servendo da vetrine per i portfolio di architettura e prefigurando i progetti futuri. Gli studenti di architettura possono perfino estendere inviti virtuali a potenziali clienti o datori di lavoro, mettendo in mostra le loro competenze e la loro visione creativa con un impatto immersivo e d'effetto.
Questa integrazione, senza soluzione di continuità, di RV nella formazione degli architetti consente agli studenti di valicare i limiti tradizionali, elevando la loro esperienza educativa a nuovi livelli. Questa fusione sinergica stabilisce un compromesso tra teoria e prassi architettonica, rendendo gli studenti in grado di esplorare e comprendere i *concepts* architettonici con un realismo e un'immersione senza precedenti.
Mentre queste tecnologie continuano ad evolversi, il futuro della formazione architettonica immersiva mantiene la promessa di plasmare una nuova generazione di architetti muniti di una profonda conoscenza del progetto spaziale e una passione tenace per superare i limiti dell'innovazione architettonica.



VR è l'acronimo di Virtual Reality, una simulazione generata al computer di un ambiente tridimensionale con cui è possibile interagire utilizzando attrezzature speciali, come cuffie, *controller* o guanti. La VR è progettata per simulare la presenza dell'utente nell'ambiente, creando un senso di immersione e permettendogli di interagire con l'ambiente come se fosse reale.
Incontriamo il Dr. Georges Kachaamy, Direttore del Centro per la Ricerca SAAD, l'Innovazione e il Design (CRID) e Professore di Architettura presso l'American University of Dubai per fargli alcune domande a riguardo.

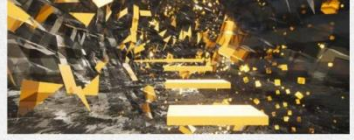
MG: Quali sono alcune delle applicazioni della tecnologia VR?
GK: La tecnologia VR è emersa come strumento di trasformazione in diverse discipline, offrendo esperienze coinvolgenti e interattive che colmano il divario tra il mondo reale e quello virtuale. Esistono molte applicazioni che supportano i sistemi VR e molte altre vengono create proprio adesso.
Alcune facilitano l'interazione sociale, altre possono essere specifiche di una disciplina. Alcune sono limitate alla navigazione di uno spazio e alle interazioni virtuali, altre sono specifiche per la creazione di risorse e mondi virtuali.

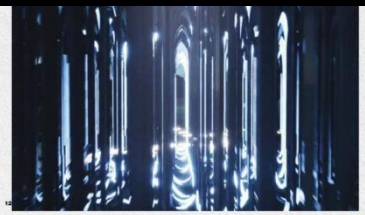
Ecco alcuni esempi di applicazioni:

Architettura e Design. Architetti e designer possono sfruttare la realtà virtuale per creare, visualizzare e presentare i loro progetti. La realtà virtuale consente ai clienti e alle parti interessate di camminare virtualmente attraverso gli edifici, sperimentare progetti di interni e valutare la funzionalità degli spazi prima dell'inizio della costruzione. Questa esperienza immersiva migliora la comunicazione, riduce gli errori e facilita un migliore processo decisionale. Al CRID (Center for Research, Innovation, and Design, American University of Dubai Ndr), abbiamo clienti che hanno chiesto progetti accessibili attraverso la realtà virtuale per meglio comprendere proporzioni e qualità spaziali nei loro progetti.

Istruzione e formazione. La realtà virtuale consente agli studenti di immergersi in simulazioni virtuali che migliorano l'esperienza di apprendimento. Inoltre, può essere utilizzata come strumento per stimolare la creatività nel design.
Ad esempio, al CRID abbiamo tenuto corsi come *DDFT 473 - Ambienti virtuali* che utilizza la realtà virtuale per aiutare gli studenti a creare, progettare e visualizzare i loro concetti, in scala uno a uno, in modo coinvolgente. Un'altra disciplina è quella della medicina, dove gli studenti possono praticare procedure chirurgiche complesse in un ambiente virtuale sicuro e controllato. Inoltre, la realtà virtuale può simulare eventi storici, siti archeologici, capolavori architettonici esistenti ed esperimenti scientifici, offrendo agli studenti opportunità di apprendimento pratico prima inaccessibili.

Immobiliare, Turismo e Ospitalità. La realtà virtuale sta trasformando il modo in cui le proprietà immobiliari vengono presentate e vissute. I potenziali acquirenti possono effettuare tour virtuali delle proprietà da qualsiasi luogo, risparmiando tempo e spese di viaggio. Allo stesso modo, l'industria del turismo utilizza la realtà virtuale per offrire esperienze di viaggio virtuali, consentendo alle persone di esplorare destinazioni e attrazioni popolari senza uscire di casa. Anche gli hotel utilizzano la tecnologia VR per mostrare le loro *lobby* e le loro camere, creando *tour* virtuali





MG: In che modo la realtà virtuale influisce sul modo in cui viviamo l'intrattenimento, l'istruzione e la formazione? Hai menzionato *DDFT 473 - Ambienti virtuali*, puoi dirci di più a riguardo?

GK: Fondamentalmente e diversamente dai precedenti *medium* piatti e non immersivi, per la prima volta nella storia umana disponiamo di uno strumento che consente esperienze immersive virtuali. La realtà virtuale supera gli schermi piatti e le pagine piatte grazie alla capacità di fornire maggiore coinvolgimento, interattività e un'esperienza tridimensionale multisensoriale. La VR crea un elevato senso di presenza e immersione, consentendo agli utenti di partecipare attivamente, manipolare oggetti virtuali e navigare in spazi virtuali; coinvolgendo più sensi e superando i limiti fisici, la realtà virtuale offre un'esperienza più vivida e di grande impatto; eccelle in una scala 1 a 1 di consapevolezza spaziale, contestualizzazione e personalizzazione, fornendo agli utenti una comprensione più profonda ed esperienze più ricche, più interattivo e adattabile di vivere i contenuti.
La School of Architecture, Art, and Design (SAAD) dell'American University in Dubai (AUD) sta sfruttando le tecnologie immersive implementando postazioni di lavoro all'avanguardia ai centro del CRID, insieme a un sistema VR che consente 6 gradi di libertà per tutti gli utenti all'interno di un regno virtuale.
Grazie all'implementazione di questi hardware e software, la scuola in collaborazione con il CRID è riuscita a creare ed evolvere corsi che consentono la creazione di ambienti, design e arte immersivi. *DDFT 473 - Ambienti virtuali* si concentra sulle discipline dell'architettura e dell'interior design. È un corso elettivo in Digital Design and Fabrication Technology che dura 5 ore. Il corso è iniziato nel 2021 e si è svolto negli ultimi 3 anni. Gli studenti finiscono per lavorare all'interno della realtà virtuale per più di 50 ore, poiché il CRID è il primo e unico centro nella regione MENA ad essere certificato VR Sketch, tutti coloro che terminano il corso possono ottenere una certificazione VR (fig. 15).
Il corso è strutturato per avere corsi in classe e un progetto di design. Ogni semestre, il corso affronta un *brief* di progettazione unico, ad esempio nell'estate 2021 il *brief* è stato *Spazio libero nuovo spazio*, nell'autunno 2021 è stato *FENOMENOLOGIA VIRTUALE*, nell'estate 2022 *METAHAUS* e nella primavera del 2023 *GAMIFITECTURE*.
Una delle principali aspirazioni del corso era potenziare la creatività degli studenti e offrire loro l'opportunità di esplorare un processo e un risultato diversi da poter applicare solo all'interno della realtà virtuale e dedicato ad un'architettura virtuale in un ambiente virtuale piuttosto che a un progetto reale nel mondo fisico reale. Esistono due modi principali per lavorare all'interno della realtà virtuale utilizzando l'applicazione VR Sketch: individuale e collaborativo. C'è una chiara connessione tra gli studenti nell'aula fisica e le capsule verdi in quella virtuale. Ogni capsula rappresenta uno studente e simula tutti i movimenti che vengono eseguiti utilizzando l'HMD e i controller (figg. 1-2).
Nel *brief* di progettazione che trattava della fenomenologia virtuale, gli studenti avevano il compito di progettare uno spazio architettonico virtuale che potesse celebrare l'esperienza umana. E poiché queste esperienze sono collegate alla percezione sensoriale umana, il progetto deve evidenziare tre sensi selezionati in modo sequenziale, dedicando per ogni spazio un senso che può essere esplorato all'interno della realtà virtuale (figg. 3-4).
Agli studenti è stato chiesto di progettare una casa virtuale nel metaverso durante il *brief* di progettazione intitolato *METAHAUS: The Virtual Home*. Il progetto era dedicato a un cliente che è un collezionista d'arte surrealista, particolarmente affezionato al lavoro di Salvador Dalí. L'obiettivo era quello di utilizzare l'ambiente costruito digitalmente come un *hub* sociale dove si potessero invitare altri *avatar* a sperimentare una casa non convenzionale e fornire l'opportunità di vedere la collezione d'arte esposta in una galleria

coinvolgenti che consentono ai potenziali ospiti di esplorare e vivere le sistemazioni comodamente da casa.

Ingegneria e produzione. La tecnologia VR consente agli ingegneri di creare prototipi virtuali e simulare prodotti, portando a cicli di sviluppo più rapidi ed economici. I produttori utilizzano la realtà virtuale anche per scopi di formazione, consentendo ai dipendenti di esercitarsi in processi di assemblaggio complessi o di utilizzare macchinari in un ambiente virtuale senza la necessità di attrezzature fisiche.

Gioco e intrattenimento. La realtà virtuale ha rivoluzionato l'industria dei giochi offrendo esperienze immersive senza pari. Gli utenti possono interagire completamente con gli ambienti virtuali, consentendo loro di esplorare mondi fantastici, partecipare ad avventure simulate e sperimentare un *gameplay* realistico. La realtà virtuale si estende anche ad altre forme di intrattenimento, come concerti virtuali, immagini a 360 gradi, video ed esperienze virtuali nei parchi a tema.

Assistenza sanitaria e terapia. La tecnologia VR ha trovato preziose applicazioni in ambito sanitario e terapeutico. Può essere utilizzato per trattare fobie, disturbi d'ansia e disturbo da stress post-traumatico (PTSD) attraverso la terapia dell'esposizione in ambienti virtuali controllati. Inoltre, la realtà virtuale viene utilizzata come strumento per praticare la consapevolezza e apprendere tecniche di meditazione che hanno enormi benefici sul benessere delle persone.

Sicurezza e protezione. La realtà virtuale svolge un ruolo cruciale nell'addestramento e nella simulazione militare. Aiuta i soldati a praticare scenari tattici, simulare situazioni di combattimento e migliorare le capacità decisionali. Gli ambienti di addestramento VR possono replicare le condizioni del mondo reale e fornire uno spazio sicuro al personale militare per apprendere e prepararsi a situazioni difficili. Inoltre, i governi stanno fornendo esercitazioni di addestramento per il proprio personale in situazioni come prove antincendio, fuoriuscite di sostanze tossiche e spazi alti o affollati.
Man mano che la tecnologia continua ad avanzare, possiamo aspettarci di vedere usi ancora più innovativi e trasformativi in vari settori e industrie.

MG: In che modo la realtà virtuale si confronta con altre tecnologie immersive, come la realtà aumentata (AR) e la realtà mista (MR)?

GK: Tutto quanto descritto sopra rientra nelle tecnologie immersive, che differiscono nel loro livello di immersione e nella misura in cui fondono il mondo virtuale e quello reale. La realtà virtuale viene spesso utilizzata per giochi, simulazioni, formazione, istruzione e intrattenimento, fornendo agli utenti un senso di presenza in un ambiente virtuale. Per dirla in maniera semplificata, in relazione a un futuro metaverso, si definisce VR quando l'utente si trova all'interno del metaverso vs AR è quando il metaverso viene estratto e portato alla vita sovrapponendosi al mondo fisico reale.
Quest'ultimo si fonderebbe con le idee filosofiche dell'iperealtà.

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Immersive Futures: Dr. Georges Kachaamy on AI and Architecture

Jumana Abdel-Razzaq | 14.10.2025

Insight

Contributing writer Jumana Abdel-Razzaq visits the campus of the American University in Dubai to explore the work of Dr. Georges Kachaamy, a celebrated architect and academic who is redefining the boundaries of architecture, and how his research in emerging technologies and artificial...

Studio Visit: Dabbagh Architects

Jumana Abdel-Razzaq | 02.09.2025

Insight

Dubai-based journalist Jumana Abdel-Razzaq recently visited the studio of Dabbagh Architects, one of the Middle East's most celebrated architecture offices working within the region's cultural space today, learning about architect Sumaya Dabbagh's background, the firm's philosophy, and some of...

Studio Visit: T.ZED Architects

Jumana Abdel-Razzaq | 24.06.2025

Insight

Dubai-based journalist Jumana Abdel-Razzaq dropped by the minimalist studio of T.ZED Architects in Dubai for a tour with founder Tarik Zaharna, getting a closer look at the practice ahead of what's shaping up to be a busy few years.

AlMusalla at the Islamic Arts Biennale 2025

John Hill | 03.02.2025

Building of the Week

The second edition of the Islamic Arts Biennale opened to

Anything Is Possible Under the Canopy

Vladimir Belogolovsky | 13.02.2025

Insight

Following the success of the much-publicized inaugural 2023 Islamic Arts Biennale in Jeddah, Saudi Arabia, its

Immersive Futures: Dr. Georges Kachaamy on AI and Architecture

Jumana Abdel-Razzaq | 14. October 2025

All images are courtesy of Georges Kachaamy

Contributing writer Jumana Abdel-Razzaq visits the campus of the American University in Dubai to explore the work of Dr. Georges Kachaamy, a celebrated architect and academic who is redefining the boundaries of architecture, and how his research in emerging technologies and artificial intelligence is reshaping the field.

I first met Lebanese architect Georges Kachaamy earlier in the year at a swanky Dubai eatery for a luncheon on a sunny January afternoon. As sunshine flooded the bustling restaurant from floor to ceiling windows, a group of us discussed, among other things, his time in Japan, life in Dubai, and his innovative work in the field of architecture. We would meet later in the year at the American University in Dubai, where he has been the Director of the Center for Research, Innovation, and Design (CRID) at the School of Architecture, Art, and Design for 15 years. The conversation was just as fruitful.

What really struck me on both occasions was Dr. Kachaamy's passion for architecture, particularly in the field of emerging technologies. He spoke extensively on the potential of virtual environments on enhancing creativity, spatial understanding, and emotional engagement in the design process.

Eiheiji Temple in Fukui, Japan

“My life began amid conflict. I am a child of war, born and raised in an environment marked by uncertainty and unrest,” he says of his early life, raised during the tumultuous period of the Lebanese civil war. “Those early struggles taught me to value peace, clarity, discipline, and, most importantly, compassion. In searching for that sense of calm, I found myself drawn to Eastern philosophy, meditation, and the idea that space isn’t just something we live in.”

As a result, the architect was naturally drawn to Japan, where he continued his doctoral studies from the University of Tokyo as a recipient of the Japanese Government Monbukagakusho Scholarship, after earning his D.E.S. in Architecture from the Académie Libanaise des Beaux-Arts (ALBA).

“My path has taken me across geographies and ontologies, beginning in the turbulent environments of Lebanon, moving through the contemplative serenity of Zen temples in Japan, and arriving in the dynamic, future-oriented cityscape of Dubai. Each context has left a distinct imprint on my overall architectural journey,” he says.

“Emptiness: The Experimentation”

One of the pivotal moments in that period was the development of a spatial experiment titled “Emptiness: The Experimentation,” conducted at the Institute of Industrial Science under the mentorship of Fujii Laboratory in Japan. Before being constructed, this design won the Union Internationale des Architectes (UIA) TIM international award. Part of the experiment was to engage 166 participants in an architectural experience designed to explore how spaces could affect the emotions of users and how it would influence their well-being.

The results demonstrated that space, when composed with specific features and intension, could evoke emotional stillness and elevate the human condition.

“That period profoundly shaped my thinking about space as a vessel of inner transformation,” Kachaamy says. “This empirical and philosophical insight laid the groundwork for what I would later develop as Gravity Defiant Architecture (GDA), a design paradigm that explores how structures might be liberated from the ground and imagined as airborne sanctuaries.” Prototypes of GDA were exhibited in Venice and Dubai, and it eventually gained the attention of CNN. “My relocation to Dubai marked a turning point,” he adds.

Gravity Defiant Architecture

Among his many accolades, Kachaamy is a professor of architecture, a registered architect, a certified VR Sketch trainer, a Gravity Sketch certified trainer, a VictoryXR certified VR educator, an associate member of the American Institute of Architects, and an affiliated member of the UAE Society of Engineers.

But his work at AUD, a quaint university located in the heart of the city, surrounded by skyscrapers and business centers right in the middle of the bustle, has given the architect a chance to explore new perspectives in emerging technologies that has seen his work highlighted and showcased in architectural publications and at events across the globe.

“There is a unique energy in this city that encourages you to imagine what architecture could become, not just what it has been,” Dr. Kachaamy explains. “Joining the American University in Dubai (AUD) felt like a natural evolution. It provided an institutional framework through which I could unify research, innovation, and pedagogy. I saw the potential to empower a new generation of designers to think beyond what is conventional.”

DDFT 473 and 373 courses at AUD

As the previous Chair of the Department of Architecture, Dr. Kachaamy led the program through NAAB accreditation, reinforcing the university’s commitment to international standards. He continues to explore the intersection of speculative architecture and immersive technologies through several groundbreaking projects—one of which is the development of Virtual Reality (VR) and Augmented Reality (AR) courses at the university that helps students design from within a space rather than “about” it.

“Through these immersive platforms, future and virtual architecture has become more than a conceptual vision; it is now an experiential framework for reimagining architecture as a phenomenology of sensory, cognitive, and even spiritual dimension,” he says. “The overwhelmingly positive feedback collected from multiple iterations of the courses revealed the potential of virtual environments to enhance creativity, spatial understanding, and emotional engagement in the design process,” Kachaamy adds.

Another project reshaping Dr. Kachaamy’s architectural practice is Generative Artificial Intelligence (GAI). He believes generative AI can bring together human ideas and algorithmic suggestions to produce results neither could achieve alone. In this approach, intelligence comes not just from the code, but from the way human thinking and computer processing work together, he explains. “In my classes, students use AI to discover new design patterns that traditional methods might miss.”

This philosophy found full expression in an initiative Kachaamy led at the CRID, titled “Dreamscapes: Envisioning the Future of Dubai with AI,” which was developed in collaboration with UAE-based conglomerate Majid Al Futtaim, Dubai Culture and Arts Authority, and the American University in Dubai. Embedded within the academic curriculum, this competition engaged 10 faculty members and over 150 students, culminating in more than 250 speculative artworks that imagined Dubai years into the future.

“Each piece was generated using advanced AI applications and explored critical themes such as cultural identity, sustainability, placemaking, innovation, and architectural storytelling,” Kachaamy explains proudly. “The result was not merely a collection of artifacts, but a pedagogical shift, one that repositions AI as a collaborator in envisioning future urban narratives.”

In his broader multidisciplinary practice, to say the architect is staying busy is an understatement, as he continues to work across art, research, and emerging technologies. As an architect, Kachaamy designed the Executive MBA Educational Facility (EMBA) on the AUD campus that we sat in during our meeting. According to Kachaamy, this project marked another significant milestone in crafting spaces that respond thoughtfully to the climate of the region while enhancing the user experience.

Executive MBA Educational Facility (EMBA) on the AUD campus

“The building reinterprets the relationship between light, space, and human experience through a composition of five distinct volumes linked by transparent circulation and social areas,” he explains passionately to me. Strategically located at the heart of the campus, the EMBA building integrates seamlessly with its surroundings, offering a balance between enclosed learning spaces that foster focus and open atriums that invite light, greenery, and fluid social interaction.

The design of the building features flexible classrooms, breakout rooms, an innovation center, and spaces that extend into outdoor terraces, elevating the academic environment through an adaptive and minimalist design. He describes it as a “business-chic atmosphere”, and I couldn’t help but agree. At its heart, the building aims to enhance the well-being and experiences of its users.

“As an artist, I continue to evolve a body of work titled *UNCONSCIOUS*, which I initiated while residing in Tokyo”, he continues. “This ongoing artwork is a visual meditation on the boundless cosmos and the fluid interplay between the microscopic and the infinite.”

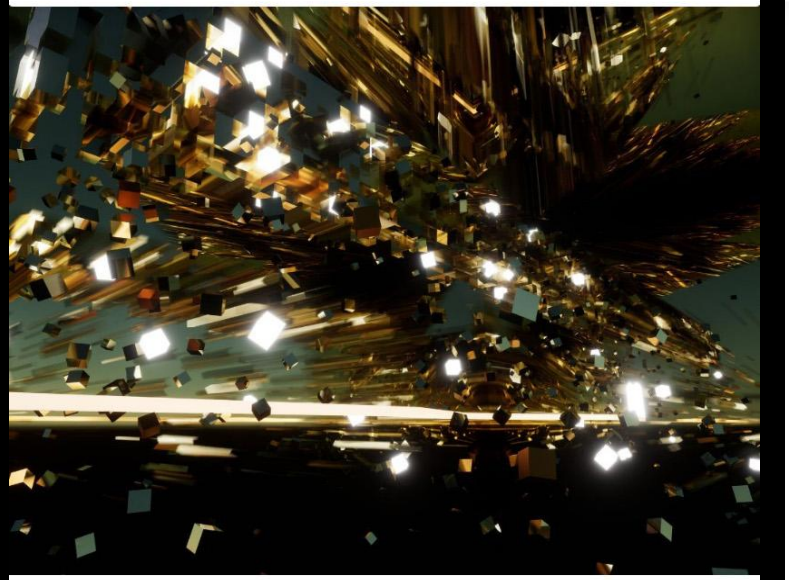
UNCONSCIOUS drawing

Created through a synthesis of surrealist automatism and meditative practices, each piece emerges in a trance-like state where conscious control dissolves and the subconscious guides the hand. The series, with over a hundred pieces, encourages viewers to openly discover meaning for themselves. This piece has been exhibited internationally, from Venice and Munich, to Dubai and London, and embodies both a personal journey and an artistic expression for the architect.

Turning to the state of architecture in the region, I picked the architect’s brain on his opinion of the state of the industry in the Middle East. “The architecture industry in this region is advancing with remarkable speed,” he says. “Yet, amid this momentum, a fundamental question must be asked: Are we building for visual spectacle alone, or are we creating environments that truly foster human well-being?

“In an age of climate urgency, technological acceleration, and urban density, architecture must do more than impress,” he continues. “It must become an instrument of healing. This is where the industry must evolve.”

Through his many ventures, from architecture and art to immersive experiences and literature, Kachaamy has consistently placed the human condition at the center of his work, while seeing great opportunity in leading a global movement rooted in spatial well-being. “By embracing this intersection of innovation, technology, design, and mindfulness, the region can assert itself not only as a hub of architectural excellence, but as a global beacon for human-centered environments,” he says, adding that “the future lies in creating buildings that don’t just rise, but uplift.”



ARCHITECTURE + INTERIOR

Building the Future: How Emerging Technologies are Revolutionizing Architecture

Dr. Georges Kaachamy of the American University in Dubai highlights the potential of emergent technologies.

JULY 15, 2024 | By CHAD RIALP

BluPrint

Traditionally, architectural design relied heavily on experience, intuition, and artistic vision. While these qualities remain essential, AI is poised to become a powerful design partner. Dr. Georges Kaachamy, renowned architect and educator from the American University in Dubai (AUD), highlights the potential of these emergent technologies.

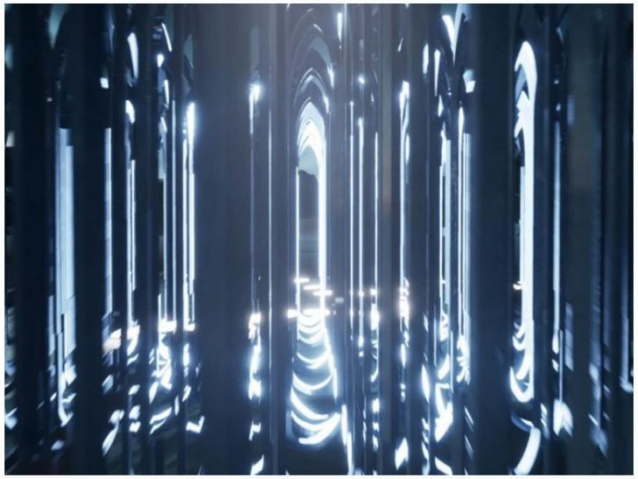
"AI can significantly enhance the design process by analyzing vast amounts of data to generate optimized design solutions, predict structural performance, and even suggest innovative design alternatives," Kaachamy shares.

Dr. Georges Kaachamy of the American University in Dubai.

BluPrint

The world of architecture is in the midst of a transformative era. Emerging technologies like Artificial Intelligence (AI) and Virtual Reality (VR) are fundamentally changing how architects design, collaborate, and envision the built environment. Advancements in educational approaches also play a crucial role. This digital revolution offers new possibilities and a renewed focus on user-centricity, sustainability, and human well-being in both physical and virtual spaces.

AI: From Data-Driven Design to Sustainable Solutions



Exciting VR Applications

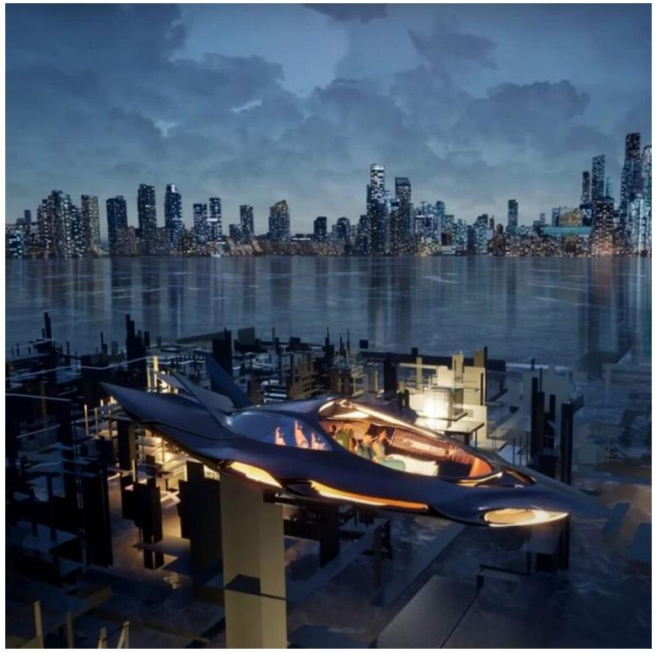
Virtual Reality provides an immersive experience that lets architects and clients visualize and interact with a space before construction begins. This enhances decision-making by offering a realistic design preview, helping identify issues and make informed adjustments early. VR also boosts collaboration through virtual walkthroughs and design discussions, regardless of location.

At AUD, The Center for Research, Innovation, and Design (CRID) offers over 40 courses that use emerging technologies, training students how to use generative design software and other VR applications.

BluPrint

how spaces are used and experienced, leading to designs that prioritize human wellbeing and comfort. Furthermore, the ability to iterate quickly and explore multiple design scenarios in a virtual environment can foster creativity and innovation in architectural practice."

Designing Virtual Worlds: Architects of the Metaverse



Educational institutions like AUD incorporate VR courses and programs focused on designing virtual spaces.

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Equipping Architects for the Future

AUD's students using VR systems to create virtual models.

This rapid pace of technological advancement necessitates a dynamic approach to architectural education. While students should still be trained in the fundamentals of architectural design, it's just as crucial to learn how to use these powerful tools.

According to Dr. Kaachamy, "Architectural education must evolve to keep pace with the rapid advancements in technology... The integration of emerging technologies requires a faster shift in both curriculum and pedagogy to prepare the next generation of

Eight virtual design projects by the American University in Dubai

Seven Deadly Realms by Shahab Pasandeh

"The project concept is an immersive journey through the narrative landscape of the God of War game franchise, reimagined through the lens of the seven deadly sins: pride, greed, wrath, envy, lust, gluttony and sloth.

"Each of the seven main realms within the virtual environment is meticulously crafted to embody one of these sins, leveraging a rich palette of colours, thematic elements and spatial designs directly inspired by the game's aesthetic and lore.

"This immersive experience is not only a testament to the creative potential of virtual environments but also serves as a profound exploration of themes and narratives that are seldom visualised in such a vivid and engaging way.

"Through this project, users are encouraged to confront and reflect upon the complexities of human emotions and behaviours in a context that transcends the boundaries of traditional gaming and storytelling."

Student: Shahab Pasandeh

Awake? by Dana Kharsa

"Drawing inspiration from Mind Path to Thalamus, this virtual reality concept transports the player into a surreal dreamscape, besieged by portals that usher them through vivid representations of the four seasons.

"Despite numerous attempts to flee, the player finds themselves ensnared in a recurring nightmare.

"The central question looms: can they ever awaken from this cyclic torment?"

Student: Dana Kharsa
Course: DDFT 473 – Virtual Environments

Chamber of Secrets by Mehak Minocha

"This project is inspired by the game Hogwarts Legacy.

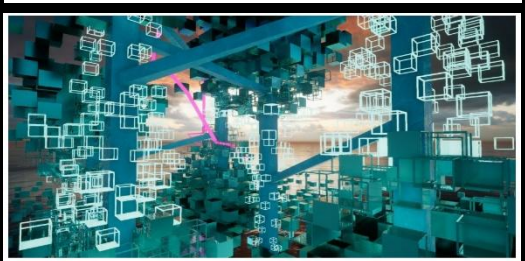
"The game is based on the famous book series Harry Potter, a fantasy world that every individual wishes to be a part of.

"Hogwarts Legacy is an immersive, open-world action role-playing game set in a world first introduced in the Harry Potter books.

"Different books inspired the spaces, and each space increases in intensity with increasing levels.

"The virtual exhibition enables visitors to experience the different realms of the wizarding world."

Student: Mehak Minocha



Toggestopia by Sameya Masroof Ahmed

"The project drew inspiration from the captivating game Togges, a delightful 3D puzzle-platformer.

"In this engaging adventure, players navigate through seven vibrant levels, stacking adorable living blocks and solving puzzles across various cosmic landscapes to safeguard the galaxy from the looming threats of the void.

"The game's diverse environments, including underwater, snowy and vertical settings, influenced the transitions in this project.

"Infused with interactivity and cheerfulness, the project culminates in a satisfying 'Eureka' moment, reminiscent of the joyous discovery of a globe."

Student: Sameya Masroof Ahmed

AUD Center for Research, Innovation and Design spotlights eight virtual design projects

Lucid Convergence by Omar Allabban

"Lucid Convergence is a meta-house consisting of a collection of fragments translated into spaces that are conjoined together and intersecting with each other, mimicking the feeling of lucid dreaming with surreal scales and symbolic non-functional spaces.

"Each room in the house is a geometric translation of its symbolic meaning in dreams. This design principle creates a house in the metaverse that serves as an artistic statement to its owner in the virtual world, rather than serving as a conventional functional home."

Student: Omar Allabban
Course: DDFT 473 – Virtual Environments
Tutor: Dr Georges Kachaamy

Deus Ex Machina by Sahar Nami

"The Metahaus Deus Ex Machina is inspired by The Elephant painting by Salvador Dalí, where large spaces are placed on thin structures to provide a spatial experience for its visitors.

"Visitors are guided by the pathway through a forest of thin structures that lead up to the interior spaces, such as the living room and bedroom, which then lead to the main central exhibition space.

"The virtual exhibition space is designed as a gallery that allows visitors to experience the space."

Student: Sahar Nami
Course: DDFT 473 – Virtual Environments
Tutor: Dr Georges Kachaamy

Centaureus Æ by Bandar Alkayyal

"The house is a virtual space for human habitation. The metaverse is the new home where technology and people meet.

"Centaureus Æ is derived from having different realities meeting in one. The design of the house is based on Salvador Dalí's surrealist expression in terms of randomness and unpredictability.

"Spaces are designed based on his art to unsettle and transgress boundaries with the liberation of thought and language."

Student: Bandar Alkayyal
Course: DDFT 473 – Virtual Environments
Tutor: Dr Georges Kachaamy

The Unconscious House by Jumana Yasser

"The unconscious mind gathers and collects bits and pieces of our everyday life and stores them.

"This Metahaus project shows how the unconscious mind relates to the body as a whole.

"The rooms in the house show the powerful aspects of our unconscious mind and once one enters a room, it unlocks a segment in our mind from our daily life."

Student: Jumana Yasser
Course: DDFT 473 – Virtual Environments
Tutor: Dr Georges Kachaamy

D-K 22 by Mariam Haddad

"The concept of D-K 22 revolves around decay, which is one of the main themes in Salvador Dalí's work.

"The more one goes into the house, the more the house breaks down into small and more fractured particles and into the process of decay.

"As one reaches the final destination the space becomes a dark room that is punctured and broken down in a way that showcases the whole journey and structure as a final overview."

Student: Mariam Haddad
Course: DDFT 473 – Virtual Environments
Tutor: Dr Georges Kachaamy

Nine design projects using virtual reality by students at the American University in Dubai

Skyscape by Sahar Nami

"Beneath Dubai's futuristic skyline lies a journey for tourists to experience.

"SkyScape is exclusively designed for adventurous travellers seeking to explore the city's beauty from the perspective of dreamers.

"Panoramic views capture the city's essence and integrate time and space, where boundaries between reality and fantasy blur into a tapestry of wonder.

"The concept emerges as an innovative design, providing an entertaining expedition of combined technologies and aerodynamic systems.

"Considering contemporary car aesthetics and leisure experiences that can be accessed, national tourism would enrich, where the sky is not just the limit – but the beginning of an extraordinary adventure."

Student: Sahar Nami
Course: DDFT 373 – Virtual Designs
Tutor: Dr Georges Kachaamy

Aerodrop Patrol by Hanin Daryanavard

"Inspired by the most aerodynamic shape, a teardrop, the Aerodrop Patrol prioritises both speed and stealth.

"It utilises the teardrop's form to coast effortlessly through the sky.

"The sleek design is emphasised by the continuous curve of the vehicle and the bladeless propellers, which, along with the vehicle's shape, ensure smooth and silent movement.

"The aim is to be available for any security issues at an optimal time.

"With its efficient design, the Aerodrop Patrol transforms the way officers navigate while also setting a new standard for futuristic policing."

Student: Hanin Daryanavard
Course: DDFT 373 – Virtual Designs
Tutor: Dr Georges Kachaamy

Astroguard by Lina El Ouafi

Arbor by Shahad Alhadid

Acrosatrix by Muhammad Yusupov

AUD students design animal-friendly urban furniture through emerging technologies

Dezeen staff | 15 March 2026

Dezeen School Shows: outdoor seating with bird feeding points and a "nesting zone" is among urban furniture designs from the American University in Dubai.

Also included is an outdoor playground designed for cats and seating informed by the structure of a tree.

American University in Dubai

Institution: American University in Dubai
School: The Centre for Research, Innovation and Design (CRID), School of Architecture, Art and Design (SAAD)
Course: DDFT 373 – Virtual Designs
Tutor: Georges Kachaamy

School statement:

"At the School of Architecture, Art and Design at the American University in Dubai, DDFT 373 Virtual Designs explores the integration of artificial intelligence, virtual reality and mixed reality within contemporary design practice.

"Developed and led by Georges Kachaamy at the Centre for Research, Innovation and Design, the course positions immersive technology not as a supplementary tool, but as a primary spatial and conceptual medium.

"At the Center for Research, Innovation and Design (CRID), students worked within fully immersive VR and MR environments using generative AI tools, Gravity Sketch and Twinmotion applications to translate speculative ideas into refined three-dimensional prototypes.

"Upon completion, participants received certification from both CRID and Gravity Sketch, recognising their immersive modelling competencies.

"A central component of the course was a design brief developed in collaboration with Dubai Culture and Arts Authority and Livescale. Students were challenged to design animal-friendly public furniture that functions simultaneously as human seating and as a feeding station for a chosen urban species.

"Students proposed multi-functional urban interventions that promote ecological awareness, utilise advanced digital fabrication workflows and remain adaptable for replication.

"Through this initiative, CRID continues to expand the boundaries of design education, cultivating a generation of designers fluent in AI-driven processes and immersive spatial thinking, and prepared to operate within an increasingly hybrid physical and virtual design landscape."

Soft Cavities by Mohammed Saeed

"Soft Cavities is shaped by how bodies move, rest and seek comfort. Inspired by animal behaviour and human ergonomics, the form grows from motion and touch rather than rigid boundaries.

"It draws from how cats stretch and settle into tight spaces, creating enclosed cavities for shelter, warmth and calm.

"Soft transitions blur inside and outside, while the exterior supports sitting and leaning. The structure uses durable, weather resistant materials suited for long term outdoor use.

"Humans occupy the outer surfaces while cats inhabit the inner chambers, forming a shared space of comfort and coexistence."

Student: Mohammed Saeed
Course: DDFT 373 – Virtual Designs
Tutor: Georges Kachaamy

Arbor by Arvig Abdelmaguid

"A sound usually vanishes the moment it is heard, but its echo can be carved into a physical entity. By tracing the three-dimensional vibrations of a bird's chirp and freezing those rhythmic patterns, a hidden geometry is revealed.

"Arbor is the frozen echo – a sanctuary built from the very oscillations of life that usually drift away unnoticed. It is a place where the kinetic energy of a melody is captured and turned into a tangible embrace.

"Within those abstract leaves, the boundaries between species begin to soften. Humans find rest within the notes of a song, while birds recognise a familiar home on the branches.

"We no longer just listen to nature; we inhabit its voice."

Student: Arvig Abdelmaguid
Course: DDFT 373 – Virtual Designs
Tutor: Georges Kachaamy

Wingfold by Marieh Khalighinasab

"Wingfold translates a pigeon's wing into an urban refuge that shifts between two states: open for movement and shade, and folded for shelter and care.

"A lifted canopy arcs overhead like a wing in flight, guiding airflow and creating a calm shaded seat.

"The lower thicker edge forms a protective pocket where people pause without feeling exposed. An integrated water basin, feeding tray and plant pockets invite pigeons in gently, turning everyday wildlife from background noise into a shared presence.

"Wingfold is not a sculpture. It is a small habitat that makes coexistence feel natural."

Student: Marieh Khalighinasab
Course: DDFT 373 – Virtual Designs
Tutor: Georges Kachaamy

Paw Plaza by Sima Assaf

"Paw Plaza grows from observing how cats move through the world. They slip into tight spaces, leap between openings, climb instinctively and seek places above us.

"This urban pod translates those behaviours into arches, circles and voids that form a shared playground for cats and humans. Seating is carved directly from the structure, removing hierarchy and encouraging quiet coexistence.

"Elevated paths allow cats to perch, observe and feel in control. Integrated feeding and drinking stations support everyday rituals without disruption.

"Designed entirely in Gravity Sketch through over 50 hours of hands-on exploration, this project is rooted in empathy, movement and play."

Student: Sima Assaf
Course: DDFT 373 – Virtual Designs
Tutor: Georges Kachaamy

Purrch by Tara Chopra

"Purrch is an urban seating prototype inspired by careful observation of feline movement. Rather than replicating their appearance, it traces the subtle geometries of stretching, curling, pausing and shifting weight.

"Each gesture is distilled into a fluid curve, layered into a single continuous line and shaped into a seamless surface.

"The design integrates feeding stations, ergonomic seating, and shading, while playful elevated perches and sweeping forms embrace and celebrate the feline body, highlighting their elegance, grace and curiosity.

"Purrch reimagines urban furniture as a shared space, defined by coexistence, care and the quiet poetry of feline presence."

Student: Tara Chopra
Course: DDFT 373 – Virtual Designs
Tutor: Georges Kachaamy

Bayt al-Hammām (The House of Pigeons) by Aastha Yadgouda

"Inspired by traditional bird towers of Isfahan and Egypt, Bayt al-Hammām reinterprets the historic dovecote as a contemporary social and ecological structure.

"The cylindrical form and thick walls provide protection and natural climate control, while carefully sized openings create nesting spaces for birds.

"Larger openings allow people to feed and interact with them, encouraging coexistence. Built using materials from traditional houses in Al Shindagha here in the UAE, the project becomes an inhabitable refuge that connects vernacular architecture, ecology and everyday social life."

Student: Aastha Yadgouda
Course: DDFT 373 – Virtual Designs
Tutor: Georges Kachaamy

Sanctuaries of Serenity with Georges Kachaamy

ARCHI & DESIGN TUESDAY, OCTOBER 10, 2023

Designing Mindscapes and Unraveling a Vision for Spaces of Wellbeing

Join Helena Costa from Alma de Luce, who brings you this exclusive conversation with Georges Kachaamy, Architect, Professor, Author, and Artist, a visionary creator who thrives in multiple domains.
Explore his groundbreaking work in Gravity Defiant Architecture, his evolving artistic journey, and his pioneering XR-Education initiatives, and delve into his philosophical musings in "INCARNATIONS: at immortality's Threshold." This interview promises a fascinating glimpse into the world of a polymath.

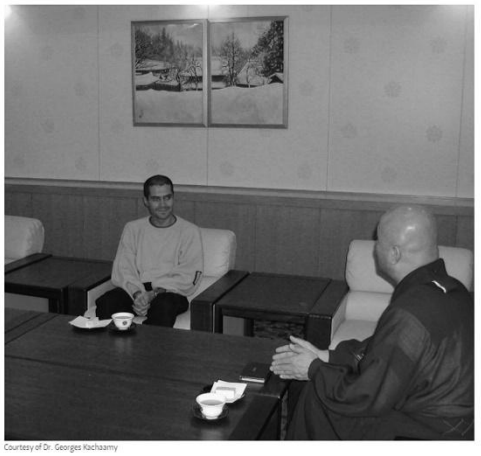
Helena Costa: Georges, you are an architect, teacher, artist, and author. What drove you to pursue such diverse disciplines? Did one passion lead you to the others, or was it a natural inclination to explore multiple creative avenues?
Georges Kachaamy: To truly understand the multi-layered journey I have embarked on, it is important to peek into the unique beginnings of my life story, as these experiences ignited my exploration through diverse fields. My narrative commenced amidst the turbulence of the Lebanese civil war, a setting that birthed my enduring quest for peace and well-being, both within myself and in the world around me. This pursuit has persistently sculpted the trajectory of my life, guiding me towards the exploration of rich and varied fields such as architecture, art, education, and literature.

Speaking about one passion, at age 12, I found refuge in Eastern philosophies and began practicing meditation. This marked the start of my self-discovery journey and left a lasting impact on my life as well as shaped decisions spanning from my academic pursuits to my lifestyle choices. My academic voyage reached a significant milestone with my doctoral studies, undertaken during years spent in Japan where I delved deeply into the understanding of the Zen monk's space of meditation, particularly those of the Soto sect.

Courtesy of Dr. Georges Kachaamy

Immersing myself in the serene environments of renowned temples like Eiheiji and Chokukuji, in addition to my observation of their monks daily activities, I gained deeper insights into how space can enhance wellbeing. This in-depth exploration, reinforced my conviction in the transformative influence of space on our state of mind.

Certainly, my fascination with meditation did not just stay in the realm of academia. It seeped into my design process, providing me the opportunity to view space not just as an empty void but as a vessel teeming with endless possibilities. This shift in perspective sparked a curiosity in me: How can we design architectural spaces to promote mental serenity and well-being? How can we make buildings that serve as sanctuaries for the mind?



Courtesy of Dr. Georges Kachaamy

Today, my life is a tapestry of architecture, art, education, and literature. These disciplines, while unique in their own right, are intertwined in my world, each inspiring and enriching the other. No matter the field, my core pursuit remains the same - peace and well-being, a testament to the transformative power of space and mindfulness.

The inspiration for the 'Rising Oases Saga' and the concept of Gravity Defiant Architecture, also known as Airborne Architecture, stemmed from this vision – to create a distinct, independent place, completely detached from its surrounding. This envisioned sanctuary, which you might think of as an 'escape', was designed to provide a space for rejuvenation and reconnection, a true oasis suspended above the mundane.

It is well established that nature, in general, has restorative effect on our wellbeing. Incorporating natural elements into the designs, I aimed to enhance their therapeutic potential. From harnessing sunlight for illumination to using water, vegetation, and the sky, I sought to create a seamless integration between the built environment and the natural world.

Courtesy of Dr. Georges Kachaamy

In sum, **my architectural vision is a loom that weave Eastern philosophy, meditation practices, the healing power of nature, innovative technologies, and creative designs, to culminate in spaces promoting wellbeing.**

HC: Can you share with us a defining moment from your career as an architect that had a profound impact on your journey and why it was so memorable to you?
GK: In essence, my architectural journey is not marked by a singular defining moment but is a rich mosaic of experiences and insights that continually shape and redefine my philosophy and approach to design, making it a truly multifaceted and evolving journey. The latest project I designed was the executive MBA building at the American University in Dubai, which contains many of these influences. It reflects a play between the hidden and the revealed, highlighting the power of illuminating spaces from above, providing transparency that connects to nature outside, and incorporates a sense of calm and purity, of course, it also takes into consideration the context and the harsh sun of the city.

Moreover, academic research keeps me at the forefront of architectural theory and practices, challenging me to continually progress and redefine the boundaries of my work. Both architecture and education offer different yet intertwined avenues and form a powerful duo that continually fuels my work and ideas.

HC: In the field of architecture, when you were completing your graduate studies at the University of Tokyo 13 years ago, you conceived research that consisted of a series of free-floating built environments. Can you provide an overview of your concept that utilizes natural resources to facilitate relaxation? How did you come up with this innovative idea?
GK: Indeed, my graduate studies at the University of Tokyo were instrumental in shaping my philosophical and practical approach to architecture. Supported by Japanese governmental scholarship, my doctoral dissertation, *'SŪNYATĀ OF SPACE: Investigation into the Influence of 'Emptiness' in Architectural Space,''* provided me with a hands-on opportunity to delve deeper into the subject of creating spaces inspired by the monk's spaces of meditation. Specifically, ''Emptiness: The Experimentation,'' an evidence-based spatial experiment conducted in Tokyo on 166 individuals, has demonstrated the potential of architecture to affect well-being and has shown how mindful designs can profoundly influence personal tranquility.

Courtesy of Dr. Georges Kachaamy

Prior to the constructions of the experiment, the design was globally awarded by the International Union of Architects (UIA). It was appreciated as a sanctuary, providing a tranquil respite from the bustling urban environment. Think of it as a city retreat, a serene escape nestled within the heart of the metropolis itself.

HC: As an architect who is also involved in teaching, can you share where your passion for architecture and education stems from? What experiences or influences have shaped your love for these fields?
GK: My passion for architecture and education is deeply rooted in the interplay between space, wellbeing, and human experience. These fields allow me to explore, create, share, and contribute to the knowledge that shapes our built environment and how we interact with it.

At an early stage, I started to notice the ways in which physical spaces could affect our emotional states, how they could become a sanctuary in an otherwise volatile world. This exposure to the impactful role of architecture triggered my lifelong fascination with the creation of spaces that are not just functional, and aesthetically appealing, but can elevate our quality of life, intensify our experiences, and influence our wellbeing.

When it comes to education, my passion was ignited during my doctoral studies in Japan. There, I experienced firsthand the power of knowledge and intellectual exchange in broadening horizons and inspiring innovation. Over the last 15 years in Dubai, I have been fortunate enough to see education from two different angles: teaching and administration. As a teacher, I have cherished the chance to share my knowledge and experiences, sparking curiosity, empowering critical thinking, and embarking on a journey of exploration with my students. But teaching is not a one-way street; I have grown from the fresh, innovative ideas my students bring to the table, continually learning and evolving alongside them.

Courtesy of Dr. Georges Kachaamy

On the administrative side, my former position as the chairperson of the department of architecture taught me the power of service. I have come to understand the delicate balance between senior administration, faculty members, and student body, and the importance of ensuring that everyone's needs are met. This has been an enriching experience that augmented my understanding and commitment to education.

Courtesy of Dr. Georges Kachaamy

The true power of immersive education extends beyond the practicalities of spatial manipulation and enhanced visualisation. Immersive education cultivates a sense of presence and engagement that is hard to replicate in traditional learning settings. Students are not just passive receivers of information but active participants in their learning and creative process.

Moreover, in my capacity as a researcher, I consistently undertake and publish comprehensive studies on the influence and effectiveness of these immersive tools and experiences. My investigative process involves conducting surveys and experiments, engaging all participants who are part of this progressive learning method. **This not only ensures a well-rounded view but also contributes to the growing body of knowledge on immersive education.**

HC: In your experience as a certified instructor, what specific benefits have you observed in students who have engaged in immersive education? How does it contribute to their overall learning and skill development?

GK: By leveraging VR and AR in design instruction, we create an immersive environment where ideas can be visualized and manipulated in three-dimensional space. This direct interaction with the design object enhances spatial comprehension, fostering a more integrated understanding of form and function. VR Sketch and Gravity Sketch are powerful tools for design ideation and collaboration. It facilitates a hands-on, interactive learning experience that enhances students' creative thinking and problem-solving skills. By working within a three-dimensional, virtual workspace, students can experiment with design forms and structures in ways that would not be possible in a two-dimensional setting.

Courtesy of Dr. Georges Kachaamy

Truly, it is difficult to single out one instance as the profound moment as every experience has shaped my perspectives and approaches, from my early interest in Eastern philosophies to my most recent research in airborne architecture.

HC: You are the first and only Certified VR Sketch Instructor and Certified GRAVITY SKETCH Instructor in the MENA region. Could you elaborate on the potential power of immersive education as a progressive learning method?

GK: Harnessing the power of innovative technologies has always been a cornerstone of my work. The mastery of tools at our disposal not only amplifies creativity but also fosters the generation of impactful, relevant designs. Currently, as the Director of the Center for Research, Innovation, and Design (CRID), my role encompasses leading the school's research initiatives and maintaining the currency of our curriculum with the latest technological breakthroughs in architecture and design. I view the center as a safe haven for creative exploration and experimentation, with a focus on the triad of transformative technologies: Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR).

I have often emphasized the potency of extended reality technologies in various forums where I have been invited to discuss this subject. Here, I echo those sentiments; there is an unrivaled power in immersive experiences. **The integration of immersive education across all disciplines, not limited to design, is a compelling necessity.** It lifts us from the constraints of two-dimensional learning into a dynamic, three-dimensional immersive environment. By bridging the gap between the physical and digital, it creates a richly interactive, engaging educational landscape that has the potential to revolutionize how we learn and innovate.

Courtesy of Dr. Georges Kachaamy

Among the innovative courses I instruct utilizing these tools is "DDFT +73 – Virtual Environments." This unique module offers students the opportunity to create in an immersive manner virtual architecture within a VR framework, all based on a specific design brief.

Through the study of virtual phenomenology, to designing the virtual home in the metaverse or even the art of gamifying architecture by producing playful virtual spaces, students are submerged in VR for over 50 hours. This immersive experience is designed to enhance their skills, stimulate their creativity, and ultimately, earn them a VR Sketch certification. This certification not only marks their competency but also positions them competitively in the constantly evolving architectural market.

HC: As a professor, how do you inspire and encourage your students to push boundaries and strive for excellence in their architectural endeavors?

GK: As a professor, I believe that the first step towards inspiring students is to lead by example. My extensive career in architecture, design, research, and innovation serves as a tangible testament to the power of curiosity, perseverance, and resilience. By sharing my personal experiences, such as my explorations, the creation of unique spaces of wellbeing, the development of 'Airborne Architecture,' or the creativity of virtual architecture, **I show my students the myriad of possibilities that lie ahead of them.**

To encourage them to push boundaries, I equip them with cutting-edge tools and methodologies, such as virtual and augmented reality technologies, which not only augment their design skills but also foster an environment of experimentation and innovation.

Courtesy of Dr. Georges Kachaamy

On the other hand, meditation is a practice that involves calming the mind, focusing inward, and achieving a heightened state of awareness. In the context of my artwork, it serves as the gateway to tap into my unconscious mind, facilitating a deeper connection with my creativity and through it with the collective unconsciousness.

When I combine these two techniques, it allows for an uninhibited flow of artistic expression. This method takes me into a trance-like state where I cease to exist and my intuition and subconscious guide the art I produce, rather than conscious thought and intention. This not only makes each piece a spontaneous act of creation but also infuses the work with an organic and authentic energy that reflects the boundless nature of the universe.

The purpose of this approach is manifold. Firstly, it enables me to bypass any preconceived notions or intellectual constraints that might impede the creative process. Secondly, it cultivates a sense of oneness with the cosmos, thereby imbuing the artwork with a depth and richness that echoes the interconnectedness of all things. Lastly, it allows viewers to engage with the artwork without any imposed interpretations, giving them the freedom to draw their own meanings from each piece. The work has been exhibited in many forums in Venice, Munich, Dubai, and London.

HC: In your book "INCARNATIONS: at Immortality's Threshold," you aim to invite readers to reflect on the eternal evolution and expansion of our collective consciousness. How do you believe architecture can play a role in facilitating this reflection and fostering a deeper connection between individuals and their surroundings?

GK: Certainly, Architecture, at its core, is more than just constructing buildings or designing physical spaces. It's about creating environments that influence our behaviors, emotions, and thoughts. By carefully considering how a space is designed, architects have the ability to inspire a deeper connection between individuals and their surroundings, fostering a sense of unity, and reminding us of our connection to the greater whole.

In terms of striving for excellence, I emphasize the power of lifelong learning, resilience, and patience. This is embedded in all my teachings – be it the importance of keeping pace with technological advancements or the art of handling setbacks and staying patient. I often underline the idea that architecture is a field where growth is continuous and where every project, be it small or large, contributes to one's development as a professional.

Courtesy of Dr. Georges Kachaamy

But perhaps most importantly, I inspire my students by helping them understand the transformative power of architecture – that the spaces they design can influence people's wellbeing and emotions, can serve as sanctuaries, and can even challenge our understanding of reality itself. By instilling this sense of purpose and potential impact, I believe students naturally aspire to excel, not just for grades, but to make a positive difference in the world.

HC: As an artist, you refer that each drawing is "created using a fusion of automatism techniques and meditation practices...". Can you share with us what this method consists of and what its purpose is?

GK: I started the artwork "UNCONSCIOUS" back when I was residing in Tokyo. It is an ever-evolving visual metaphor for the infinite expanses of the cosmos. Embodying a seamless dance between micro and macro phenomena, this collection of over a hundred pieces transcends restrictions, categories, and boundaries. The process is a unique blend of automatism techniques and meditation practices. Automatism, originating from the Surrealist movement, involves creating art without conscious thought, allowing the subconscious mind to take over. It is akin to doodling, but instead of mindlessly sketching, **you are actively surrendering control to your subconscious.**

INCARNATIONS represents a distinctive project that I have devoted more than ten years of my life to. The book beckons the reader to introspect on our existential condition and perhaps unearth answers to the toughest questions that bear the greatest significance. This work, an autofiction and a self-help guide, consists of nine insightful chapters and one allegorical tale.

Courtesy of Dr. Georges Kachaamy

Each chapter is designed to stimulate thought, provoking readers to challenge their preconceived notions and reexamine our collective human predicament.

The revelations nestled within these pages are intended to be forward-thinking without definitive conclusions, thus establishing a path for ongoing exploration into the infinite development and broadening of our shared consciousness.

As a perpetual explorer of life's mysteries, I wish to share my three-decade journey with the reader, imparting the knowledge I have accumulated in hopes that it might serve as a beacon, aiding each individual in their quest for the connection they seek.

HC: What advice would you give to aspiring architects who aspire to success in architecture practice in their careers?

GK: For aspiring architects seeking to flourish in their careers, I would underscore the importance of three vital elements that I myself practice:

Firstly, establish a profound connection with the universe that surrounds us. This connection serves as an eternal source of energy, inspiration, and rejuvenation. It allows you to stay motivated and empowered, it provides you the opportunity to observe, learn, and draw from the world around you, imbuing your work with depth and relevance.

Secondly, grasp the power of compounding. It is about consistent efforts, small steps that add up over time, ultimately allowing you to manifest your visions into reality. Remember, Rome was not built in a day, and neither will be your masterpieces.

Lastly, embody patient resilience. The path to achieving your goals might be laden with challenges and setbacks, but with patience and tenacity, you can navigate through them. Keep your vision clear, hold your passion dear, and persist with unwavering resilience. Success in architecture, like any meaningful pursuit, is a marathon, not a sprint.

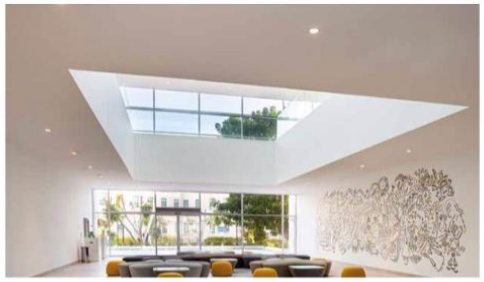
034 MEMORIES IN TRANSITION

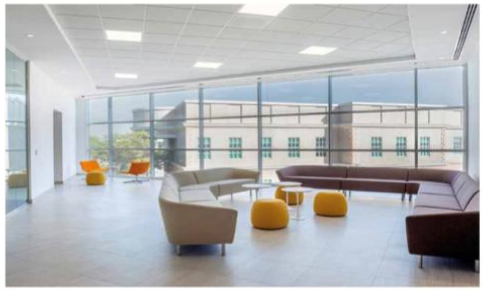
Anna Cornaro

Evanescence: a dance of the hidden and the revealed

Georges Kachaamy

Work
American University in Dubai, Executive MBA Educational Facility
Client
American University in Dubai
Location
Dubai, United Arab Emirates
Project Year
2018
Architecture and Design
Georges Kachaamy – Director of the Center for Research, Innovation, and Design (CRID), WASL Asset Management Group
Architect
Georges Kachaamy
Project Team
WASL, Elie Sawaya, AUD Director of Central Services
Engineering
WASL, PRIME Engineering
Building Management
WASL, Elie Sawaya, AUD Director of Central Services
Landscape
WASL
Additional Functions
Developer: WASL, DREC
Size and total area
2.500 m²
Image credits
Chiragh Bhatia, courtesy of Georges Kachaamy and of the American University in Dubai





One of the main features that appears to the visitors when stepping into the building is the light that pierces through the atrium, where boundaries are blurred and a piece of the Dubai clear blue sky can be experienced from above, along with the beautiful greenery of the university campus. The main hall of the project is an element that not only serves as a transitional link among all functions, but is also a place where activities are constantly changing, and space feels like it is almost ephemeral.
It was on a Thursday morning of spring 2016 that the executive vice president of the American University in Dubai (AUD) called in the architect on campus, Dr Georges Kachaamy, to express his vision for the creation of a new facility that would accommodate the Executive MBA program. Dr Kachaamy, who is a professor of Architecture and the current director of the Center for Research, Innovation and Design (CRID) at the School of Architecture, Art and Design (SAAD), accepted the challenge considering the context of the existing buildings on AUD campus and the hot humid climate of Dubai.

Context
Surrounded by three main communities, Dubai Media City, Dubai Internet City and Dubai Marina, the AUD campus occupies a strategic location that overlooks the Sheikh Zayed Road on one side and the Dubai Media City Park on the other. The project is located inside the campus between the School of Engineering and the School of Business Administration. Its south façade faces a piazza, an area used as an outdoor extension for any events or activities happening in the campus' surroundings . From the main entrance of the building, the atrium and the main hall are situated on a north-south axis, ending with an outdoor terrace that serves as an extension of the activities taking place inside the building. The terrace itself overlooks the piazza directly and can be used as a stage to the outdoor activities or as an outdoor extension of indoor events.

Concept
Accordingly, instead of generating a single massive building, the architect reverted to a more complex like approach, where five distinct and partially opaque volumes, each accommodating separate functions, are connected by transparent circulation and social spaces forming a wholesome entity. This method generated a building with more human scale proportions and allowed a balance between masses and voids, static and dynamic spaces, and light and dark ambiences. On the one hand, the learning environments are housed in the more enclosed volumes that require >

less light and less distractions from the outside bustle, while, on the other hand, the atrium, the hall and the social and circulation spaces are more open, transparent and have a direct visual communication with the outdoors. The sequence of spaces is a dance of the hidden and the revealed.

Description
The ground floor comprises two main large learning spaces: the stepped lecture hall and the flat flexible classroom. Each space can accommodate more than 100 students and can be used for delivery of courses, events or workshops. The space is organized in a semi-circular layout that steps up and overlooks the main focal area of the room. The first row can be easily accessed, which makes the lecture hall inclusive to people with disabilities. The flat classroom is arranged in a flexible manner in order to allow different types of activities, that range from separated small groups's gatherings to one single large meeting. Breakout rooms for small private get-togethers along with administrative offices can be accessed from the atrium. The east side of the building is dedicated to faculty members' open offices, together with a triangular shaped lounge whose large floor-to-ceiling glazed elevation faces the trees on campus.
The west side of the first floor accommodates AUD Entrepreneurship and Innovation Center (AEID). This space is located precisely on top of the lecture hall and can be divided into two areas by a flexible built-in partition, which allows it to be a single large zone for big workshops or two smaller parts for separate events or activities. Besides the director of the program and the administration offices, there are three additional breakout rooms that overlook the void of the below main hall and can provide spaces for smaller gatherings or private study sessions. A large conference room that can host meetings for more than 50 people can be used for university large administrative meetings or external professional assemblies.
A minimalistic style of pure forms, white walls, simple openings, and floor-to-ceiling glazing provided a clean finish, reflecting a business chic environment which was one of the main desires expressed by the administrators of the program. When asked about his statement, Dr. David Schmidt, the president of the university, said: «The EMBA building has a special significance on campus, not only because it was designed by a member of our faculty, but more specially because its design and its structure embody a majestic sense of serenity and excellence which is so very emblematic of the university's mission».
Geometry, spatial organization, volume and colour influenced the way in which light and shadow are reflected inside the building as well as on the volumes outside. Ramps exist on all entrances allowing easy access from the outside, and all inside spaces are accessible to people with disabilities.

Experience
The dialogue among visitors, architecture and nature can be observed throughout the design. Horizontally it can be experienced from the outside, through the main entrance, the atrium, the hall and finally through the terrace and the piazza. Vertically it can be experienced through the double-height of both the atrium and the hall that end up with skylights allowing light to ignite all social spaces naturally. The proportion and position of the volumes provided protection to the atrium and to the main hall from the extreme heat caused by Dubai's weather. From outside, typically, the shadows of the trees facing the south facade draw a distinguished ever-changing painting on the volume walls and serve as a protective shading element for outdoor gatherings.

Conclusions
The height, form, texture and colour of the new project have contributed to its integration with its surroundings and have added a different ambience to the already existing attractive built environment of the university campus. The quality of the executed project is evident through the collaboration of all project team members, where the contribution of AUD Director of Central Services, Elie Sawaya, is manifested in the implementation of the design details. The new facility has augmented the experience of the students and stakeholders by making them feel the up-grade to a first-class spatial treatment, where they can learn and practice the art of becoming an executive.

Evanescenza: una danza tra il rivelato e il nascosto

Una delle caratteristiche principali che appare ai visitatori entrando nell'edificio è la luce che penetra attraverso l'atrio, dove i confini sono sfocati e la vista di un nitido frammento del cielo blu di Dubai, insieme alla splendida vegetazione del campus universitario, connette il visitatore con l'esterno. Il lungo ambiente centrale è un elemento chiave che non solo funge da collegamento e transizione tra tutte le funzioni, ma è anche un luogo in cui le attività cambiano costantemente e dove lo spazio sembra quasi effimero. L'idea iniziale risale alla primavera del 2016, quando un giovedì mattina il vicepresidente dell'Università americana di Dubai (AUD) chiamò l'architetto del campus, il dott. Georges Kachaamy, per esprimere la sua visione riguardo alla creazione di una nuova struttura universitaria che avrebbe dovuto ospitare il programma Executive MBA. Il dottor Kachaamy, professore di Architettura e attuale direttore del Centro per la Ricerca, l'Innovazione e il Design (CRID) presso la Scuola di Architettura, Arte e Design (SAAD), accettò la sfida tenendo in considerazione il contesto degli edifici esistenti nel campus AUD e il clima caldo umido di Dubai.

Contesto
Circondato da tre comunità principali, Dubai Media City, Dubai Internet City e Dubai Marina, il campus AUD occupa una posizione strategica che si affaccia su Sheikh Zayed Road da un lato e Dubai Media City Park dall'altro. Il progetto si trova all'interno del campus universitario tra la School of Engineering e la School of Business Administration. La sua facciata sud si affaccia su una piazza che funge da spazio pubblico all'interno del campus e dove possono essere ospitati eventi e altre attività. L'atrio e la sala principale sono situati su un asse nord-sud terminante con una terrazza esterna, che si configura come un'estensione delle attività che si svolgono all'interno dell'edificio. La terrazza stessa si affaccia direttamente sulla piazza e può essere utilizzata come palcoscenico per le attività all'aperto o come prolungamento esterno di eventi al coperto.

Concetto
In considerazione degli aspetti climatici, l'architetto, invece di generare un unico edificio monolitico, si è indirizzato verso un approccio più complesso, in cui cinque volumi distinti e parzialmente opachi, ciascuno dei quali ospita funzioni separate, sono collegati da una circolazione trasparente e spazi sociali che formano un'entità unica. Questo metodo ha generato spazi a misura d'uomo e ha consentito un equilibrio tra pieni e vuoti, spazi statici e dinamici e ambienti bui e illuminati. Da un lato, le aule di apprendimento sono ospitate nei volumi più ermetici che richiedono luce diffusa e meno distrazioni dal trambusto esterno. D'altra parte, il lungo spazio centrale è in connessione con spazi sociali e di circolazione più aperti e

trasparenti, che hanno una comunicazione visiva diretta con l'esterno. La sequenza degli spazi è una danza tra il nascosto e il rivelato.

Descrizione
Il piano terra comprende i due principali spazi di apprendimento: un'aula gradonata e un'aula in piano, dalla configurazione maggiormente flessibile. Ciascuno spazio può ospitare più di 100 studenti e può essere utilizzato per l'erogazione di corsi, eventi o workshop. L'aula gradonata è organizzata in una pianta semicircolare che sale e si affaccia sulla principale area focale della stanza. La prima fila è facilmente accessibile, il che rende l'aula fruibile agli utenti con disabilità. L'aula in piano è organizzata in modo flessibile per consentire diversi tipi di attività che vanno da piccoli gruppi separati a un unico grande incontro. Dall'atrio è anche possibile accedere a sale per piccole riunioni private e uffici amministrativi. Il lato est dell'edificio è dedicato agli uffici open-space per i docenti, con uno spazio aperto di forma triangolare dove l'ampio prospetto vetrato, da pavimento a soffitto, si affaccia sugli alberi del campus.
Il lato ovest del primo piano ospita l'AUD Entrepreneurship and Innovation Centre (AEID). Questo spazio si trova esattamente sopra una delle aule del piano terra e può essere diviso in due aree da una parete flessibile incorporata che gli consente di essere un'unica grande zona per grandi laboratori o di trasformarsi in due aree più piccole per eventi o attività separate. Oltre all'ufficio del direttore del programma e agli uffici amministrativi, ci sono altre tre stanze per i momenti di pausa che si affacciano sul vuoto dell'ambiente principale sottostante e possono essere utilizzati per piccoli incontri o per sessioni di studio. Un'ampia sala conferenze, che può ospitare riunioni con più di 50 persone, può essere utilizzata per grandi riunioni amministrative universitarie o assemblee professionali esterne.
Uno stile minimalista di forme pure, pareti bianche, semplici aperture e vetrate a tutta altezza crea un ambiente dall'aspetto pulito e riflette un'atmosfera business elegante rispondendo ai desideri espressi dagli amministratori del programma. Quando gli è stato chiesto della sua dichiarazione, il dottor David Schmidt, il preside dell'università, ha detto: «L'edificio EMBA ha un significato speciale nel campus, non solo perché è stato progettato da un membro della nostra facoltà, ma soprattutto perché il suo design e la sua struttura incarnano un maestoso senso di serenità ed eccellenza che è davvero emblematico della missione dell'università».
Geometria, organizzazione spaziale, volume e colore hanno contribuito al modo in cui la luce e l'ombra si riflettono all'interno dell'edificio e sui volumi esterni. Rampe esterne in corrispondenza degli ingressi consentono un facile accesso all'edificio e gli spazi all'interno sono tutti accessibili ai disabili.

Esperienza
Il dialogo tra visitatori, architettura e natura è presente in tutto il progetto. Orizzontalmente può essere vissuto provenendo dall'esterno, attraverso l'ingresso principale, l'atrio, l'ambiente centrale e infine la terrazza e la piazza. In verticale è vissuto attraverso la doppia altezza dell'ambiente principale coronato dai lucernari che consentono alla luce di illuminare naturalmente tutti gli spazi comuni. La proporzione e la posizione dei volumi fornisce una protezione allo spazio centrale dal caldo estremo causato dal clima di Dubai. All'esterno, le ombre degli alberi sulla facciata sud disegnano un dipinto in continua evoluzione e fungono da elemento ombreggiante protettivo per le riunioni all'aperto.

Conclusioni
L'altezza, la forma, la consistenza e il colore del nuovo progetto hanno contribuito alla sua integrazione con l'ambiente circostante e, allo stesso tempo, hanno aggiunto una diversa atmosfera al paesaggio edificato già esistente nel campus universitario. La qualità nell'esecuzione del progetto è il risultato della collaborazione di tutti i membri del team di progetto, dove il contributo del Direttore di Central Service di AUD, Elie Sawaya, si manifesta nella realizzazione dei dettagli di progettazione. La nuova struttura rappresenta un'esperienza spaziale unica per gli studenti, i fruitori occasionali, le imprese coinvolte e il committente, facendo loro sentire che si tratta di un up-grade spaziale di prima classe in cui è possibile apprendere e praticare l'arte di diventare parte della futura classe dirigente.

'Rising Oases' project imagines a city of airborne architecture

Kieron Monks

3 minute read · Updated 11:36 AM EST, Wed November 13, 2019

Floating architecture

Courtesy of Georges Kachaamy

4 of 9

Kachaamy has been developing prototypes for floating architecture for five years. The first iteration was just a few centimeters long. He is currently working with models of around two meters.

(CNN) — One of the downsides of living in a major city is the lack of space.

CNN style Arts Design Fashion Architecture Luxury Beauty Video

From its agile regulations to its raft of accelerators, incubators, and initiatives, read more about why Dubai has the world's fastest-growing VC ecosystem.

But what if we could rise above it all, leaving the crowds and traffic behind for a peaceful haven in the urban skies?

This is the captivating premise of the "Rising Oases" project from Professor Georges Kachaamy, director of the Center for Research, Innovation and Design at the American University in Dubai (AUD).

Kachaamy's floating architecture, more than a decade in development, is one of the star attractions on display at Dubai Design Week from November 11-16. "Rising Oases" sketches out a possible future in which there are "platforms inside the city where humans can unwire themselves from their daily restraints."

The architect's visions of untethered spaces hovering over city streets might seem far-fetched, but he believes in them.

"When you realize the possibilities you truly believe it is not so far away," he says. "This is not science-fiction."

Professor Georges Kachaamy with one of his prototypes. Courtesy of Georges Kachaamy

CNN style Arts Design Fashion Architecture Luxury Beauty Video

Inch by inch

Kachaamy first conceived of floating architecture as a student in Japan 13 years ago, and the quest has become increasingly serious. For the past five years he has been steadily increasing the size of his models.

"When I started generating prototypes it was in miniature dimensions almost 10 centimeters long," he recalls. "Now the current prototype is almost two meters long - so the next one will definitely be bigger."

The professor has experimented with different technologies for his floating models.

The current system makes use of magnetic levitation - sometimes shortened to "maglev" in its application with frictionless, high-speed trains - that works by lifting an object through the force of two opposed magnets.

Kachaamy uses 3D-printed, ultra-light plastic material for the prototypes, to maximize the size of the object the magnetic force can lift.

"You have to find an equilibrium between the weight of architecture and the strength of technology," he says. "Then you can achieve greater heights and more impressive prototypes."

CNN style Arts Design Fashion Architecture Luxury Beauty Video

Efficiency and resilience

The potential benefits of levitating architecture are many and varied.

Transcending space constraints could allow for more efficient planning, with less land required for construction, and less pressure on green spaces that could be preserved or expanded.

Floating architecture could also build resilience to natural disasters such as earthquakes and flooding.

Then there is the intangible value of "accomplishing the impossible" as Kachaamy puts it, rewriting the received wisdom and pushing at perceived limits.

"This is not solely about whether (floating architecture) can be realized or not," he says. "It is also an opportunity to think of plausible future environments."

"There is no better way to create the future than to think, imagine, and design it."

CNN style Arts Design Fashion Architecture Luxury Beauty Video

Mapping the future

Kachaamy says he has a roadmap to creating ever larger and higher prototypes, all the way up to full-size model, which he hopes to achieve in his lifetime.

Much of his work is devoted to researching emerging technologies and materials that might enable such a breakthrough. One of his next targets is for a full-size floating roof.

Magnetic levitation experts have cautioned that the technology offers only limited height – Kachaamy's prototypes hover just a few inches above their magnetic base – and remains prohibitively expensive.

But there is growing interest and innovation in levitating architecture.

Chinese architects Zeyu Cai and Sibei Li recently won a competition to come up with a design for the reconstruction of Notre Dame Cathedral in Paris after fire damage with a levitating spire (although this is unlikely to meet the French parliament's requirements for a faithful reconstruction).

Kachaamy also points to the development of maglev elevators that move sideways and diagonally as well as vertically, powered by magnetic fields, as another encouraging sign - and a problem solved.

"This is the only way my architecture could be accessed," he says.

Such designs may never come to fruition. But in a city that has already colonized the ocean, one man's mission to populate the skies is underway.


Dr. Georges Kachaamy
Director of the Center for Research, Innovation, & Design and
Professor of Architecture, American University in Dubai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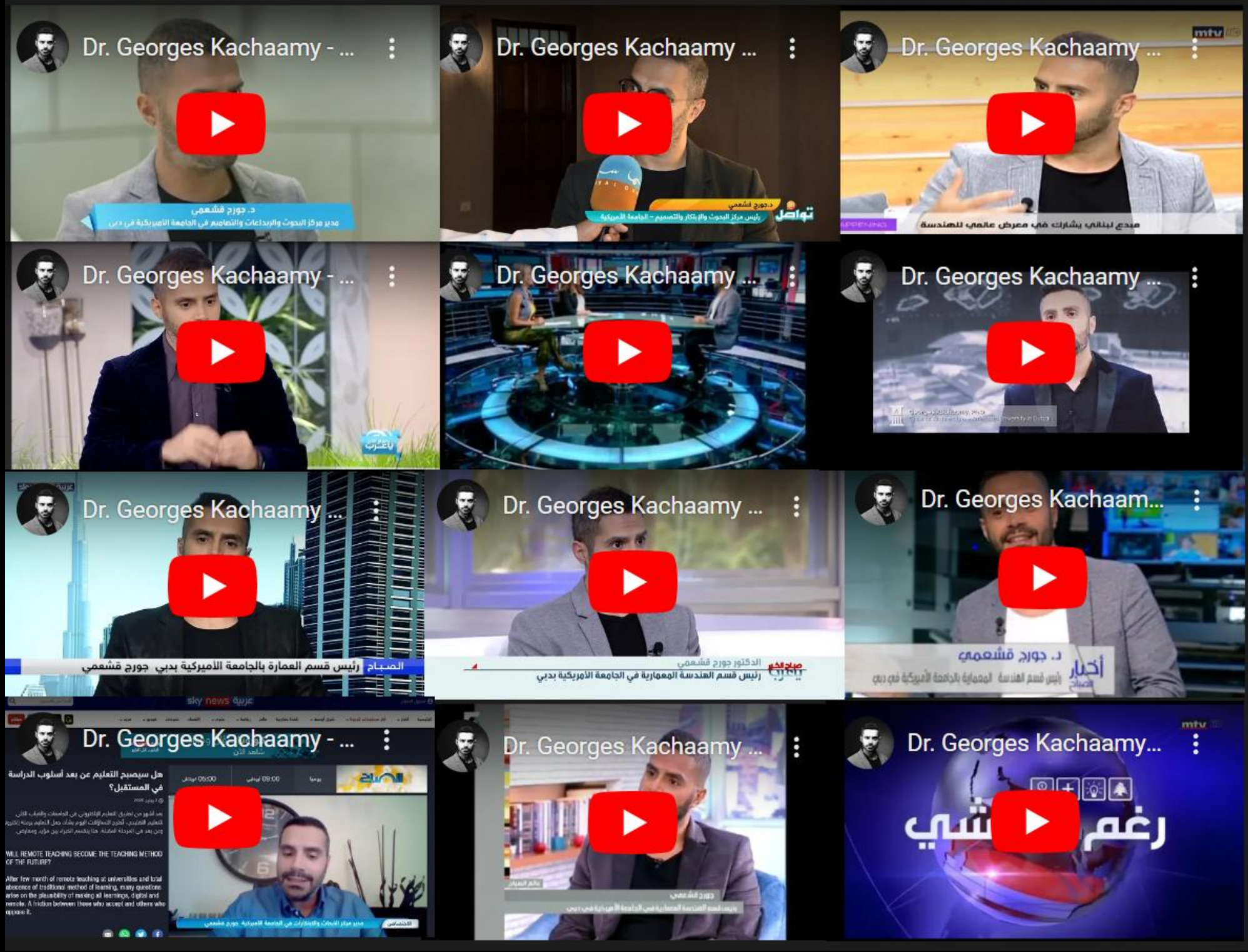
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The Architecture of Defying Gravity

An Exploration of Future Environments that Focuses on the Poetics, Innovation, and Potential of Airborne Architecture

future environments
gravity defiant
airborne architecture
sustainable futurism

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INTRODUCTION

From the dawn of civilization, the skies have served as a source of inspiration, embodying the unattainable and the divine. The celestial bodies - sun, moon, and stars - have long been revered, symbolizing the mysteries of the universe and the eternal quest for knowledge and transcendence. This fascination with the heavens has permeated every aspect of human culture, influencing mythology, religion, art, and, notably, architecture. Throughout history, architecture has been more than a mere response to functional needs; it has been an expression of humanity's desire to reach beyond the earthly and to connect with the skies. Tall buildings, whether religious or secular, have been culturally perceived as iconic landmarks and powerful symbols of authority and dominance (Dobraszczyk 2019, 108-110), embodying both spiritual ambition and societal influence. GDA also known as Airborne Architecture (Fig.1), emerges as an ambitious response to this ancient yearning and challenges conventional notions of architecture by proposing structures that defy gravity, floating, hovering, and ascending into the sky. This article covers the philosophical and practical implications of GDA, and focuses on the case of Rising Oases Saga, a project that crossed prototypes in order to bring this radical and innovative architecture closer to a tangible reality.

THE THEORETICAL AND HISTORICAL BACKDROP OF GRAVITY DEFIANT ARCHITECTURE

The idea of defying gravity in architecture is deeply rooted in historical and cultural narratives. The exploration of verticality has been a central theme in architectural design reflecting humanity's enduring desire to reach beyond earthly constraints. This ambition, driven by technological advances and cultural aspirations, has not only shaped architectural endeavours but has also been reflected in other fields such as literature, art, engineering, and various scientific pursuits. Illustrating a longstanding fascination with transcending the limits of what might look unfeasible (Frampton 2007, 316-318). Throughout human history, celestial bodies appearing in the skies - mysterious and weightless - have been sources of adoration, admiration, inspiration, and aspiration. These heavenly objects have sparked a profound sense of wonder and a persistent aspiration to overcome the skies. This fascination with the celestial is evident across various cultures and eras, where the desire to levitate, fly, or transcend earthly limits is a common thread. One of the earliest and most significant figures in the history of human flight is Abbas Ibn Firnas (Fig.2), who is often credited as the first aviator. His experiments in the 9th century with gliding and attempted flight mark a crucial moment in the ongoing human quest to defy gravity. Ibn Firnas's pioneering spirit laid the groundwork for subsequent explorations into aviation and the possibilities of overcoming gravity (Anderson, 2024, 122-152).

The theme of levitation and anti-gravity has also been richly explored in literature, where authors have imagined technologies and worlds free from the constraints of gravity. H.G. Wells's 'First Men in the Moon' introduces the concept of "Cavorite," a fictional material that negates gravity, enabling space travel (James, 2012, 126-136). Similarly, James Blish's Cities in Flight series explores the idea of "spindizzy" technology, allowing entire cities to break free from their terrestrial anchors and move through space. These literary works, alongside others such as the "Laputa Flying Island" from Jonathan Swift's Gulliver's Travels (Fig.3) and the "Illmenia Balloon" depicted in Etienne-Gaspard Robert's 1820 novel, eloquently embody the human aspiration to surpass the confines of physical limitations. This theme resonates deeply with the principles of GDA.

Historically, the desire to overcome the constraints of gravity can be observed as early as the construction of the Gothic cathedrals. With their pointed arches, ribbed vaults, and flying buttresses, these cathedrals were designed to reach toward the heavens. These architectural elements were not merely technical innovations; they were also profound symbolic gestures designed to elevate the spiritual experience by directing the eyes - and the soul - upwards. As earthly dwellings of the Divine, Gothic cathedrals were intended to embody an otherworldly presence, achieved through their staunary, stained glass, and sheer scale, as well as their calculated transcendence of earthly limitations through architectural form (Trachtenberg and Hyman, 2002, pp. 223-227). This pursuit of verticality is exemplified by the soaring heights of structures like Notre Dame de Paris, which employed innovative techniques to achieve an ethereal sense of lightness within their massive stone facades.

A particularly compelling example of the architectural aspiration to create the illusion of defying gravity is evident in the domes of Renaissance and Baroque churches. Architects of these eras adeptly employed light as a medium to evoke a sense of weightlessness within their designs. These domes, spanning expansive spaces and ascending to great heights, were ingeniously crafted to appear as if they floated above the spaces below. This effect was achieved through the strategic incorporation of a ring of windows at the base of the domes, which permitted light to permeate the interior, creating an ethereal glow that gave the impression of the dome hovering effortlessly in mid-air. Filippo Brunelleschi's work, particularly his design of the dome for Florence Cathedral, employed innovative techniques to create an elevated, seemingly suspended form, challenging the structural limitations of his time. Brunelleschi's pioneering use of a double-shell construction and a herringbone brick pattern allowed for a more efficient distribution of weight, enabling the dome to soar prominently above the ground has fostered a neo-sense of spatial openness by allowing the natural landscape or traffic to flow without any interruption underneath the structure (Curtis 1996, 175-178). This approach coincides with GDA principles that seek to transcend the conventional architectural limitations and suggest structures that are completely detached from the ground.

The common vision of reducing the physical footprint of buildings in order to preserve the ground for nature and public spaces can be observed in both Le Corbusier's pilotis and GDA. While the usage of pilotis in le Corbusier's work aimed at achieving a visual lightness and functional liberation of the ground, GDA evolve this idea into a more radical outcome that envisions architecture freely floating in the air. This freedom from being bounded by gravity maximizes spatial flexibility and environmental harmony.

In the mid-20th century, Buckminster Fuller explored the concept of structures that float in the air. He was considered a pioneering figure in the development of structures that open large spaces without internal supports. His invention of the geodesic dome, represented a significant advancement in the quest for structural lightness and efficiency. The geodesic dome's hemispherical shape, composed of interlocking triangles, distributed structural stress evenly, making it one of the most efficient structures in terms of material use versus enclosed volume. In collaboration with Shoji Sadao, Fuller further expanded the possibilities of Airborne Architecture with the "Cloud Nine" project (Fig.3). The project envisioned floating habitats consisting of enormous geodesic tensegrity spheres, each with a diameter of 1.6 km (1 mile) and capable of housing autonomous communities of several thousand people. Fuller proposed that these sky cities could drift at chosen altitudes, allowing their inhabitants to view the world from above or even migrate to different locations (Baldwin, 1997, p. 190). Another visionary architect known for his avant-garde ideas, particularly in the realm of futuristic architecture, was Georgii Krutikov. His project "The Flying City" envisioned a utopian airborne structure suspended in the air as a solution to the spatial constraints of urbanization. For him placing buildings in the sky was to enable the land to then be cultivated (Maksel, 2016). Yona Friedman's unrealized theoretical construct, "Ville Spatiale" proposed a framework of a second city, as high as 20 meters, on top of an existing one. The layout of each level would not occupy more than fifty percent of the overall structure to provide proper ventilation and light to each residence and to the city below (Cline and Carlo, 2002, p. 40).

In the late 20th and early 21st centuries, architectural endeavours have become increasingly ambitious in their attempts to appear to defy gravity. Santiago Calatrava's Museum of Tomorrow in Rio de Janeiro (Fig.4) exemplifies this trend with its striking 75-meter overhang, achieving a sense of weightlessness through a cantilevered design. Similarly, Richard Rogers's Cantilevered Gallery, Maloco Sel Wawanders's Kilkaseum, and Ithra's The Link - a panoramic sky concourse connecting the two towers of One Za'abeel in Dubai (Fig.5) - demonstrate the potential of architecture to challenge conventional structural norms. Notably, The Link features the world's longest cantilever, an awe-inspiring structure that floats 300 meters above the ground, further pushing the boundaries of architectural innovation in terms of structural lightness and suspension. Other contemporary architects, such as Kazuyo Sejima, have also contributed to this dialogue with the Serpentine Gallery Pavilion, where she employed slender structural pillars that almost disappear, making the roof seem as though it is hovering effortlessly above the space below.

Another well-established Japanese architect who is known for his surreal animated movie 'feel' designs, is Terunobu Fujimori. His design for the "Flying Stud Boat,"

can be perceived as a case study for architecture that is elevated off the ground (Hudson, 2012).

Many contemporary architects have attempted to visually eliminate the presence of pillars in their projects. Norman Foster's more recent work, particularly his design for the roof of Apple Park's Steve Jobs Theatre, eliminates all visible pillars, creating the effect of a hovering floating roof. Such projects collectively reflect the evolution of architectural practice towards creating structures that are visually and conceptually aligned with the principles of GDA and its pursuit of architecture forms that challenge gravity.

Similarly, Lebbeus Woods, who was one of the most innovative and visionary architects of the contemporary era, challenged traditional confines of architectural practice by imagining a world unconstrained by conventional boundaries. His Geomagnetic Flying Machines visually made manifest his exploration of "what the world would be like if we were free of conventional limits." As Woods articulated, he aimed to illustrate what could be possible if we chose to live by a different set of rules. His experimental approach aligns with

the principles of GDA, envisioning architectural structures liberated from the earth's surface. Further pushing the boundaries of what architecture might aspire to achieve.

THE RISING OASES SAGA: BRINGING INNOVATIVE ARCHITECTURE TO LIFE

This paper discusses the Rising Oases Saga (Fig.6) that sketches out a possible future in which there are "platforms inside the city where humans can unwire themselves from their daily restraints" (Monks, 2019). The Living Unit was first conceived in 2007 at the University of Tokyo. It has evolved to be regarded as pioneering ongoing research into GDA (Watermeyer, 2019). The Rising Oases consists of sanctuaries of well-being, ethereal retreats that float above their context, offering a refuge from the frenetic pace of urban life. The aim is to allow users to reconnect with nature and find inner tranquility. Unlike traditional buildings, the Rising Oases are not grounded in the earth; but are aerial retreats, floating above the cityscape or the natural landscape. The project, proposes a model where architecture coexists with, rather than dominates, it's environments.

Since 2018 the Rising Oases have been exhibited in various forums from Venice to Dubai (Fig.7). The most notable prototype - the River Prototype - showcased at the Dubai Design Week in 2019. This project garnered international attention, including coverage by CNN, for its innovative approach to architecture (Monks, 2019). The Spring Prototype was one of the earliest publicly exhibited models advocating for the architecture discipline to defy gravity and ascend, urging it to advance in line with the technological and conceptual innovations of the current era (GAA 2018, 372-373).

The Rising Oases symbolise a proposal for a new way of living where humanity's creations float above the earth, leaving the ground free for nature to reclaim. This initiative aligns with broader trends in sustainable futurism, advocating for reduced land consumption and minimising environmental impact. Advancements in any field of study are dynamic and continually evolving through an iterative process of exploration and refinement. Although GDA aspires to defy gravity, it remains in a delicate opposition of time and technological innovation. The primary challenge of the research was to conceptualise and develop a fully self-sustaining architectural form that liberates itself from the earth and achieves equilibrium in the air. Historically, the application of such avant-garde concepts was impeded primarily by technological limitations. However, recent technological advancements have shifted this paradigm, enabling the exploration of GDA in unprecedented ways. The findings from this research indicate that, though many factors play significant roles, the stability and success of Airborne Architecture hinge on three interrelated components: design, technology, and materiality. Beyond the architectural composition and form, a crucial aspect is achieving equilibrium by managing the interplay between dead load (the intrinsic weight of the structure) and live load (the dynamic weight it must support). This necessitates the use of lightweight materials that maintain structural integrity while being robust enough to support the architecture's levitation. Thus, the materials and technologies employed must be sufficiently lightweight to counteract the weight and allow the structure to float. Several practical concerns arose during the development process, such as ensuring accessibility to floating platforms, HVAC load distribution, and

Fig.8 - Design Process & Iterations (Left) and 3D-Printed Material of the Prototypes (Right).

wastewater drainage. These were seen not as insurmountable obstacles but as stimulating challenges to be creatively addressed. Key aspects essential to the successful realisation of GDA, which are deeply interconnected, include the following:

Technology: Various technologies are under consideration to achieve levitation, including electromagnetic suspension, superconductivity, and unmanned aerial vehicle (UAV) systems. The technologies at hand relates to existing applications such as but not limited to maglev trains or UAVs that can maintain stability in the air without any human intervention. Of course, with the advancements of these types of technologies the capacities to levitate larger and heavier structures will improve. The current research has utilized electromagnetic levitation devices for its prototypes that are known by "OzoSB" that allows levitation of 88 mm and up to a weight of10 Kg.

Design: The form, function, and structural elements are fundamental to creating a self-sufficient architectural entity that achieves both aesthetic and functional balance in the air. The design must integrate principles that allow for levitation while maintaining the desired aesthetic and operational effectiveness (Fig.8).

Size: The scale of the project determines the type and feasibility of the architecture. It directly influences the overall weight of the structure and, consequently, the strength and type of technology required to achieve levitation. Early prototypes were developed on a miniature scale, measuring approximately 10 centimeters (4 inches) in length and weighing around 20 grams. Over time, these prototypes have been progressively scaled up. The most recently exhibited model that occurred just before Covid measured nearly 2 meters (7 feet) in length and weighed 2000 grams. Future iterations aim to further increase in size and scale, potentially utilizing different technologies to accommodate the additional dimensions.

Materiality: The search for suitable materials is critical, focusing on those that are light yet rigid enough to withstand both natural forces and human use. Material choice directly impacts the visual appearance, structural integrity, and overall integrity of the project, determining how minimal the architectural elements can be while still ensuring stability. The research has explored a range of materials, beginning with paper and cardboard, progressing to 3D-printed ultra-light plastic filaments (Fig.8), and currently experimenting with carbon fiber, known for its strength-to-weight ratio and rigidity.

Weight: The balance between dead load and live load is crucial for determining the feasibility of the structure to float. The dead load includes the intrinsic weight of the structure, while the live load

Fig.6 - "The Rising Oases Saga" (Spring, River, and Waterfall Prototypes) photos by Georges Kachaamy.

Fig.7 - The Spring Prototype Exhibition in Venice (Top) and The River Prototype Exhibition in Dubai (Bottom).

Fig.9 - "The Rising Oases Saga" (Waterfall Prototype) Exhibition in the Virtual Realm.

flood is not novel and has populated human history through legends, myths, and stories, making it part of our collective consciousness. "Unmoored Cities," he changes the focus from mere mitigation to adaptation where he suggested ways in which urban environments might acclimatize to this existential threat of climate change. He identifies three strategies: the drowned, the floating, and the airborne that aligns closely with the principles and aspirations of GDA. He then further elaborates on the airborne scenario in the works of Tomás Saraceno and its significance in representing what a city in the sky might look like, and how one might live in them (Dobraszczyk 2019, 77-104). In addition, deforestation, loss of biodiversity, and the degradation of natural habitats in the 21st century has foregrounded the consequences of unchecked urbanisation. When liberating buildings from the ground, GDA reduces the physical footprint of urban development, which might act to preserve valuable ecosystems by minimizing human encroachment on natural habitats (Fig.10).

Aligned with the principles of environmental stewardship, this approach advocates for urban environments that exists in harmony with the earth's ecosystems. Furthermore it envisions qualities essential to biophilic cities by facilitating the integration of additional green spaces within urban environments and by contributing to the connection between human habitation and nature. These qualities could play an important role in developing livable cities, improving air quality, and enhancing both mental and physical well-being, which are fundamental for building resilience and sustainable urban areas that prioritize human-nature interaction (Beatley 2010, 46-83).

Many studies have demonstrated that reduction of carbon emission in architecture can occur through the minimization of land use and the incorporation of renewable energy sources such as solar panels, and wind turbines. According to the "Global Status Report for Buildings and Construction 2019," by the International Energy Agency's (IEA), the buildings and construction sector was responsible for 39% of global energy and process-related CO2 emissions. Through energy efficiency, renewable energy integration, and reduced material use, sustainable architectural practices can minimize environmental impact. The report promotes the pressing need for the decarbonization of the building sector, which requires adopting policies and technologies that promote sustainable architectural designs.

GDA promotes airborne development that plays a role in decreasing the physical footprint of buildings and the efficient usage of land which often requires significant energy and resources to construct and maintain. As a result, the restoration of natural habitats could foster ecological resilience and offer a platform for biodiversity enhancement.

Moreover, to enhance the environmental credentials of GDA and demonstrate its commitment to sustainable futurism, solar cladding panels, wind turbines, and other renewable energy systems can be seamlessly incorporated into the design to ensure that they would operate with minimal carbon emissions.

DURABILITY, FLEXIBILITY, AND VERSATILITY IN GDA

One of the advantages of GDA lies in its resilience, particularly, in mitigating the impacts of natural disasters. Earthquakes, floods, and rising sea levels, can easily affect buildings that are traditionally anchored to the ground. This can compromise the structural integrity of a building, lead to catastrophic failures and by that a significant loss of life. Accordingly, when structures are detached from the earth, they are less affected by these ground-based forces, and they potentially can provide a safer alternative in populated urban areas that are susceptible to these disasters. Structures that hover above the ground could be designed to endure natural hazards in an effective manner, to minimize property damage and reduce the risk to human life.

The flexibility and adaptability of structures that are not bound to the ground offer more possibilities for urban design, planning, and development in ways that conventional static architecture cannot. GDA allows the dynamic and responsive use of urban spaces. Due to its mobile nature, it can be relocated or reconfigured according to the needs of the city (Fig.11).

Fig.10 - "GDA" soaring above a natural context, render by @gravitydefiantarchitecture.

Fig.11 - "GDA" soaring above a dense urban context, a render by @gravitydefiantarchitecture.

Fig.12 - "GDA" environment section with isolated technical zones by @gravitydefiantarchitecture.

The value of this flexibility and adaptability can be mostly used in rapidly urbanising areas or regions where geographical boundaries, such as climate change, where there is a need to adjust spatial configurations, in response to socio-economic or environmental changes are crucial.

The concept of GDA is not without its challenges. Maintaining stability and balance in the face of high winds, storms, or others weather related incidences, could bring engineering and technological challenges. The requirements to ensure the safety and stability of such structures under environmental conditions would need to be highly advanced, and would require interdisciplinary collaboration between architecture, engineering, aerodynamics, artificial intelligence, and even materials science. Also, from an economical perspective, underdeveloped regions might not be able to afford the production and maintenance of such structures hindering both their feasibility and accessibility. Accordingly, while ground-based vulnerability can be avoided by GDA other technological considerations, such as the constant monitoring of environmental and safety measures. Even in situations where these structures were static, they would still need to overcome engineering challenges of structural integrity, material limitation, energy efficiency, and aerodynamics when hovering in place. Emerging technologies could play a crucial role in addressing these challenges. For instance, in lightweight materials, the new developments in carbon fiber composite could provide the necessary lightweight and structurally stable shell for GDA. Advancements in AI could also play a fundamental part in maintaining the stability of GDA when in the air.

Another challenge is the impact of certain technologies on human health, both physically and psychologically. For example, the usage of levitation technologies, such as, but not limited to, electromagnetic fields may be harmful to the human body. Accordingly, adequate shielding need to be found such as creating isolated technical zones that would functionally serve the levitation purpose of GDA and at the same time avoid causing any physical damage to the occupants (Fig.12). Research would also be needed into the future on the impact of these aerial environments to study the psychological effects of airborne societies inhabiting GDA. Other aspects related to social and economic implications would need to be considered specifically when it comes to the integration of an existing urban fabric. These considerations would need innovative solutions to land use policies and to allocation of public space, and transport regulations would also need to be revised to ensure the safe and secure movement of these structures. There could also be challenges around access and equity.

There is no doubt that many challenges would need to be investigated and addressed in order to ensure an adequate framework and safe environment for these aerial habitats. For GDA to meet the needs and aspirations of diverse communities including the future airborne societies, the involvement of all stakeholders and policymakers across many disciplines would be necessary to ensure the feasibility and sustainability of these future environments.

EMBRACING THE VISION OF GRAVITY DEFIANT DESIGN

As we contemplate future environments, GDA and the Rising Oases Saga offer a glimpse of what might be possible when we dare to dream beyond the constraints of the ground. These innovative concepts challenge us to rethink the very nature of architecture, pushing us to explore new heights - literally and figuratively. In doing so, they open up a new frontier for architecture, one where our buildings no longer dominate the earth but coexist with it in a delicate balance (Fig.13). GDA with its emphasis on sustainability, resilience, and artistic freedom, represents more than just a technical or aesthetic innovation; it is a philosophical statement about the role of architecture in the modern world. It asks us to consider how we can build in ways that respect our planet, nurture our communities, and inspire future generations.

As a last thought, architecture throughout its evolution has traveled out of caves, settled on grounds, surfaced on water, climbed to pilotis and dared to defy gravity (GAA 2018, 372-373). It has even cantilevered into the air, yet it has never taken flight. The time has come to populate the skies, liberate the ground, and reclaim nature to its rightful place on our planet, in the end. GDA must not be looked upon as merely a vision of the future; it must be considered a call of action for architects, engineers, explorers, and thinkers to embrace the possibilities of a world where our environments can take flight. As we embark on the challenges and opportunities of this century, GDA takes a bold and inspiring vision of what cities could become.

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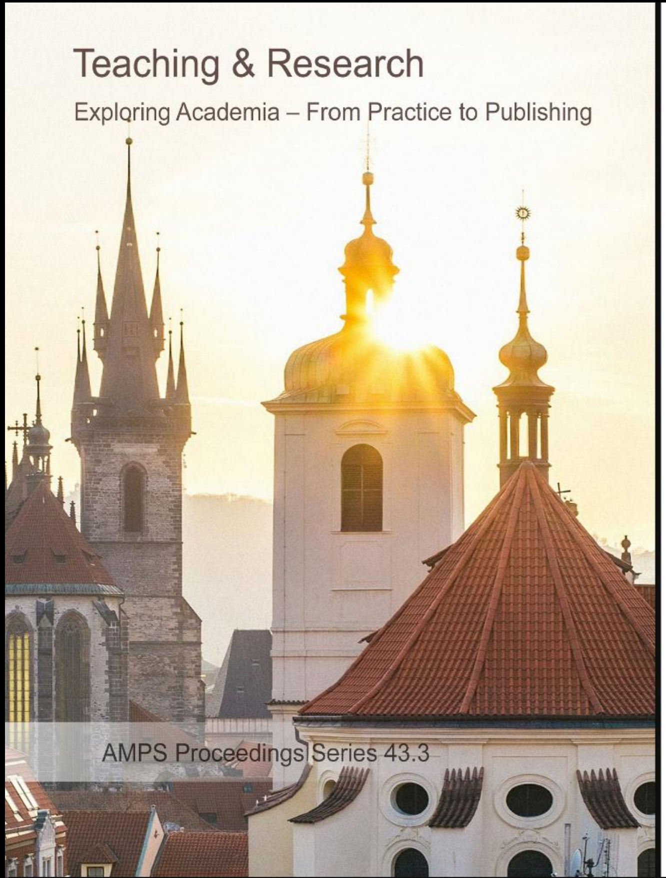

SKYSCAPES: VIRTUAL AIRBORNE CITIES OF UDDE 607

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INTRODUCTION

In response to the challenges of overpopulation, climate change, and resource depletion, the concept of a Sky Island emerges as a speculative yet visionary architectural paradigm where an airborne, gravity-defiant city exists beyond terrestrial constraints in both a virtual and or physical realm. This research investigates the urban, societal, and technological implications of such a future, where humanity evolves in a self-sustaining elevated habitat. By integrating narrative-driven urban design, inspired by literature about cities in the skies, generative artificial intelligence (GAI), and immersive virtual reality (VR) modelling, this study conceptualizes and critically analyses the feasibility of Skyscapes. Situated at the intersection of research, teaching, and emerging technologies, this study reflects on the evolving role of urban design education in the digital age. It highlights how AI, VR, and virtual modelling are reshaping the way we design, teach, and engage with speculative urban environments, bridging the gap between academia and practice. The case studies done in UDDE 607 serve as both a pedagogical tool and a research framework, demonstrating the blurring boundaries between research, practice-based learning, and digital experimentations. It aligns with the broader discourse on the digital turn in academia, questioning how immersive technologies and AI-driven methodologies are redefining architectural pedagogy, interdisciplinary collaboration, and the future of the built environment. The process culminates in architectural visualisations, offering a comprehensive exploration of this speculative urban paradigm. The methodology taught in the course incorporates multidisciplinary frameworks and follows a structured design-research-technology approach. The findings explore how digital innovations, AI-driven urbanism, and virtual environments can redefine human habitation, positioning Sky Islands as new typology of sustainable urban futurism, one that transcends conventional architectural boundaries and offers alternative pathways for post-terrestrial evolution.

AIRBORNE CITIES, SPECULATIVE FICTION OR VISION OF THE FUTURE?

The realm of speculative scenarios has long been an interesting ground for exploring the possibilities of future urban landscapes, and the concept of airborne cities has captivated the imaginations of authors and readers alike by uncovering the rich cultural and environmental diversities embedded within these visionary urban constructs. There are many visionary narratives from renowned authors such as Italo Calvino, Selim Omarovich Khan Magomedov, and Paul Dobraszczyk, that have impacted our understanding and appreciation of plausible futuristic environments. These imaginative

ground abstract architectural ideas in experiential human contexts. To translate these speculative visions into tangible forms, generative artificial intelligence (GAI) tools such as Midjourney were used to create a plethora of visual ideations based on these narratives. This iterative loop between text and image enabled a dynamic development of spatial concepts, atmosphere, and architectural language. Through enhancing the prompts and resulting visuals, a selection of the most relevant images was chosen for further refinement. By using upscaling and expanding tools, improved iterations of the chosen images were made to develop greater details as seen in Figure 1. This process allowed the focus on the main design elements and atmospheric moods, resulting in more refined and visually compelling images that represent the students' concepts of their airborne cities. After enhancing the overall architectural design, materials, textures, environments, styles, and quality, the final vision of the elevated city has come to life in a series of images that served as a visual blueprint for the design implementation.

Figure 1. AI Developed Images using Midjourney

Then VR was employed as an immersive design medium where the construction of the cities were done in an immersive three-dimensional environment that enabled real-time spatial exploration at a 1 to 1 scale using VR Sketch application. Designing inside VR enhanced the ability to assess scale, proportion, and the phenomenological experience of exploring airborne cities as seen in Figure 2. The integration of GAI and VR was conceptual, representational, and experiential, serving as an experimental virtual immersive environment into the future of architecture and urban design.

Figure 2. Students modeling in VR

Following the creation of a fully 3D virtual models, the work was transferred to a real-time rendering and visualisation software. In Twinmotion, the integration of realistic lighting, textures, environments, and animated elements brought the airborne city to life. This workflow with more than 50 hours inside

VR not only streamlined the design process but also ensured an experiential, visually captivating, and engaging final presentation of the innovative airborne cities. The methodology emphasized not only design production but also critical reflection. Each project was documented in both individual and collaborative research, synthesizing design outcomes with scholarly analysis, and situated the Sky Island projects within debates on sustainability, cultural identity, and technological innovation.

SKY ISLANDS CASE STUDIES

The case studies presented here serve as architypes of the Sky Island project. These cases are not only final products but also embodiments of the iterative design-research process described above. Each case demonstrates how narrative imagination, generative artificial intelligence, virtual reality modelling, and immersive real-time visualization were combined to construct possibilities that emerge when architecture is liberated from the ground. More importantly, through VR they reveal how speculative design functions as both a critical and creative methodology, producing visions that interrogate pressing questions of sustainability, identity, and resilience in future urban life. In doing so, the case studies highlight the capacity of speculative design to move between imagination and technical exploration. They reveal how the integration of literary inspiration, advanced digital tools, and critical reflection enabled students to construct future airborne environments. Equally significant is the pedagogical framework underlying these projects. The course fosters a form of design education that is both experimental and experiential. This approach resonates with contemporary discourses on speculative design and immersive learning, where the act of imagining alternative futures becomes a method of critical inquiry. The incorporation of immersive technologies and AI not only enhances representational techniques but also positions students at the forefront of debates surrounding digital-physical hybridity and the future of urban practice. In this way, the projects demonstrate how architectural education can serve as a laboratory for innovation, cultivating both critical reflection and creative agency in addressing the challenges of an uncertain future.

Sky Island #1: Aetheris by Ayah Albaumy

Aetheris, emerges as a flying urban modular composition of white cubes with varying scales, each serving a distinct programmatic function such as residences, workspaces, public plazas, and green zones as seen in Figure 3.

Figure 3. Modular Composition of Aetheris made by Ayah AlBaumy

Elevated and partially embedded in the clouds, the entire structure mimics an irregular, pixelated sphere shown in Figure 4. These interconnected clusters form a network of sky bridges that act as public promenades and connective tissue between districts, fostering movement and interaction. For flexible mobility, inhabitants commute via hovercars, personal hoverbikes, and rideable drones, all connected through four main transportation hubs embedded within the city's core clusters.

Figure 10. Infrastructure and transportation network of Nuvora made by Abdullah Shakir

These capsules act as intelligent structures, dock onto the core rings and return to their honeycomb like hive as illustrated in the bottom part of Figure 10. Each module serves a purpose: some are homes, others are traveling forums, research labs, or temporary cultural stations. Their arrivals and departures compose the city's rhythm, responding to both need and environment. Overall, this aerial network forms a kinetic, living city, an ecosystem of floating architecture where form follows flight, and permanence yields purposeful motion.

CONCLUSION

The exploration of virtual airborne cities within the framework of UDDE 607 has represented an innovative and transformative vision of urban living that transcends traditional architectural and societal norms. By integrating AI and VR, the project encapsulates a paradigm shift towards a future where urbanism is not confined by the limitations of gravity and conventional design principles. The case studies served as prototypes illustrating how these technologies can cultivate self-sustaining ecosystems, challenge existing conceptions of space, and foster more equitable social structures. Beyond their outcomes, these projects highlight the broader pedagogical value of integrating literature, technology, and design experimentation. The use of AI in the design process has streamlined ideation, allowing for the generation and optimization of complex urban forms. Meanwhile, VR tools empowered students to immerse themselves in their designs, experimenting with compositions, experiencing scale, spatial relationships, and environmental impact in ways that traditional models could not achieve. This blending of speculative inquiry with experiential learning situates design education within the wider debates of sustainability, digital-physical hybridity, and sustainable urban futurism. By employing AI and VR, students are provided with a robust framework to explore complex design and environmental challenges through experiential learning. This explorative method redefines architectural pedagogy and actively engages a new generation of thinkers poised to address the multifaceted issues facing urban environments globally.

SOCIETY. SPACES. SCREENS

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FROM METAVERSE TO HYPERREALITY: THE ROLE OF IMMERSIVE TECHNOLOGIES IN SHAPING VIRTUAL ARCHITECTURE

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INTRODUCTION

The advent of immersive technologies, particularly Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), is poised to revolutionize the concept of virtual architecture, propelling virtual worlds and the current state of the "metaverse" toward a state of hyperreality. This research explores how these technologies enable the seamless integration of virtual spaces and objects with the physical world, leading to a blended reality where digital and real distinctions become increasingly imperceptible. The study begins by examining the foundational principles of VR, AR, and MR, highlighting their roles in creating immersive environments. Through a comprehensive review of current technological advancements and practical applications, we analyze the potential of these tools to extend beyond isolated virtual experiences, facilitating interactions that overlay and augment our physical surroundings.

A key focus is the concept of hyperreality, where the virtual and the real converge to a point of indistinguishability. This merger is anticipated to redefine spatial interactions, architectural design, and user experiences in unprecedented ways. The study suggests scenarios on how virtual objects can be projected onto physical spaces, creating a combined and unified environment. This paper argues that as immersive technologies advance, they will drive the evolution of virtual spaces, transforming them into a hyperreal domain where virtual and real coexist seamlessly. The findings underscore the need for a multidisciplinary approach to harness the full potential of these technologies, ensuring ethical and sustainable integration into our daily lives. This research contributes to the ongoing discourse on digital and physical world convergence, providing insights into the future trajectory of virtual architecture stepping outside the metaverse and creating a new reality, a hyperreality existence.

THEORETICAL FRAMEWORK OF IMMERSIVE TECHNOLOGIES

One of the earliest attempts that aimed at providing an immersive experience was of Morton Heilig's Sensorama. The booth-like device was intended to fully immerse the individual in the film and synchronize sight, sound, smell, and movement to create for the user a multisensorial immersive experience.[1] While Heilig's work was halted due to financial limitations, many other attempts, and experimentations took place in the time span that lasted 55 years before HTC released its HTC VIVE SteamVR headset in 2016. This is considered to be the first commercial release of a headset with

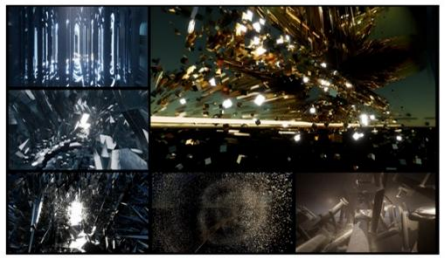
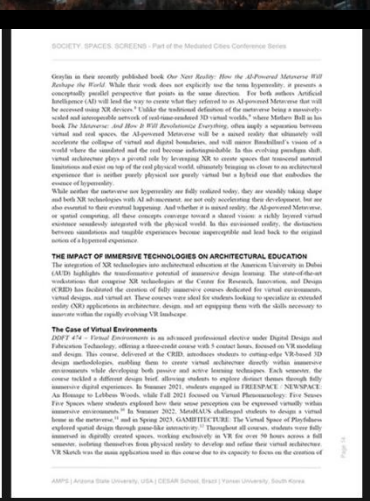


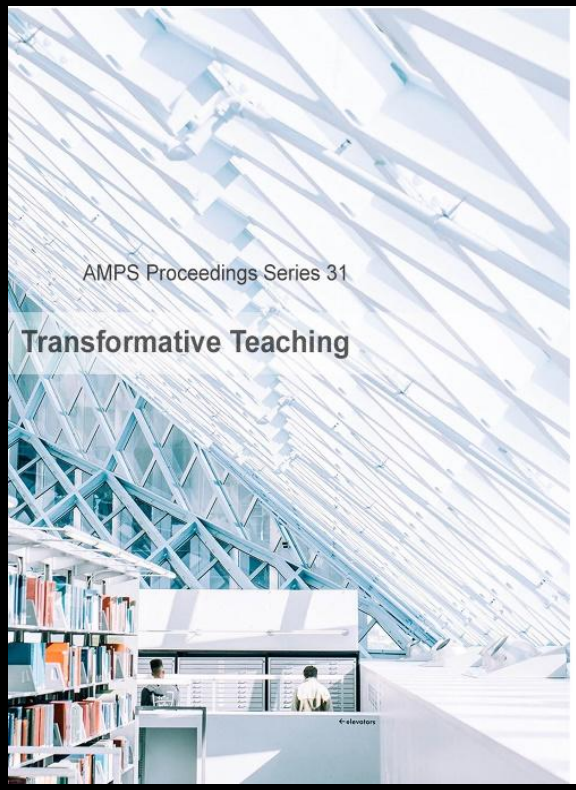
Figure 3. Samples of Virtual Architecture Created by Students for the GAMIFITECTURE Design Brief

The design brief of this course was part of a competition in collaboration with the Dubai police and one of the biggest developers in the UAE (Majid Al Futtaim) that tasked students to design the future flying vehicles. In this full semester course students as well spent 50 hours inside VR to create their designs where they utilized Gavity Sketch as the main application for design process and creation (Figure 4). students adeptly transformed two-dimensional concepts into complex three-dimensional models, mastering scaling, manipulation, and the application of materials, colors, and lighting to elevate their creations to a professional standard.[13]

Figure 4. Students at the CRID working in VR utilizing Gravity Sketch Application

The design proposals covered a large variety of topics that allowed students to not only refined their virtual reality modeling skills but also contributed meaningfully to the discourse on sustainable and futuristic design solutions. For instance, *SkyScape* by Sahar Nami, offers tourists an immersive journey beneath Dubai's futuristic skyline and presents panoramic views that capture the city's essence. This design combines advanced technologies and aerodynamic systems, drawing inspiration from contemporary automotive aesthetics to enhance national tourism. *Aerodrop Patrol* designed by Hanin Daryanavard draws inspiration from the aerodynamic teardrop shape. One of the main aspects is to prioritize speed and stealth. The design features a continuous curve and a new type of propellers





THE IMPACT OF VIRTUAL REALITY ON THE DESIGN PROCESS: THE CASE OF DDFT 473 – VIRTUAL ENVIRONMENTS

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INTRODUCTION

Technological advancements have significantly impacted architectural education, especially in recent years. [1] As the means of representation, modeling, and simulation of buildings and their structural systems have evolved, so has the profession. Still, despite the rapid changes, architectural education remains somewhat inconsistent in its technology adoption, especially relative to the design processes within studios. [2] And while some of the newer approaches, such as parametric design and artificial intelligence, are forcing rapid change, [3] these still have not replaced the overall 'thesis' of studio education - described by Schnabel [4] as a linear process, which remains an abstract, conceptual, and iterative process - starting in a two-dimensional sketch or image that is later rendered into the third dimension through different mediums.

One of the technologies with the potential to disrupt design education appears to be Virtual Reality (VR) – in its different iterations. [5] While VR has been around since the 1980s, recent advancements in extended reality technology (XR) itself, in addition to the "*metaverse*" discourse, have created a heightened interest within the architectural profession and education. As a result, many studies have appeared which examine the use of VR in the architecture and construction fields. These point toward some inevitable changes to the pedagogical approaches within the design studio and the profession in general. [6]

In this paper, we take a closer look at the use of VR in architectural education through a case study of the course "DDFT 473: Virtual Environments". This course, offered as part of the Bachelor of Architecture at the American University in Dubai, uses VR technologies as the primary design medium – attempting to shift from the traditional linear 2D to 3D design process. The students participating in the course are expected to design entirely in an immersive environment – bypassing other design mediums. The course aims to boost students' creativity and understanding of space, therefore improving their learning outcomes relative to design and the relationship between architecture and the designer. The course also aims to boost collaborative design and editing, made possible by the collaborative tools within the VR ecosystem. This paper reflects on the experience of some of the participants in this course relative to designing architectural spaces in a completely immersive environment. The paper attempts to understand if such a design methodology could boost creativity and improve concept generation and design skills. The article hopes to contribute to the literature on the use of XR technology in architectural design studio pedagogy.

(VR) IN ARCHITECTURE EDUCATION AS A TOOL FOR CREATIVITY

Virtual Reality (VR) systems have been used in design fields for nearly two decades in varying formats and iterations. [7] The technology has had broad applications in other areas beyond the design disciplines, such as in medical fields, [8] education, [9] tourism, [10] and industrial design [11] and others. These applications vary in the type of VR systems they use and the levels of immersion. [12] While the technology has been around for a long time, recent advancements in hardware and software have made it widely accessible, affordable, and more robust. This has increased its presence, especially in the architecture and design disciplines.

A standard definition for VR remains somewhat elusive, with different scholars and practitioners providing several descriptions highlighting the collaborative, immersive, interactive, and human sensory experience included by these systems [13]. Oxman [14] describes VR as a system where the user has a pure virtual presence, which seems to encapsulate all the different definitions, and distinguishes VR from other forms of computer-based virtual simulations, such as Mixed Reality (MR) and Augmented Reality (AR). The latter two systems, while immersive, provide a hybrid mix of virtual and real worlds. [15]

VR has recently spread widely within architectural practice and education. The availability of affordable, and lightweight Head-Mounted Display (HMD), such as the *HTC - VIVE* and the *Oculus Rift and Quest*, and other necessary hardware has enabled users to have more immersive experiences without the need for dedicated VR labs. [16] The widespread of these systems has also allowed a better integration with industry-standard software packages. [17] While the widespread use of these systems has increased, most of it appears to be in the later stages of the design process - or as an interface with clients to "visualize" the final product. VR is becoming more important as a collaborative tool due to its inherent collaborative abilities and interfaces with Building Information Modeling (BIM) since BIM is at the core of the construction industry nowadays [18].

While significant research is available relating to the use of VR in visualizing and experiencing the design process, less academic research examines the role of VR on architectural studio creativity. [19] Creativity as a concept is difficult to quantify or define, especially in the design fields. [20] Still, as an attempt to better understand creativity, especially conceptual stages, several factors seem to influence this process within design studios. These include *spatial ability, immersion levels, and motivation*. [21] Digital design, in general, and VR systems, in particular, as tools for design appear to complement these elements and therefore help boost this creativity. [22] In a study by Yang, [23] the authors indicate that using an immersive VR system in the early design process boosted students' creative activity and allowed them more freedom in design. Therefore, VR enabled more out-of-the-box thinking compared to 2D conceptual sketching. The technology also allowed for more conceptual development and provided students with a more holistic conceptual design. The authors argued that VR allowed for radically different designs since the students could see the different elements from 'new' viewpoints. [24] Assisted by advancements in VR hardware and better network infrastructure, another potential benefit of VR in education is the ability to collaborate simultaneously amongst many designers. For example, different students could engage in the design process. This collaboration could boost creativity in design as it allows for the instant exchange of ideas. [25] Educators could help guide and critique designs collaboratively and in an immersive and real-time environment. Lo and Schnabel [26] further argue that the use of collaborative (social) VR in education yielded an increase in efficiency and improved communication between the designers. Overall, the use of newer VR applications in the design process appears to be breaking free from the traditional linear design process and affording design students and professionals extended opportunities for more creativity in design. [27] While students and designers are usually comfortable with specific software packages and are therefore limited by the

capabilities of these packages, newer VR ecosystems allow interface well with most design software and act as a unifying medium for the designers, especially in a collaborative studio environment. The VR systems also enable non-designers to be part of the design process, therefore allowing for stakeholder feedback and community engagement with relative ease. [28] The latter aspect is extremely important not only in the architecture profession but also in the areas of urbanism and landscape architecture. [29]

DDFT 473, PROCESS, AND OUTCOME OF IMMERSIVE VIRTUAL ENVIRONMENTS

The course "DDFT 473 - Virtual Environments" was introduced as a professional elective technology course under Digital Design and Fabrication Technology courses within the bachelor of architecture program in the summer of 2021. The course was influenced by the digital emphasis of the School of Architecture, Art, and Design, within the university and by the impact of digital presence as experienced by students and faculty during the covid-19 pandemic. In essence, the course introduces students to the principles of VR modeling methods, where they acquire passive and active learning techniques to provide them the opportunity to 3D design while they are inside VR (Figure 1). The course boosts students' design creativity and introduces them to immersive architectural design – free of the traditional linear process. The course uses VR Sketch, an extension to *Sketchup*, and combines multiple training coursework exercises inside VR with a single design project following a specific design brief.

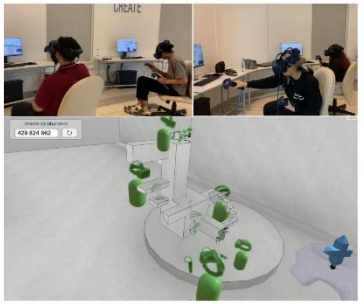


Figure 1. Top: Center for Research, Innovation, and Design; Bottom: Immersive Virtual Environment (Collaborative Editing Mode in VR Sketch)

In each course offering, the design brief focused on a specific aspect relating to the technology's usage and a topic deemed relevant to influence both the students' process and outcome. One brief focused on creating free space, and another tackled the relationship between virtual spaces and the senses.

For example, in a brief titled "**METAHAUS**: The Virtual Home," the students were presented with a hypothetical design exercise where they were supposed to create a virtual home inside the "Metaverse." Students were encouraged to design directly in an immersive manner inside VR (Figure 2). They also had to spend 50 hours in order to be qualified for the VR Sketch certification. This certificate was awarded to the students who successfully completed the course.

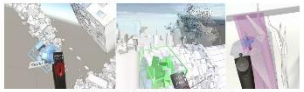


Figure 2. Immersive Virtual Process Inside VR

One of the main objectives was to challenge the students to rethink conventional physical architectural spaces and create, inside VR, spaces that can reflect virtual homes dedicated to immersive experiences in virtual worlds. This ties back to a body of student work that represents some exciting expressions of space, which are uncommon in traditional architectural programs. For example, some students wanted to reinterpret specific spaces inside a house and reimagine their functions within the virtual realm (Figure 3). They were also asked to consider aspects of User Experience (UX) and characteristics that can only be applied within the virtual space. Ultimately, the brief emphasizes the experiential aspects of architecture, allowing students to design in any location and time – free from site restrictions.

Figure 3. Reinterpretation of Spaces in a Virtual Home (The Bathroom vs the Living Room)

Finally, students were expected to produce a 'montaged' video with a project walkthrough using a visualization application such as *Twinmotion*. DDFT 473 is different from regular VR courses, which are usually used to visualize the final design. In this course, VR became the design environment and the design tool. Meanwhile, the final product is presented in a two-dimensional video and images along with the VR immersive experience file. This *flipped-design* methodology has allowed students to experience and manipulate design like never before – in an immersive manner on a scale of 1:1 with relative freedom and ease. Students work varied from rectilinear, sharp, and regular designs to fluid, curved, and irregular ones (Figure 4).

Figure 4. Selected Samples of Student Final Outcome

METHODS

A survey focusing on the use of VR as a design tool was developed for this research effort to test the user feedback and experience using VR. Due to VR studio capacity and work-stations, the course is usually limited to nine students per iteration. Hence, the number of responses remained somewhat limited (N 22). An online survey was administered at the end of each academic semester. The responses were generated mainly from three-course offerings, some had multiple sections, to total five classes during the past two academic years.

Overall, the survey was divided into three main sections and consisted of 20 multiple-choice questions. The first section covered demographic information such as gender, age, study major, and year in the program. Also questions about eyesight and the use of glasses were included. The second section was the main section and examined aspects of VR use. These included questions about ease of use, proportions, scale, limitations (if any) on creativity, if designing in VR was intuitive, and questions about experiential aspects – among others. Section two was the longest section of the survey and consisted of twelve questions. The third and final section of the survey was a reflective one. It focused on the experience during the time spent in the immersive environment and whether users experienced any dizziness, nausea, or other adverse effects using the Head-Mounted Displays (HMDs) and the VR controllers. It is worth noting that upon completing each semester, and in addition to the survey, the students participated in an informal discussion relative to their experiences with VR. Some additional insights and comments were distilled from these meetings and included in the discussions below.

Survey Results

The survey shared with the students who participated in the different iterations of DDFT 473 provided some valuable insights relative to the use of VR in design, especially in the *flipped-design* format discussed earlier. While the responses remained limited to a total of 22, some of the answers shed some light on the usefulness of this technology and methodology in design studios. Out of the total respondents, 90% were architecture students, mostly in their senior year. Meanwhile, 68% were female respondents, and 50% indicated the need to wear glasses while working on the computer (irrespective of VR usage).

When asked if VR, as used in the course, contributed to their *creativity in design*, the majority agreed or strongly agreed with this notion (Figure 5). This overwhelmingly positive response could be expected, as for nearly all participants, this was the first time to use VR extensively. This, coupled with an architectural design brief that provided students with more freedom in design, potentially explains these overwhelmingly positive results.

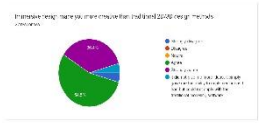


Figure 5. Creativity in VR

When asked about *proportionality* in design, the same pattern emerged with nearly 95% positive responses (Fig. 6). Students reported that the proportions of the spaces and different elements in the design were clearer (to them) when designed directly in an immersive manner using VR. This could be due to the immersive nature of the system and the ability to move through the designs with ease and on different scales and perspectives.

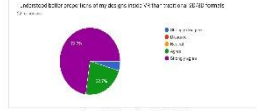


Figure 6. Proportionality in VR

As students often struggle with understanding and conceptualizing space, especially in early design stages, 85% of respondents indicated that they *understood the space* they were designing better when compared to traditional 2D/3D design methods in design studios. Only a few respondents preferred the conventional methods, as seen in figure 7.

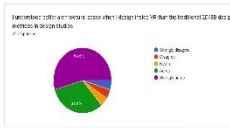


Figure 7. Conceptualizing Space

One of the aspects that VR usage seemed to be helpful in the design stage was the ability to visualize and better understand specific design details students usually struggle with. In figure 8, around 82% indicated that they appreciated this aspect of designing in VR. During our informal discussions with some students in the course, they noted that this was the first time they understood how staircases, for example, were properly designed and calculated. They were also excited to visualize and see these elements easily scaled 1:1 inside VR as if they were being constructed in real life.

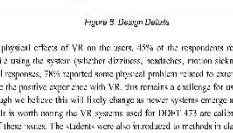


Figure 8. Design Details

Regarding the physical effects of VR on the users, 45% of the respondents reported that they felt dizzy/sick while using the system (either dizziness, headaches, motion sickness, etc.) (Figure 9). Out of the total responses, 76% reported some physical problem related to excessive time within the system. Despite the positive experience with VR, this remains a challenge for using the software and hardware. Though we believe this will likely change as newer systems emerge and become available in the market. It is worth noting the VR systems used for DDFT 473 are calibrated continuously to reduce some of these issues. The students were also introduced to methods in class as par. of the user experience to minimize any potential motion sickness. In addition, the room setup was established as a seated position at all times while using VR. The settings within the software interface are for the seated position with the appropriate eye level from the ground – which helped reduce discomfort and motion sickness.

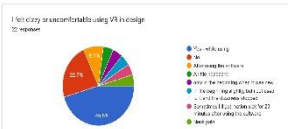


Figure 9. Physical Effects on the User

Finally, 95% of respondents felt more engaged while designing in VR (Figure 10). The process felt more enjoyable overall, and the ability to see their designs materialize (robustly scale 1 to 1) was a significant attraction of the system.

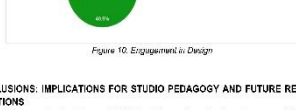
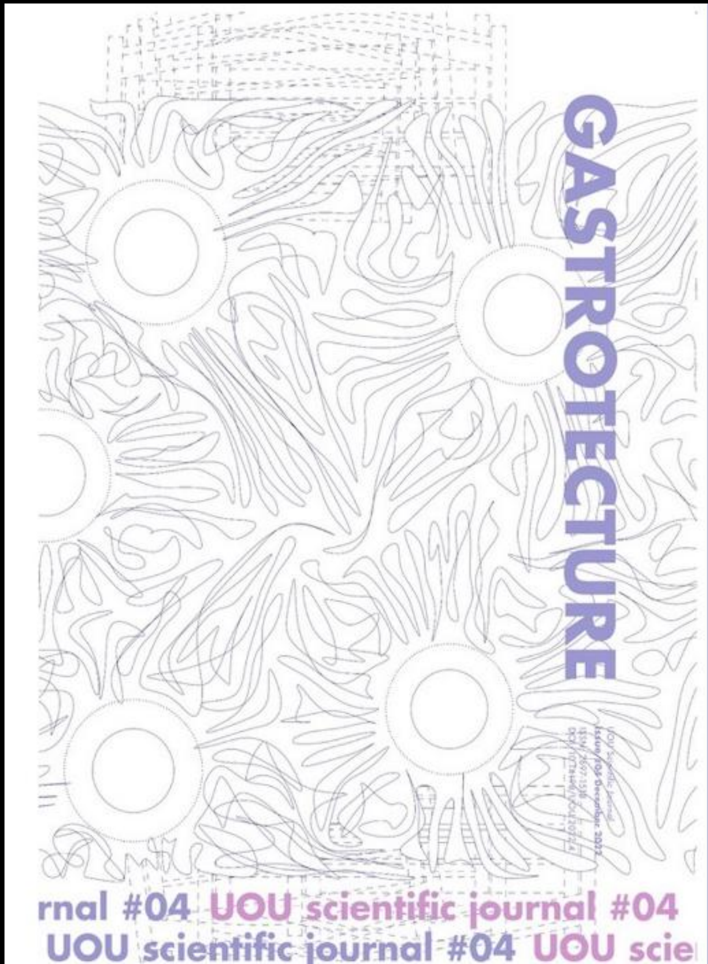


Figure 10. Engagement in Design

CONCLUSIONS: IMPLICATIONS FOR STUDIO PEDAGOGY AND FUTURE RESEARCH DIRECTIONS

Overall, this paper described the use of VR in architectural studio education as a tool for boosting creativity while implementing a *flipped-design* method. The paper argued that designing in VR directly, as opposed to a more linear 2D to 3D process, could help students conceptualize and understand space better. This, in turn, could help them generate more creative designs and have better understanding of proportions through spatial experiences. The argument for what we label a *flipped-design* approach is not necessarily novel, and the merits of such an approach to studio pedagogy have been discussed in the literature. [30] Nevertheless, we argue that this technique has not received the recognition it deserves as a creativity-boosting approach, especially early in the conceptual design stage or overall design process. Most current VR applications in design studios appear to use the tool to experience the final product, and not necessarily as a design-enhancing tool, as suggested here.

Considering the results of the students' work and their survey responses, this proposed *flipped-design* approach appears to help boost creativity and encourages somewhat different designs. This, of course, is aided by design briefs that focus on creativity and emphasize the strength of the VR ecosystem. Namely, the experiential aspects of design and human interaction inside immersive virtual



Virtual Phenomenology

A Critical Essay about the Relationship between Virtual Environments and the Senses

immersive
virtual
phenomenology
senses
gustatory

Kachaamy, Georges[1]

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Throughout history technologies have augmented human physical and mental capacities. Immersive technologies that include extended reality equipment (e.g., virtual reality and augmented reality head-mounted display) provide immersive three-dimensional virtual environment experiences that have greater impact than that of non-immersive tools (e.g., 2D computer monitor, mouse and keyboard). Inside immersive virtual environments, users can experience powerful emotions and feel psychologically as if they were present in these environments (Adams, 2004; Blascovich & Bailenson, 2005).

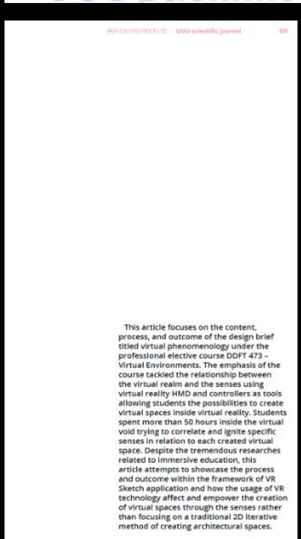
In an experiment done on students in immersive VR or via a self-directed PowerPoint slide show, the results showed that students reported lower motivation, interest, and engagement ratings when viewed in non-immersive way (Parong, J., & Mayer, R. E., 2018). In addition, virtual reality has enhanced students' learning experiences by providing them with a highly interactive simulated virtual environment (Kung Wong Lau & Pui Yuen Lee, 2012). The consensus obtained from many researches done on the use of virtual reality in learning environments demonstrates the positive impact of this technology on the ability of learners to solve problems, discover new concepts, increase motivation, and offer a high level of interactivity among others (Geris, A., & Ozdener, N., 2020). This paper will discuss the relationship between the virtual realm and the senses using virtual reality HMD and controllers as tools to allow students the possibilities to create virtual spaces inside virtual reality. Then it will focus on the selected process and outcome that specifically highlights the sense of taste and how students attempted to manifest a virtual gustatory space inside virtual reality. The paper will discuss how design process and outcome has allowed for both a final virtual space which stimulated the senses when experienced and the use of VR as a tool to design a space that is empowered by a specific sense.

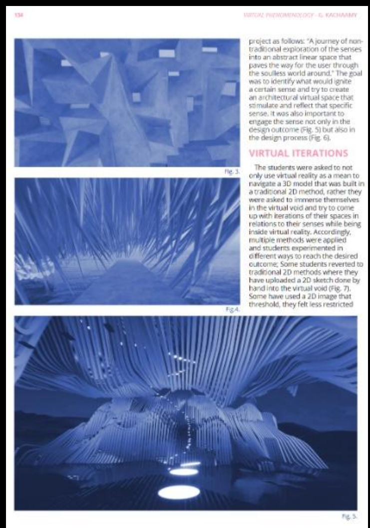
VIRTUAL PHENOMENOLOGY

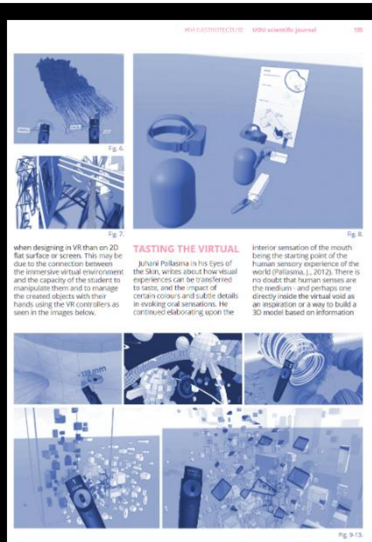
The utilization of immersive technologies has provided the opportunity to experiment with many existing theories and bringing them to the virtual realm; many of these studies tackled different topics such as the study on the feasibility and benefits of using immersive virtual environments where presence level was higher in the IVE compared to the still images experiment (Birenboim, A., et al., 2019). Another work specific to the usage of VR in higher education showed that the interest in immersive VR technologies for educational purposes seems to be quite high (Radianti. J., et al., 2022).

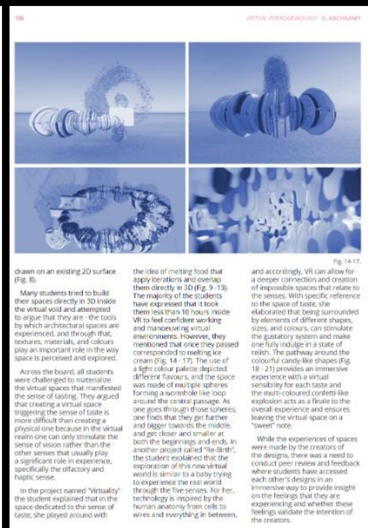
While many papers and articles have tackled the notion of phenomenology in their studies, a lot less included the impact of immersive technologies on such notion due to the fact that advancements in these tools are recent. Daniel O'Shiel in his book the phenomenology of virtual technology has dedicated a chapter where he writes on the changed selves and the values in VR, AR and MR technologies (O'Shiel, D., 2022). At the School of Architecture, Art, and Design of the American University in Dubai, the Center for Research, Innovation, and Design (CRID) is well equipped with state-of-the-art immersive technologies, hardware, and software that provided the students the opportunity to experiment and explore such a notion. Certainly, the sense of presence in a virtual classroom (Fig. 1, where each green capsule is representing one student) required a physical presence (Fig. 2, where each student is using a VR HMD in order to control the green avatar inside the virtual classroom) in a space that can allow students the 6 degrees of freedom where they can design any form, shape and space out of the thin air. The application used to make that collaboration plausible is done by VR Sketch, that is a plugin of SketchUp. The software allows for both individual engagement and design for a single user or a collective one for multiple users. It also allows a direct connection between the SketchUp file and the work that is being created in VR Sketch. In addition, it provides a clear, simple, and efficient way to design accurately architectural spaces with a friendly user experiences characteristics that are not present in other software. One of the design briefs of the "DDFT 473 – Virtual Environments" course titled "Virtual Phenomenology: Five senses Five Spaces" requested students to create virtual architectural spaces that can celebrate the human experiences and challenged them to connect these experiences with the human sense perception. In addition, the brief not only highlighted the importance of taking into consideration the philosophy of phenomenology but also added the significance of how to reflect it virtually and related to the virtual space.

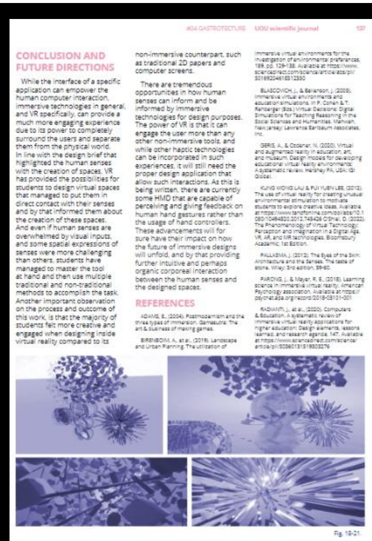
The brief emphasized that students must connect three out of five senses in a sequential manner dedicating one sense per each space to be created, designed, built, and explored inside virtual reality for virtual reality experiences. It was mandatory for students to spend more than 50 hours inside virtual reality in order to accomplish this task throughout the three-and-a-half-month-long semester. Many students find it more challenging to correlate virtual spaces with specific senses; for example, the sense of hearing (Fig. 3) in contrast to the sense of touching (Fig. 4) and the sense of smelling in contrast to the sense of seeing. One of the students described her











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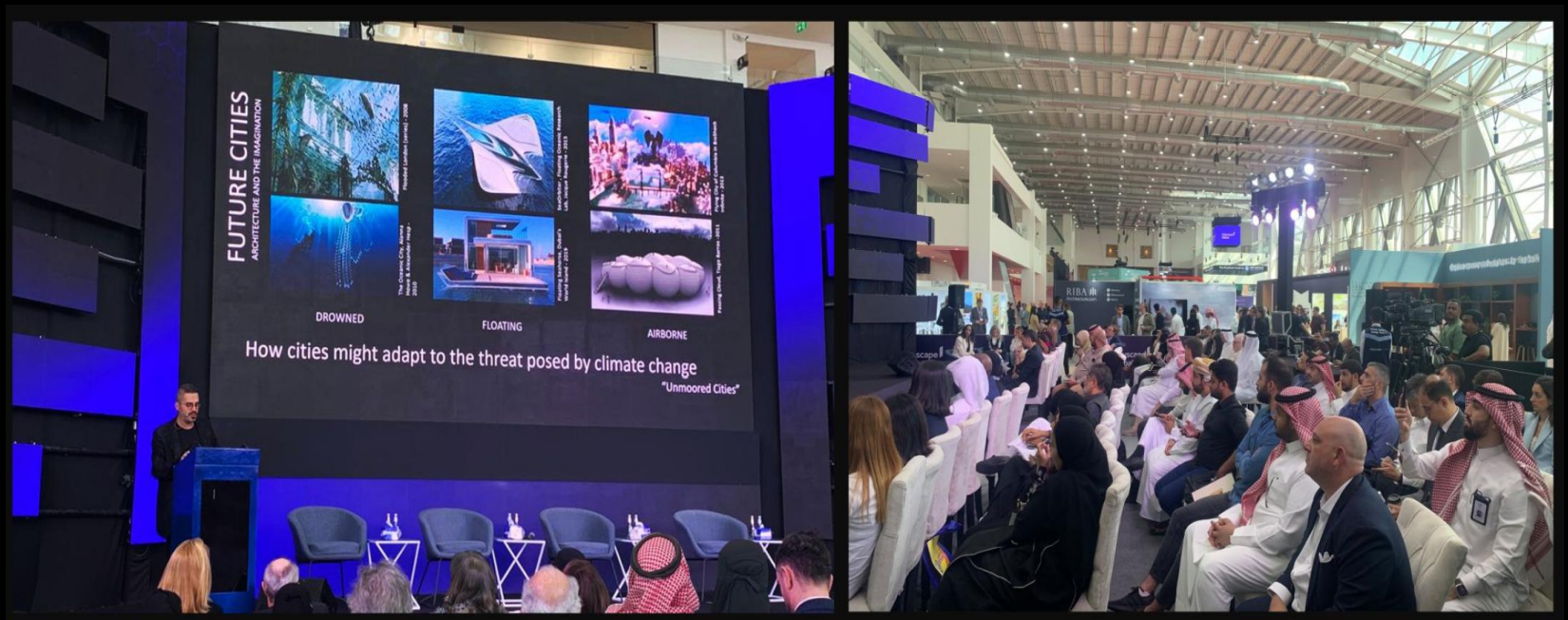
Dr. Georges Kachaamy
Director, Center for Research, Innovation, and Design (CRID),
American University in Dubai

Dr. Georges Kachaamy is the Director of the Center for Research, Innovation, and Design (CRID) at the School of Architecture, Art, and Design, the American University in Dubai. He has served as the chairperson of the Department of Architecture under which the program has received the NAAB Accreditation.

Dr. Kachaamy is a professor of architecture, a registered architect, a certified VR Sketch trainer, a GRAVITY SKETCH Certified Trainer, an associate member of the American Institute of Architects, and an affiliated member of the UAE Society of Engineers. He received his doctorate from the University of Tokyo in Japan.

As a practicing architect, Dr. Kachaamy has over 15 years of experience between Dubai, Tokyo, and Beirut. He worked on different national and international urban and architectural designs.

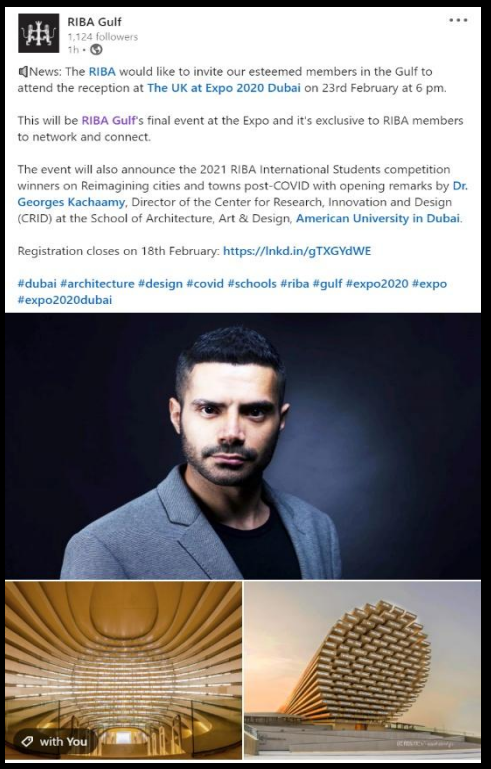
In 2018, 2019, and 2021 he was invited by the European Cultural Center to exhibit his architecture project "Rising Oases" and artwork "Unconscious" at the Palazzo Bembo and Mora in the context of the Venice Biennale. In addition, his works and contributions have featured on major multiple media outlets such as CNN, TIME Magazine, MBC1, Skynews Arabia, and Dubai TV,

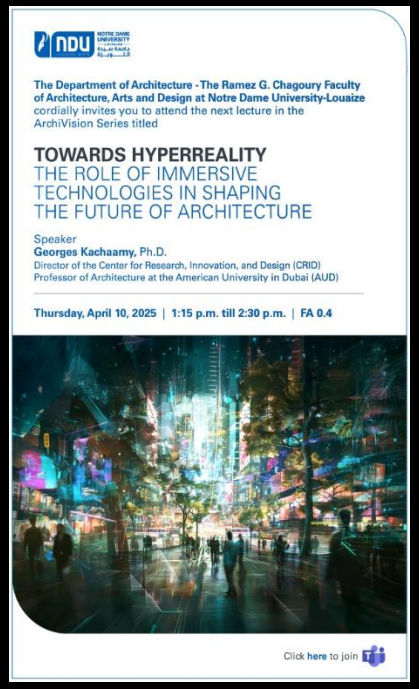


Cityscape Global

FUTURE ENVIRONMENTS: PARADIGM SHIFT IN ARCHITECTURAL DESIGN POSSIBILITIES

THE CASE OF GRAVITY DEFIANT ARCHITECTURE – GDA (A.K.A. AIRBORNE ARCHITECTURE)

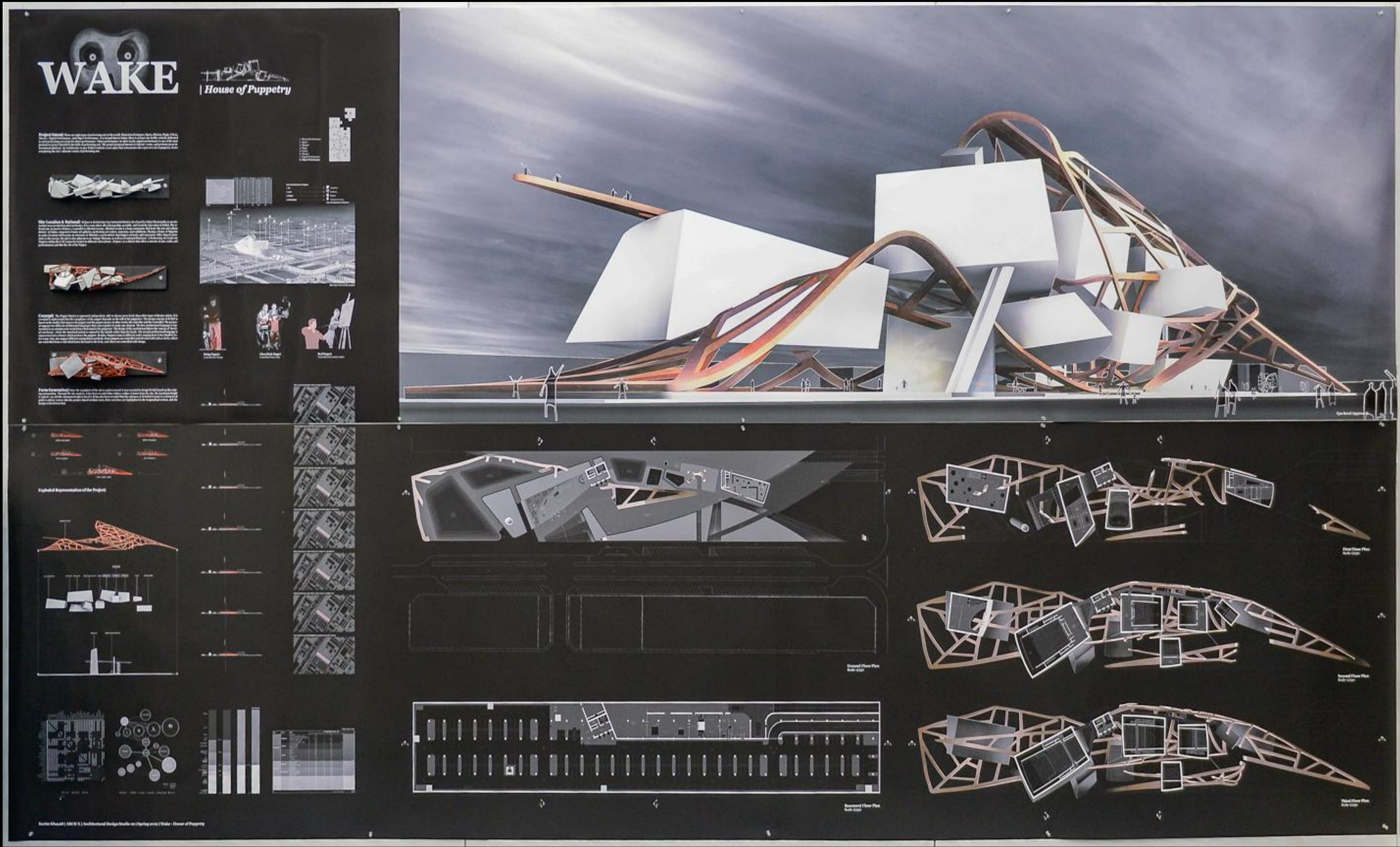


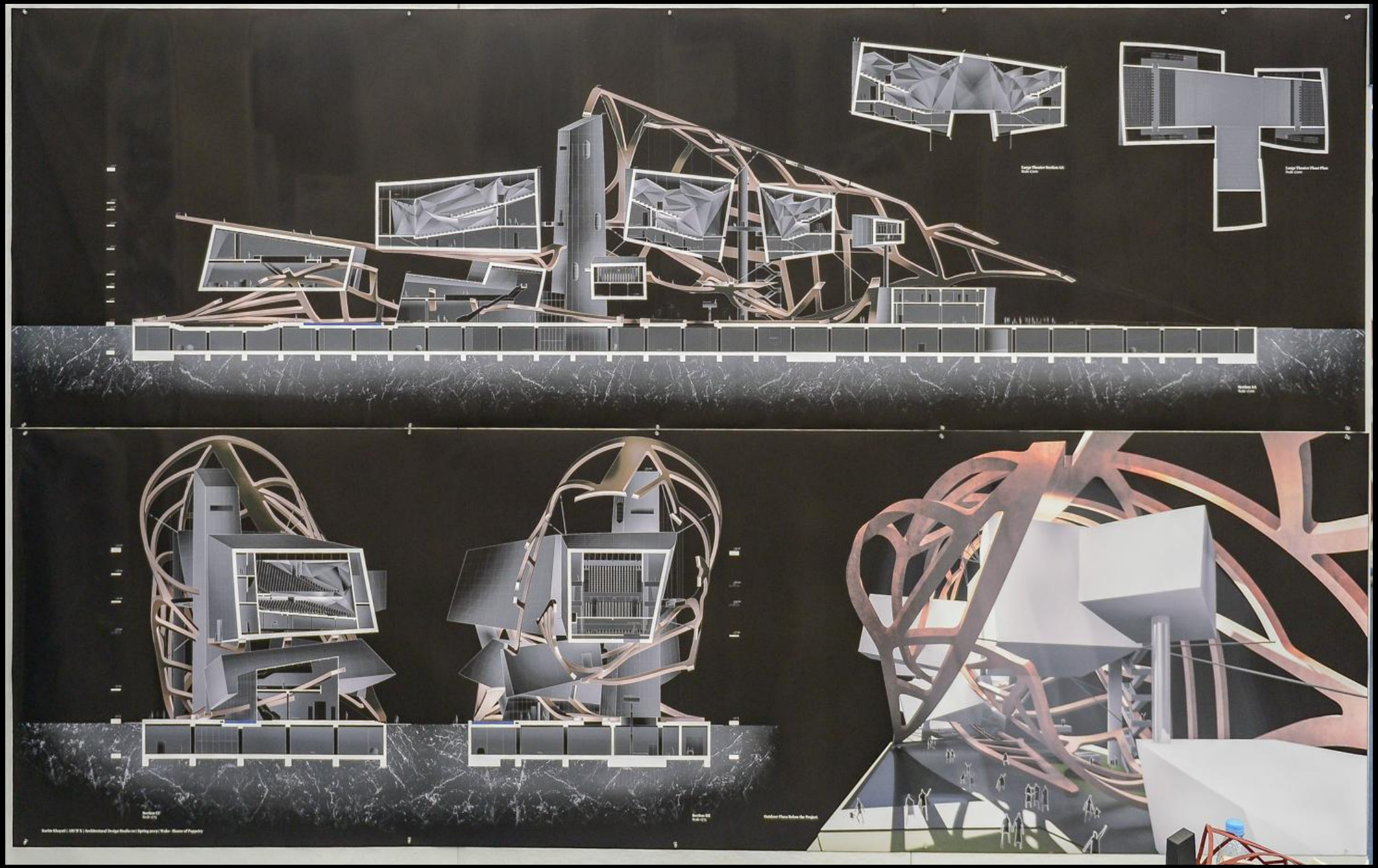


SAMPLE SENIOR FIFTH-YEAR STUDIO SUPERVISION

WATCH THE VIDEO


WAKE
| House of Puppetry


WAKE
| House of Puppetry
Exploded Representation of the Project

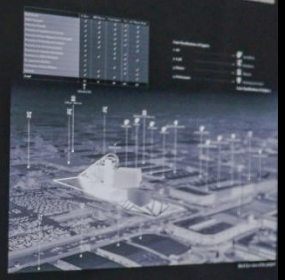


WAKE

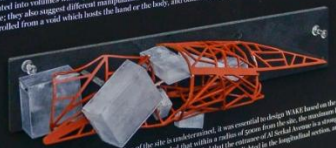
House of Puppetry

Project Intent| There are eight types of performing arts in the world: Musical performance, Opera, Illusion, Magic, Circus, Theater, Digital Performance, and Object Performance. It is factual that in Dubai, there is at least one facility entirely dedicated to each performing art except for object performance. Object performance, in other words, puppet performance is one of the most prominent factors that led to the birth of performing arts. The project proposal intends to relocate, create, and perform on an international platform. An Architecture to give Dubai residents a new space that reinvarnates the expressive art of puppetry, hence completing the city's ultimate variety of performing arts.

Site Location & Rational| Al Quoz is divided into four industrial districts developed by Dubai Municipality to accommodate mass production and warehouses. It is a zone where all craftsmanship, assemble, and creativity takes place in Dubai. The selected site, located in Al Quoz 1, is parallel to AlSerkal Avenue. AlSerkal Avenue is a large community that hosts the arts and culture in such a location will become an extension of AlSerkal, a social artistry that triggers curiosity and expression. Other than its proximity to the avenue, the plot is also adjacent to an Antique Museum, as well as a Courtyard Playhouse. A Performing Art Center for Puppets within the UAE cannot be located in different whereabouts. Al Quoz 1 is a district that offers a mixture of arts, crafts, and performances; just like the Art of the Puppet.

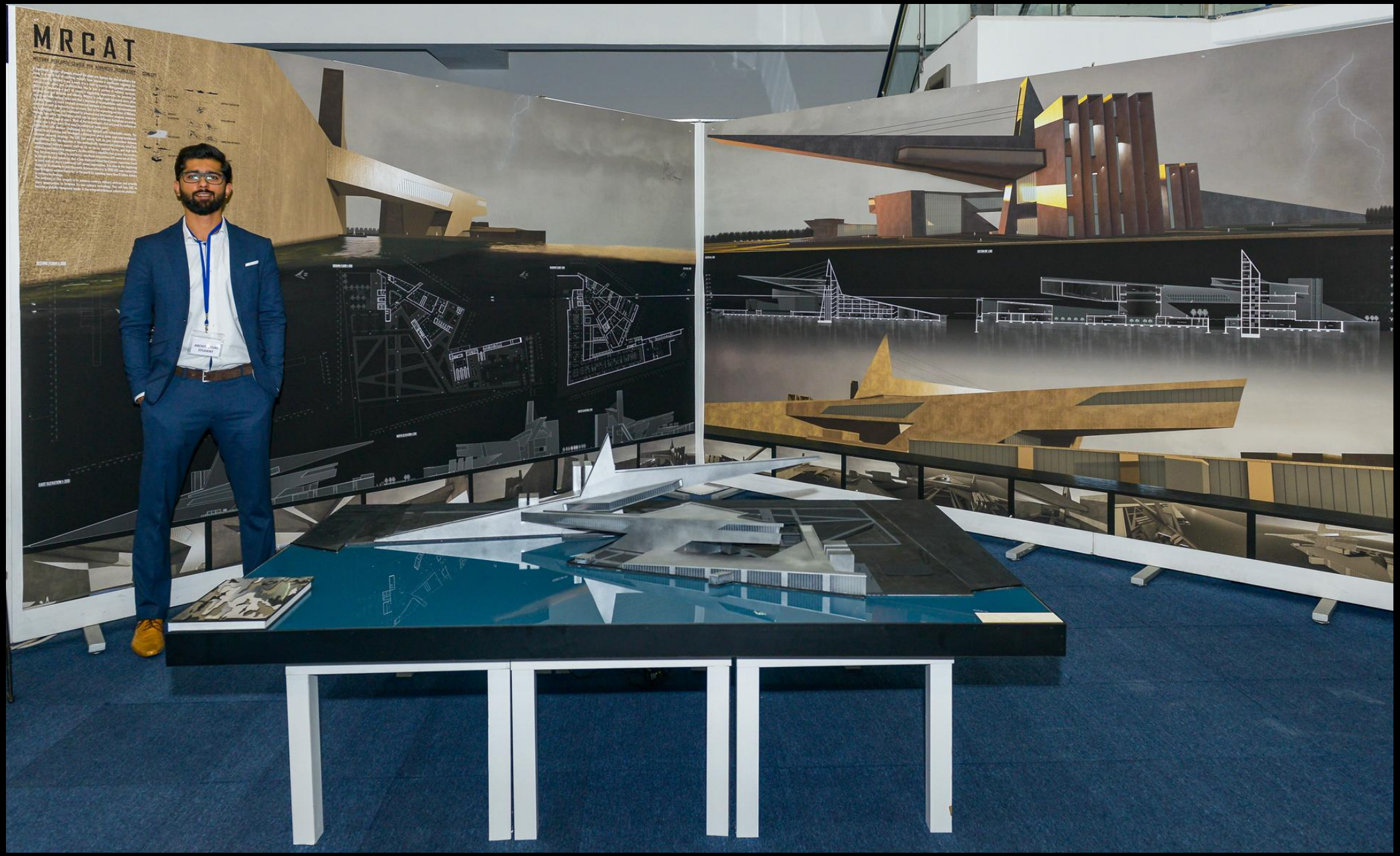


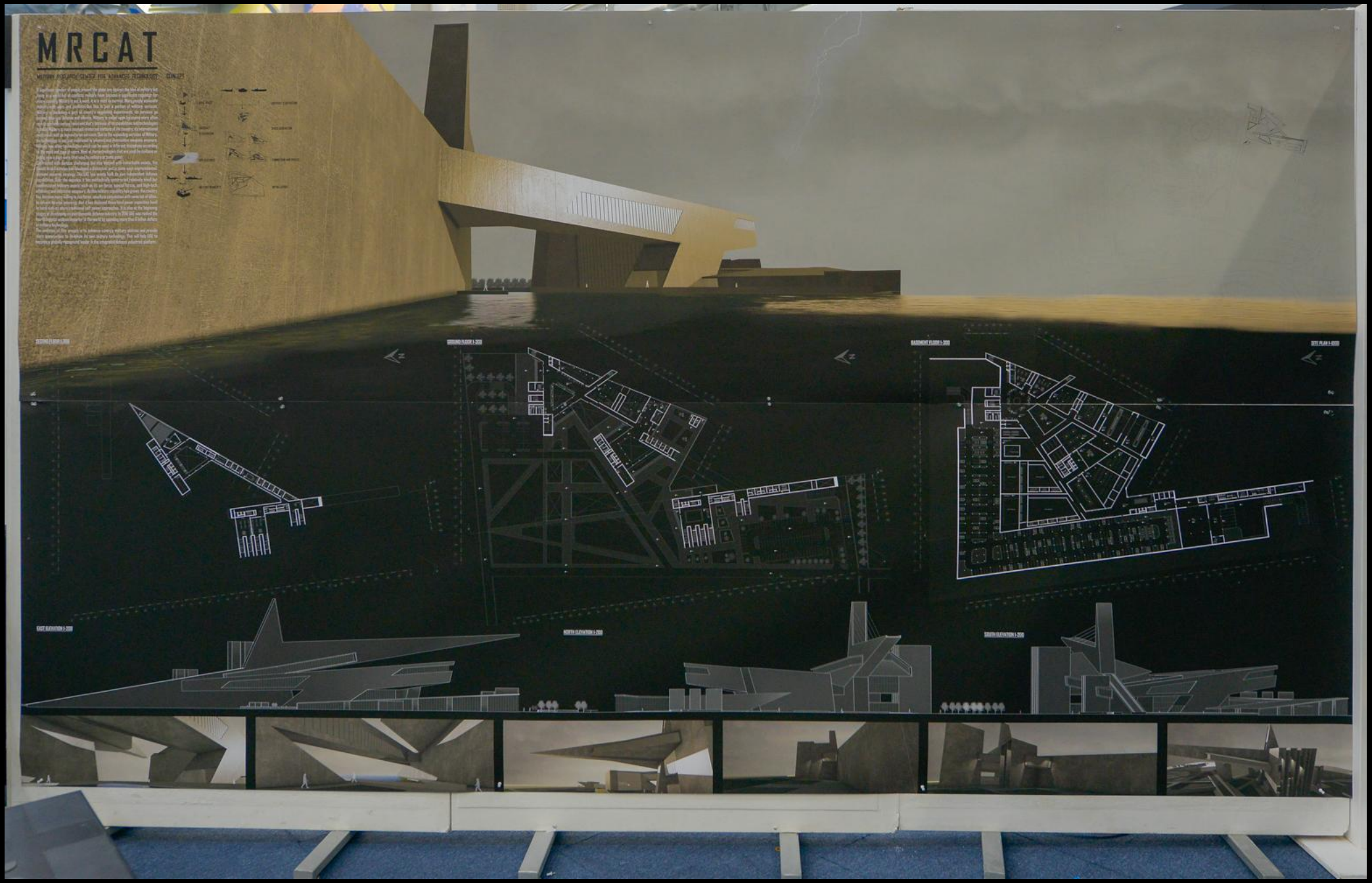
Concept| The Puppet Master is supremely independent, able to choose more freely than other types of theater artists. It is essential to understand that the compliance of the puppet depends on the will of the puppeteer. The design concept of WAKE is based on the duality that opposes the puppet and the puppet master; in other words, the controller and the controlled. The proposal suggests two different architectural languages that come together to make one element. The first architectural language is revealed in an omnipresent exoskeleton which depicts the puppeteer. The design of the exoskeleton follows the concept of 'inverted warehouse', where the structural system is exposed to the outside rather than the inside. The second architectural language is represented into volumes which portrays the puppets. Besides, Puppets come in different scales ranging from Extra-Small to Extra-Large; they also suggest different manipulation methods. Some puppets are controlled and elevated with rods or sticks, others are controlled from a void which hosts the hand or the body, and others are controlled with strings.

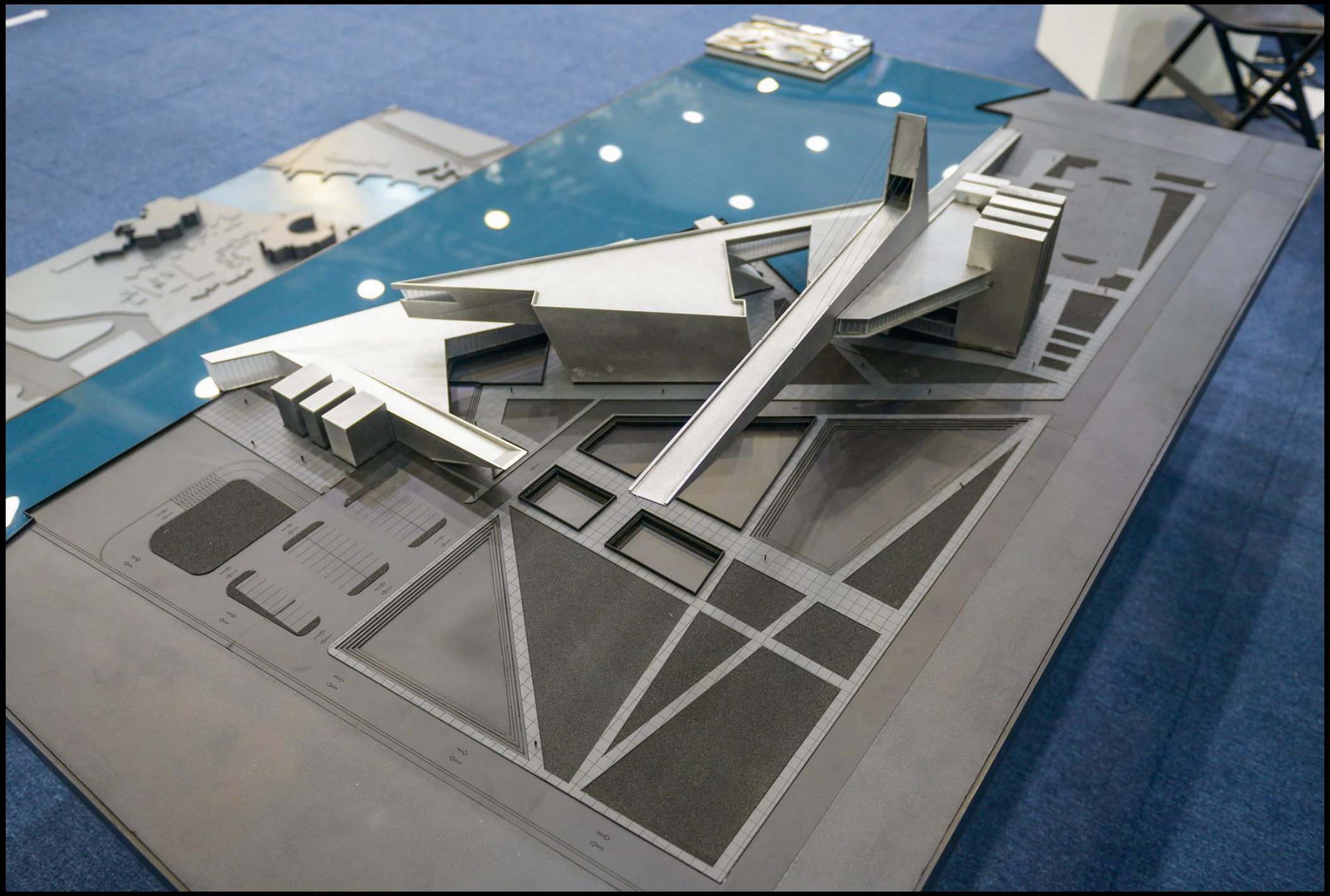


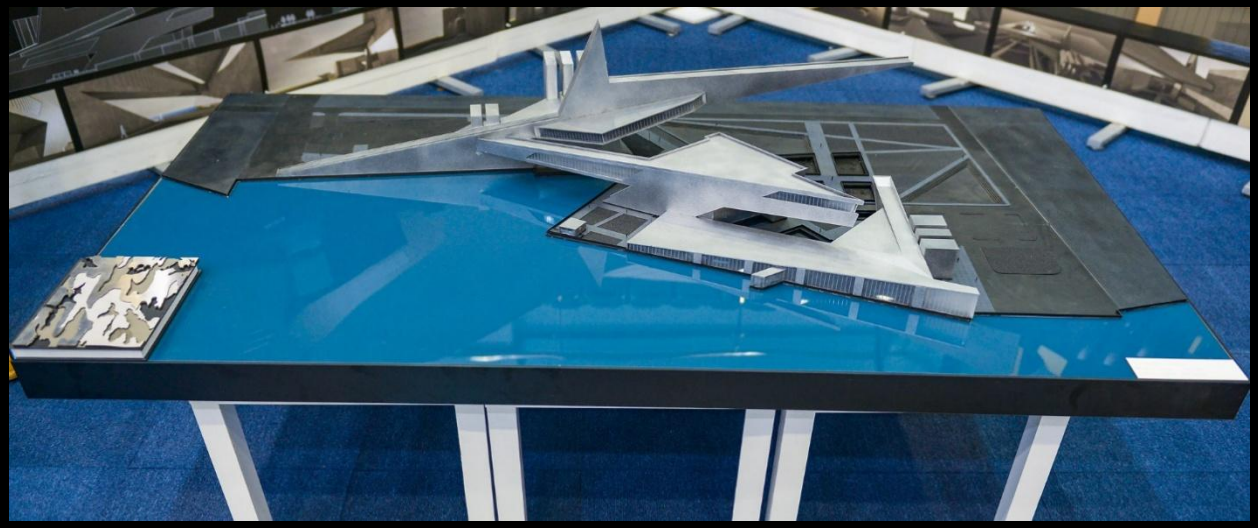
Form Generation| Since the regulation of the site is undetermined, it was essential to design WAKE based on the existing surrounding. Through the site analysis, it has been revealed that within a radius of 500m from the site, the minimum height is 25m (G+4), and the minimum height is 6m (G). It has also been revealed that the entrance of Al Serkal Avenue is a strong focal point to attract visitors into the project. Based on these facts, three axis lines are highlighted in the longitudinal section, and the design evolved from that.

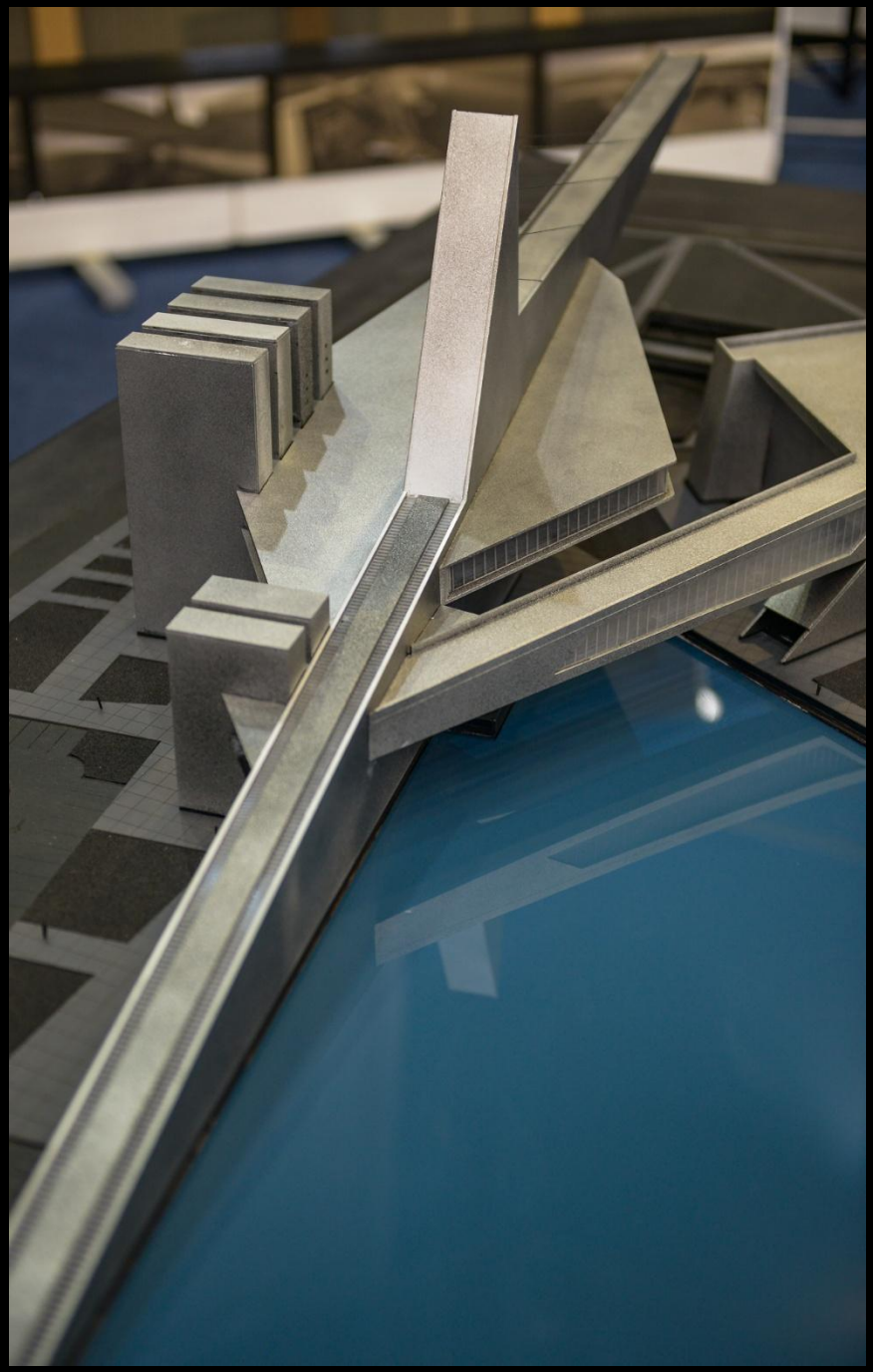
Exploded Representation of the Project|


MRCAT


MRCAT
MILITARY RESEARCH CENTRE FOR ADVANCED TECHNOLOGY
CONCEPT
SECOND FLOOR 1:200
GROUND FLOOR 1:200
BASEMENT FLOOR 1:200
SITE PLAN 1:1000
EAST ELEVATION 1:200
NORTH ELEVATION 1:200
SOUTH ELEVATION 1:200





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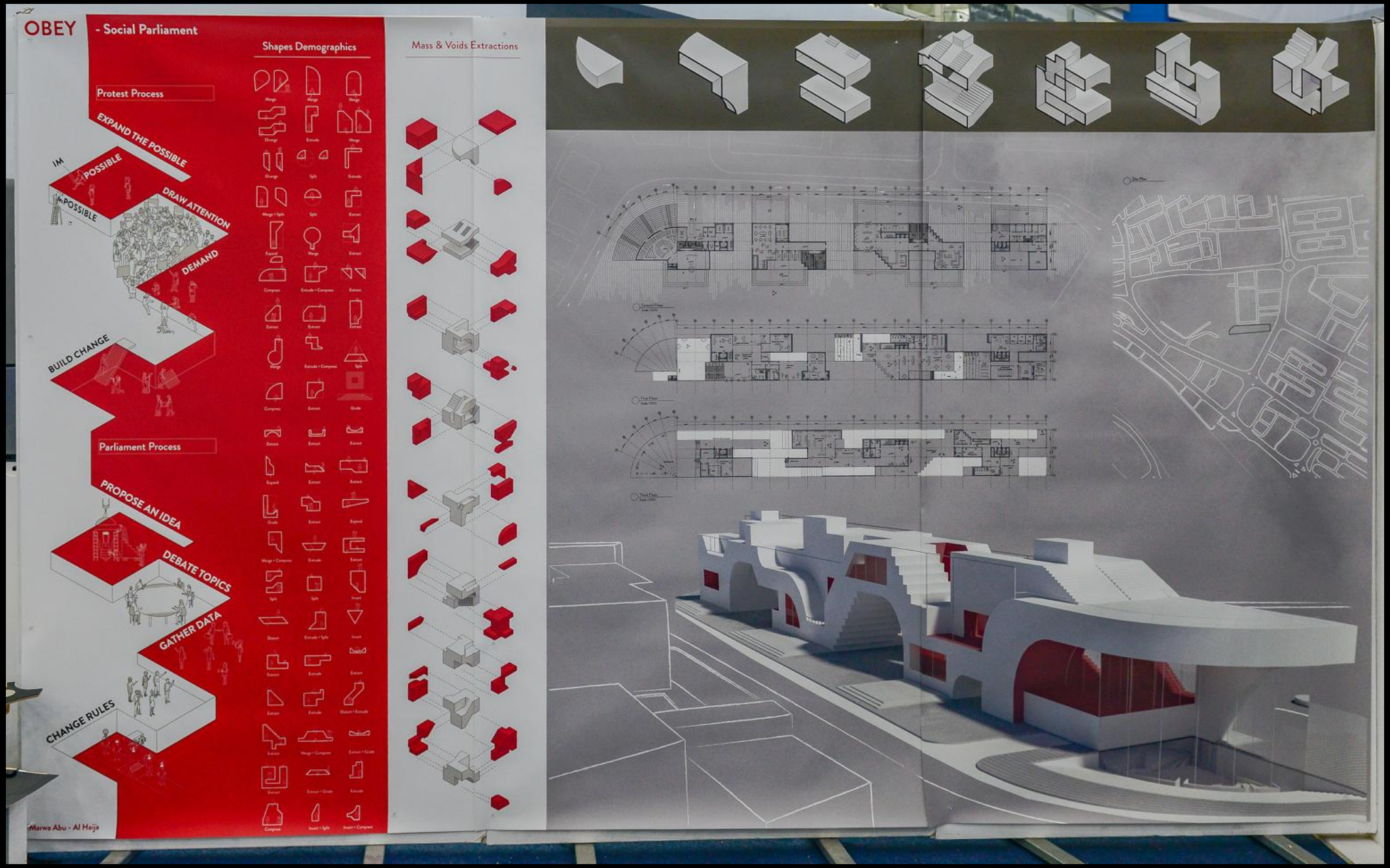
- Social Parliament
Protest Process
EXPAND THE POSSIBLE
POSSIBLE
DRAW ATTENTION
DEMAND
BUILD CHANGE
Parliament Process
PROPOSE AN IDEA
DEBATE TOPICS
GATHER DATA
Shapes Demographics
Mass & Voids Extractions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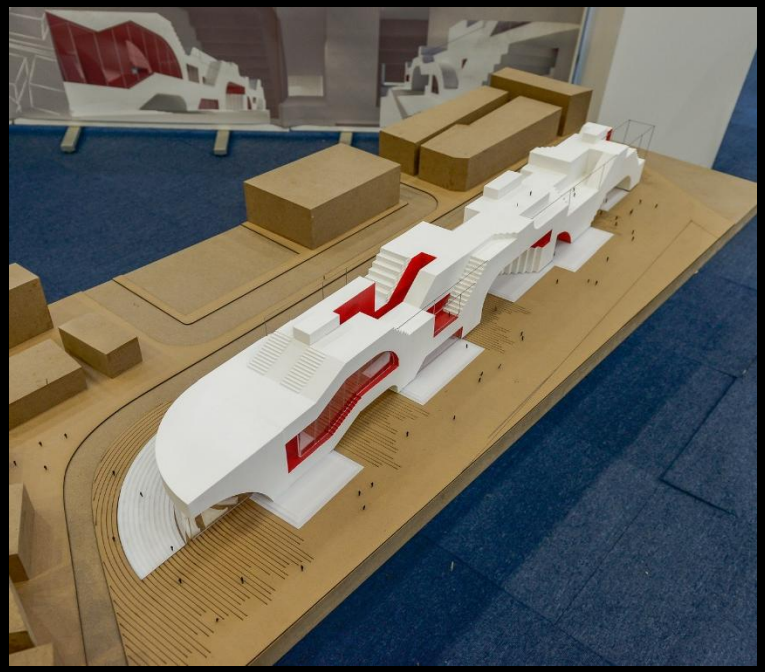

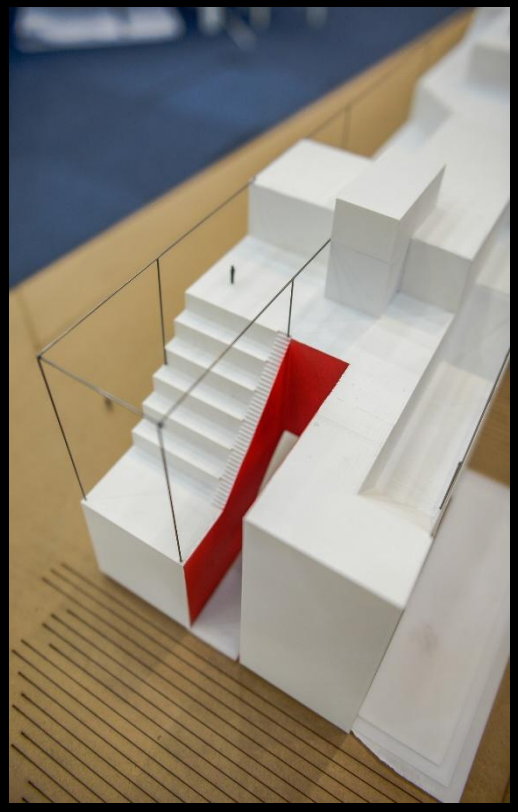

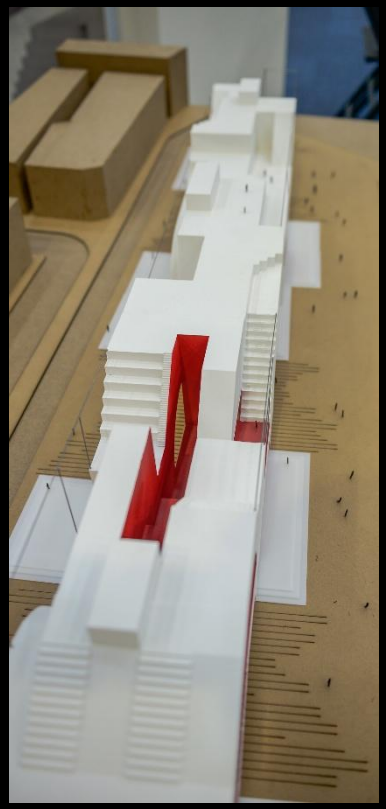


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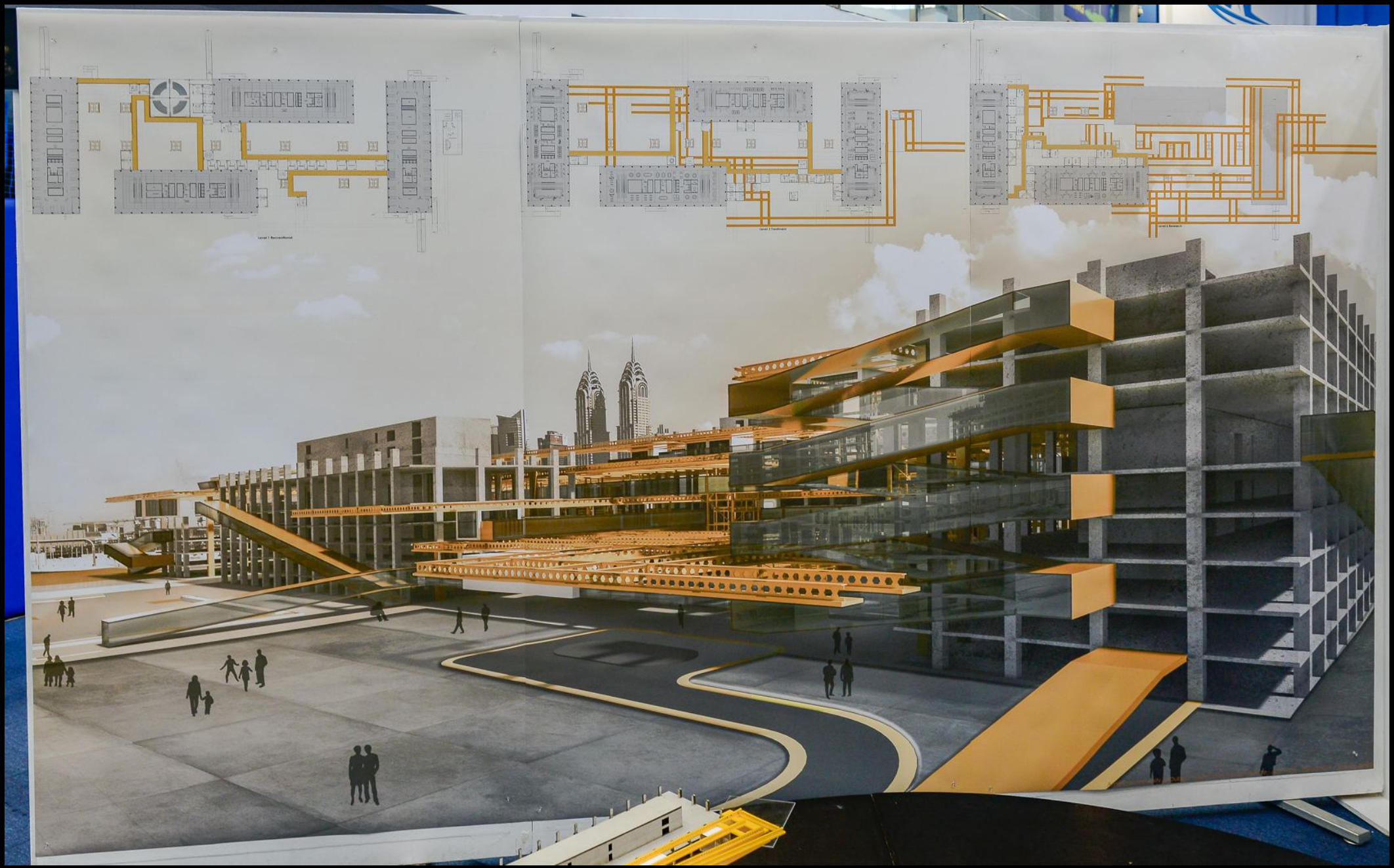

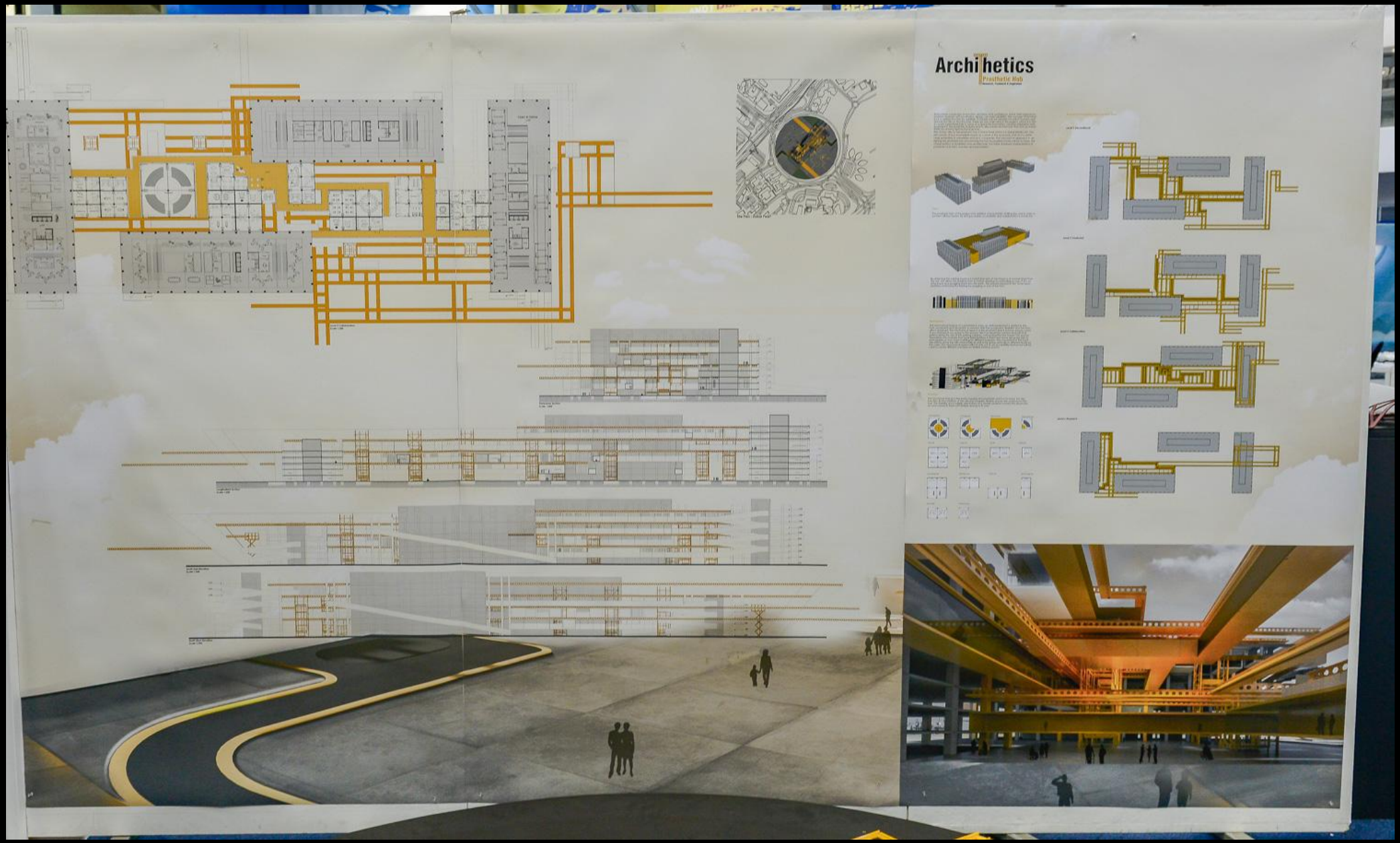
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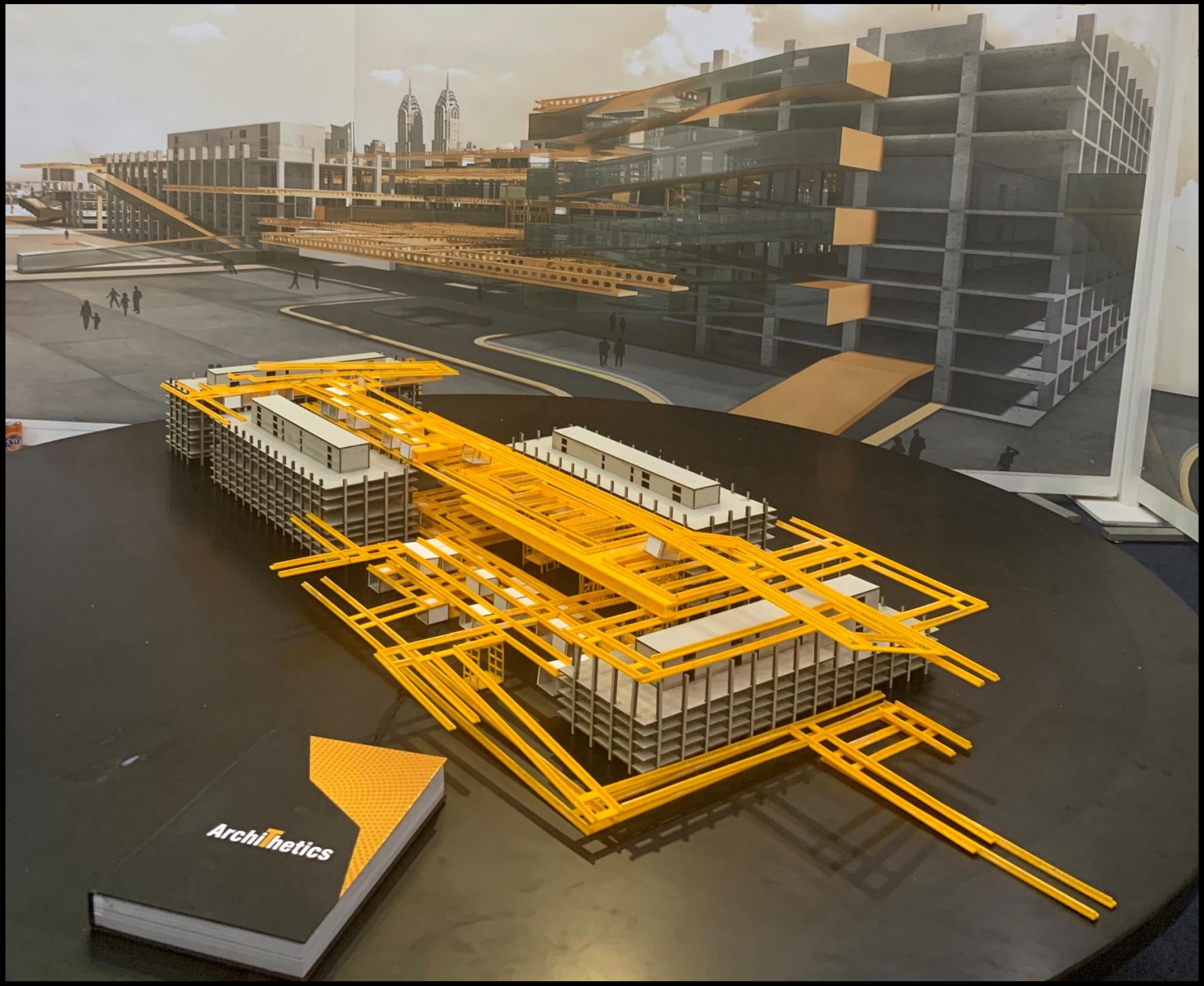
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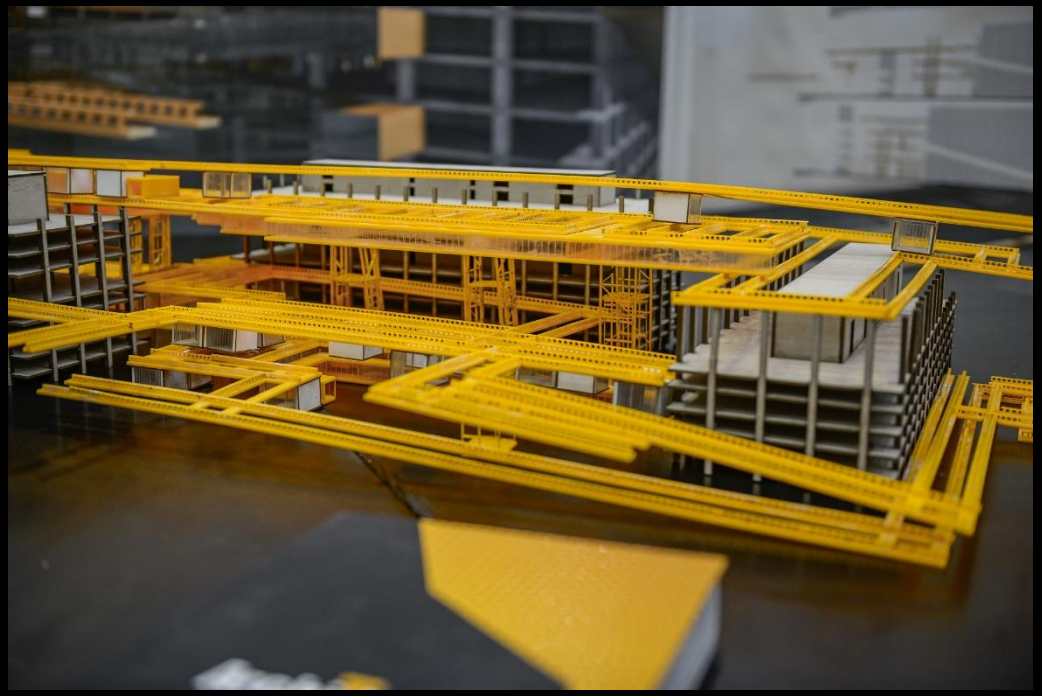
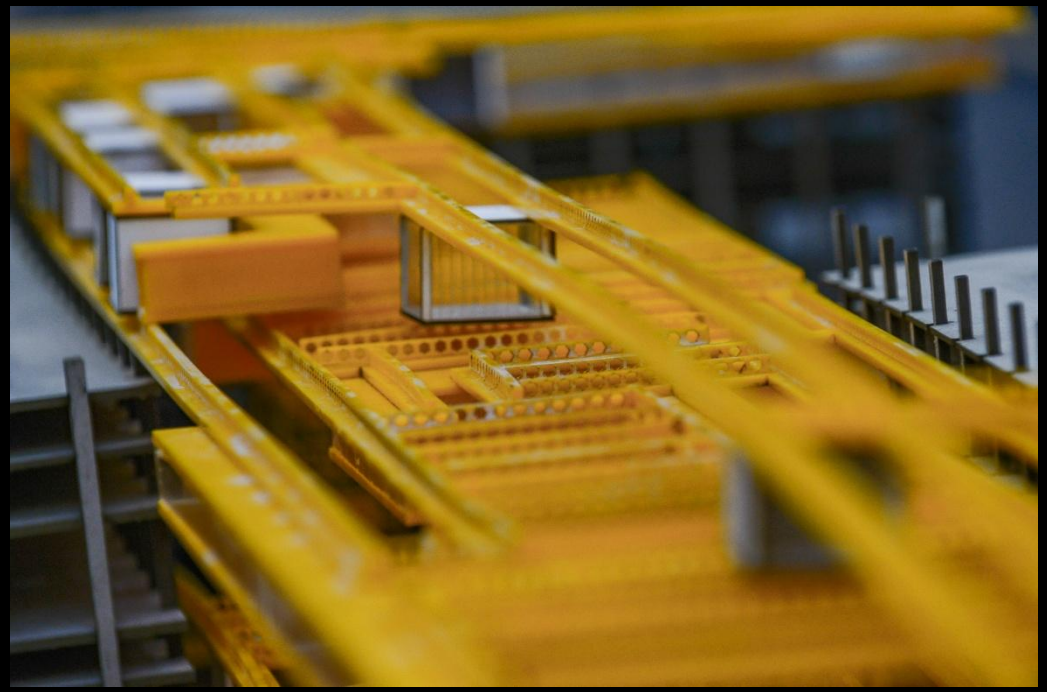
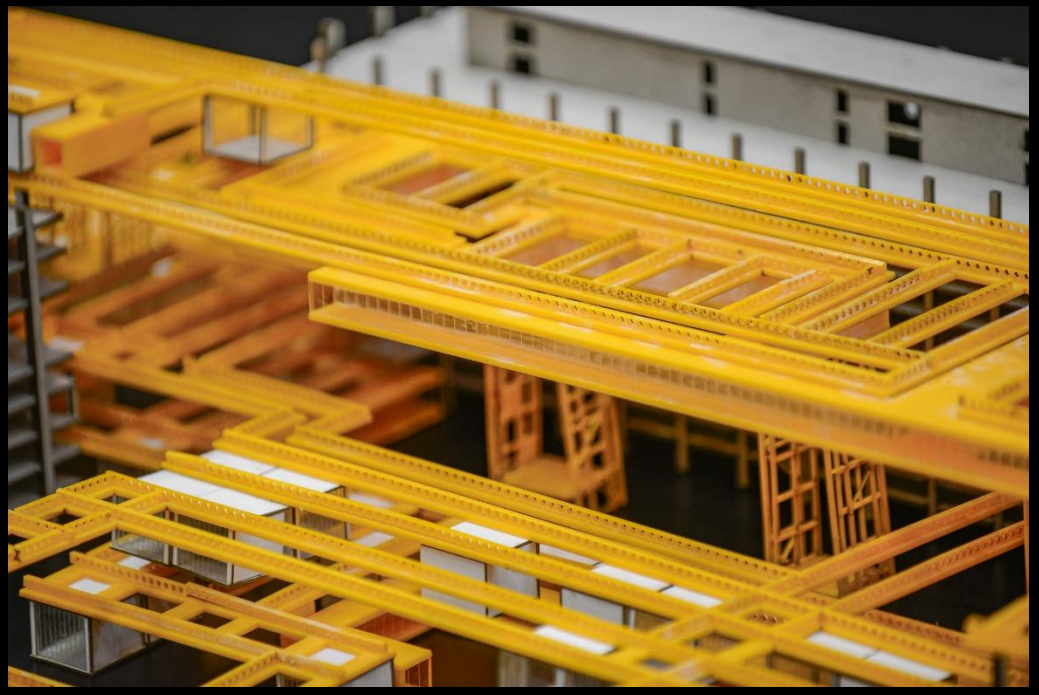







TINCTORIUM
Function of Project
Reasons of Holocene Extinction
Human Activity
Climate Change
&
Global Warming
Natural Disaster
ETCHES
CESS
CONCEPT PHYSICAL MODELS STUDY
ANGLED WALLS
FACADE CONCEPT
SECTION A-A
SCALE 1:250
SECTION B-B
SCALE 1:250
6th

EXTINCTORIUM

Extinctorium is a combination of two words, extinct means no longer exist, and whale is a forming noun donating a place for its function.

CONCEPT

Extinction is a widespread risk that is rising gradually in its pit and heavily affects the humanity and nature. Biodiversity is the main fundamt of ecological system on the earth where each species plays an important role in the life of other species. Biodiversity is often used as the measurement of the ecological system's productivity and stability. Moreover, the greater varieties of species on earth yield a greater chances for the sustainability of life and humanity survival. Biodiversity and ecosystem are fundamental to humans' life, thus, protection of nature and conservation of biodiversity are essential for humanity survival.

The earth is currently in the Holocene era, in which it is now going under the sixth mass extinction. In the Holocene era, mainly, humanity is the primary extinct as a result of the human activities that are changing the climate. Furthermore, various types of species are becoming extinct at an increasingly high rate, which put the life under huge pressure and at the risk of extinction.

Is extinction the most important element is time, since what we do at a certain time can decide the future of living things. To represent this in the design, the programs have been divided into three time segments, Past, present and future. The programs related to the Past will be accommodated below the ground, the one for the present will be located at the ground level, and the one for the future will be placed above the ground level. Moreover, the three segments will have three different architectural spaces, which represent the time line of extinction through past, present, and future. Each space has a different function and represents one part of extinction's time line.

The project includes:

Memorial of all extinct species to illustrate the effects of extinction on earth and its species also signifies how humans are driving their life towards extinction. The memorial is a space that links the concept of extinction and death to an architectural space. Designing a memorial is a good way to access the people's emotion. The hope how that earth found in different disciplines of life through different times.

Gene Vault to conserve genetics of endangered species that are at high risk of extinction in order to ensure the survival of species and to prevent the loss of genetic diversity. There are currently a lot of species that are facing the risk of extinction, especially due to GHE. The Gene Vault will play an important role in the preservation of the humanity by conserving the genetics of the endangered species.

Climatorium to increase awareness and knowledge of the people about the relationship between climate change and how it might increase the potentials of species extinction in the future. Climate change is caused by humans due to their actions that harm the environment and lead to global warming.

Moreover, natural disasters such as earthquakes, volcanos, tsunami, and other disasters were the major cause of the five previous extinction events. Therefore, the design of the building implements most of the natural disasters effects. First of all, the design mimics how massive angled portions of the surface are partially in the water that are joining together in a triangular form. The design of the two massive walls come from the site's island that had been broken into two plates away from each other in order to represents the effect of an earthquake on the island. Furthermore, the two plates had been separated from each other by a gap that allows the water to flow through it, which represents the effect of a tsunami. The water flow into side and allows water into it in order to create a feeling of sinking, which represents the effect of a flood. As well, the entry assembly is open into the side to let the water in to create a feeling of knowledge and submergence, which represents the effect of a tsunami. The opening also allows dim light in while at the same time people view's gets restricted with those walls to focus only on water, light and its reflection. Furthermore, some of the programs are accommodated in the's enlarged mass around the triangular form, while the other programs are accommodated in the two plates of the island. The ones in the plates are accommodated below the ground level and can be accessed from the exterior through the ground floor entry mechanism. When the façade is exposed to the sunlight, it creates a shadow of the fossil in the main wall of the building.

Function of Project

Reasons of Holocene Extinction

Human Activity

↓

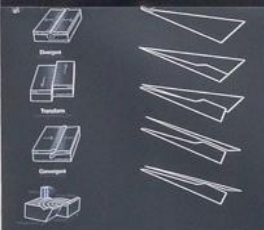
Climate Change & Global Warming

↓

Natural Disaster

CONCEPTSKETCHES

DESIGN PROCESS



CONCEPT PHYSICAL MODELS STUDY

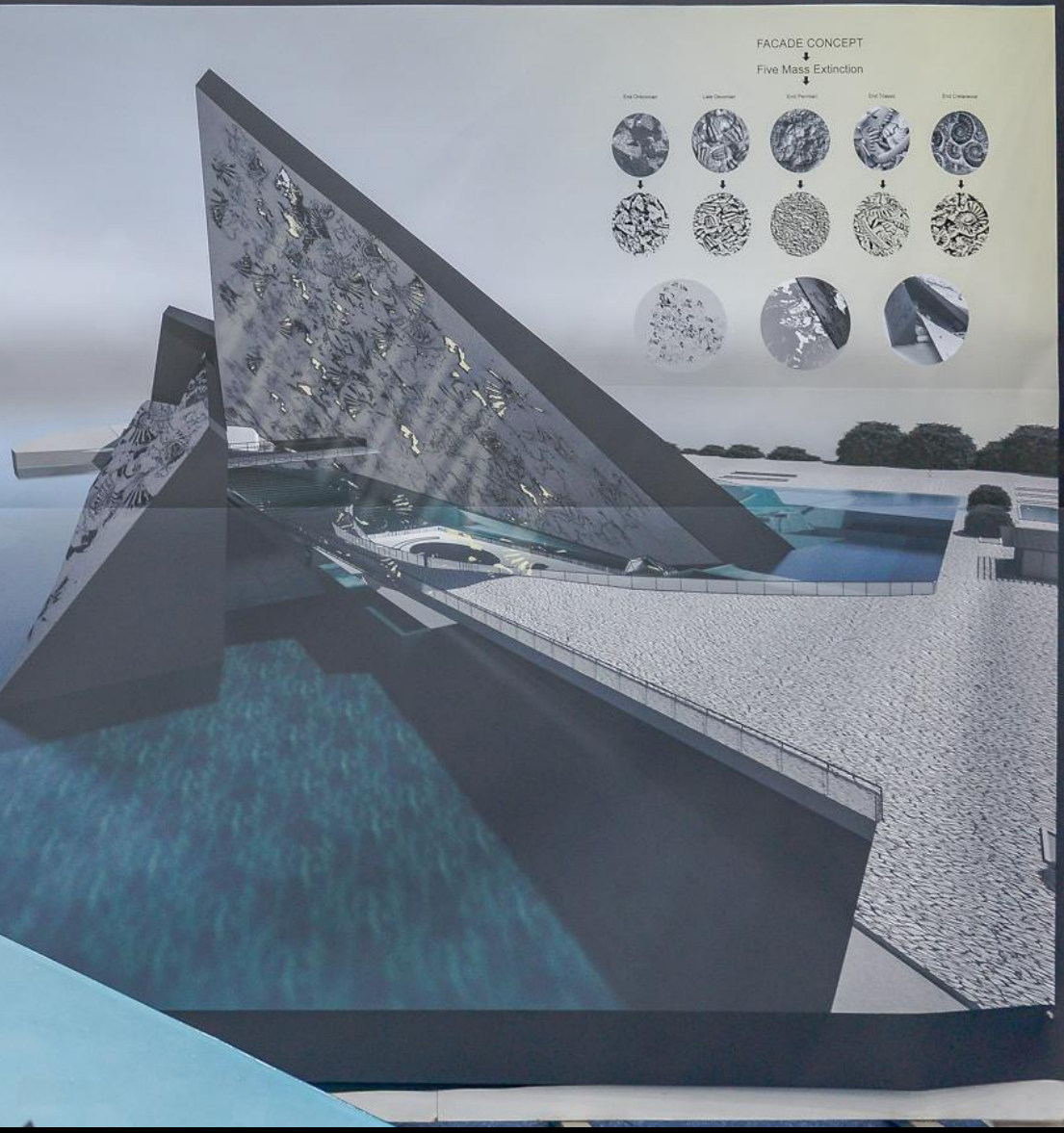
MASSIVE WALL

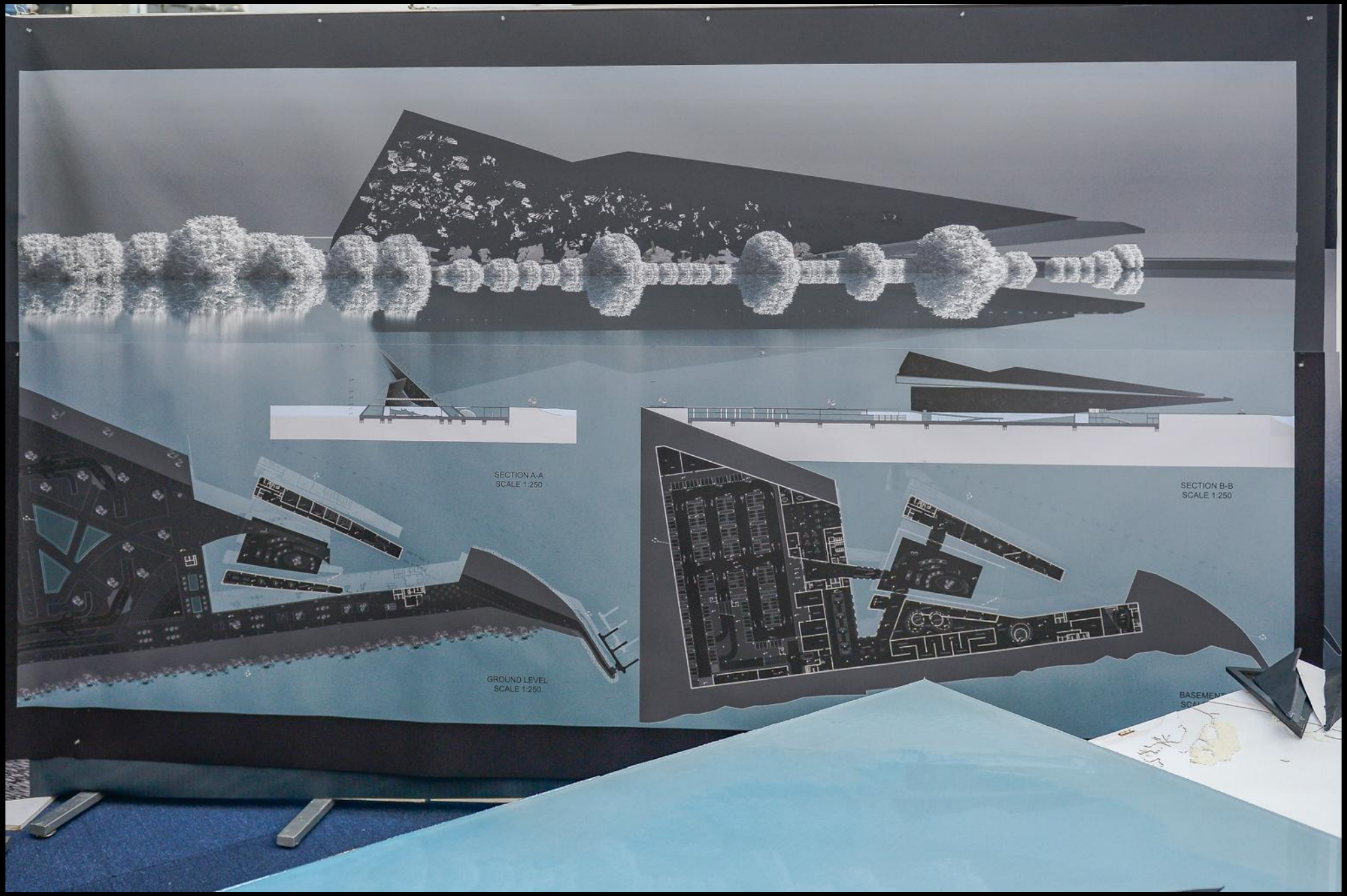
ANGLED WALLS

FACADE CONCEPT

↓

Five Mass Extinction

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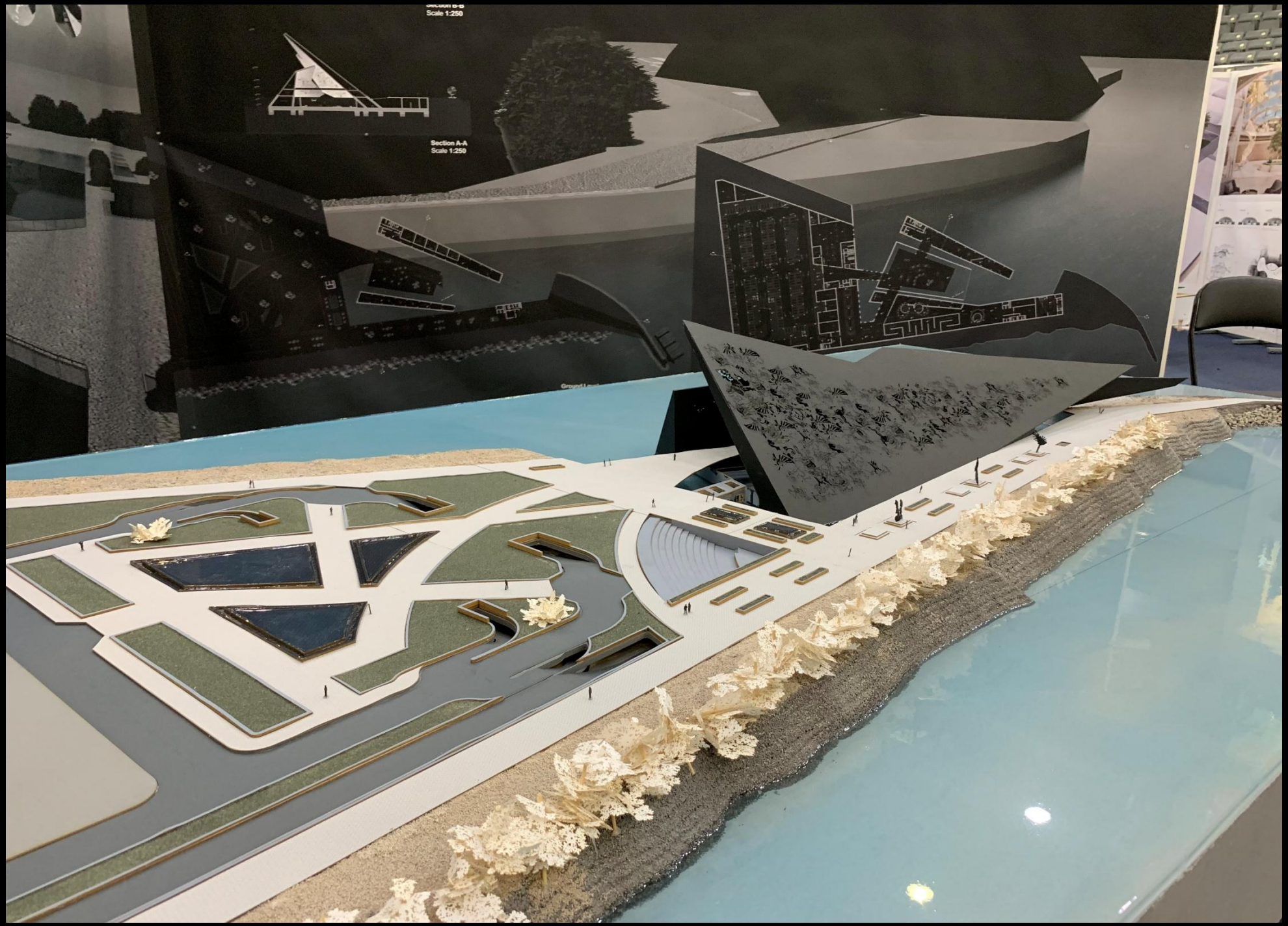
SCALE 1:250
SECTION B-B
SCALE 1:250
GROUND LEVEL
SCALE 1:250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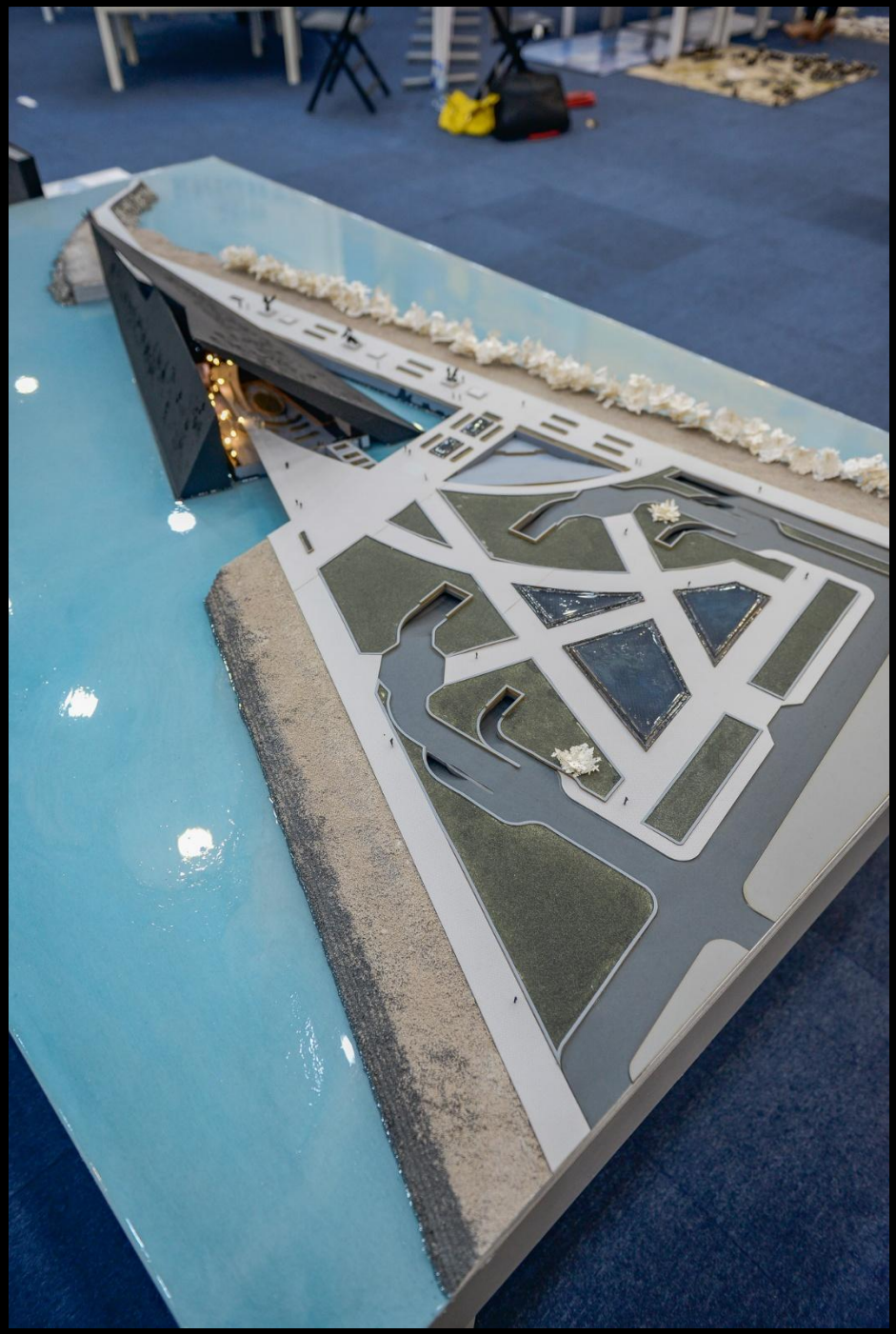
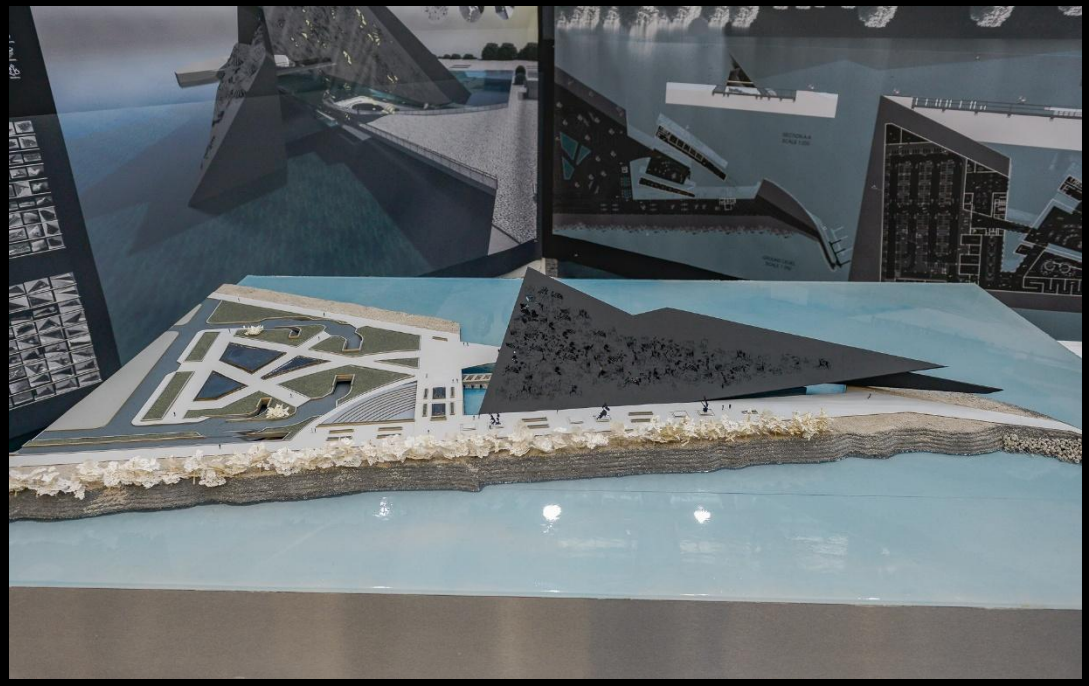
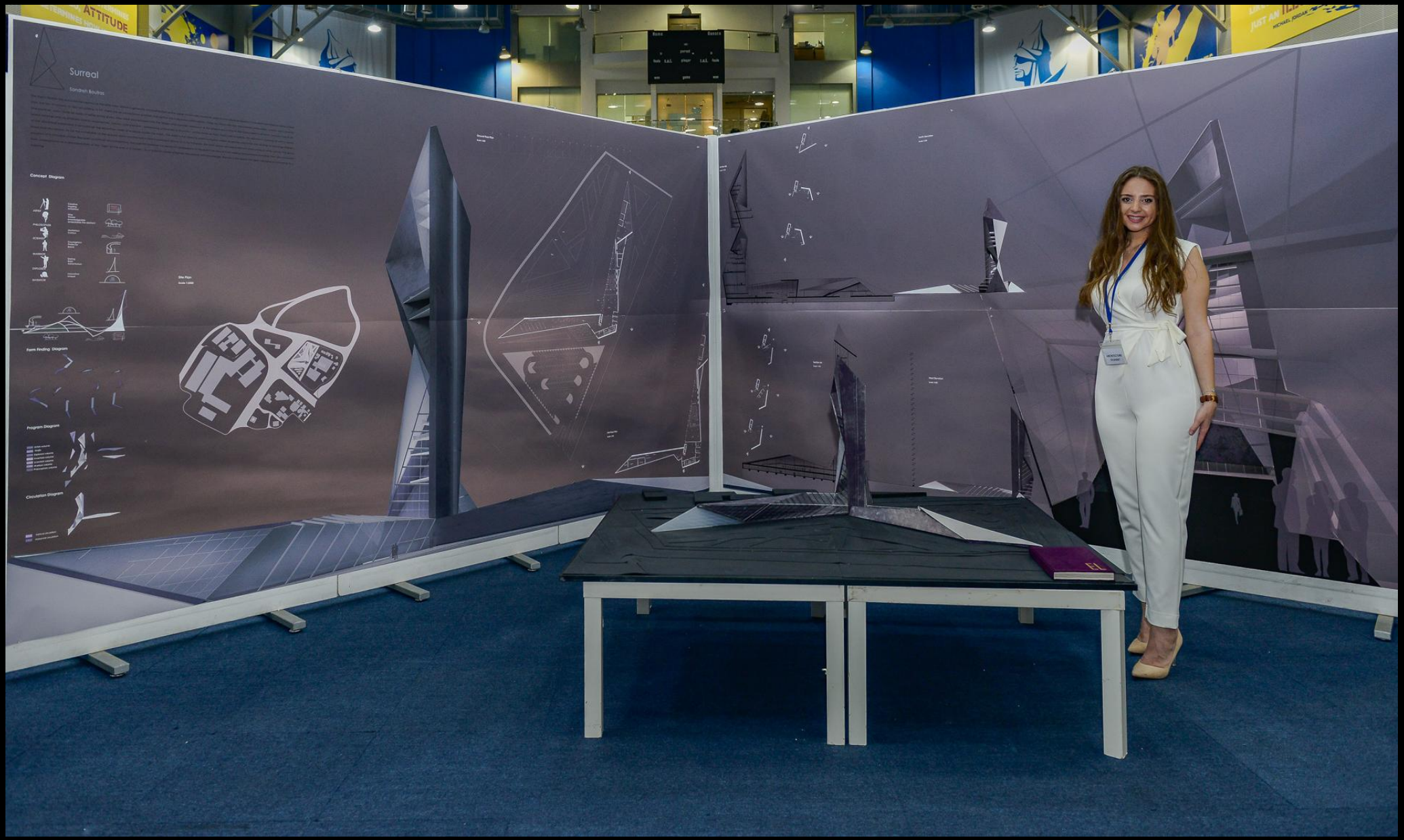
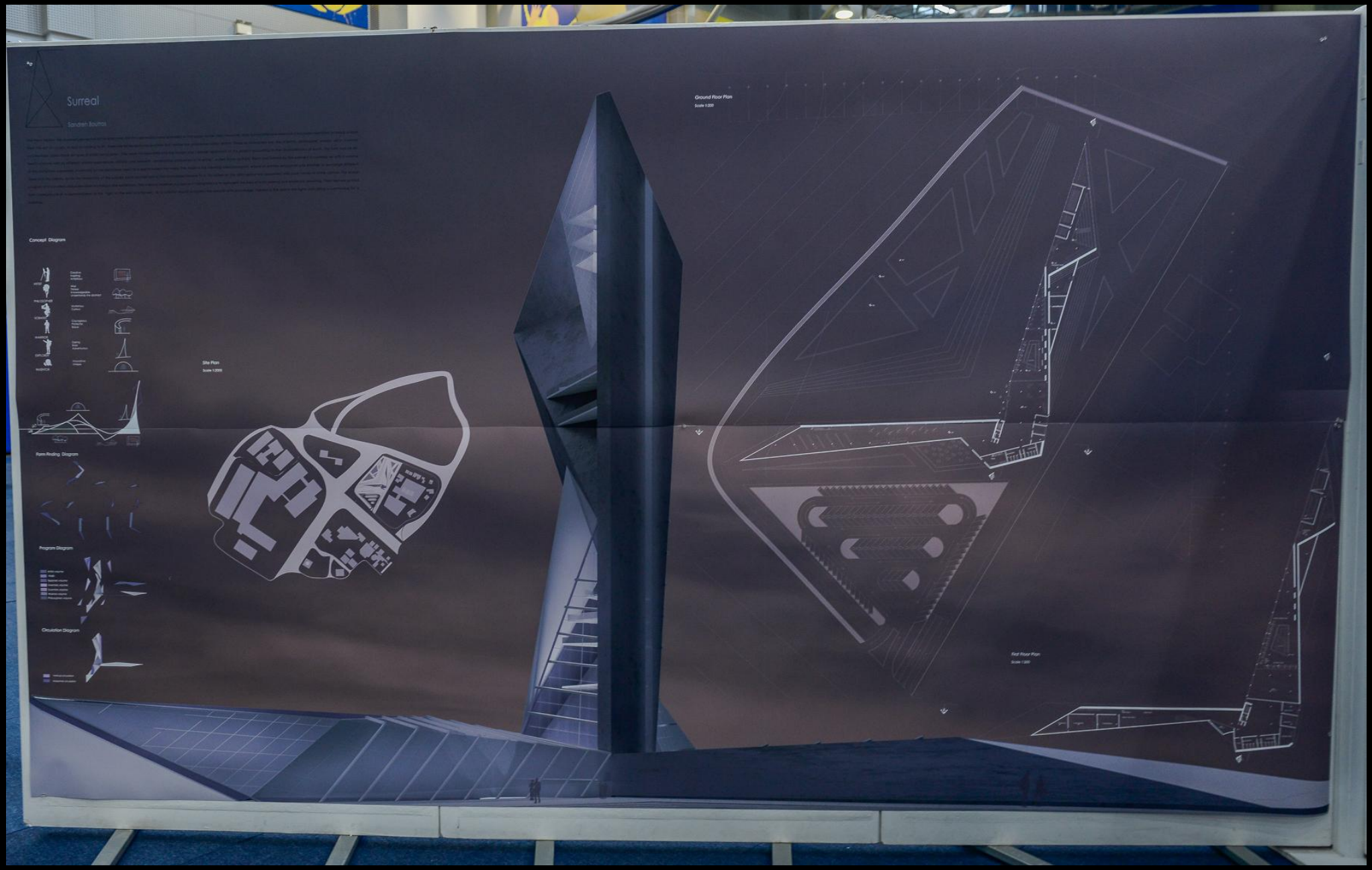
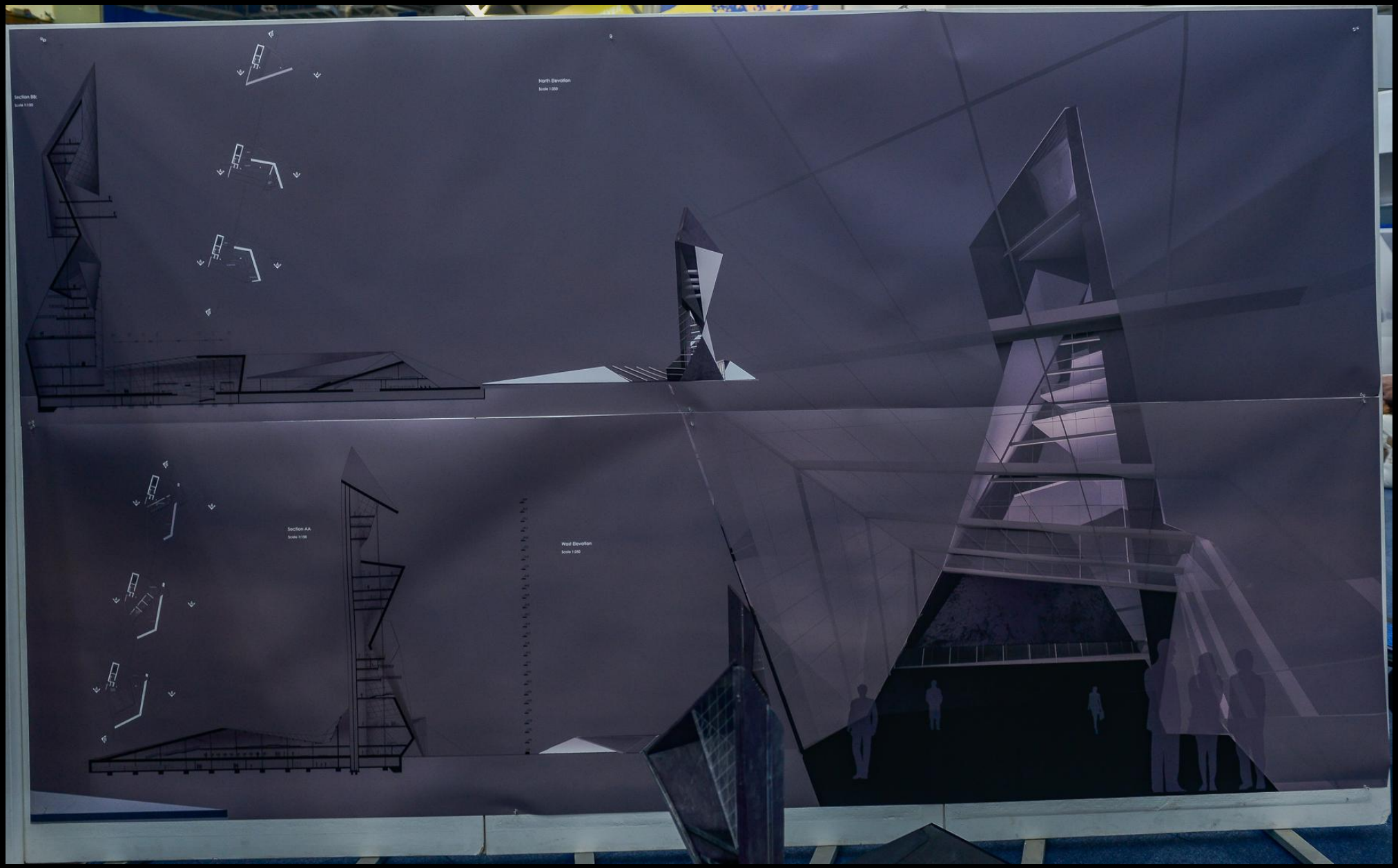





Surreal
Concept Diagram
Site Plan
Form Finding Diagram
Program Diagram
Circulation Diagram


Surreal
Sandrein Bautista
Concept Diagram
Site Plan
Scale 1:2000
Ground Floor Plan
Scale 1:200
Form Finding Diagram
Program Diagram
Circulation Diagram
Roof Floor Plan
Scale 1:200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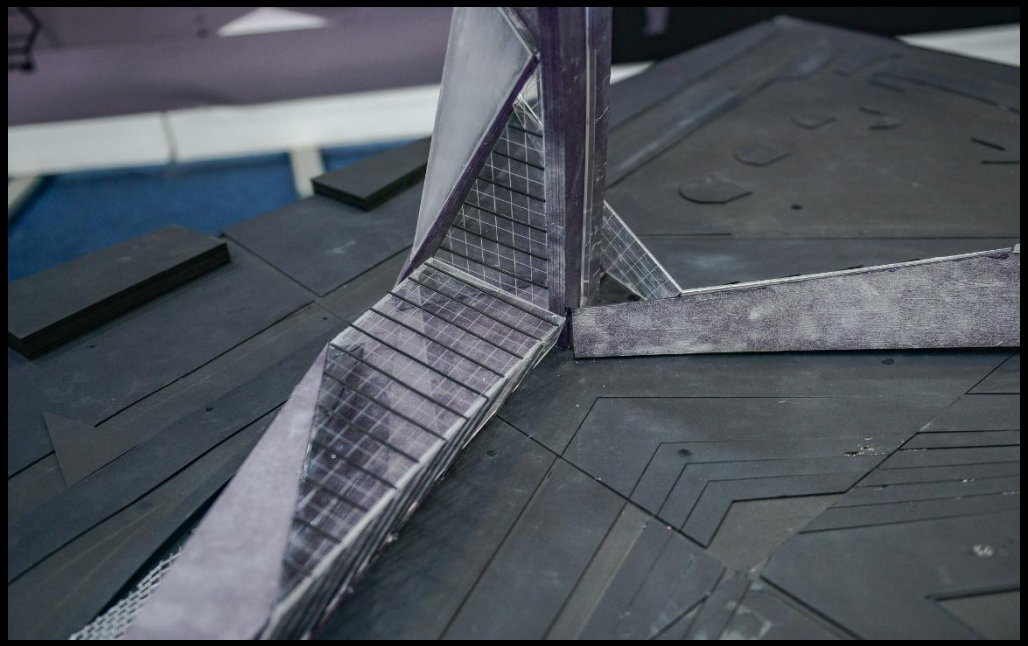
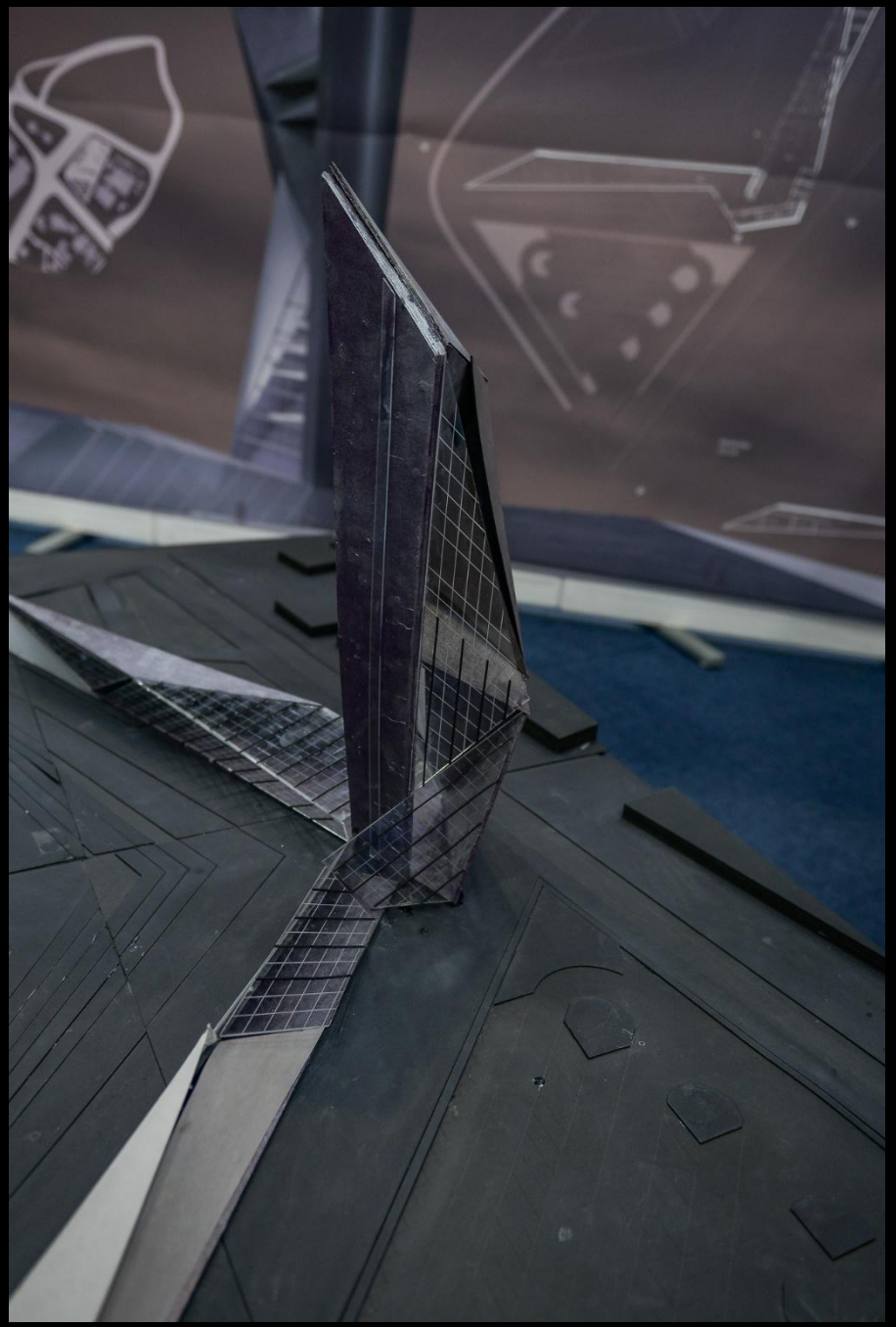
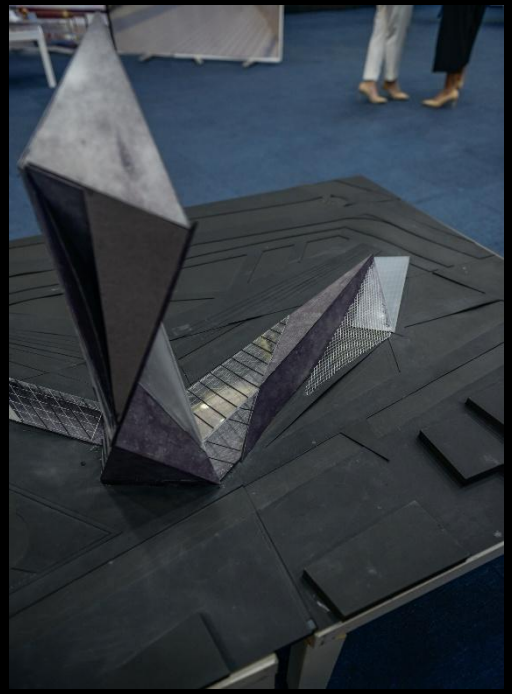
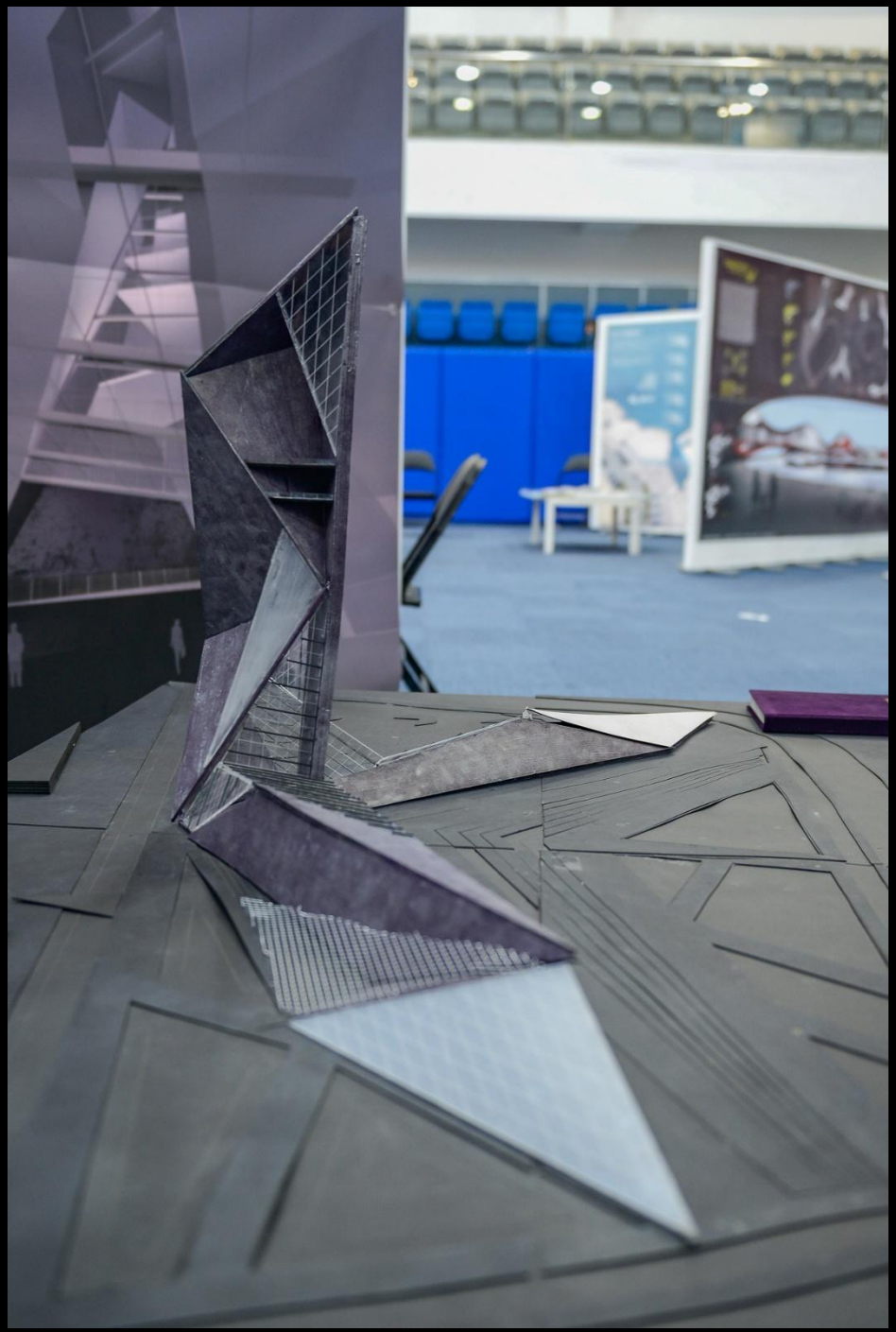
North Elevation
Scale 1:200
Section AA
Scale 1:100
West Elevation
Scale 1:200







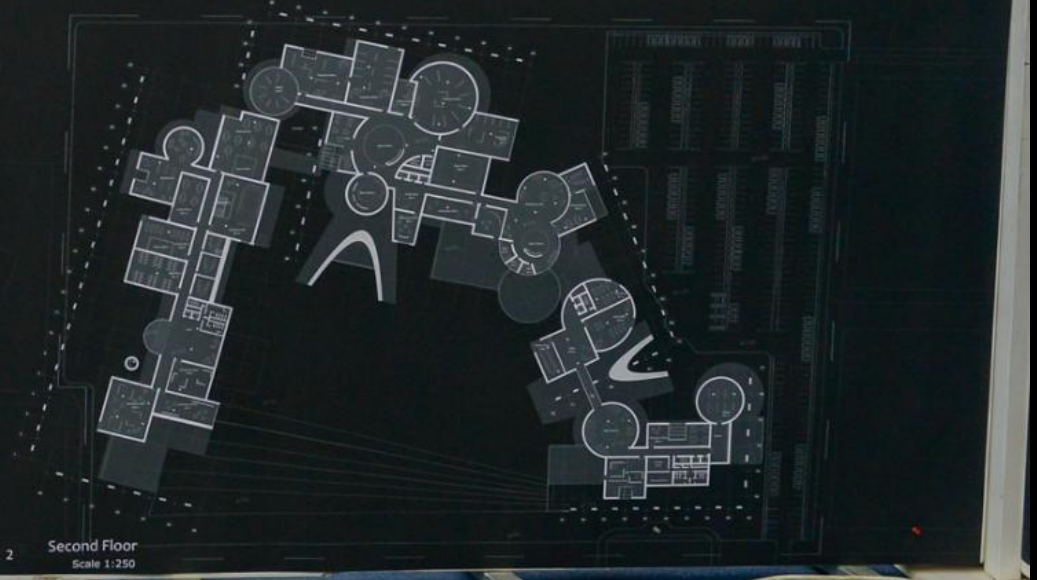



Sprayed
From GRAFFITI to Urban ART
AUD
KNIGHTS

Sprayed

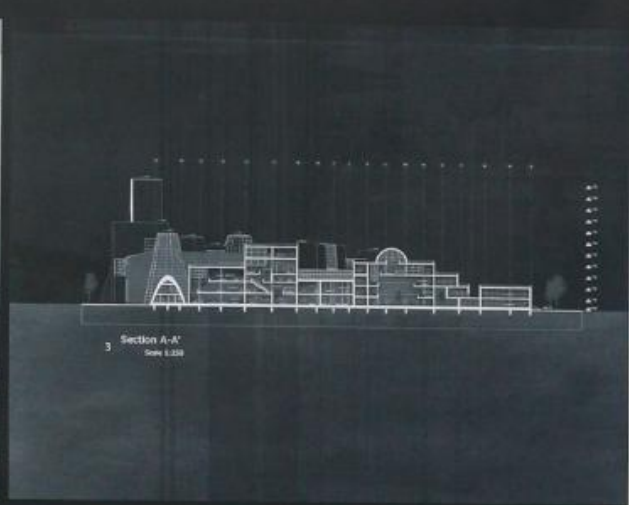
From GRAFFITI to Urban ART

May Madi-AUD-ARCH502-Spring2018




5 South Elevation
Scale 1:250


6 North Elevation
Scale 1:250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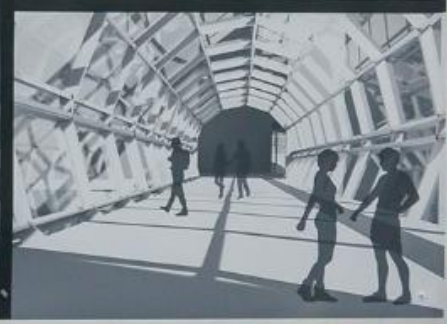
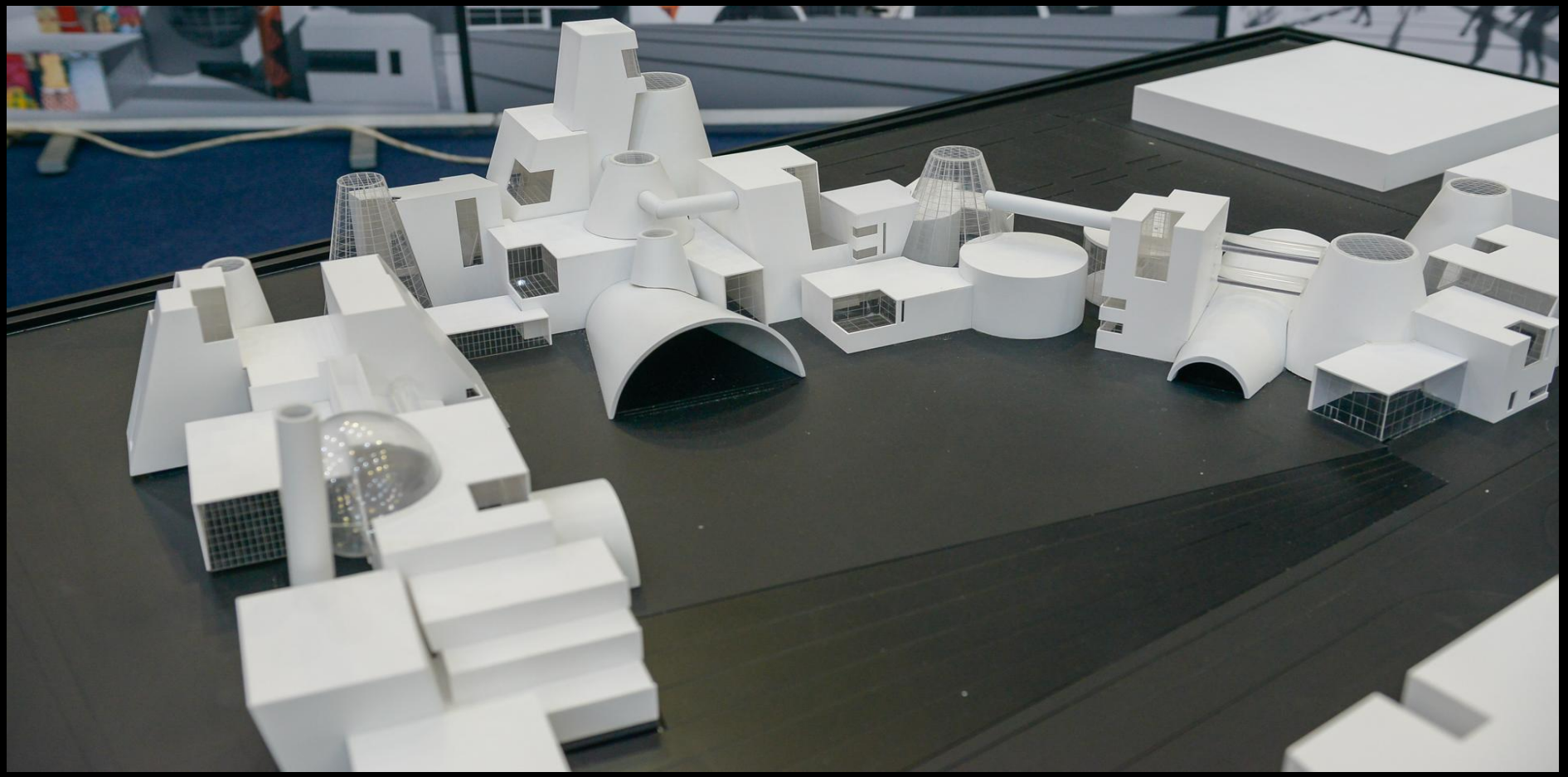
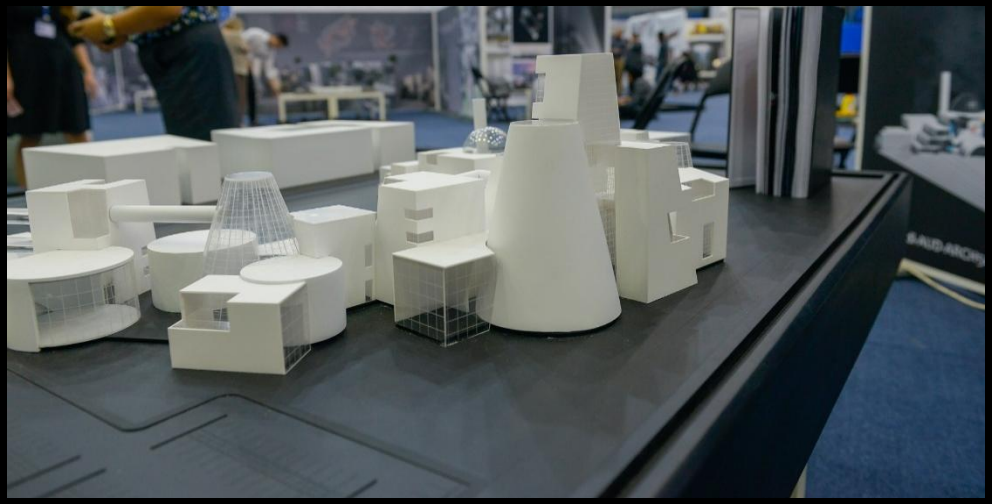


6 North Elevation

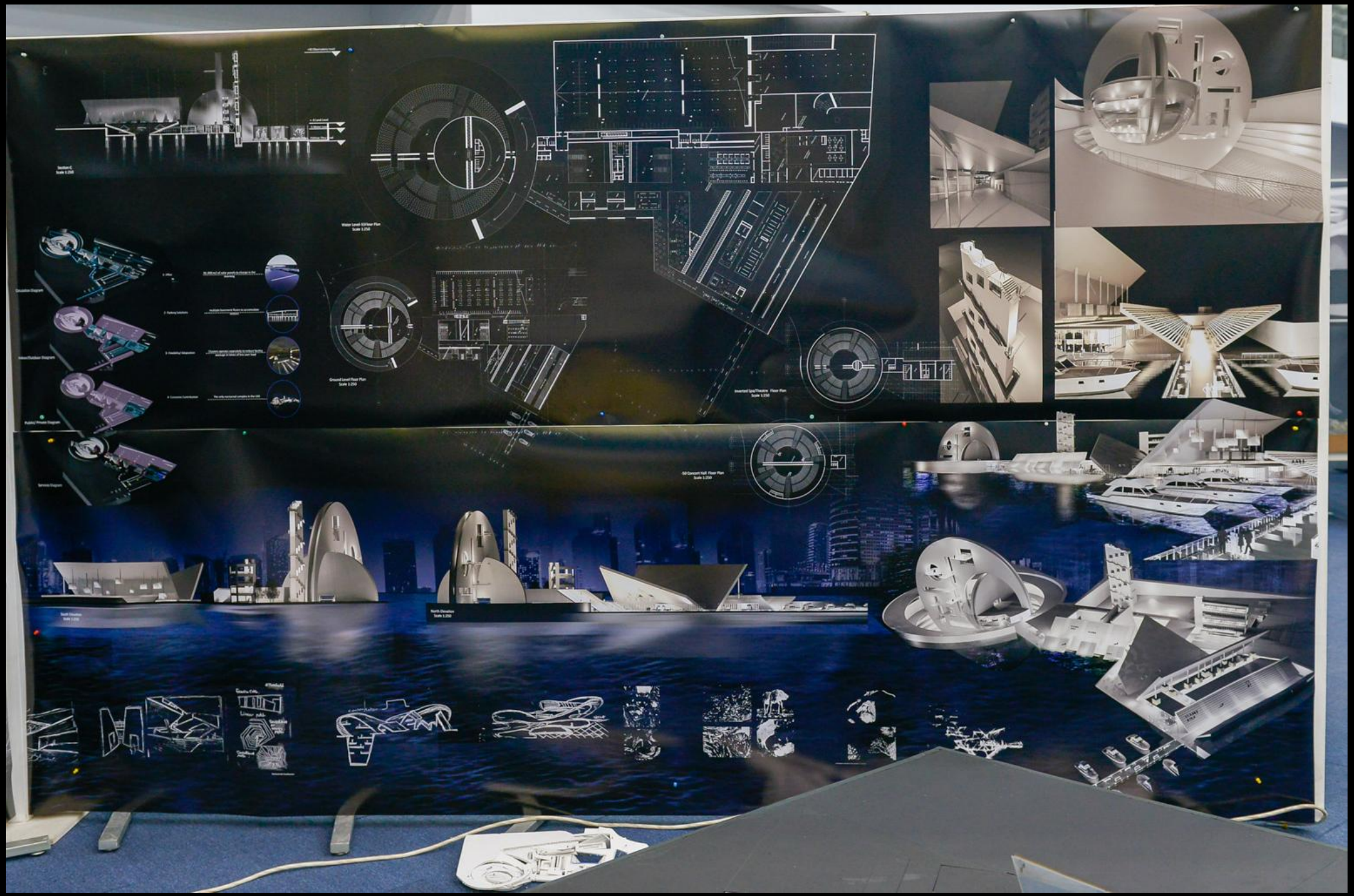
Scale 1:250

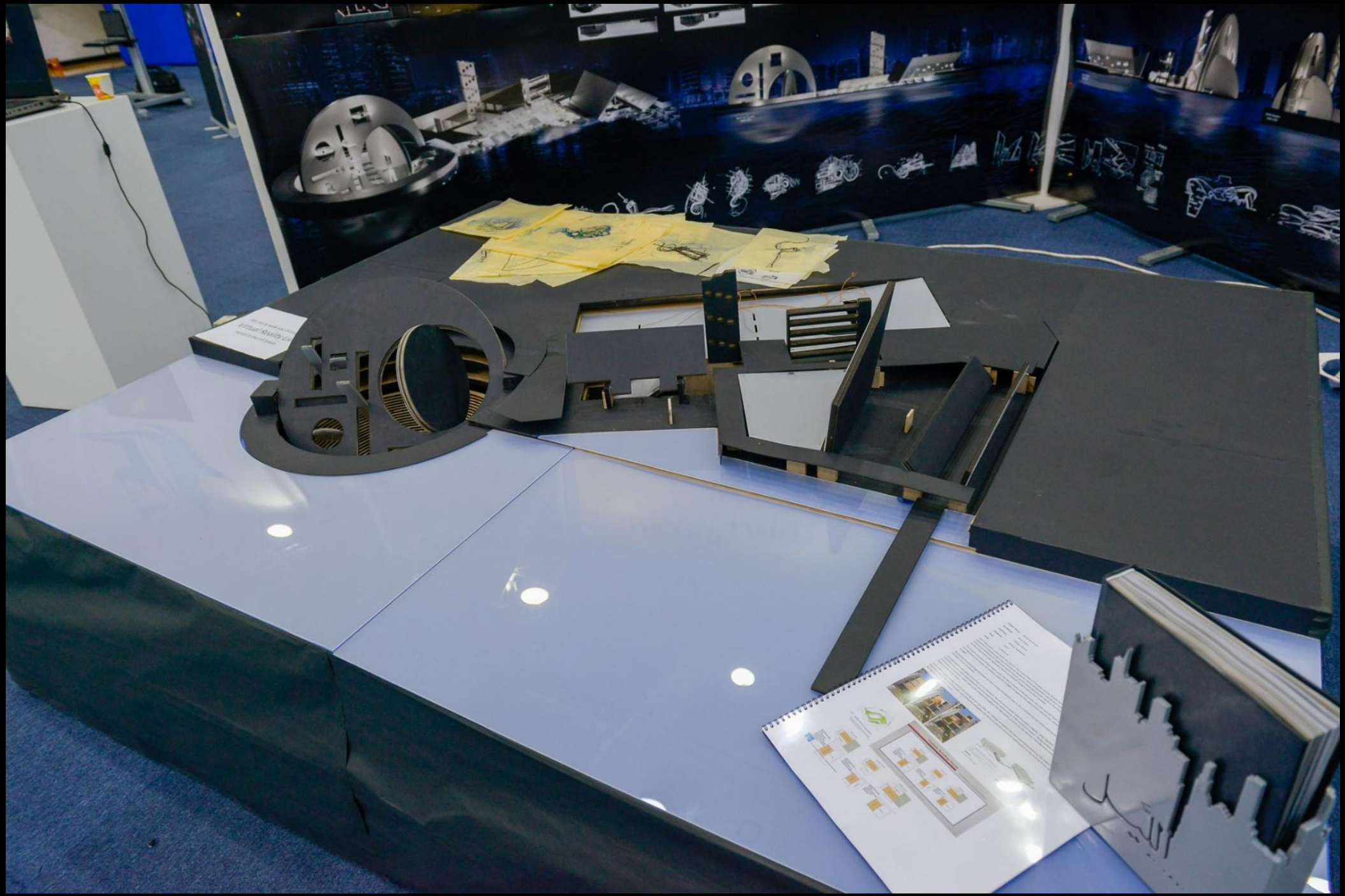


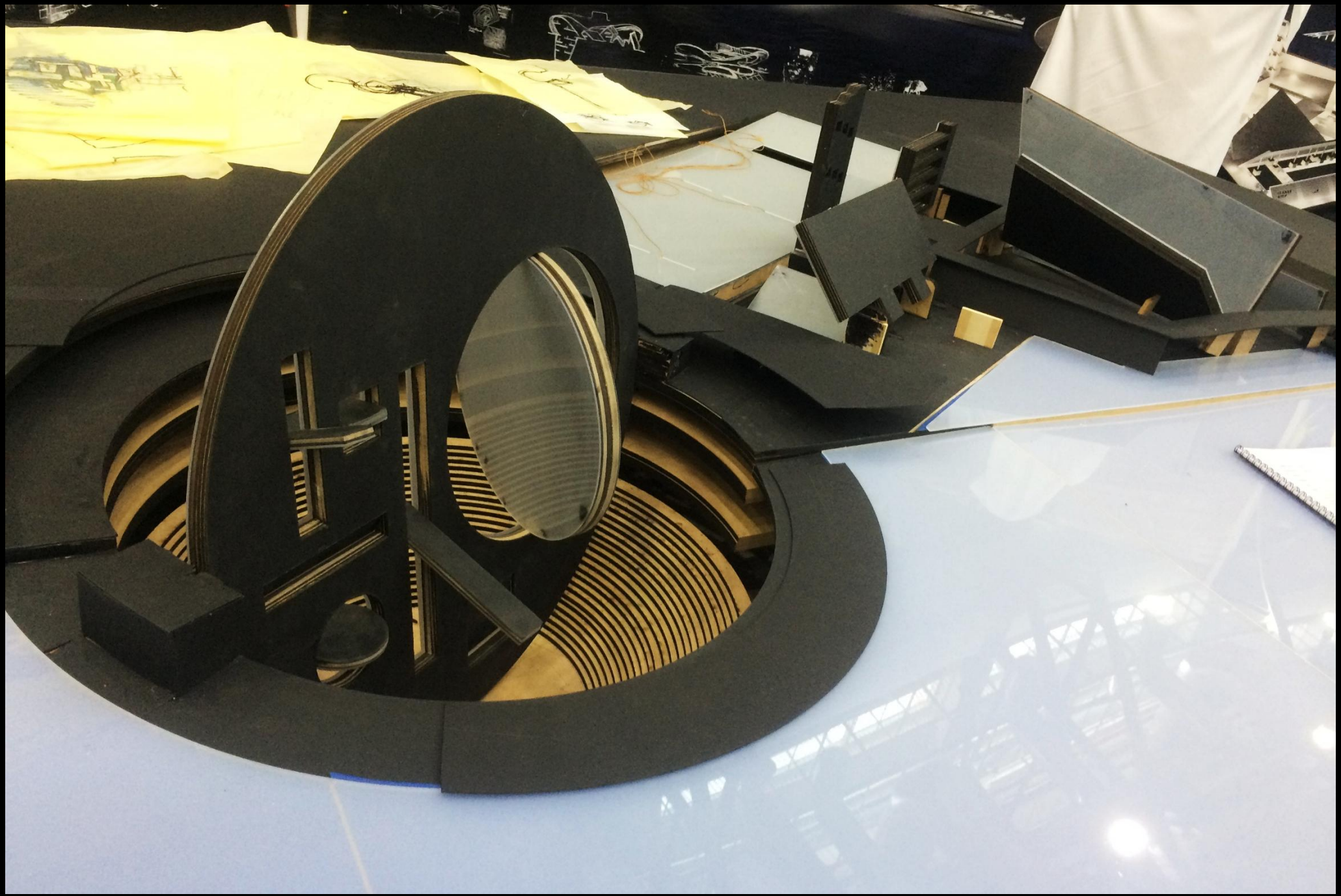



IG-NIGHT الليل
From Dusk to Dawn
الليل


IG-NIGHT الليل
From Dusk to Dawn
Carpediem: "seize the day" is the widely known term that celebrates the virtues of the daytime. is the night not wisable as well?
Due to the diverse nature of the emirate and the integration of different cultures, the nightlife has become a crucial contributor to the tourism and the economy. A building that is exclusive to the night has to depict nocturnal behaviors. As humans, we are always inspired by nature and our surroundings and this is where the design concept came from. All creatures of the night crawl out at night and behave differently while in the daytime they hide away!Therefore, the design would use the gesture of rotation to hide in the daytime and crawl out at night. Through the analysis of six intensive studies about nocturnal behaviors worldwide the topic was divided into four main broad activity categories Transgression, Expression, Sensation and Exertion, and accordingly they were further analyzed in terms of their intensities in time and that concept was adopted at the two different complex levels of the design.
Section A
Scale 1:250
Section B
Scale 1:250
Nightlife Zones
Non-Residential Areas
Dark Areas
Site Rationale
North East Elevation
Scale 1:250








WINNING
AUD KNIGHTS
Comix Complex
Ask me to walk you through the Virtual Reality Live model in the VR Space

Comix Complex

ARCH 502-Spring 2018

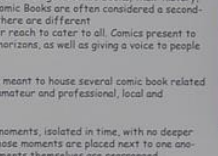
Angelo Mateus

Project Desciption: The goal of this project is to analyze and investigate Comic Books, their history, influence and drawing techniques, in different countries. Comic Books are often considered a second--rate art form, as they are deemed to be childish; but as there are different themes, styles, and content forms, Comics can expand their reach to cater to all. Comics present to reader a way to escape reality, and expand their creative horizons, as well as giving a voice to people to express their own views of the World.

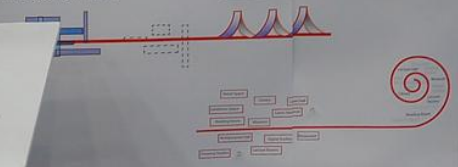
This is the Comix Complex, which is a multipurpose facility meant to house several comic book related activities, including a Convention Center, where creators, amateur and professional, local and international can display their work.

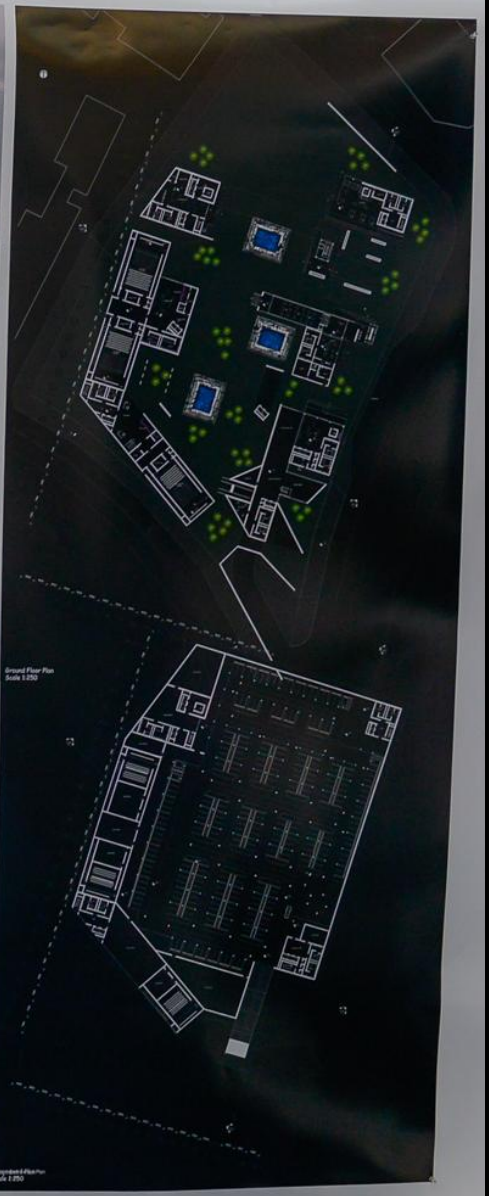
Concept Development: Stories are composed by separate moments, isolated in time, with no deeper meaning other than the first impression. However, when those moments are placed next to one another, they create a story, that can be rewritten if the moments themselves are rearranged.

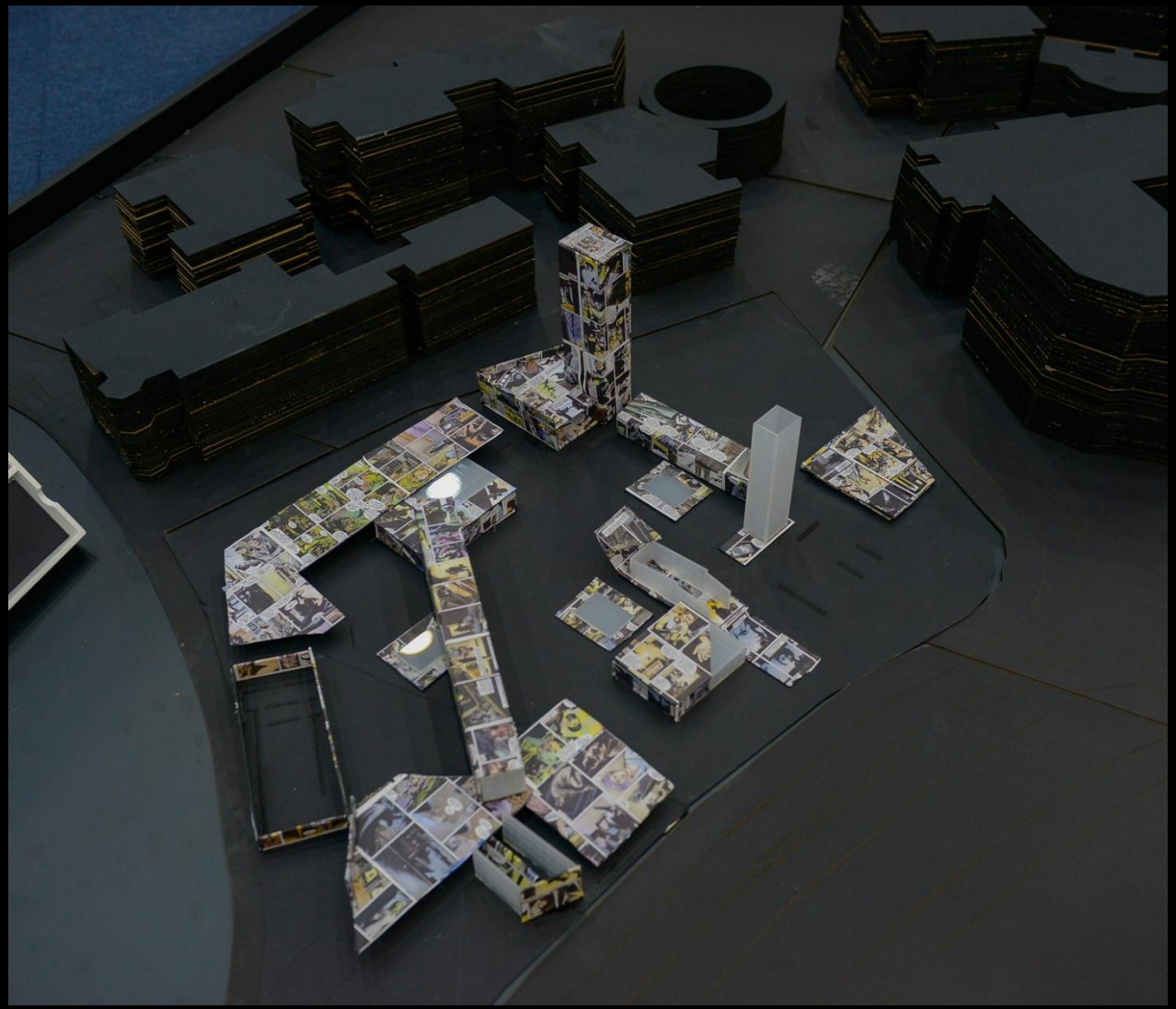
That is how comic books work! By using separate panels, confined by a border, isolated moments in time are established, but when a reading sequence is introduced, a narrative comes to life.

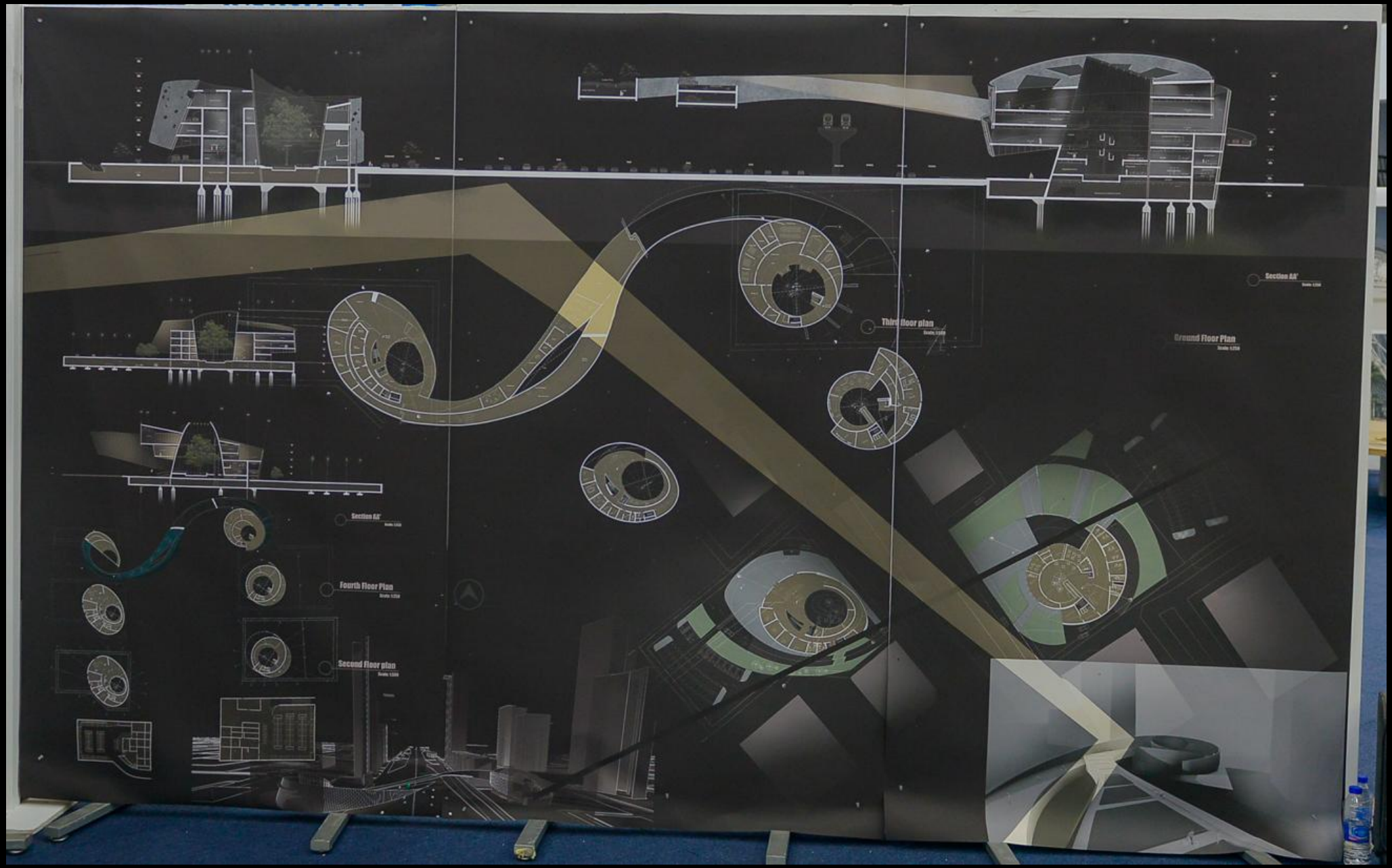


Using the border itself as the structiral element, or a datum that regulates, confines and unites separate moments (which are the programs); spaces are created, providing visitors the opportunity to create their own stories when exploring the space.

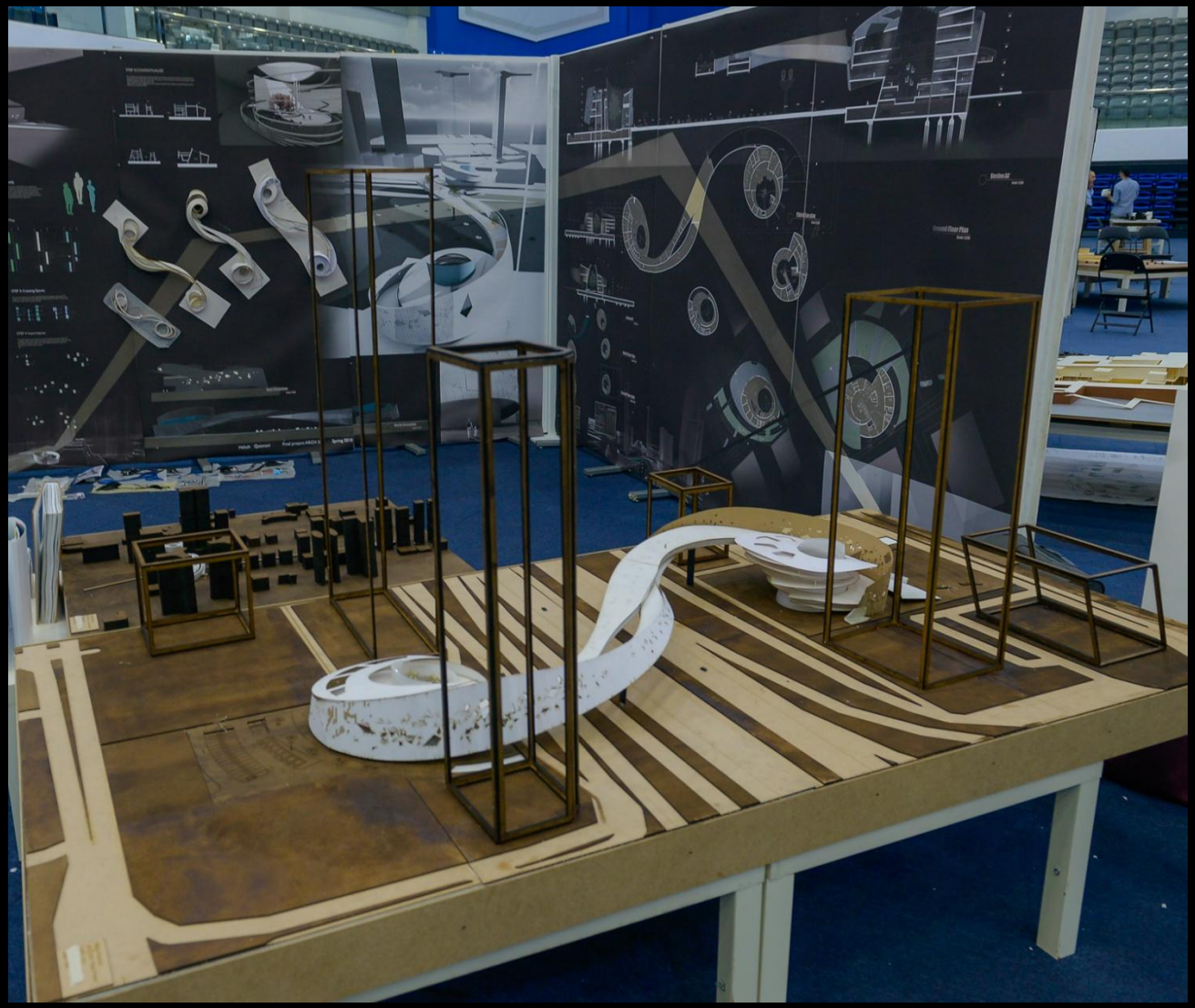






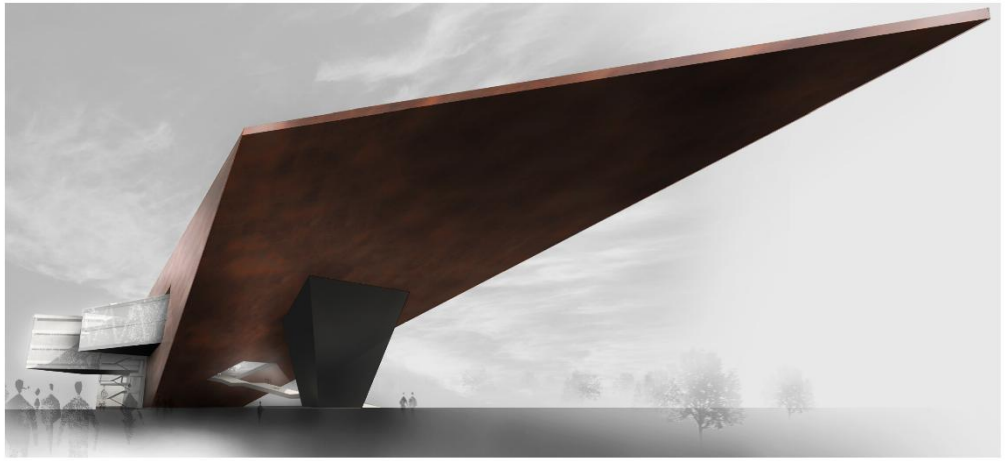

Section AA'
Third floor plan
Ground Floor Plan
Section AA'
Fourth Floor Plan
Second floor plan


INSIDE OUT
A mothers is a force of nature, care and protection. A female worker is a force of determination and accomplishment. When these two forced come together they create a duality and a dilemma within each working mother. On one hand, a mother has to be tender and caring when at home, on the other she has to be determined and accomplished at the workplace. This unique "Proteus" like characteristic means that the mother is in constant transit and interchange between her two roles. She is able to shift persona from harsh to tender, from aggressive to caring and so ondepending on the space and surrounding.
Dubai is a city is that is contains this same duality and schism withinits urban fabric. Between the sea and desert areas are extensively zoned into residential and commercial (as seen by the graph). Sheikh Zayed road, by flowing in a liner direction irrigates the city and provides circulation tothe zones in this liner direction. In this sense it is provides a pathway for the influx of mothers that travel between their two dualities of home and work. However, by being a liner entity it does not bridge the two zones. On the country,
sfurtherdividesthem.Hence,bucreatingan architecture that is perpendicular to the road I can create spaces that would follow the influx of mothers constantly shifting between residential to commercial.
STEP 1: Identify
STEP 2: Map
STEP 3: Creating Spaces
STEP 4: Superimpose
STEP 5:CONTEXTUALIZE
East Elevation
North Elevation
Hebah Qatanani
Final project ARCH 502
Spring 2018



Masks are elements worn on the face in order to hide, protect or impersonate. They have been part of the development of societies through time. They are a direct reflection of the people. But one thing is certain; the universality of masks is still unknown to many. The aim of the project is to celebrate masks in order to create a common ground for cultural exchange and social interaction: a Masquerade. Hence, the notion of Other is celebrated. The concept of masking is creating a second face. But the depth of masks lies in the intricacy of the connection between the interior and the exterior, the fisrt and the second face, the original and the invented.

Translating this notion into architecture is accomplished by amplifying the still surrounding images into performing backgrounds for users. Hence, it is necessary to create an unobstructed link between the elements of an already dynamic site through a subtle and defined structure that is the mask.



site selection & rationale

After looking at the different layers that constitute the performing identity of Dubai and their location, we can identify a main area of interest for the site selection. With the growth of Dubai away from the seaside and into the empty lands, the center of the city is moving away from the historical Center, and donning the coast mainly for residential purposes.

Performance Centers

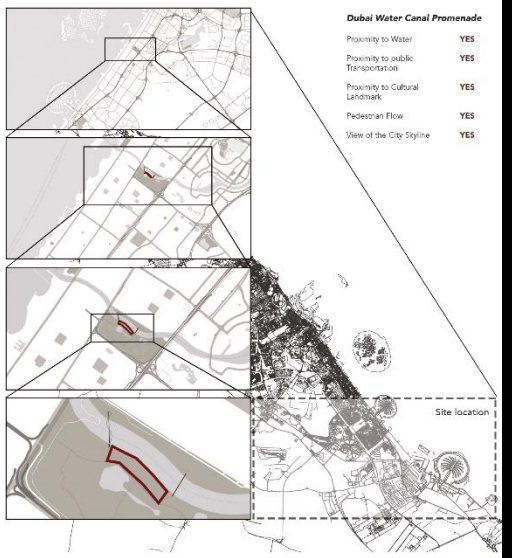
With the growth of Art Performance appreciation, many spaces and facilities are present to encourage this branch of the Seven Arts. They are scattered around the city and provide different experiences to the audience. A majority of these performing spaces are open to a diversity of interpretation and shows, such as DUCTAC, DWTC, Madinat Theatre and others. However, only few recent ones (Dubai Opera and La Perle) are purpose built stages.

Art Hubs

Celebrating masks starts by appreciating the technics of their creation, hence requiring a place that offer the necessary facilities for their production. Many art hubs have been home for artists and designers in Dubai, providing workshops, studios and galleries for their creativity, such as the Dubai Design District, Tashkeel Dubai, Al Quoz Industrial Area and others. However, as seen on the map, their presence is still very shy on Dubai's expanding lands.

The Performing City

From the moment Dubai started growing into a global metropolis, performance has been key to its identity recognition. With the diversity of Dubai and its urban growth it is safe to say that the city is a stage for performances at different scales. Ranging from the grandeur of the Burj Khalifa, to the dynamism of the Metro line, to the expansion of the ground to water with the Palm, and the dance of the Dubai skyline, the city is a creative performing whole.

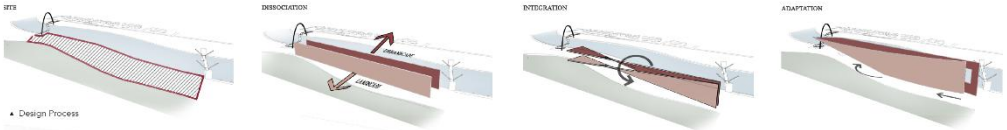


Dubai Water Canal Promenade

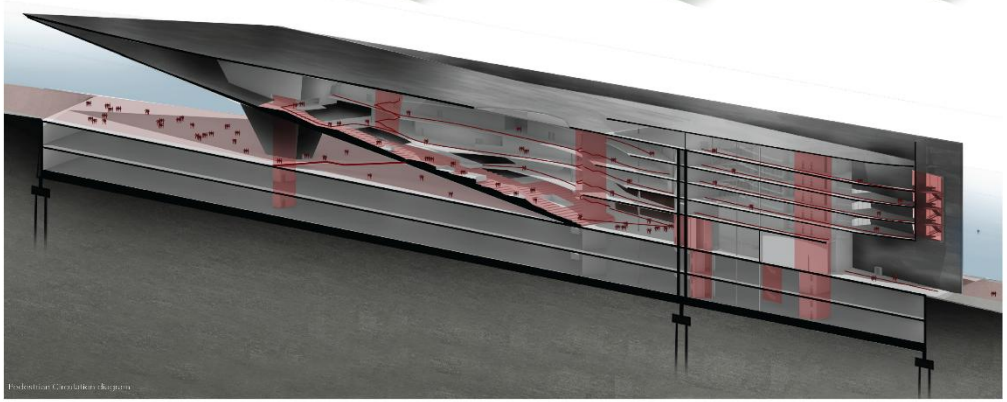
Proximity to Water	YES
Proximity to public Transportation	YES
Proximity to Cultural Landmark	YES
Pedestrian Flow	YES
View of the City Skyline	YES

movement & animation

Movement is a crucial element in the animation of masks. In fact, while watching masked performances, and due to the limitation of the facial details, the audience tends to turn to the body movement for a clearer understanding of the real identity of the actor. A paradox is born. The face is valued as the most important part of the body, and yet when the gaps are to be filled as to determine an identity, the body takes control and the face comes next.
Hence, the notion of movement is demonstrated in different ways in the design. The process that leads to the final twisted form of the building skin, as well as the pedestrian circulation are crucial to the design of this performing art center. With live performances happening in dedicated stages or in the open redefined public space, the building is constantly animated and alive.



▲ Design Process



spatial program & partitioning

The spatial partitioning of this performing art center is based on the process that would glorify most the elements of masks. In order to fully understand a mask, a sequence of 3 concepts is to be understood: the substance, the meaning and the spirit. Hence, the program is divided into the sectors of creation, education, and exhibition respectively.
However, in order to answer the public/private dissociation of space, the sequence of the sectors starts from the top down; giving the ground floor, mezzanine floor and 1st floor access to the performing locations, the 2nd floor to workshops and studios, and finally the 3rd floor to the open library and other functions to educate the visitors about masks.

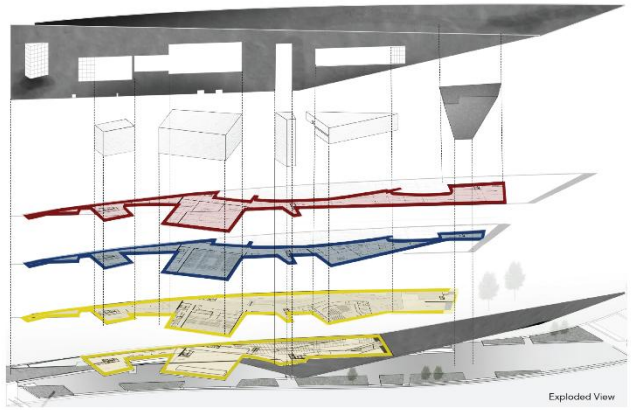
MASK

Substance
Primary stage that consists of creating the mask, varying according to culture and geography.
→ Acess to workshops and building studios.

Meaning
Intermediate stage that helps understand the mask, its function and its symbolism.
→ Access to library, lecture halls and classrooms

Spirit
Ultimate stage of embracing a mask, and consisting of the incarnation of another.
→ Performing Floors with access to stages and interior open space

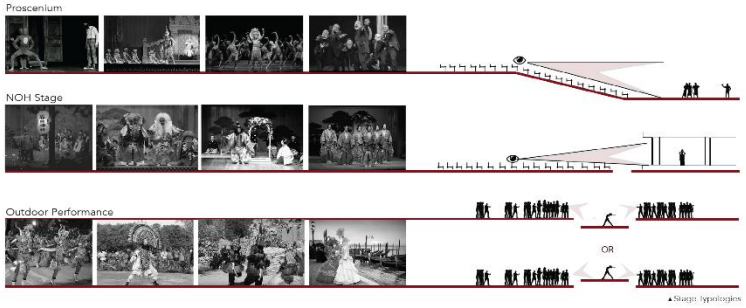
CATEGORY ZONE			SPACES	Masquerade		
				Area (m2)	Number of Spaces	Total Area (m2)
MEANING	Educate	Individual	Library	750	1	750
			Worksapce	20	5	100
			Rehearsal Room	60	4	240
		Group	Lecture Hall	300	1	300
			Lecture Room	55	5	275
			Classroom	50	5	250
SUBSTANCE	Create	Public	Workshop	50	2	100
			Studio	100	5	500
			Children Playhouse	80	1	80
		Private	Workshop	200	2	400
SPIRIT	Exhibit	Static	Temporary Exhibition Hall	300	1	300
			Permanent Exhibition Hall	300	2	600
			Interactive Art Installation	40	4	160
			Museum Shop	50	1	50
		Dynamic	Proscenium	1000	1	1000
			Proscenium Foyer	500	1	500
			NOH Stage			
			NOH Stage Foyer			
			Main Lobby/Entrance Hall	300	2	600
			Banquet Hall	200	1	200
			Information Desk	25	2	50
			Ticketing Office	25	1	25
			Restaurant	300	1	300



stage typologies & public space

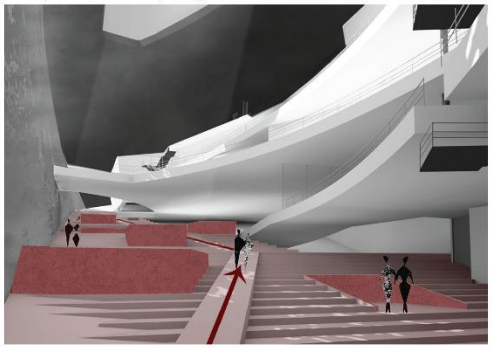
Although masks are very different all around the world, one common element celebrates them as animating objects: performing locations or «stages». Hence, the main solid volumes that constitute the structure follow a typology of spaces required for masked performances; and they can be divided into 3.

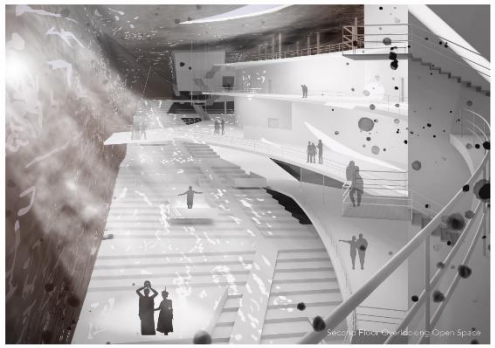
Following the strong cantilever of the structure that answers the need for a strong pedestrian flow towards the interior, another element is created on its inner surface. A grand staircase connects the 2 performing floors with the ground floor, encouraging people to perform on dedicated platforms (intruded or extruded) while always having an audience from the top floors. The outdoor public performance space is clearly redefined.



▲ Stage Typologies

▼ Public space, intruded and extruded performing platforms



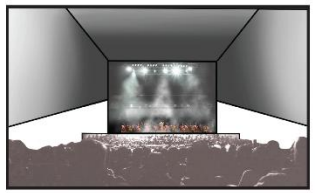


facade design (1)

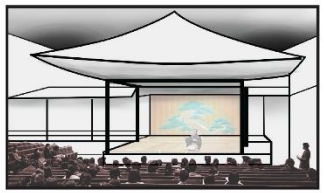
Mass vs Void

Each facade of the building varies according to the view it embraces, embodies and filters, offering the visitors different experiences throught the visit.
The North Facade has a strong statement looking towards the Dubai Water Canal, as the stages are cantilevered towards the water. A reflection is created in the water, enforcing the concept of illusion and imagination.
Static (Exhibition Halls) and dynamic (Stages) performances are celebrated accross this facade; and a contrast is created between the solid boxes and the twisting skin that holds them.

▲ Exhibition Hall

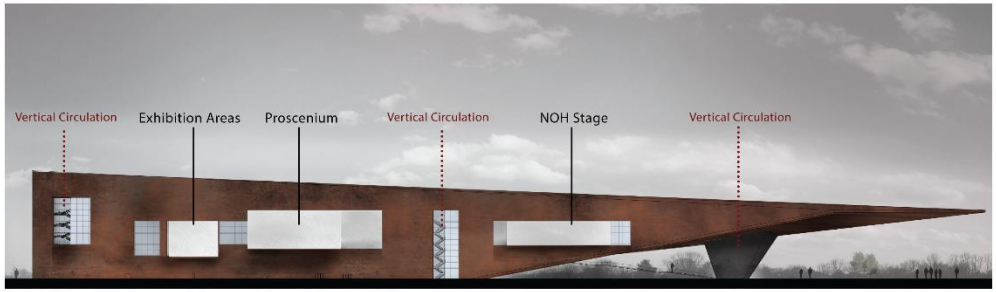


▲ Proscenium



▲ NOH Stage

▼ North Elevation

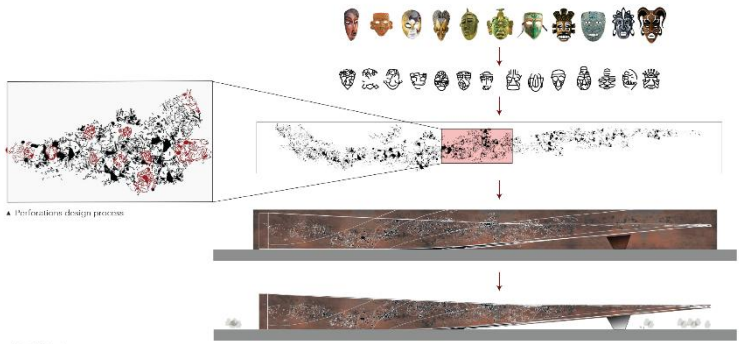


facade design (2)

Mass vs ***Void***

The South Facade has the opposite. Inspired by the primary way of crafting masks, a juxtaposition of single line schematic representations of masks from around the world creates the pattern for the perforations. Opening to the «redefined public performance space», and with the play of the sun exposure, spotlights encourage self expression on the designated intruded or extruded platforms.

▼ Sun Analysis



▲ Perforations design process

▼ South Elevation

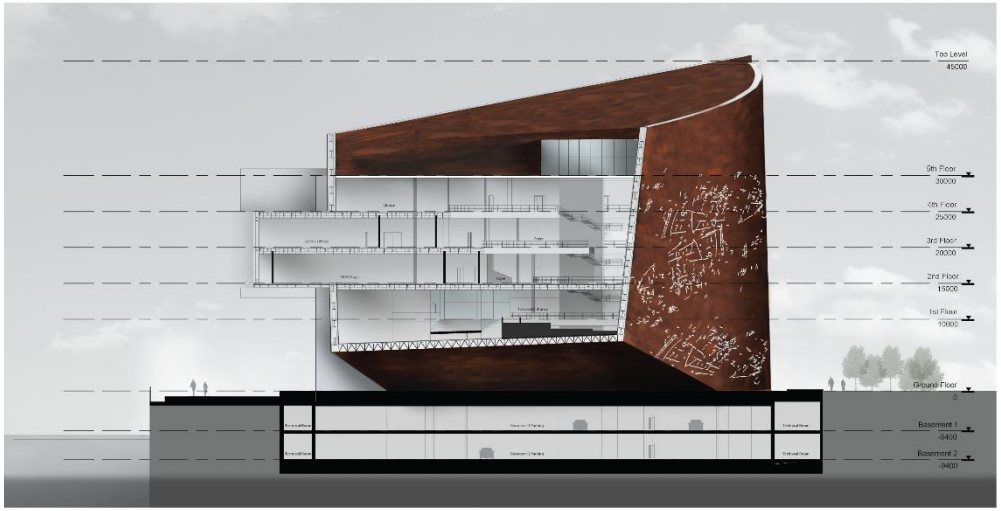
building structure

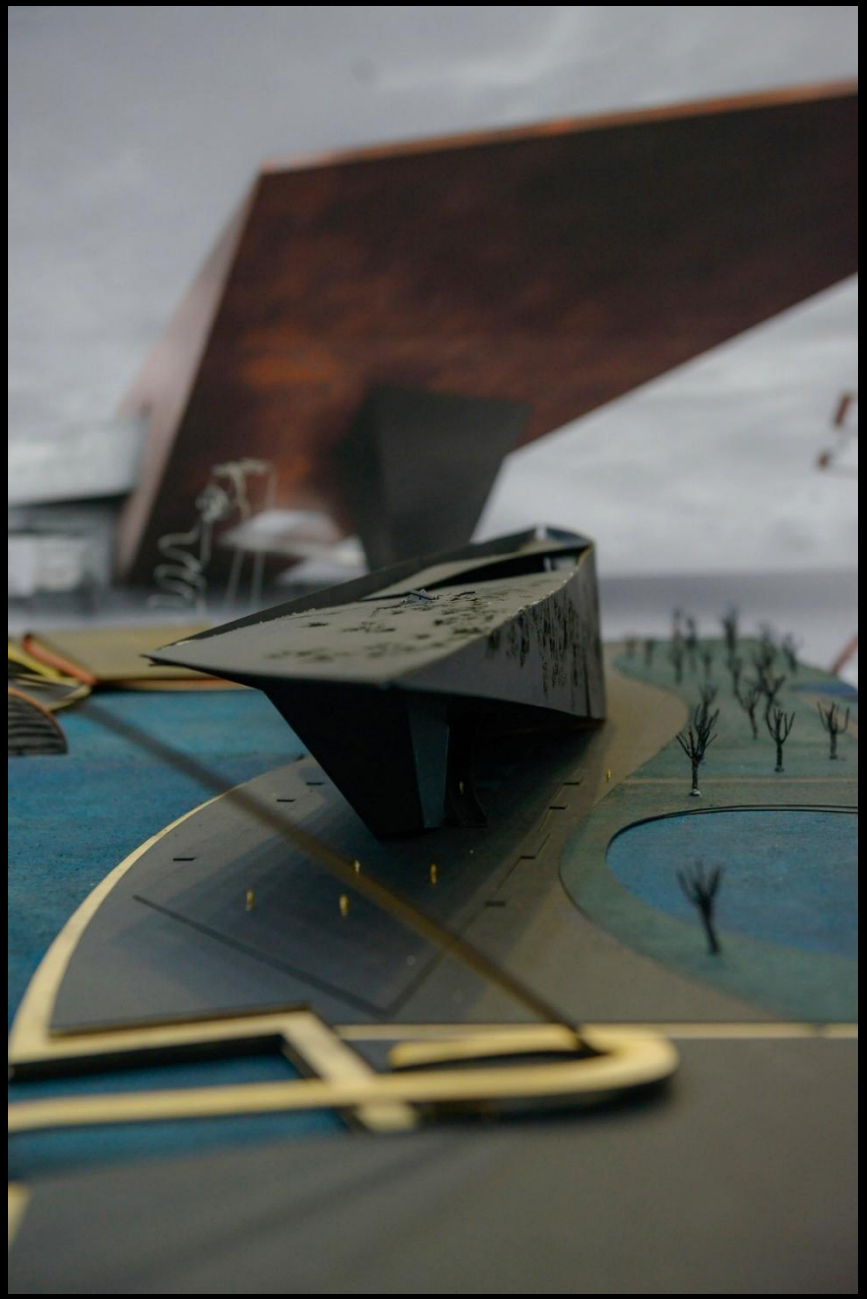
The structure of the building is another challenging element in the design. There are in total 4 critical locations that require structural reinforcement: The 3 extruded boxes as well as the stronge cantilever created by the main skin. Hence, the north wall acts as an RCC bearing wall holding the steel structure (trusses) that constitute the boxes. In addition, when it comes to the cantilever, the envelop is also designed as a steel structural frame sitting on a concrete support.

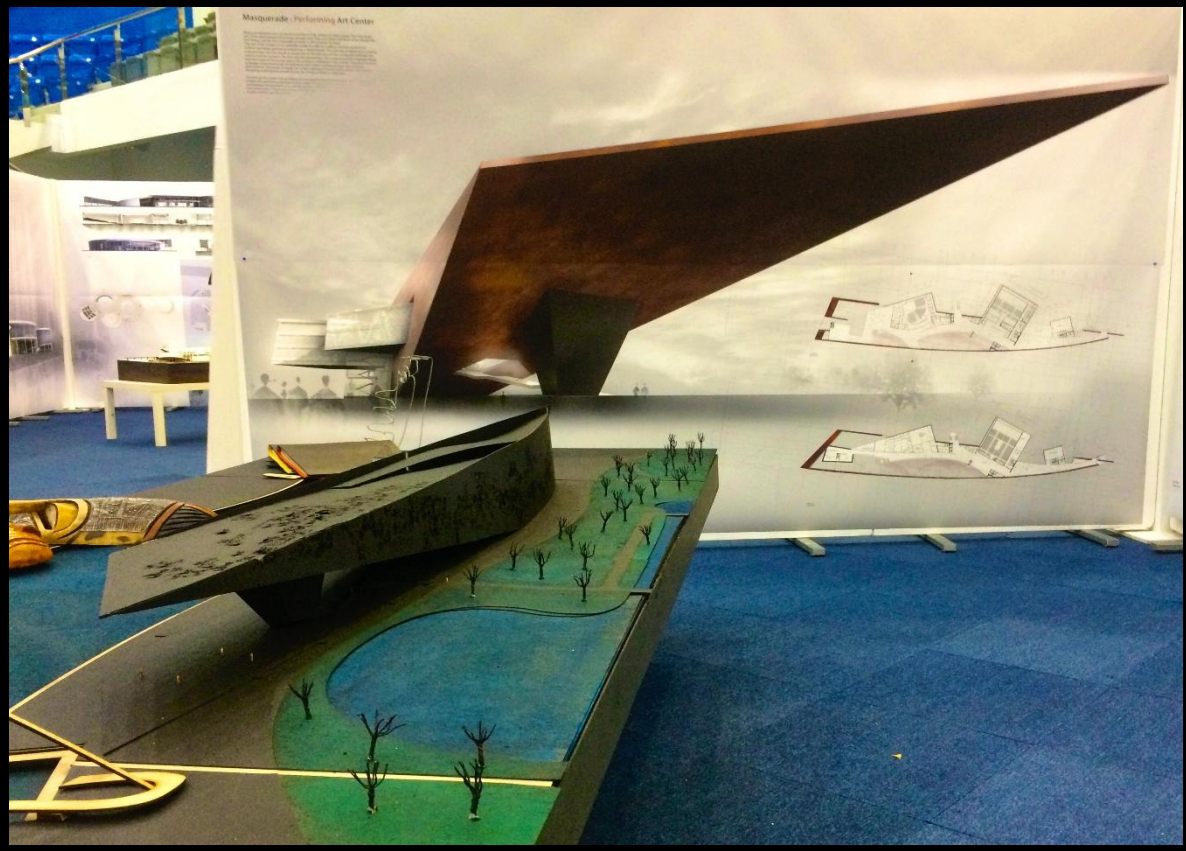
Corten: Main Skin Material

Corrugated Glass

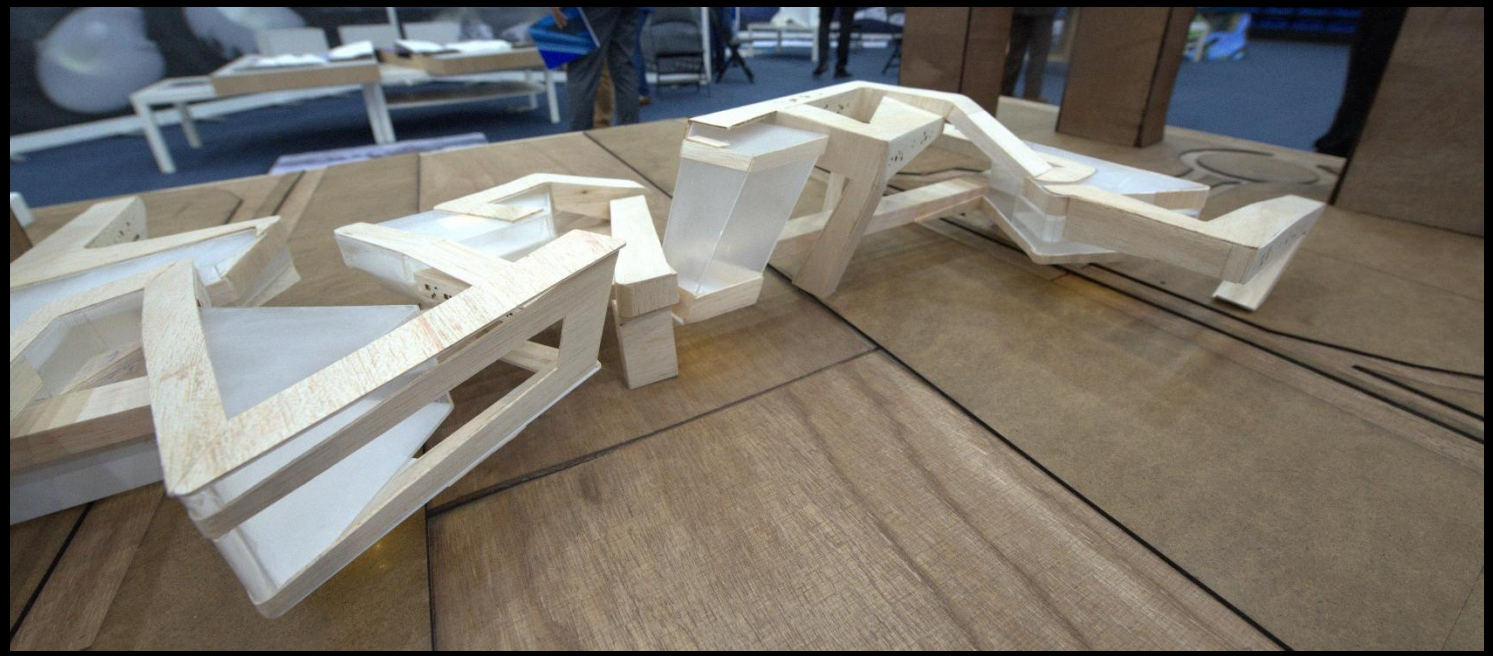
Transversal Section

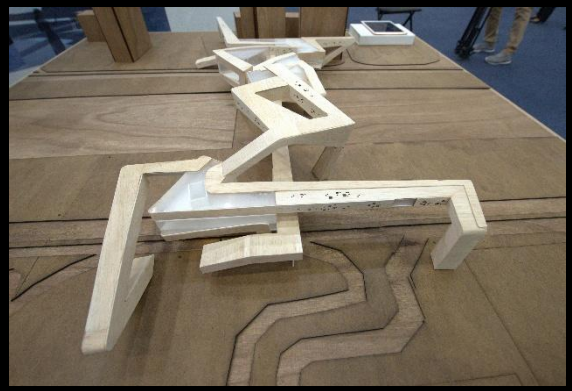


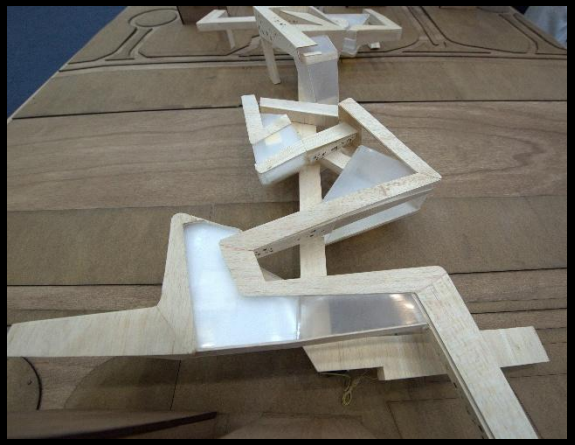


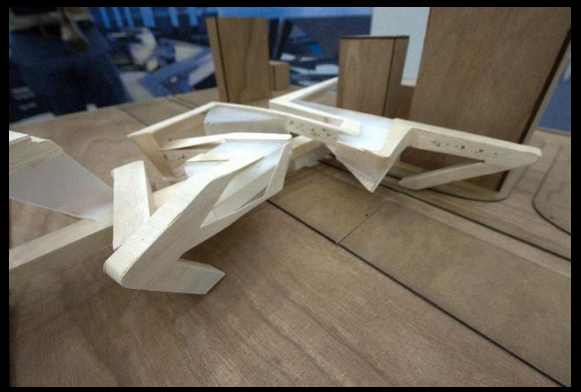

Masquerade : Performing Art Center

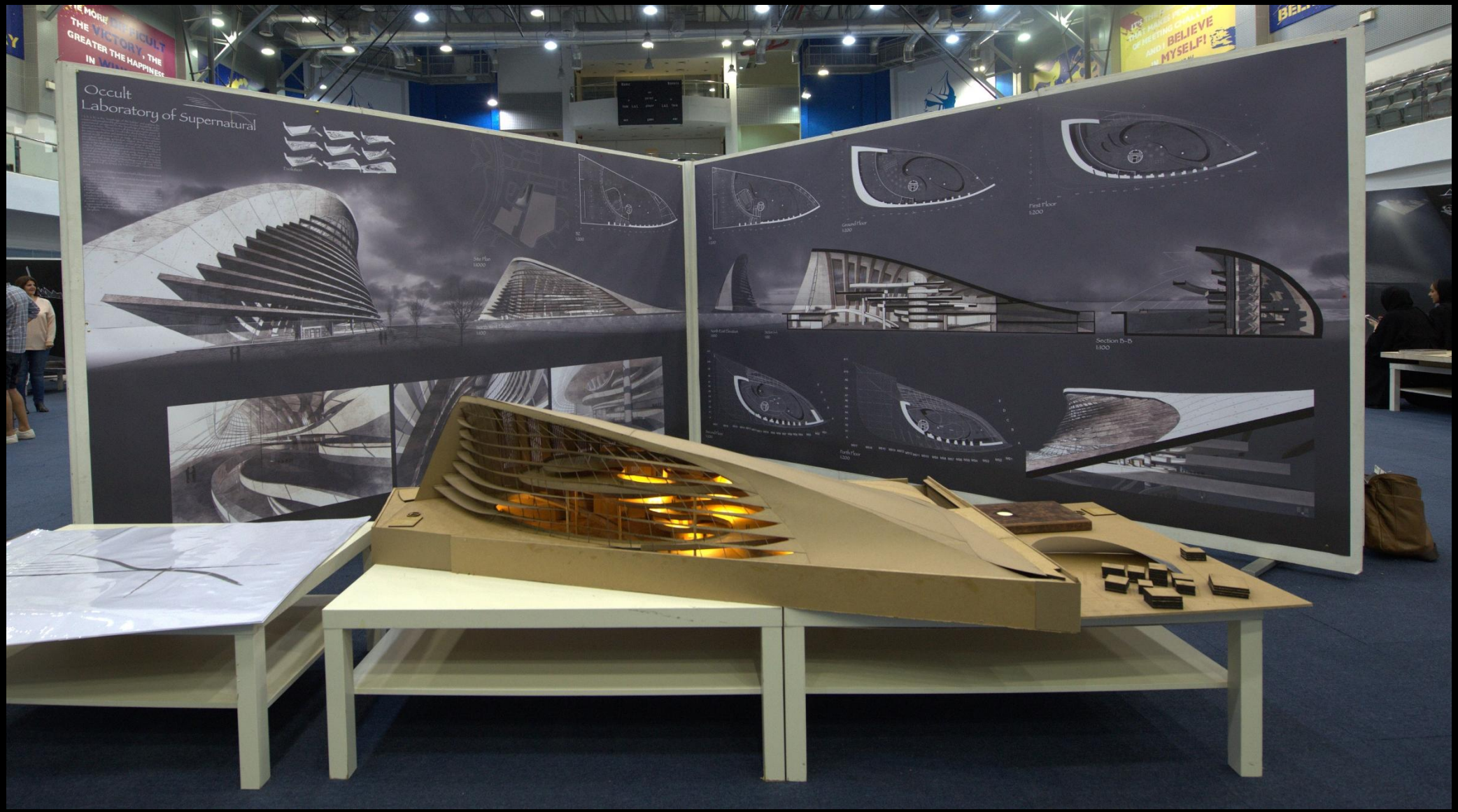

AUD
NIGHTS
LOVE
IT'S THE LACK OF FAITH
THAT MAKES PEOPLE AFRAID
OF MEETING CHALLENGES,
AND I BELIEVE
IN MYSELF!
MUHAMMAD ALI
MOTIVATION
MEDIA CITY
DUBAI MARINA
DOWNTOWN
BUSINESS BAY
MOTOR CITY





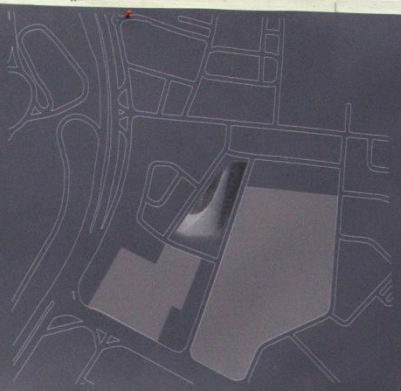





Occult
Laboratory of Supernatural
Site Plan
1:1000
Ground Floor
1:200
First Floor
1:200
Section B-B
1:100
THE VICTORY, THE
GREATER THE HAPPINESS
BELIEVE
MYSELF!

Occult
Laboratory of Supernatural

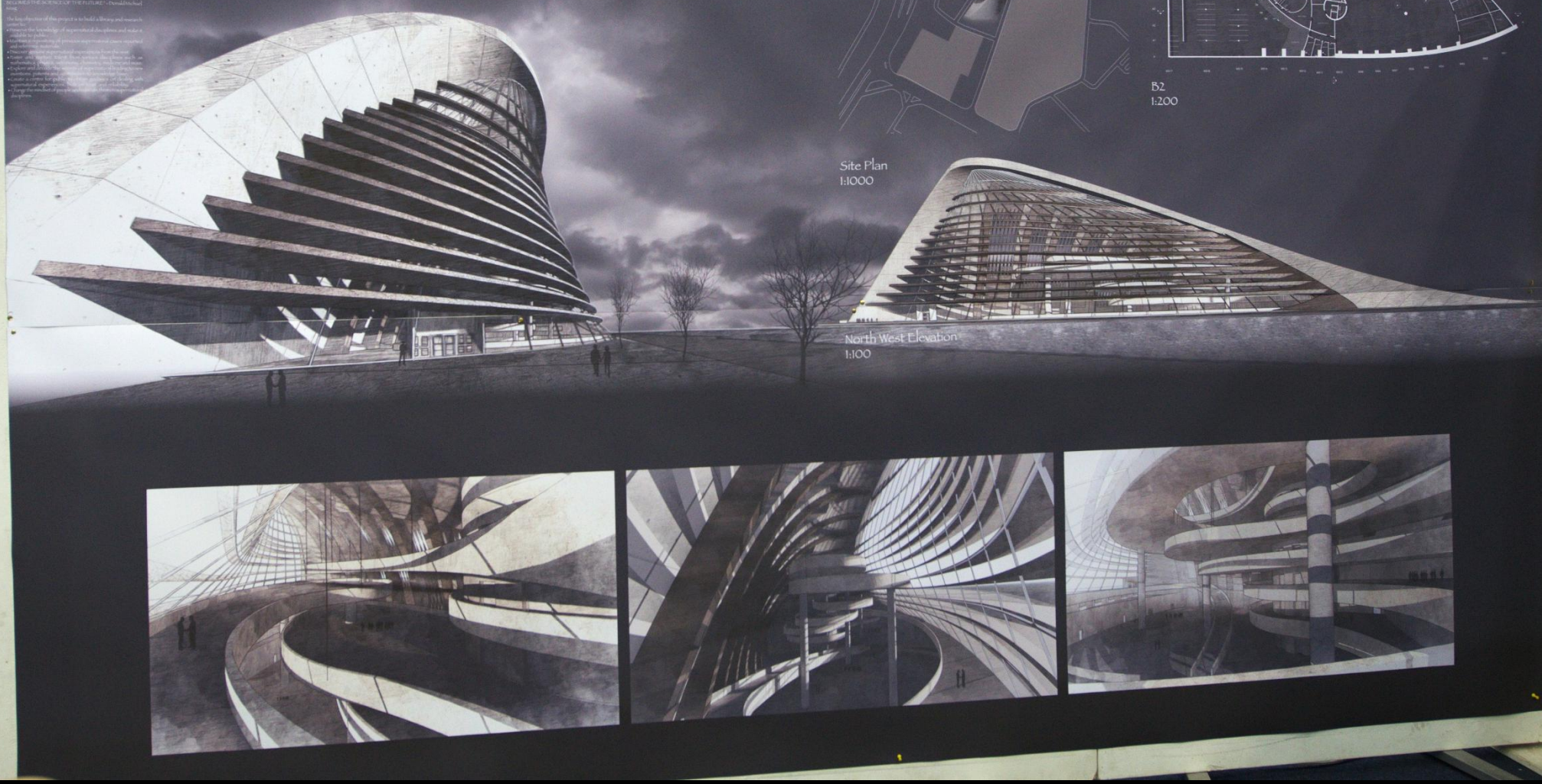
Evolution

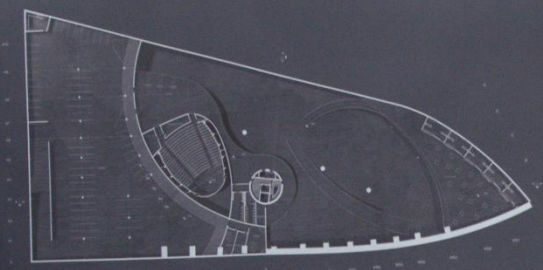


B2
1:200

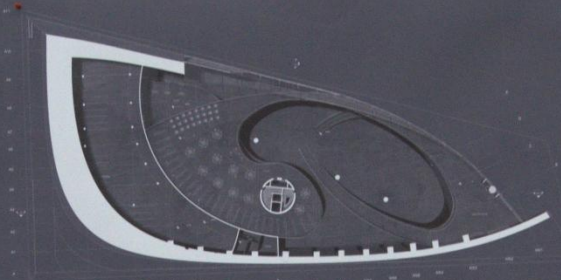
Site Plan
1:1000

North West Elevation
1:100

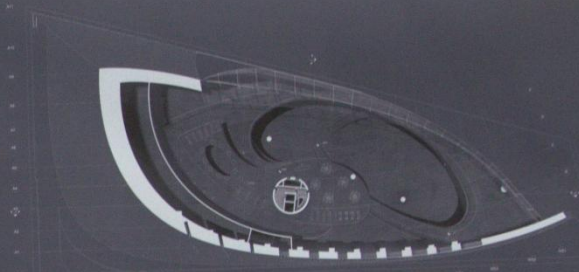




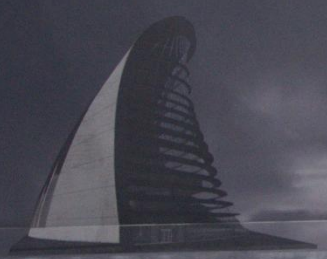
B1
1:200



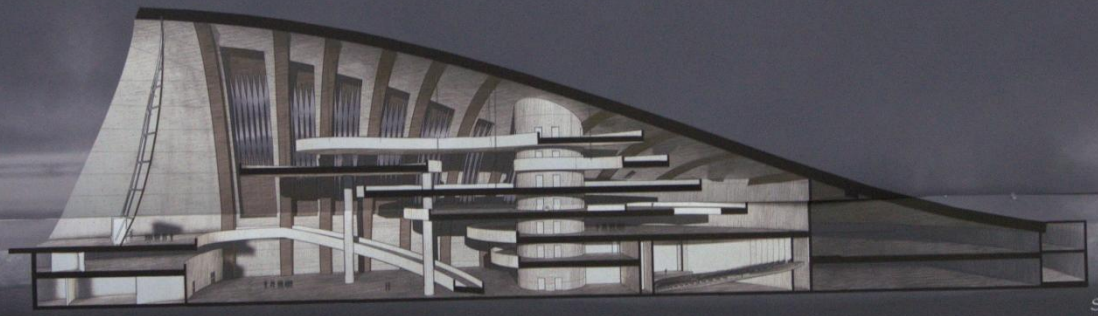
Ground Floor
1:200



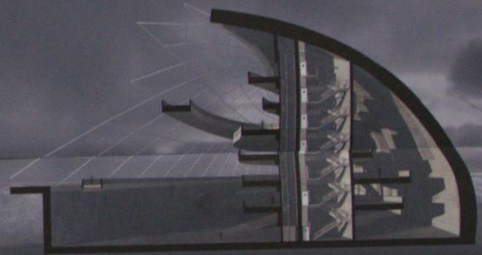
First Floor
1:200



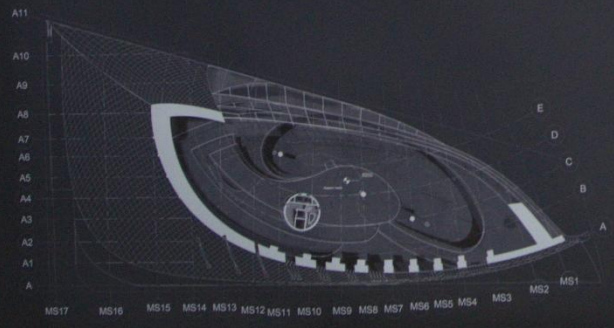
North East Elevation
1:100



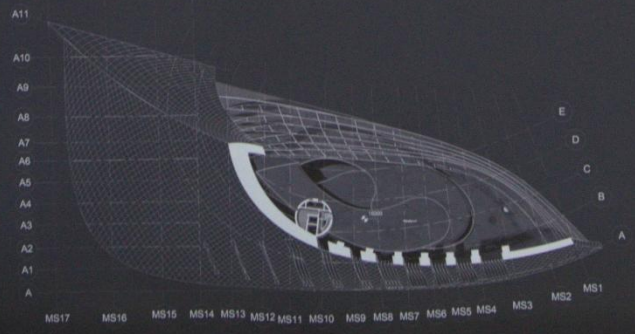
Section A-A
1:100



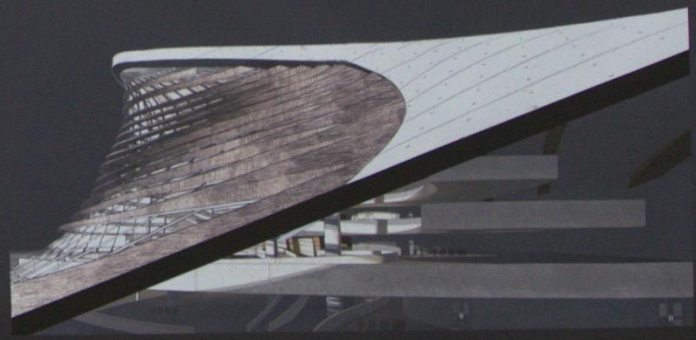
Section B-B
1:100

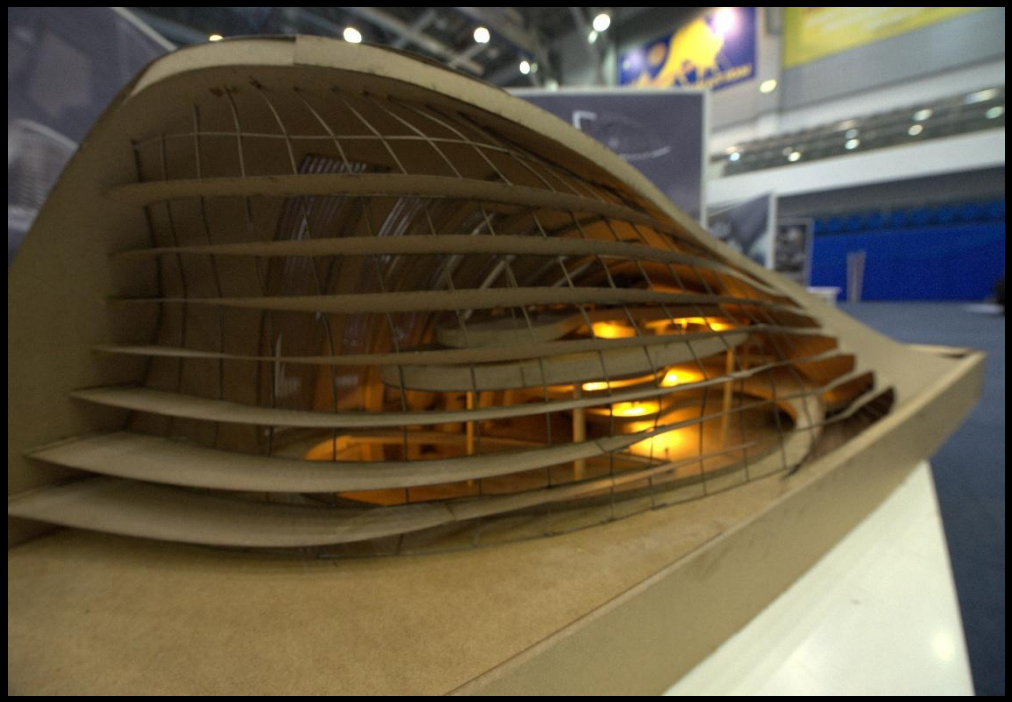


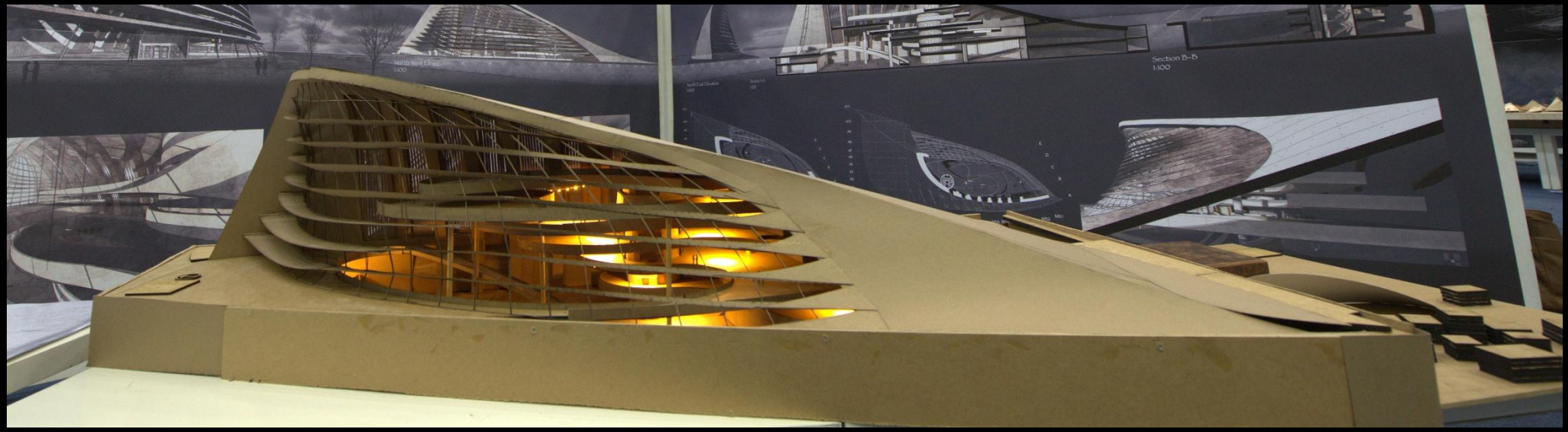
Second Floor
1:200



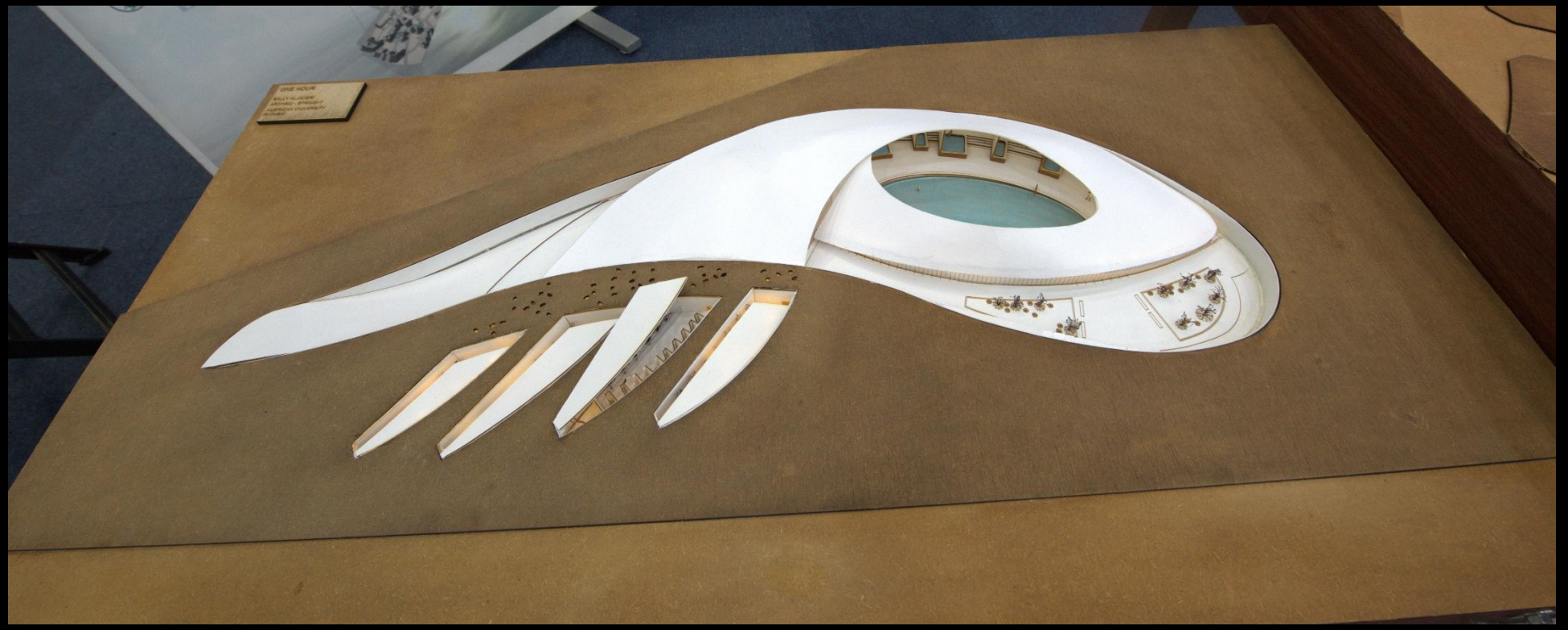
Forth Floor
1:200

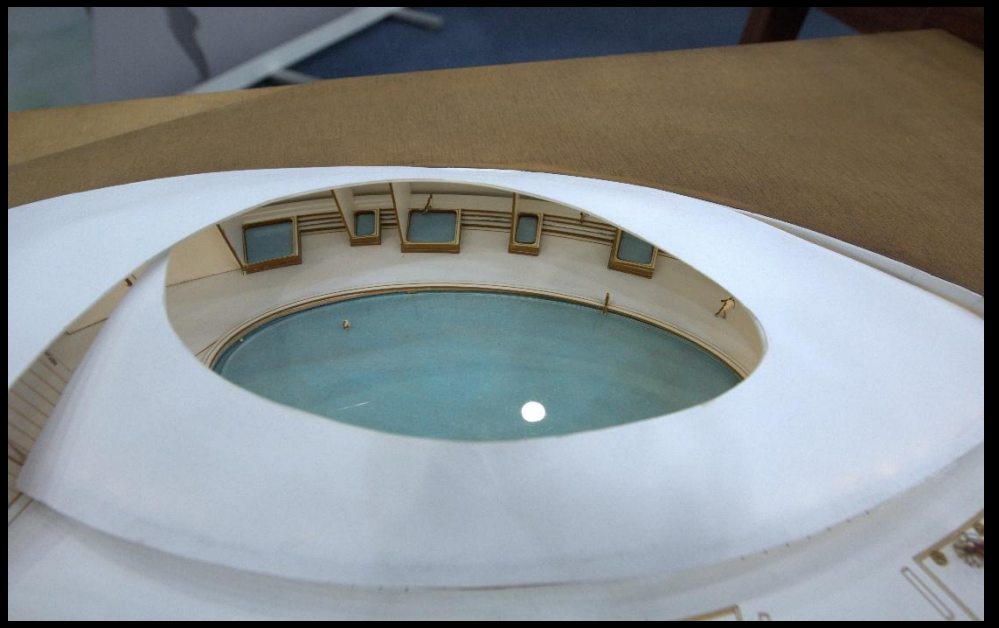


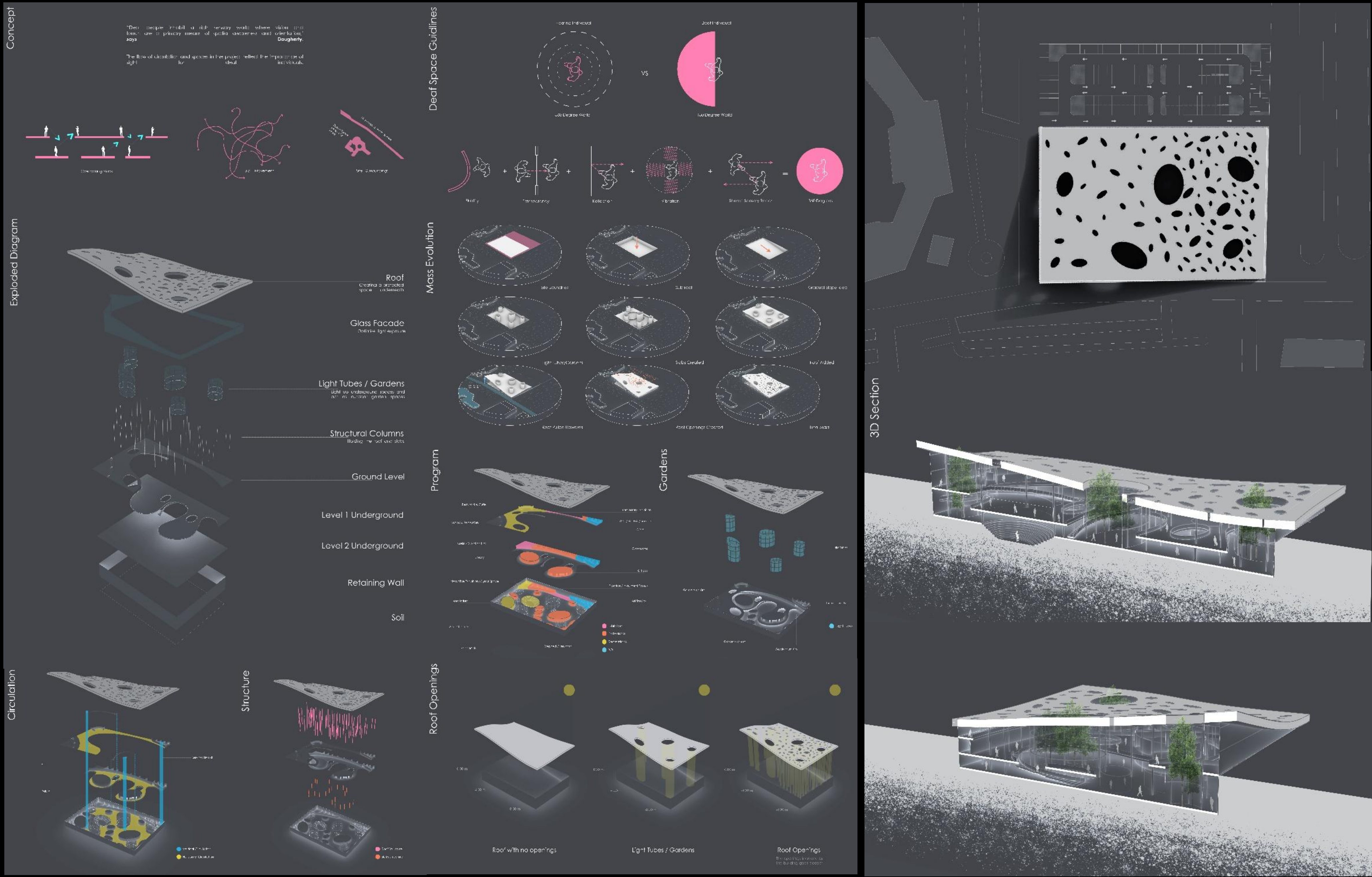


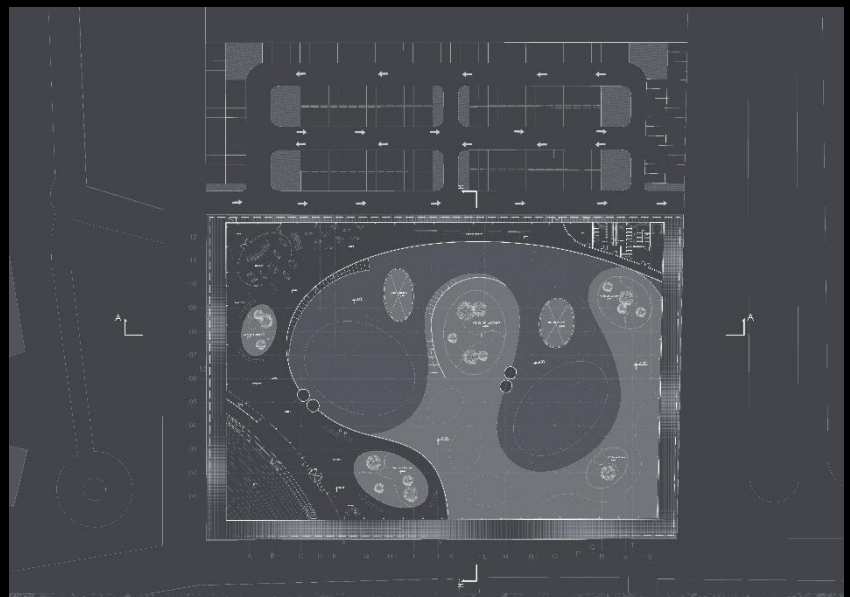

Section B-B
1:100

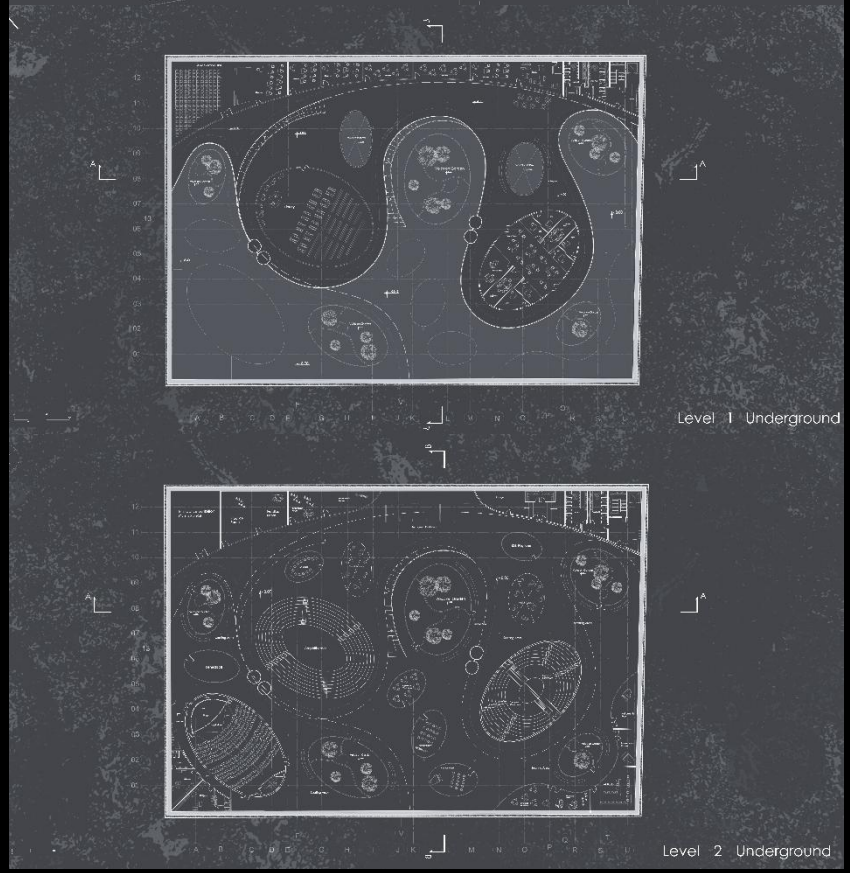

MEDITATE
REST
EXERCISE
VENT
CREATE

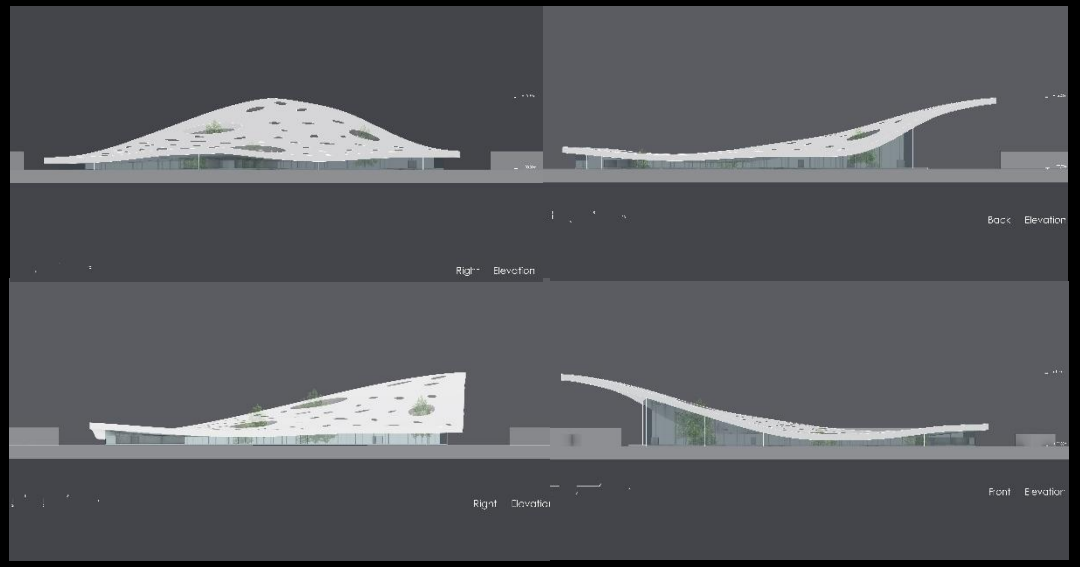


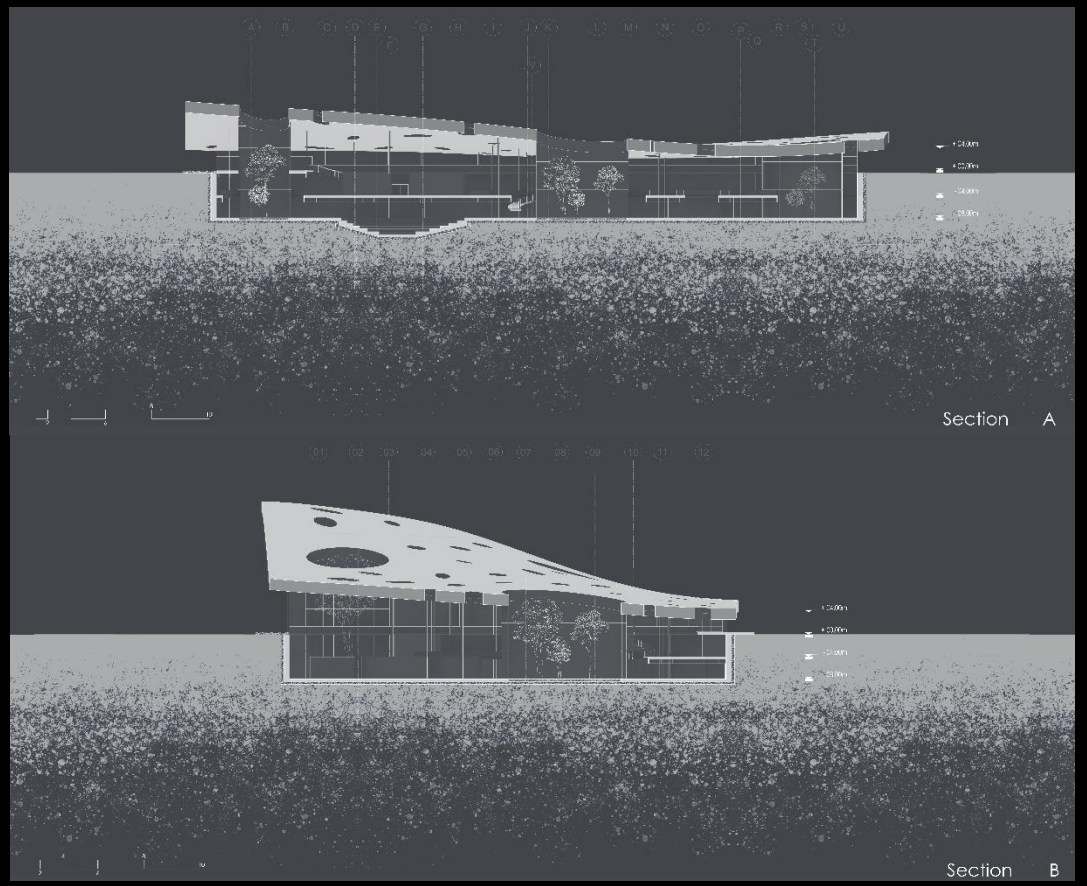


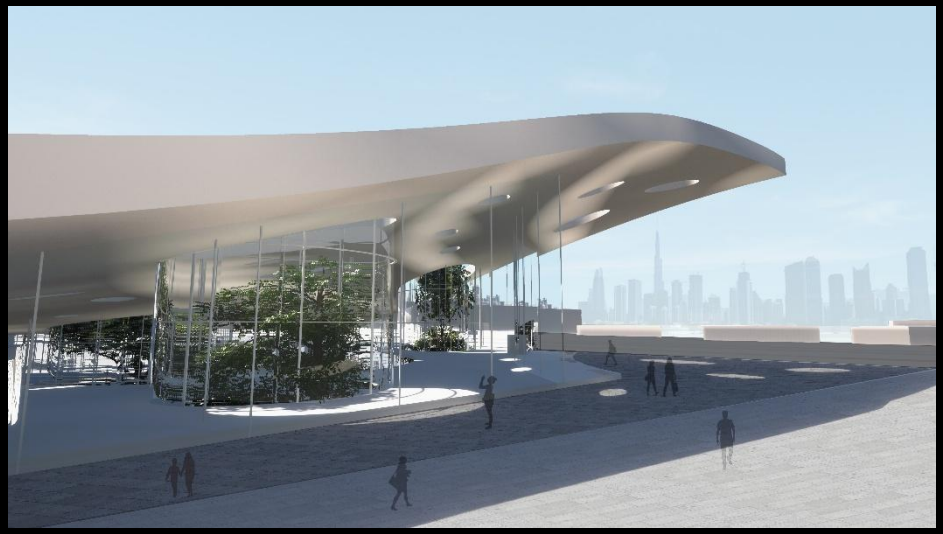

Concept
Dougherty.
Deaf Space Guidlines
vs
Exploded Diagram
Roof
Glass Facade
Light Tubes / Gardens
Structural Columns
Ground Level
Level 1 Underground
Level 2 Underground
Retaining Wall
Soil
Mass Evolution
Program
Gardens
Circulation
Structure
Roof Openings
Roof with no openings
Light Tubes / Gardens
Roof Openings
3D Section

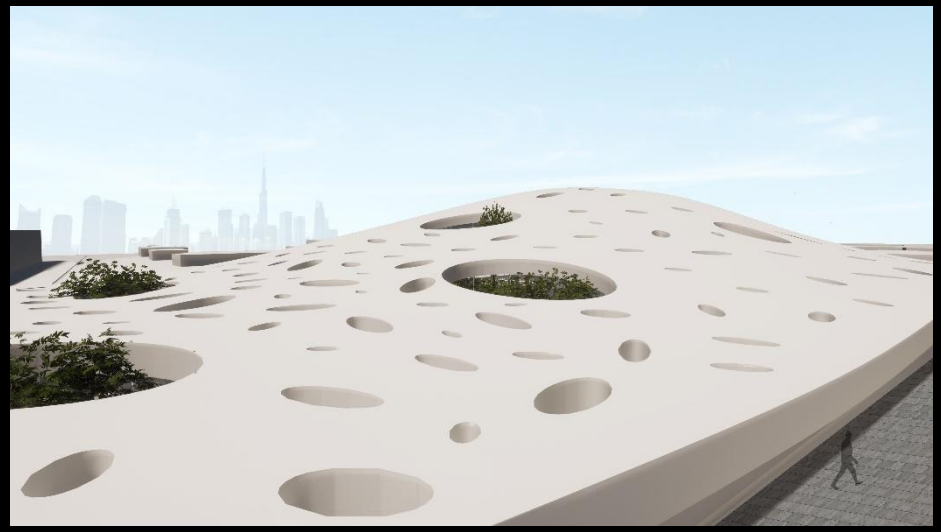


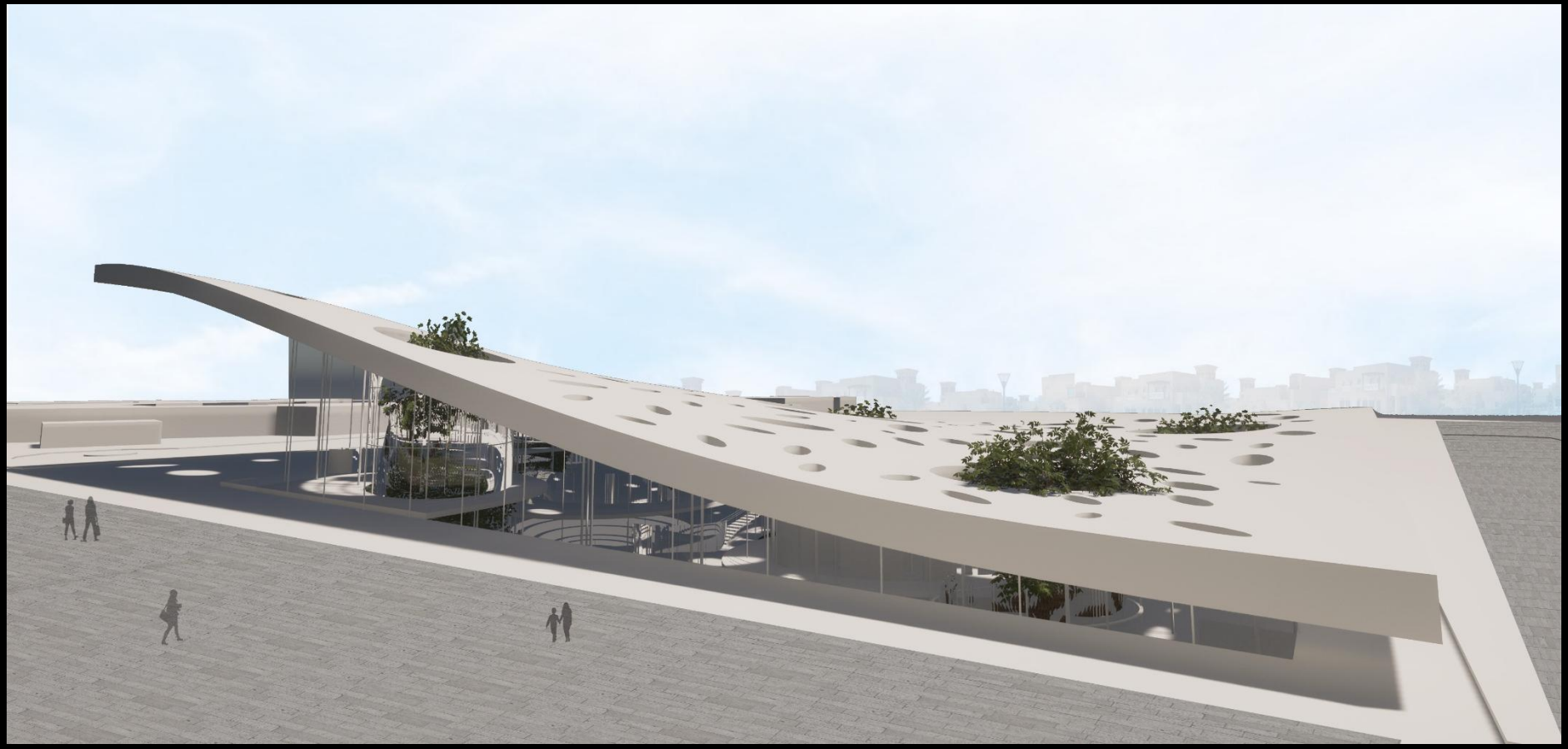

Level 1 Underground
Level 2 Underground

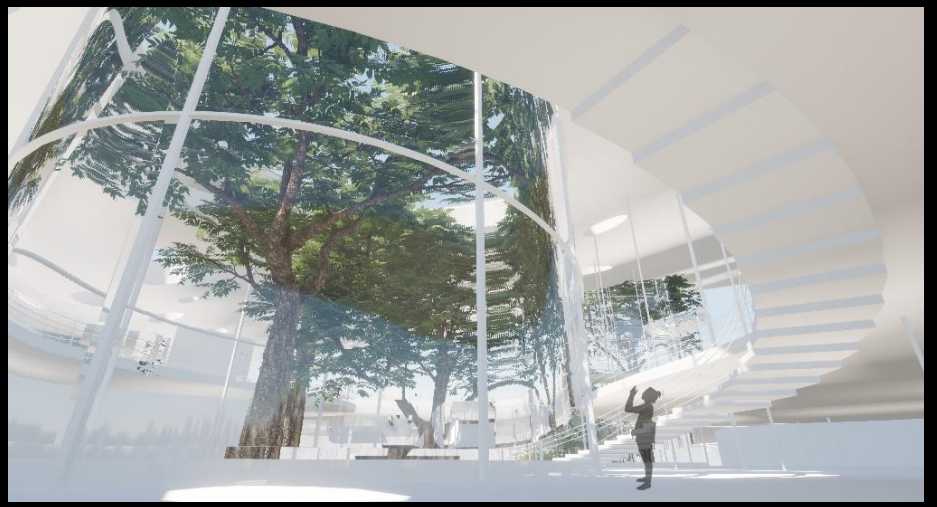

Back Elevation
Right Elevation
Right Elevation
Front Elevation


Section A
Section B

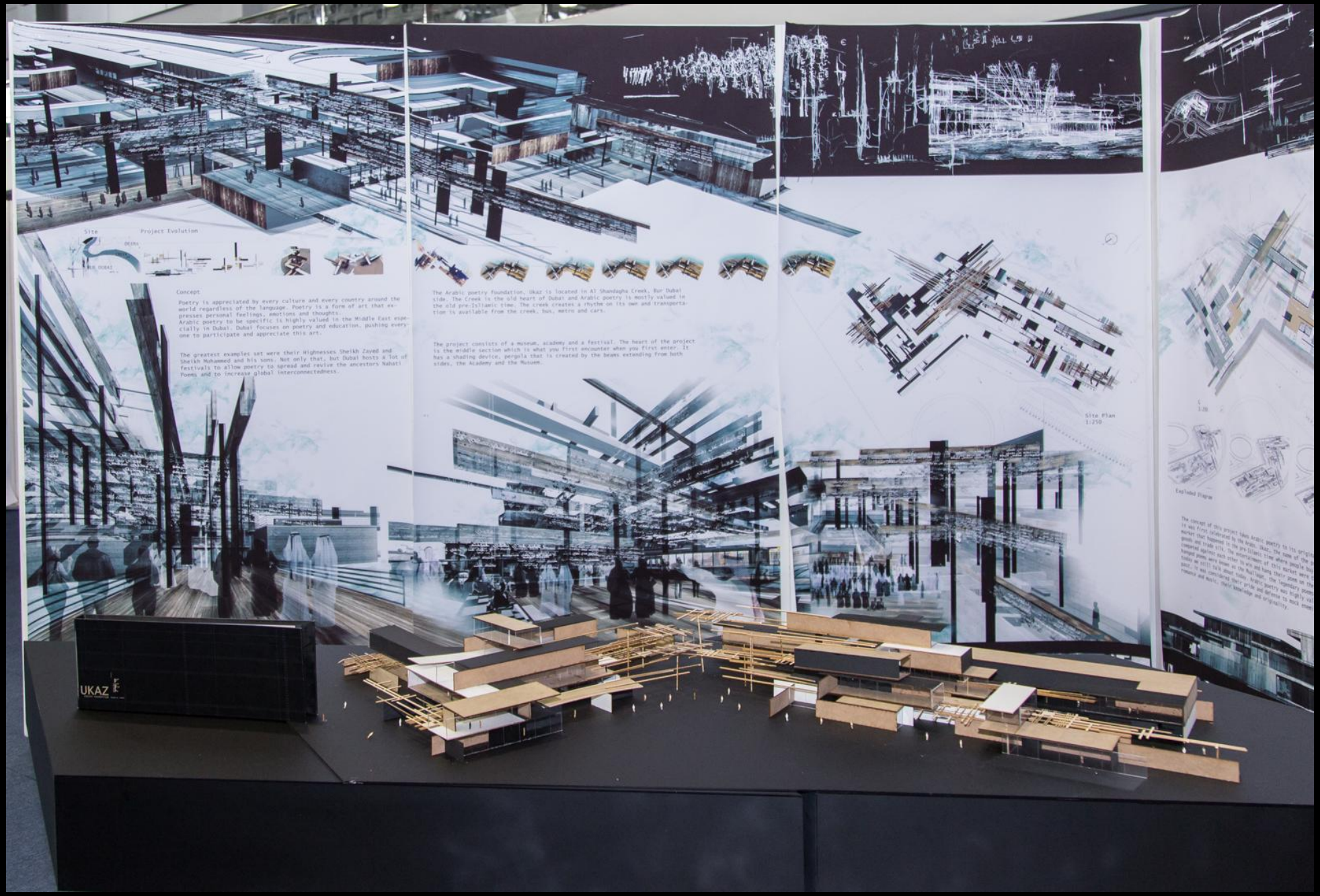


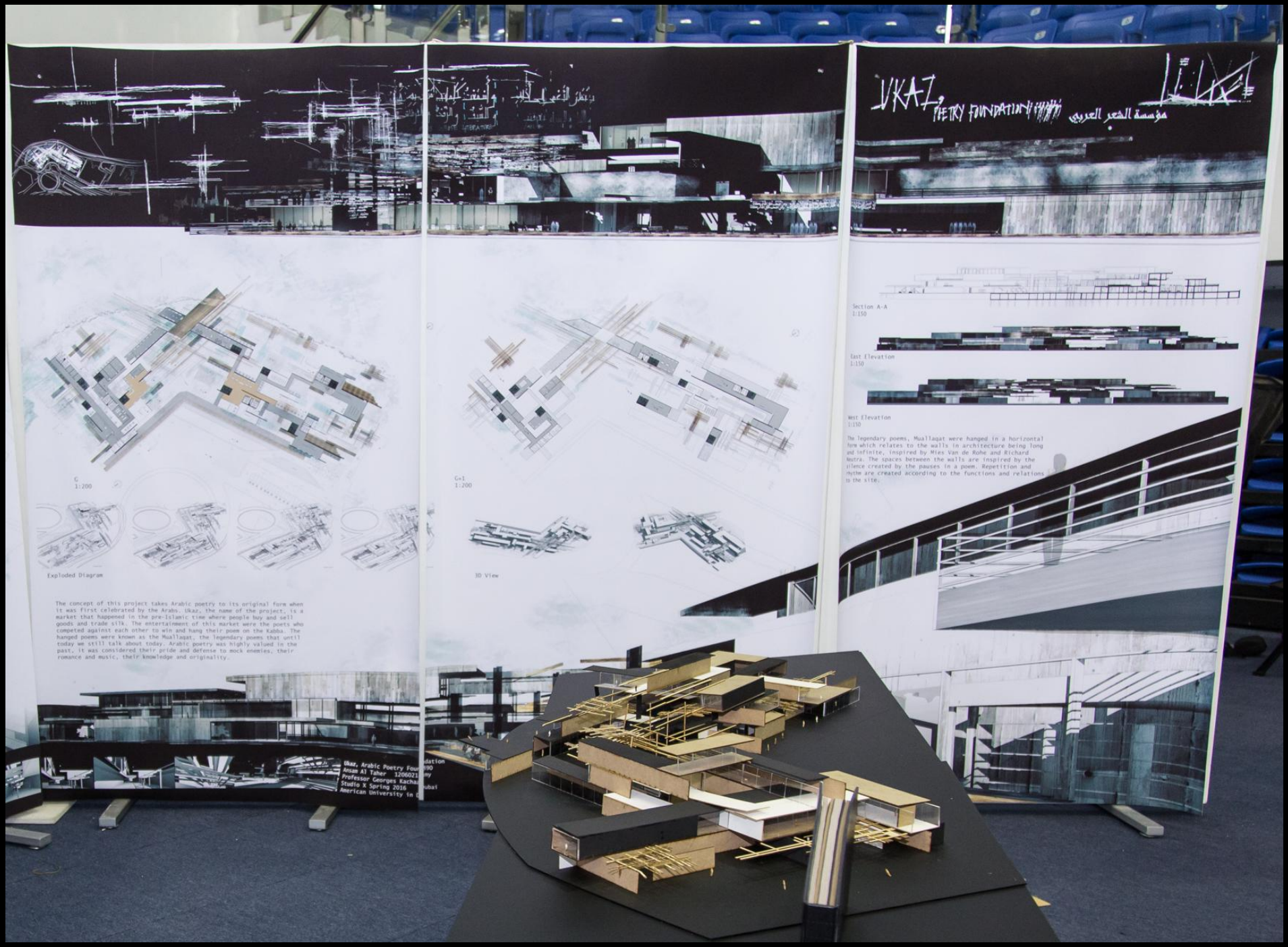







UKAZ
UKAZ
مؤسسة الشعر العربي


Site
Project Evolution
Concept
Poetry is appreciated by every culture and every country around the world regardless of the language. Poetry is a form of art that expresses personal feelings, emotions and thoughts.
Arabic poetry to be specific is highly valued in the Middle East especially in Dubai. Dubai focuses on poetry and education, pushing everyone to participate and appreciate this art.
The greatest examples set were their Highnesses Sheikh Zayed and Sheikh Muhammed and his sons. Not only that, but Dubai hosts a lot of festivals to allow poetry to spread and revive the ancestors Nabati Poems and to increase global interconnectedness.
The Arabic poetry foundation, Ukaz is located in Al Shandagha Creek, Bur Dubai side. The Creek is the old heart of Dubai and Arabic poetry is mostly valued in the old pre-Islamic time. The creek creates a rhythm on its own and transportation is available from the creek, bus, metro and cars.
The project consists of a museum, academy and a festival. The heart of the project is the middle section which is what you first encounter when you first enter. It has a shading device, pergola that is created by the beams extending from both sides, the Academy and the Musuem.
Site Plan
1:250
Exploded Diagram
UKAZ

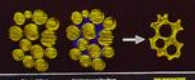

UKAZ
POETRY FOUNDATION
مؤسسة الشعر العربي
Section A-A
1:150
East Elevation
1:150
West Elevation
1:150
The legendary poems, Muallaqat were hanged in a horizontal form which relates to the walls in architecture being long and infinite, inspired by Mies Van de Rohe and Richard Neutra. The spaces between the walls are inspired by the silence created by the pauses in a poem. Repetition and rhythe are created according to the functions and relations to the site.
G
1:200
Exploded Diagram
The concept of this project takes Arabic poetry to its original form when it was first celebrated by the Arabs. Ukaz, the name of the project, is a market that happened in the pre-Islamic time where people buy and sell goods and trade silk. The entertainment of this market were the poets who competed against each other to win and hang their poem on the Kabba. The hanged poems were known as the Muallaqat, the legendary poems that until today we still talk about today. Arabic poetry was highly valued in the past, it was considered their pride and defense to mock enemies, their romance and music, their knowledge and originality.
G+1
1:200
3D View

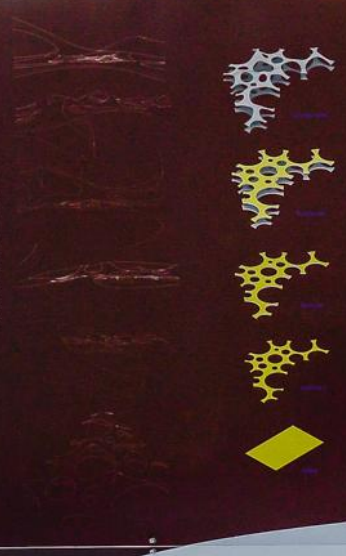

Dubai Circus
The Ringmaster
American University of Dubai
Department of Architecture
ARCH202
Spring 2019
Rami Ameed Mezayed
Dubai Circus
The Ringmaster

Dubai Circus

The Ringmaster

This project is consisting of a multipurpose facility that will house the different circus related activities like circus education facility and circus performance spaces. In addition, introducing an architectural space for the circus will enhance the understanding of the circus in the region. Throughout the design and form, which will focus on creating a circus street where audience and performers interact together, the circus importance will be highlighted. The circus makes people happier, builds community, and inspire people. The proposed "Dubai Circus", based on the research done in ARCH 501, will be the place where people get to know the Circus more and be a part of it by beginning and completing the design and planning process. The architecture will be a reflection of the circus and emphasize the elements that make the circus what it is. Space planning that will create the audience experience, as they enjoy the performance while being around the project. Apply the philosophical knowledge learned in ARCH501 to the proposed design. Any circus show consists of three main elements, the performers, the audience, and the show itself. These elements existed throughout the phrase the circus went through. The circus started on the streets where street performers did their acts to the audience around. Circus elements shifted from the circus to the ring. However, Astley changed the circus traditional ring people know today. Due to the developing of railway systems the circus started to spread around the world where it was performed in the circus shows. The circus has a unique form of the circus, the performers, and the audience. Each one of them has a specific form of art. The ringmaster, the clowns, the trapeze artists, the beasts, and the jugglers. For centuries, the ring element existed on these circus performers. The proposed is to create architectural spaces that reflect each character and join them all together. The proposed architecture will create several stops for performer and audience to experience the performance. To represent the ringmaster who controls and connects everything, this form will evolve based on the existing site conditions. After studying and site around Dubai which engage street performance, circus and entertainment activities, we cannot find that Dubai. The chosen site is "Mirdif Food Park" is an abandoned theme park. The site is on Sheikh Rashid Road which is a major road in Dubai that connects Sharjah and Dubai together. The site is also in a large area, which is Mirdif. Mirdif is one of the city, it is known for its traditional Emirati culture and its large shops. In addition, a huge history village is also in Mirdif. The theme park used to be one of the favorite attractions for families with all their shows and shows. The proposed will revive the theme park in a way that will help the proposed programs. "The circus coming to town" is the process that starts all the excitement, hearing the circus posters, the circus wagons, and hearing the circus music is astonishing. However, nothing will beat the have of seeing the circus tent being set up. The tent is the place where people with different backgrounds and age gather to enjoy and live the shows with the circus performers. Moreover, it contains the backstage and everything the tent is the constants tab of a circus. Wherever the circus moves, the tent is the element that will let people where is its next destination.



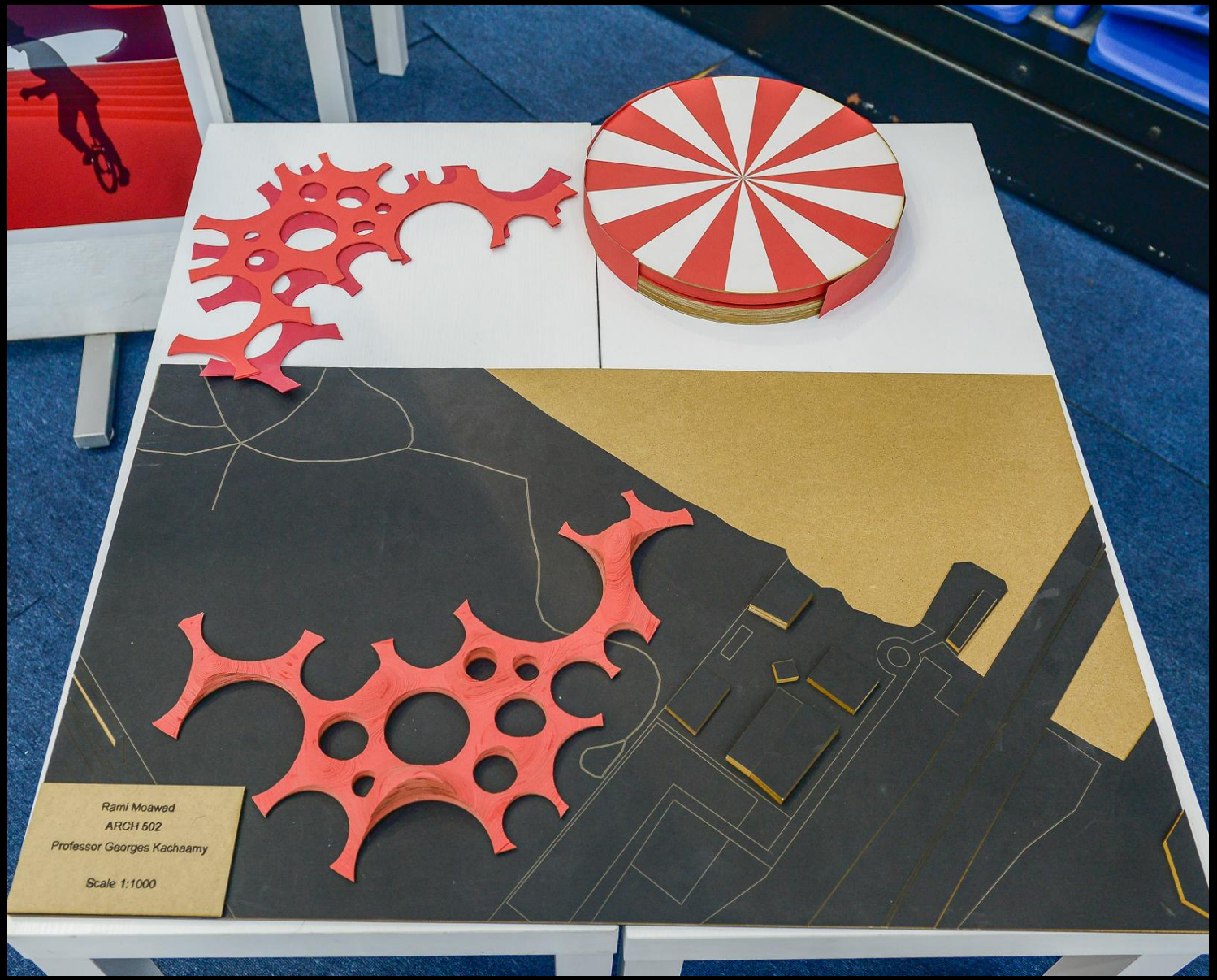


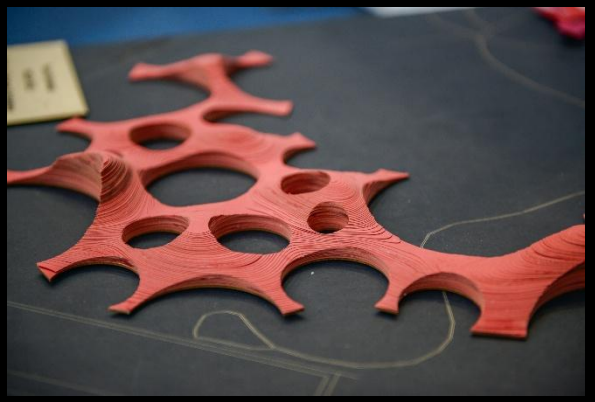
Partial Upper Level Plan

Exploded View

Lower Level Plan

American University of Dubai Department of Architecture ARCH502 Spring 2019 Rami Ameed Moawad


Rami Moawad
ARCH 502
Professor Georges Kachaamy
Scale 1:1000




Re : Material
RE-MATERIAL


Re : Material
Re : Material | Graduation Project | Spring 2016 | American University in Dubai | Prof. Georges Kachaamy | Stella Woo Seung Yeon


Re : Material | Graduation Project | Spring 2016 | American University in Dubai |


ARCHITECTURE OF NIGHT: Repertoire of Dreams
Project Evolution
IN TAGIBLE SPACE
ephemeral
REALITIES
FRAGMENTED
JOURNEY
ESCAPE
DREAMS
MEMORIES
Spiritual Journey
View From Terrace
Ground Floor 1:200
Second Floor 1:200
Site View
stacking walls
monocoque structure
Studio X
structural columns
Spring 2016
Dr. Georges Kachaamy
Temple of Dreams
Dreamers library
Repertoire Dreams
REPERTOIRE OF DREAMS
MUSEUM OF DREAMS
AUD


Ground Floor
1:200
Second Floor
1:200
Spritual
Journey
View From
Terrace
Site View
stacking walls
monocoque
structure
Dreamers
library
Temple of
Dreams
Dr. Georges Kachaamy

ARCHITECTURE OF NIGHT: Repertoire of Dreams

Our mind is capable of creating intangible architecture through dreams. Everything we experience in this dream space is never created out of pure imagination. Its formed out of the experiences and memories of reality. We spend 30 percent of our lives sleeping and while sleeping, we experience dream world where the constant of time does not apply. Yet, there exist no architecture denoted to experience this very humane activity dreaming. If our mind can create the real life space in our dreams in desired form, is it not possible to recreate the architecture of our subconscious-dreamy state into our real life? My project is the architecture of night, it's the architecture that allows everybody to experience this very human activity of dreaming, collectively.

Fragmented realities:
Fragmented Realities
It's very rare one remembers Dreams in episodic frames. Dreams typically emerge as disconnected fragments (Schwartz 2003). These fragments of dreams act like a fragmented Mirror, where each individual part of it has its own very story, yet they reflect the observer in a very peculiar way. Within the dream-world, the same space, the same people, feels familiar. However once one enters the conscious state it all suddenly feels like a maze, like as if it's an irrational, un-functional thought.
In the similar way, reality itself is fragmented and from the distance of time, seems irrational. It's like a life that we have once lived in , yet remember them as only fragments and not as whole. For example, when one looks at his/her own baby picture, he knows it's him yet he has to bridge the fragments of memories to reach to that memory of that picture.
There is no much difference in realities or dreams, they both happen to us moments and then remain only in our memories as fragments.
This project aims to discover and travel through fragments of space and discover the unreality in reality and realizing everything is perhaps a dream. The aim is to find the agitated, trance space that lies within- done through the fragmentation of layers in between. It wishes to "bridge" the journey to the alternative world displaced from reality.
The overall form floats like a cloud with the embracing architecture that invokes dreamers to cross the threshold. The architecture creates this fragments of reality and direct the views of this reality; yet not control what one may experience of them. It's the randomness of these experience that may make one dream. When one travel in this dreamscape, he see reality sweeping in trough the fragmented views.One may escape this dream by escaping through doors. Whereas, the "vertical empty" tunnels makes its way through the slab creating a space that characterize those fragment of the dream that one remembers vividly. In the creation of this architecture space it optimize to create a place of "happy accidents" where a dream could feel, sense and touch the glimpse of hope, faith, love and everything that makes one dream.While one travels in this fragmented space in his collective memory he collects this views and experiences that he takes with him to end his journey at sleeping Museum where he enters his very own dreamscape. This journey forever evolves, in its ephemeral period.

Project Evolution

IN TAGIBLE SPACE

ephemeral

REALITIES

FRAGMENTED

JOURNEY

DREAMS

MEMORIES

Capturing Views


ALT
CTRL
ALTITUDE CONTROL
By
Golnaz Mayel Afshar
Dr. Georges Kachaamy
Site Plan
1:10000
West Elevation
1:250
Ground Floor
1:500
South Elevation
1:250
Section A-A
1:250
First Undergournd
1:250
Section B-B
1:250
Second Undergournd
1:250

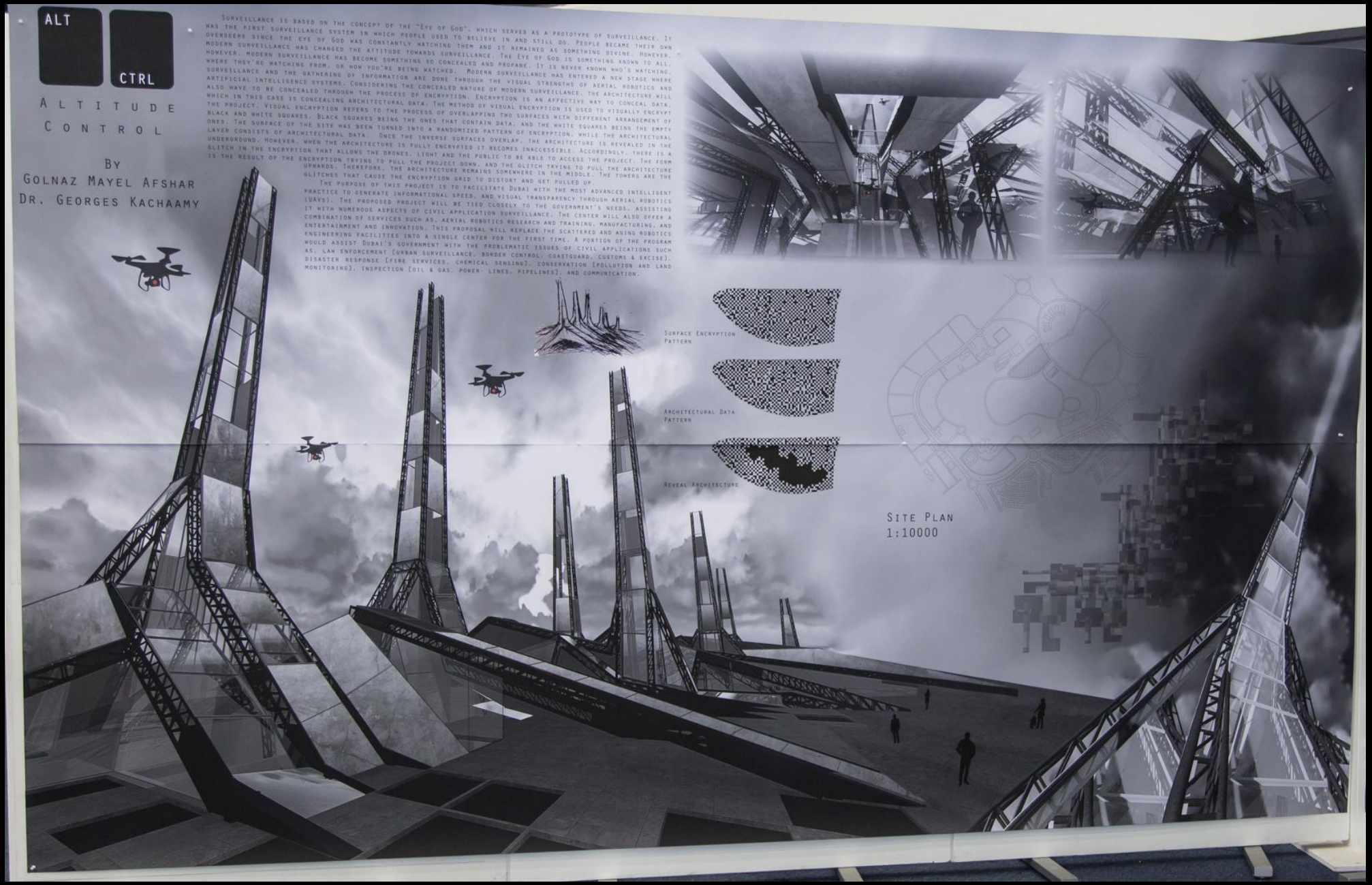
ALT CTRL

ALTITUDE CONTROL

By
Golnaz Mayel Afshar
Dr. Georges Kachaamy

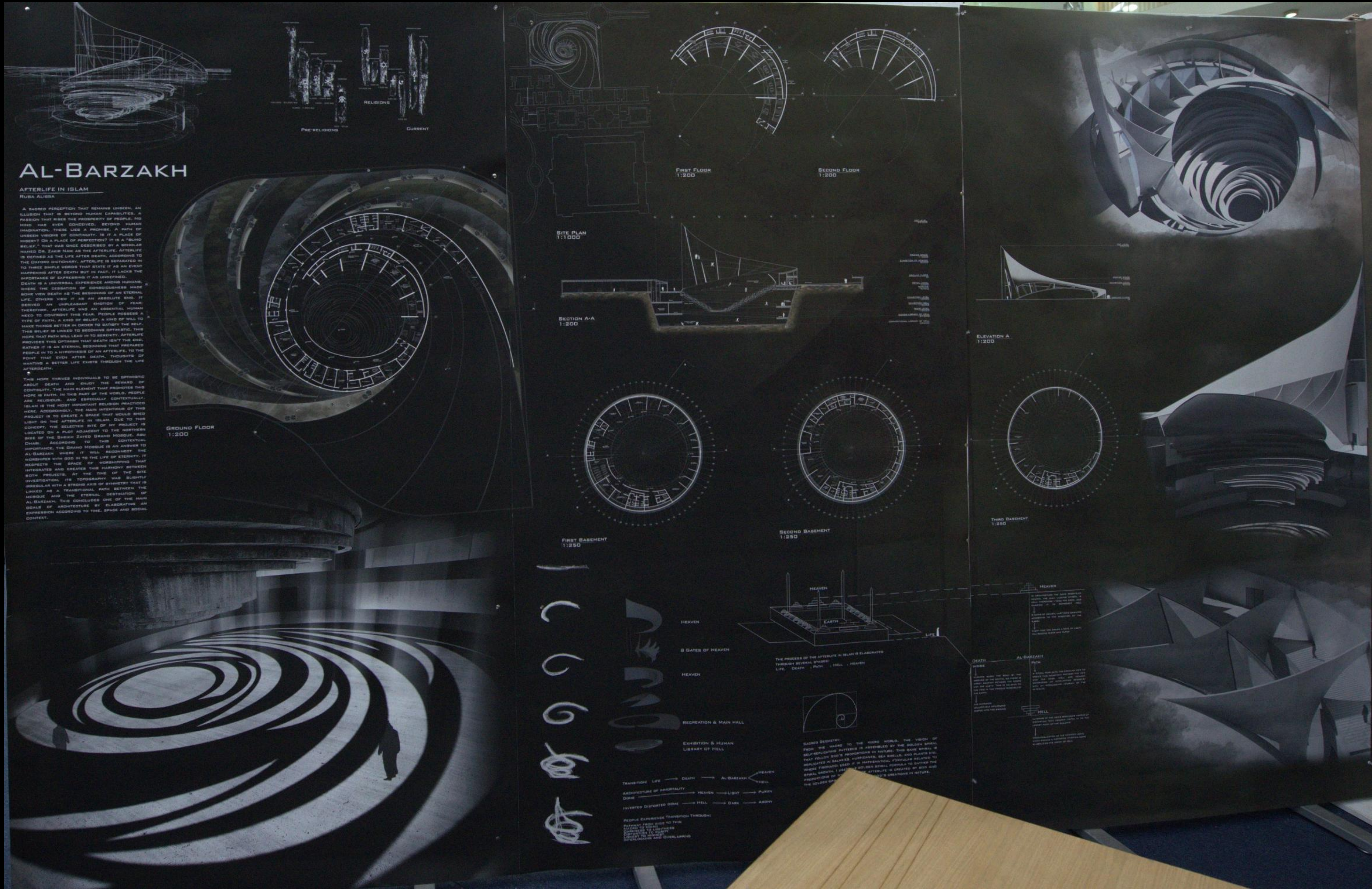
Surveillance is based on the concept of the "Eye of God", which serves as a prototype of surveillance. It was the first surveillance system in which people used to believe in and still do. People became their own overseers since the Eye of God was constantly watching them and it remained as something divine. However, modern surveillance has changed the attitude towards surveillance. The Eye of God is something known to all, however, modern surveillance has become something so concealed and profane. It is never known who's watching where they're watching from, or how you're being watched. Modern surveillance has entered a new stage where surveillance and the gathering of information are done through the visual strengths of aerial robotics and artificial intelligence systems. Considering the concealed nature of modern surveillance, the architecture will also have to be concealed through the process of encryption. Encryption is an affective way to conceal data, which in this case is concealing architectural data. The method of visual encryption is used to visually encrypt the project. Visual encryption refers to the process of overlapping two surfaces with different arrangement of black and white squares. Black squares being the ones that contain data, and the white squares being the empty ones. The surface of the site has been turned into a randomized pattern of encryption, while the architectural layer consists of architectural data. Once the inverse surfaces overlap, the architecture is revealed in the underground. However, when the architecture is fully encrypted it becomes inaccessible. Accordingly, there is a glitch in the encryption that allows the drones, light and the public to be able to access the project. The form is the result of the encryption trying to pull the project down, and the glitch trying to pull the architecture upwards. Therefore, the architecture remains somewhere in the middle. The towers are the glitches that cause the encryption grid to distort and get pulled up.

The purpose of this project is to facilitate Dubai with the most advanced intelligent practice to generate informational speed, and visual transparency through aerial robotics (UAVs). The proposed project will be tied closely to the government's needs, assisting it with numerous aspects of civil application surveillance. The center will also offer a combination of services such as, aerial robotics research and training, manufacturing, and entertainment and innovation. This proposal will replace the scattered and aging robotics engineering facilities into a single center for the first time. A portion of the program would assist Dubai's government with the problematic issues of civil applications such as, Law enforcement [urban surveillance, border control, coastguard, customs & excise], disaster response [fire services, chemical sensing], conservation [pollution and land monitoring], inspection [oil & gas, power- lines, pipelines], and communication.

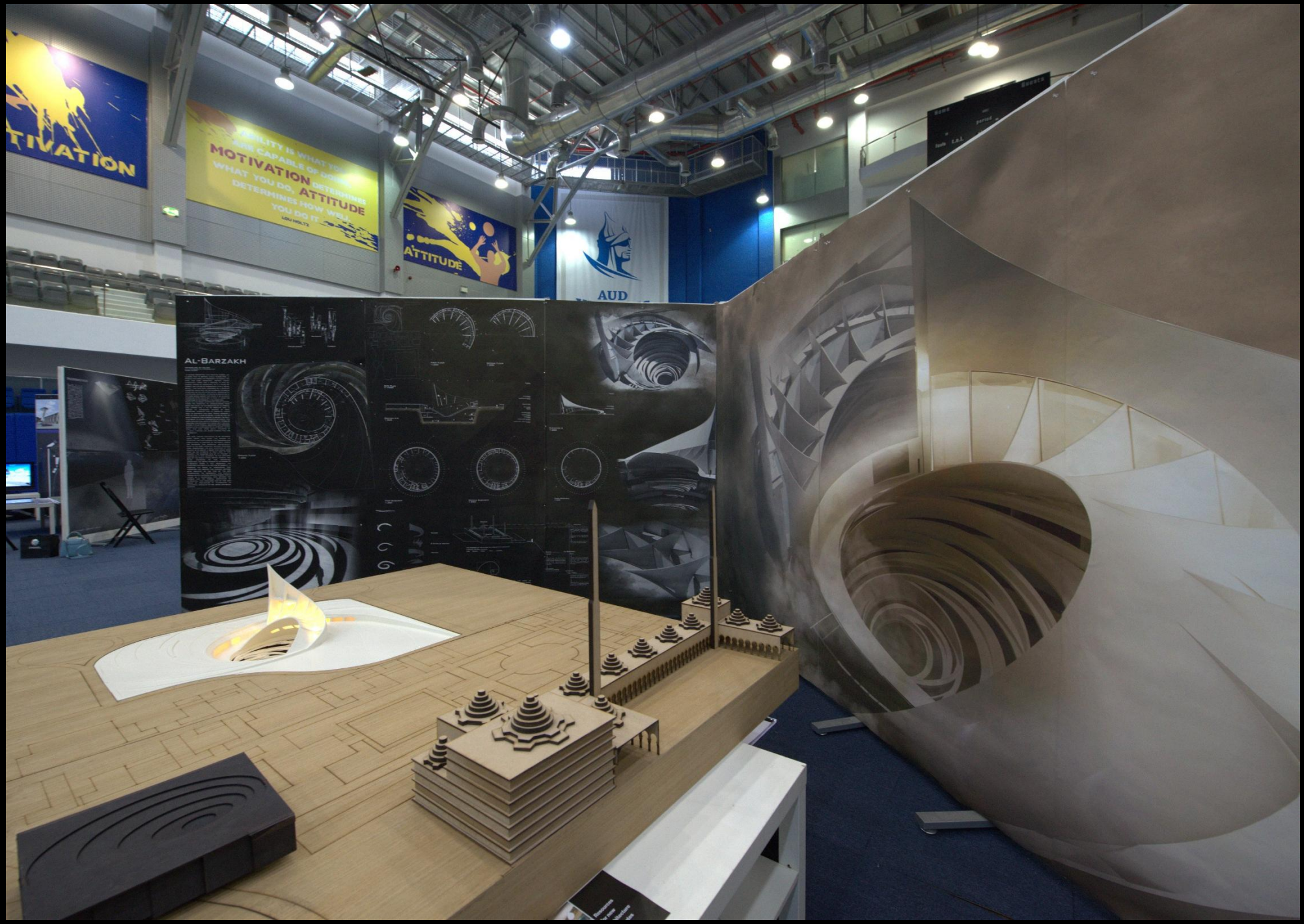


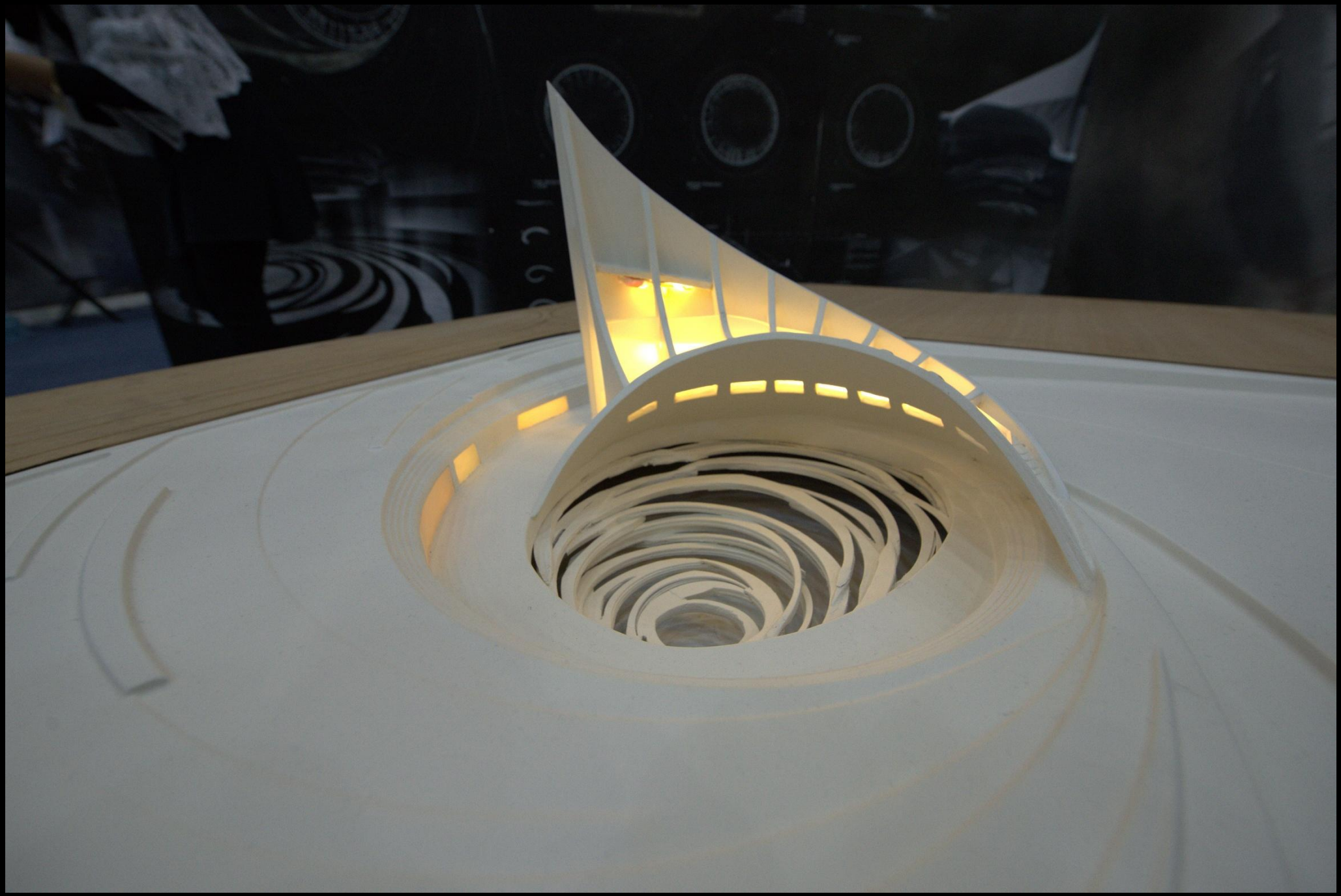

Ground Floor
1:500
West Elevation
1:250
South Elevation
1:250
Section A-A
1:250
First Undergournd
1:250
Section B-B
1:250
Second Undergournd
1:250


AL-BARZAKH
AFTERLIFE IN ISLAM
AUD
KNIGHTS

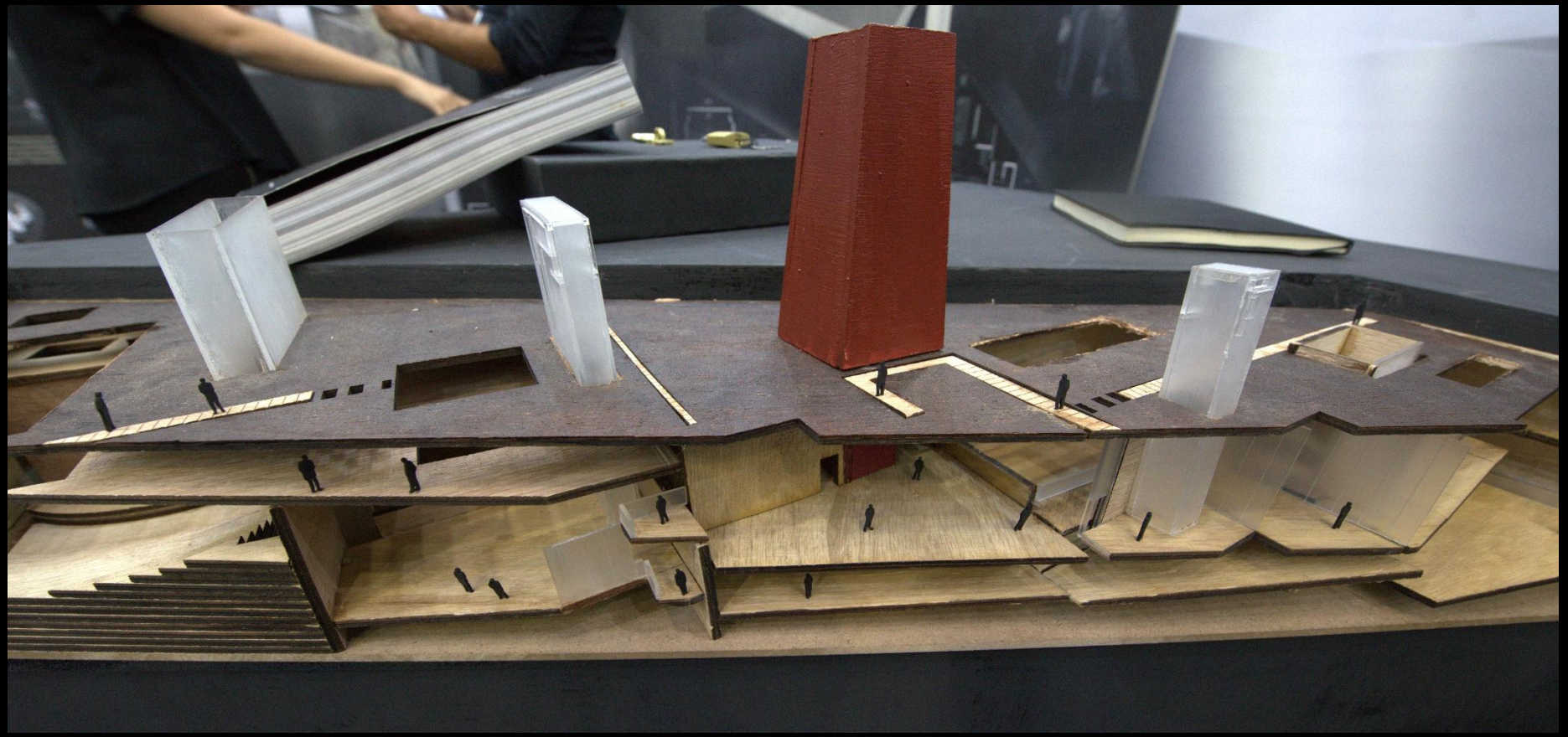


Pre-religions
Religions
Current
Al-Barzakh
Afterlife in Islam
Ruba Alissa
A sacred perception that remains unseen, an illusion that is beyond human capabilities, a passion that rises the prosperity of people. No mind has ever conceived, beyond human imagination, there lies a promise. A path of unseen visions of continuity. Is it a place of misery? Or a place of perfection? It is a "blind belief," that was once described by a scholar named Dr. Zakir Naik as the afterlife. Afterlife is defined as the life after death, according to the Oxford dictionary. Afterlife is separated in to three simple words that state it as an event happening after death but in fact, it lacks the importance of expressing it as undefined.
Death is a universal experience among humans, where the cessation of consciousness made some view death as the beginning of an eternal life. Others view it as an absolute end. It derived an unpleasant emotion of fear; therefore, afterlife was an essential human need to confront this fear. People possess a type of faith, a kind of belief, a kind of will to make things better in order to satisfy the self. This belief is linked to becoming optimistic, this hope that faith will lead in to serenity. Afterlife provides this optimism that death isn't the end, rather it is an eternal beginning that prepared people in to a hypothesis of an afterlife, to the point that even after death, thoughts of wanting a better life exists through the life afterdeath.
This hope thrives individuals to be optimistic about death and enjoy the reward of continuity. The main element that promotes this hope is faith. In this part of the world, people are religious, and especially contextually, Islam is the most important religion practiced here. Accordingly, the main intentions of this project is to create a space that would shed light on the afterlife in Islam. Due to this concept, the selected site of my project is located on a plot adjacent to the northern side of the Sheikh Zayed Grand Mosque, Abu Dhabi. According to this contextual importance, the Grand Mosque is an answer to Al-Barzakh where it will reconnect the worshiper with God in to the life of eternity. It respects the space of worshipping that integrates and creates this harmony between both projects. At the time of the site investigation, its topography was slightly irregular with a strong axis of symmetry that is linked as a transitional path between the mosque and the eternal destination of Al-Barzakh. This concludes one of the main goals of architecture by elaborating an expression according to time, space and social context.
Ground Floor
1:200
Site Plan
1:1000
First Floor
1:200
Second Floor
1:200
Section A-A
1:200
Elevation A
1:200
First Basement
1:250
Second Basement
1:250
Third Basement
1:250
Heaven
8 Gates of Heaven
Heaven
Recreation & Main Hall
Exhibition & Human
Library of Hell
Transition: Life → Death → Al-Barzakh → Heaven / Hell
Architecture of immortality
Dome → Heaven → Light → Purity
Inverted Distorted Dome → Hell → Dark → Agony
People Experience Transition Through:
Pathway from wide to thin
Macro to micro
Darkness to lightness
Distortion to purity
Lowest to highest
Interlocking and Overlapping
Heaven
Earth
Life
The process of the afterlife in Islam is elaborated through several stages:
Life, Death, Path, Hell, Heaven
Death
Al-Barzakh


MOTIVATION
ATTITUDE
AUD
AL-BARZAKH



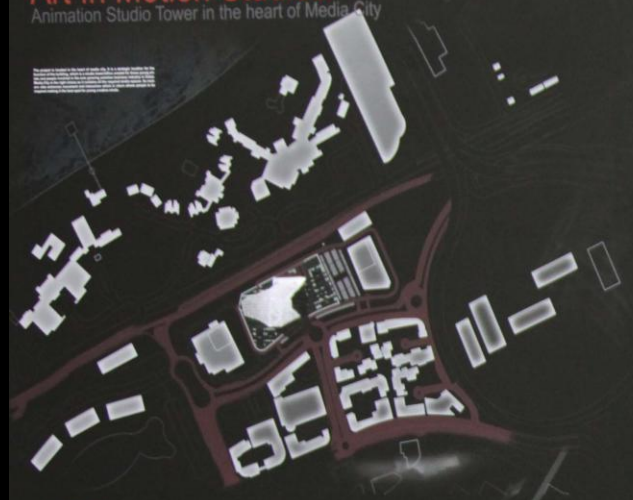

TABOO
THE SHACKLES WITHIN



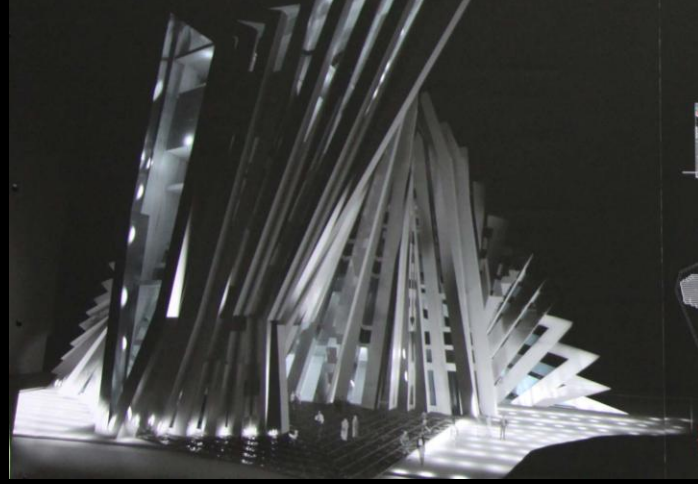

Art In Motion Studios
Concept
ART IN MOTION STUDIOS
PHYSICAL MODEL SCALE 1:150
ARCH101 – SPRING 2014
AMNA BIN THANEYA

Art In Motion Studios

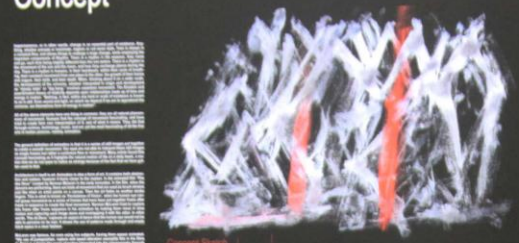
Animation Studio Tower in the heart of Media City



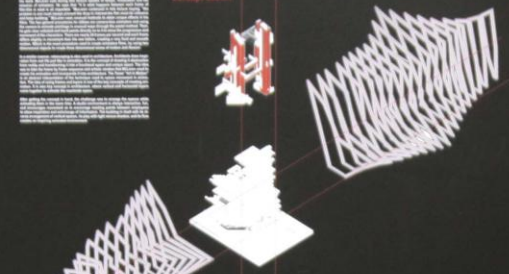
Site Plan
Scale 1:1500



Concept

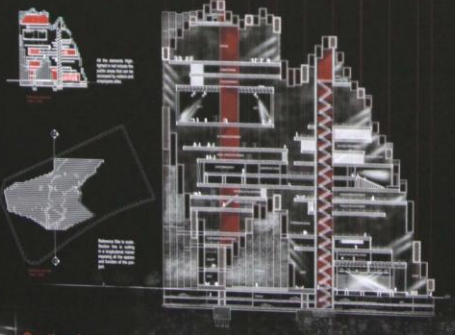


Concept Sketch

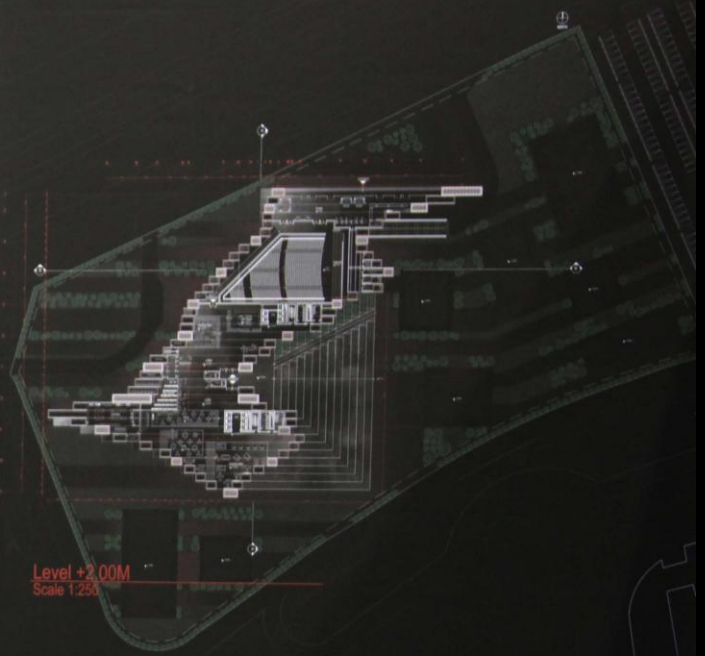


Exploded Axonometric

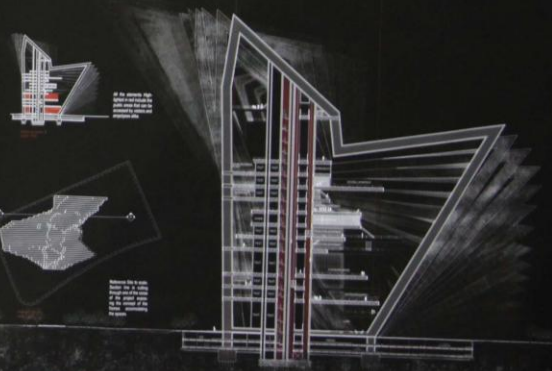
Persistance of Vision



Section A
Scale 1:250

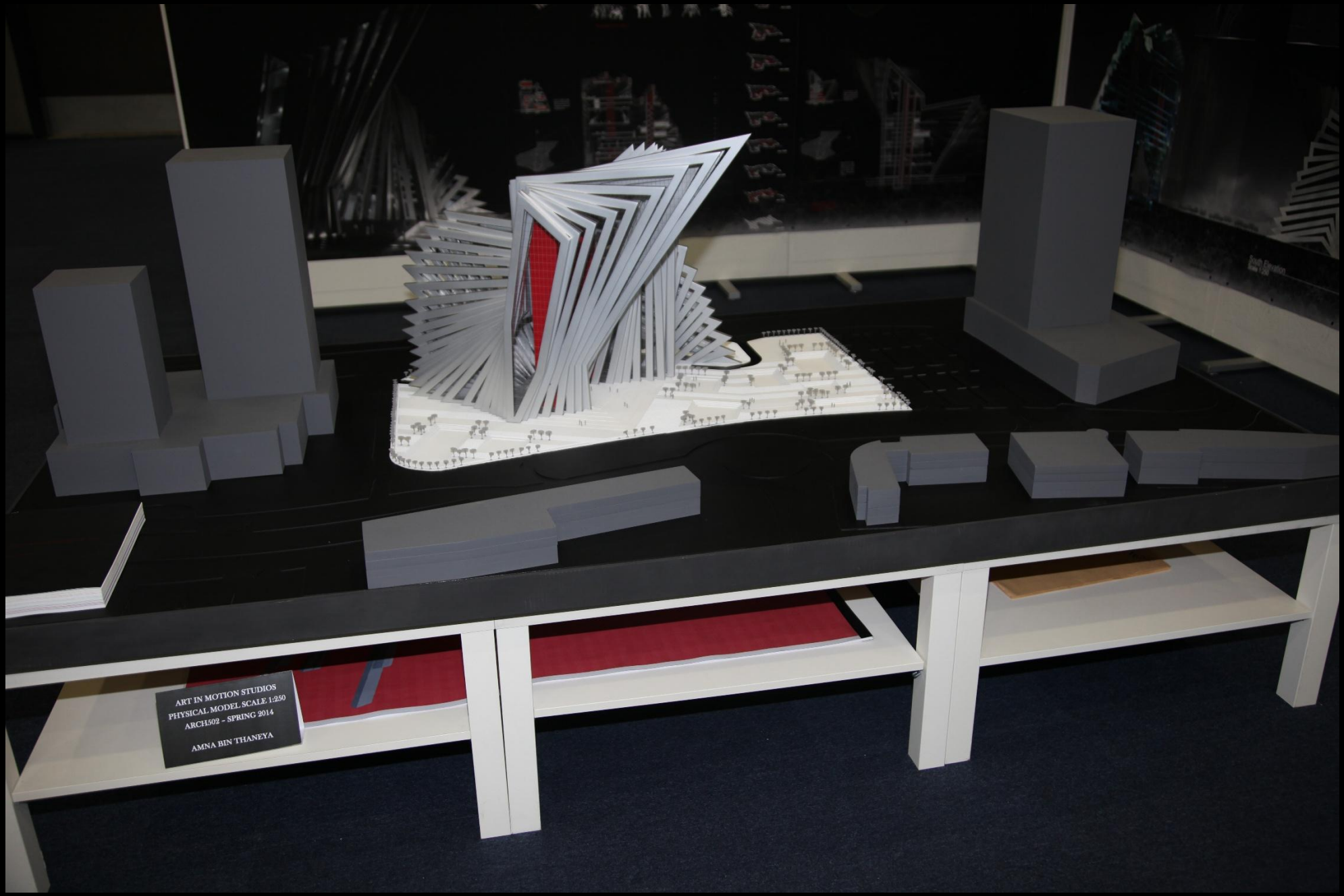


Level +2.00M
Scale 1:250



Section B


Level +39.00M
Scale 1:250
Level +44.00M
Scale 1:250
South Elevation
Scale 1:250

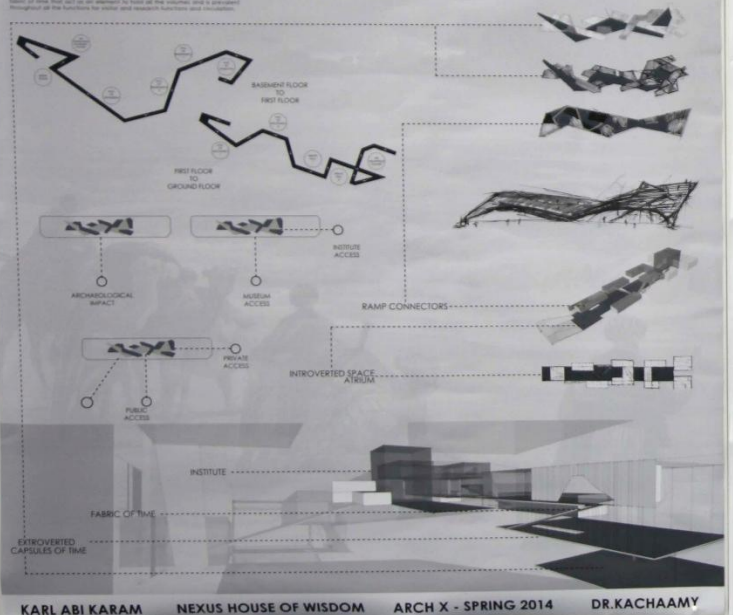

ART IN MOTION STUDIOS
PHYSICAL MODEL SCALE 1:250
ARCH502 – SPRING 2014
AMNA BIN THANEYA


NEXUS
HOUSE OF WISDOM
"Space is form abstracted from matter and exists only in consciousness"
KARL ABI KARAM
NEXUS HOUSE OF WISDOM
ARCH X - SPRING 2014
DR KACHAAMY

NEXUS
HOUSE OF WISDOM

"Space is form abstracted from matter and exists only in consciousness"
- Brotherhood of Purity
900 A.D

DUBAI | ARCHAEOLOGICAL SITE | SITE PLAN | 60 M X 360 M 21600 m² SUBURBAN AL WASL ROAD JUMEIRAH DUBAI | 800 A.D CARAVANSERAI PALACE MOSQUE

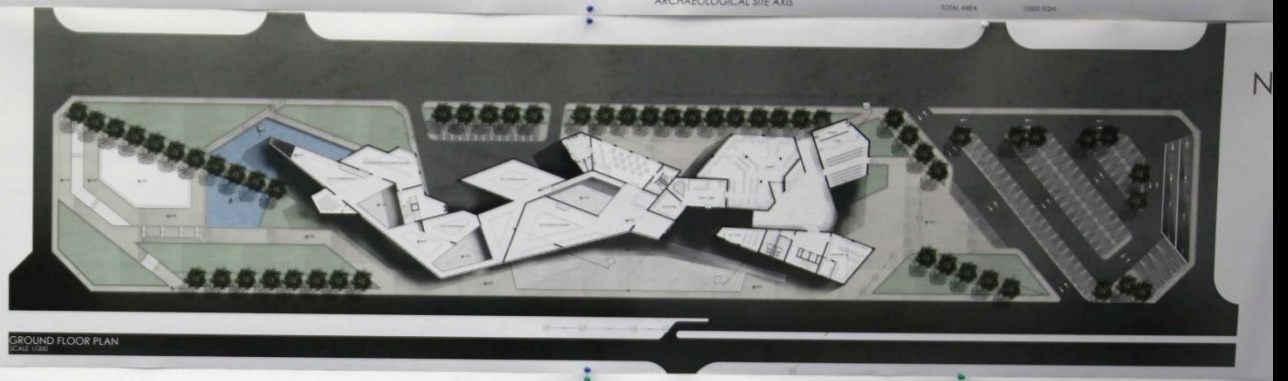


KARL ABI KARAM NEXUS HOUSE OF WISDOM ARCH X - SPRING 2014 DR.KACHAAMY

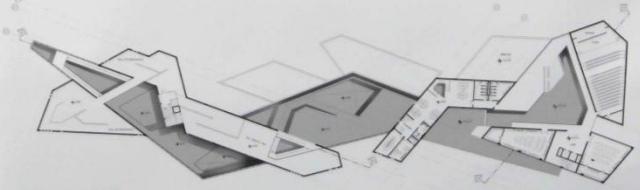
SITE PLAN
SCALE 1/500

ARCHAEOLOGICAL SITE AXIS

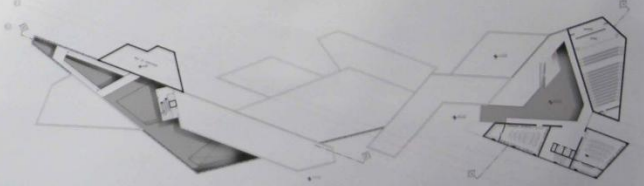
BASEMENT FLOOR	2600 SQM
GROUND FLOOR	5100 SQM
FIRST FLOOR	2000 SQM
SECOND FLOOR	450 SQM
THIRD FLOOR	450 SQM
TOTAL AREA	10600 SQM



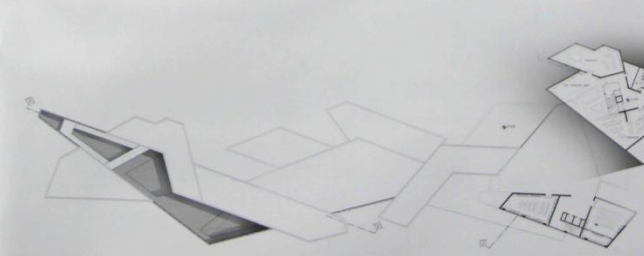
GROUND FLOOR PLAN
SCALE 1/200



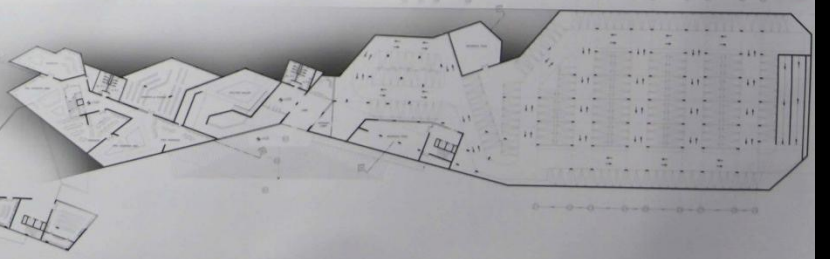
FIRST FLOOR PLAN
SCALE 1/200



SECOND FLOOR PLAN
SCALE 1/200



THIRD FLOOR PLAN
SCALE 1/200

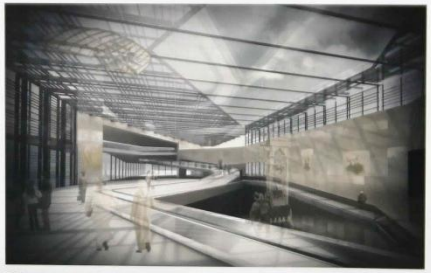


BASEMENT FLOOR PLAN
SCALE 1/200

PROMENADE

MUSEUM ENTRANCE

INSTITUTE ENTRANCE



THE MILLENNIUM GALLERY

HALL OF REGENERATION

NW ELEVATION
SCALE 1:200

SW ELEVATION
SCALE 1:200

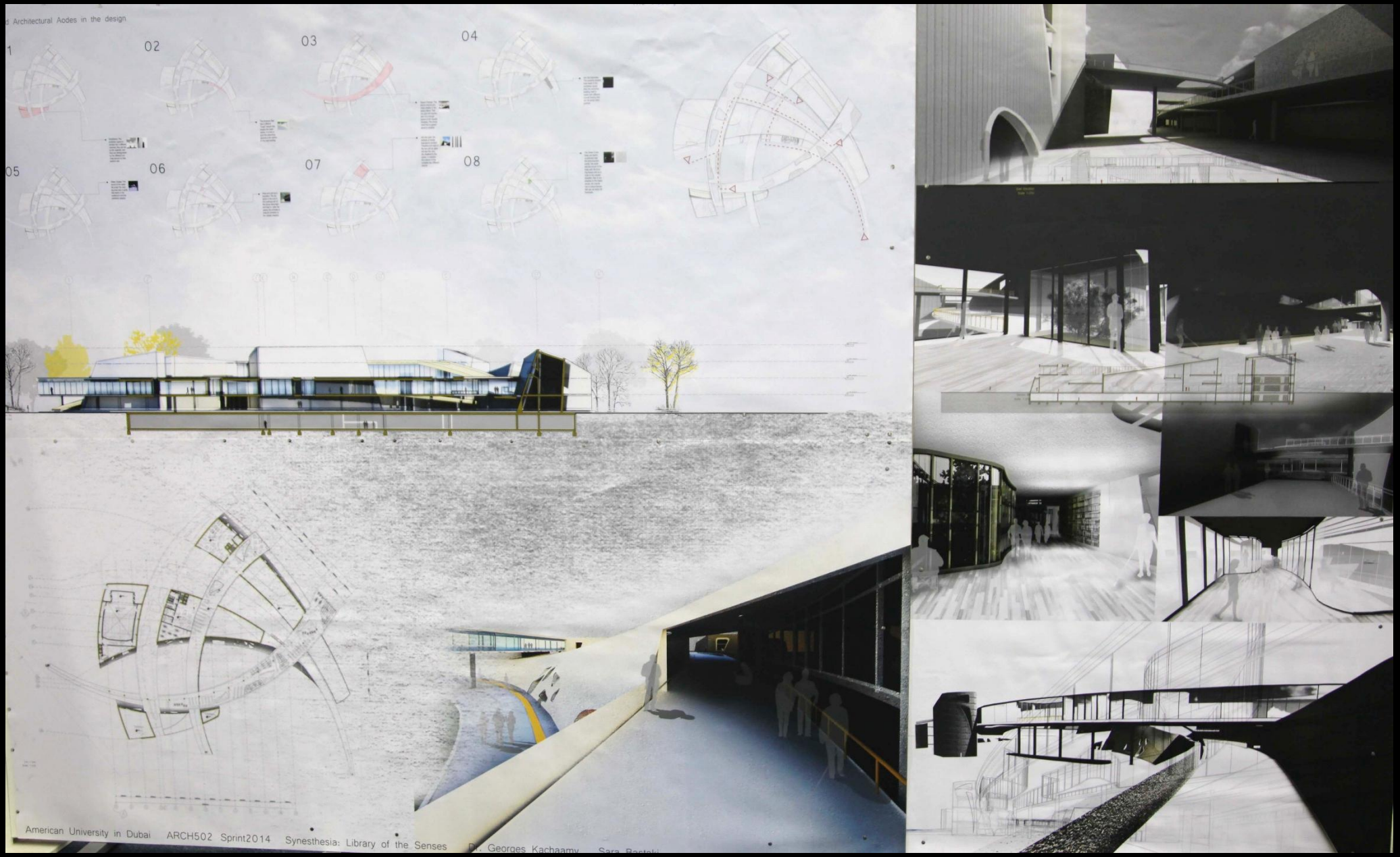
SECTION A-A
SCALE 1:200

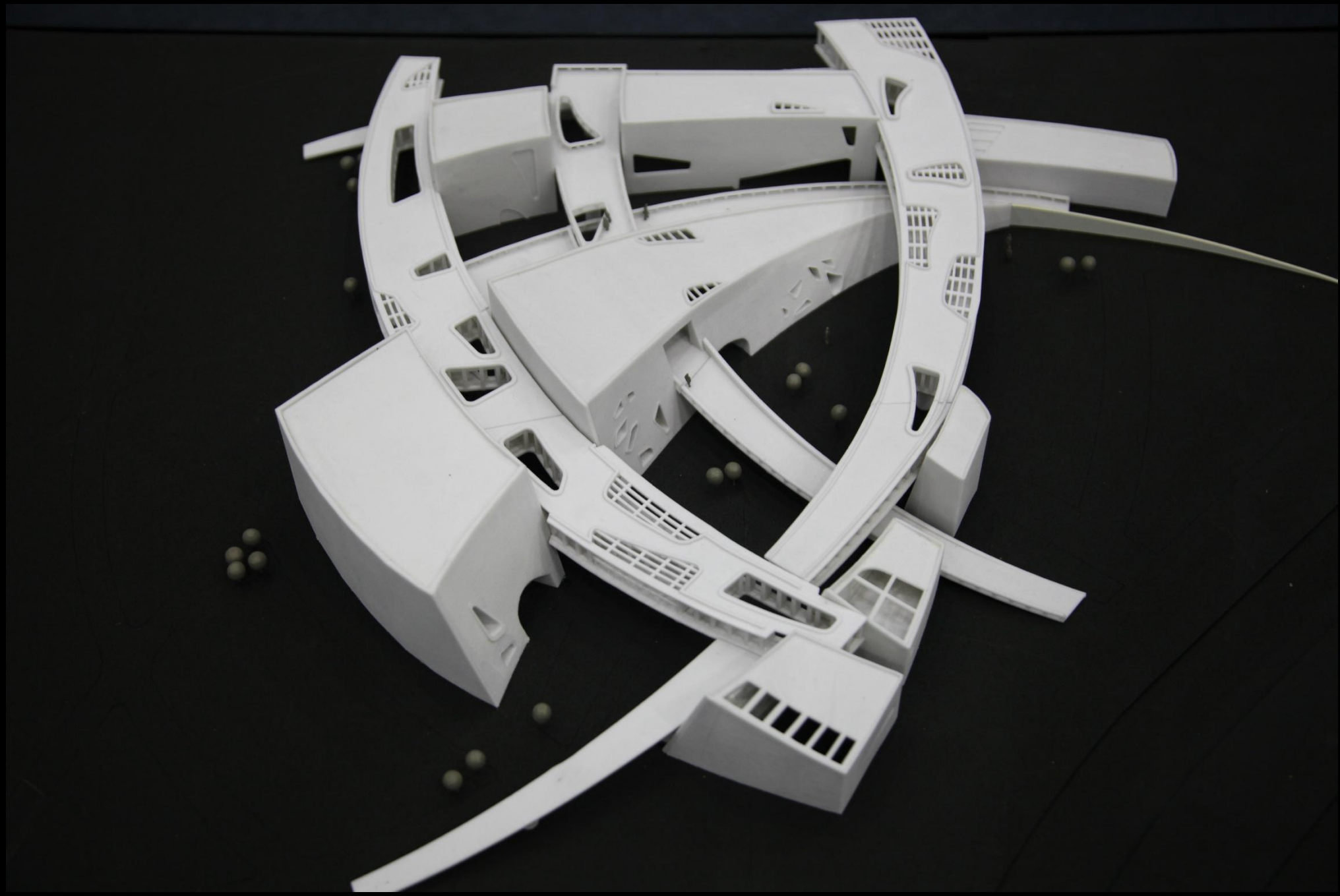
SECTION B-B
SCALE 1:200


SYNESTHESIA
Library of the Senses

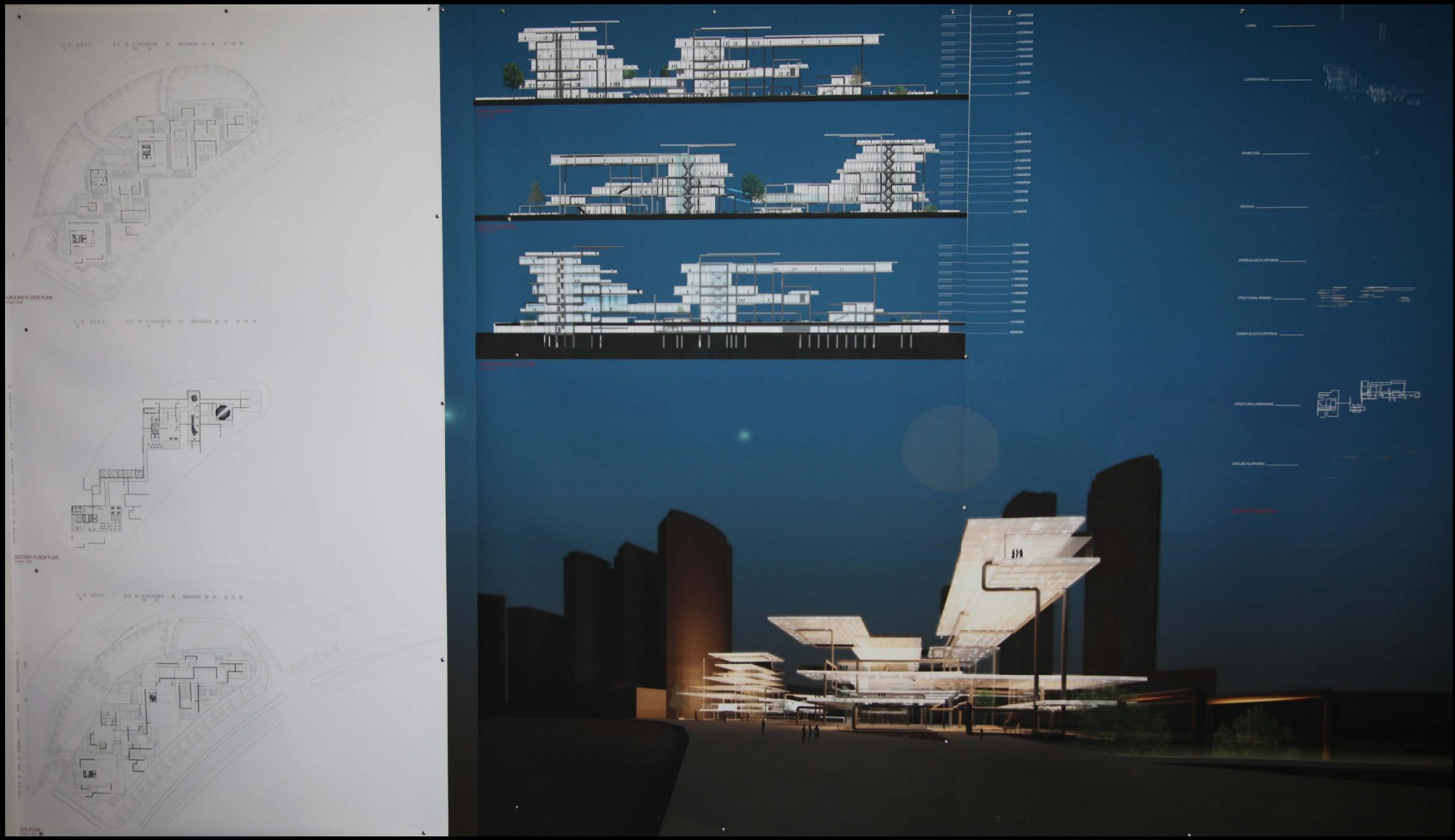
YNESTHESIA Library of the Senses

01 02 03 04 05 06 07


Architectural Aodes in the design
01
02
03
04
05
06
07
08
American University in Dubai ARCH502 Sprint2014 Synesthesia: Library of the Senses




MCDA
THE MUSEUM OF CONTEMPORARY DIGITAL ARCHITECTURE
EAST EXTERIOR
INSTITUTE INTERIOR VIEW
MUSEUM INTERIOR VIEW
PROGRAM
INSTITUTE
MUSEUM
A
B
C
D
PROGRAM CHART
TOTAL AREA: 9 250 m²


GROUND FLOOR PLAN
SECOND FLOOR PLAN
SITE PLAN
CORES
CURTAIN WALLS
STAIRCASES
CEILINGS
UPPER GLASS PLATFORMS
STRUCTURAL FRAMES
LOWER GLASS PLATFORMS
STRUCTURAL WAREFRAME
GROUND PLATFORMS


THINNER - PLAYGROUND
The idea of the project is to lose weight viaspace by reversing the functions of architectural spaces. The aim is to alter a person's lifestyle through space which in return helps him burn some calories on a daily basis. Most common space for physical activity is a playground. The idea is to integrate the concept of a playground in the project design to create a morphology which makes you lose weight.
DESIGN PHILOSOPHY
STACKING UNITS

THINNER - PLAYGROUND

DESIGN PHILOSOPHY

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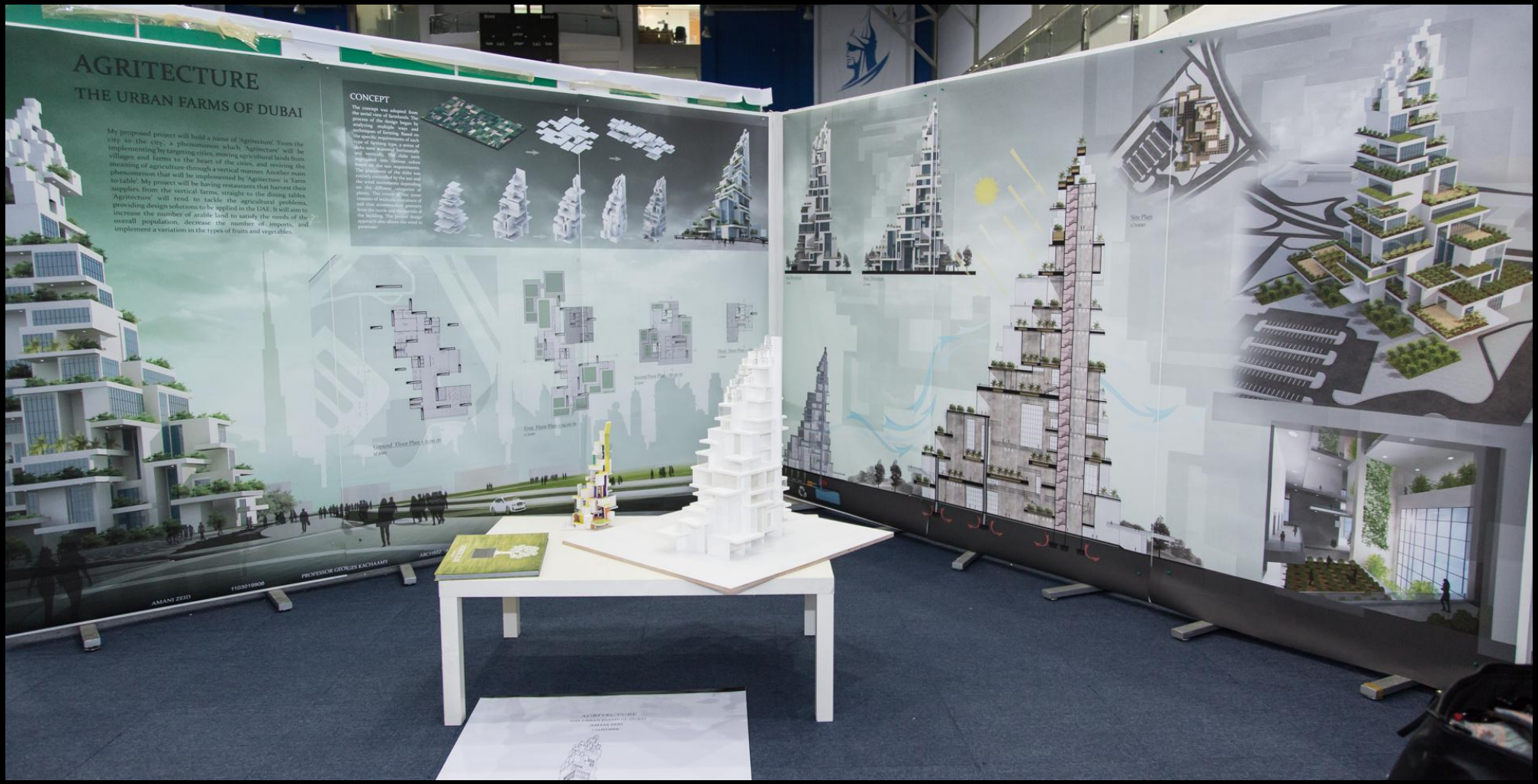
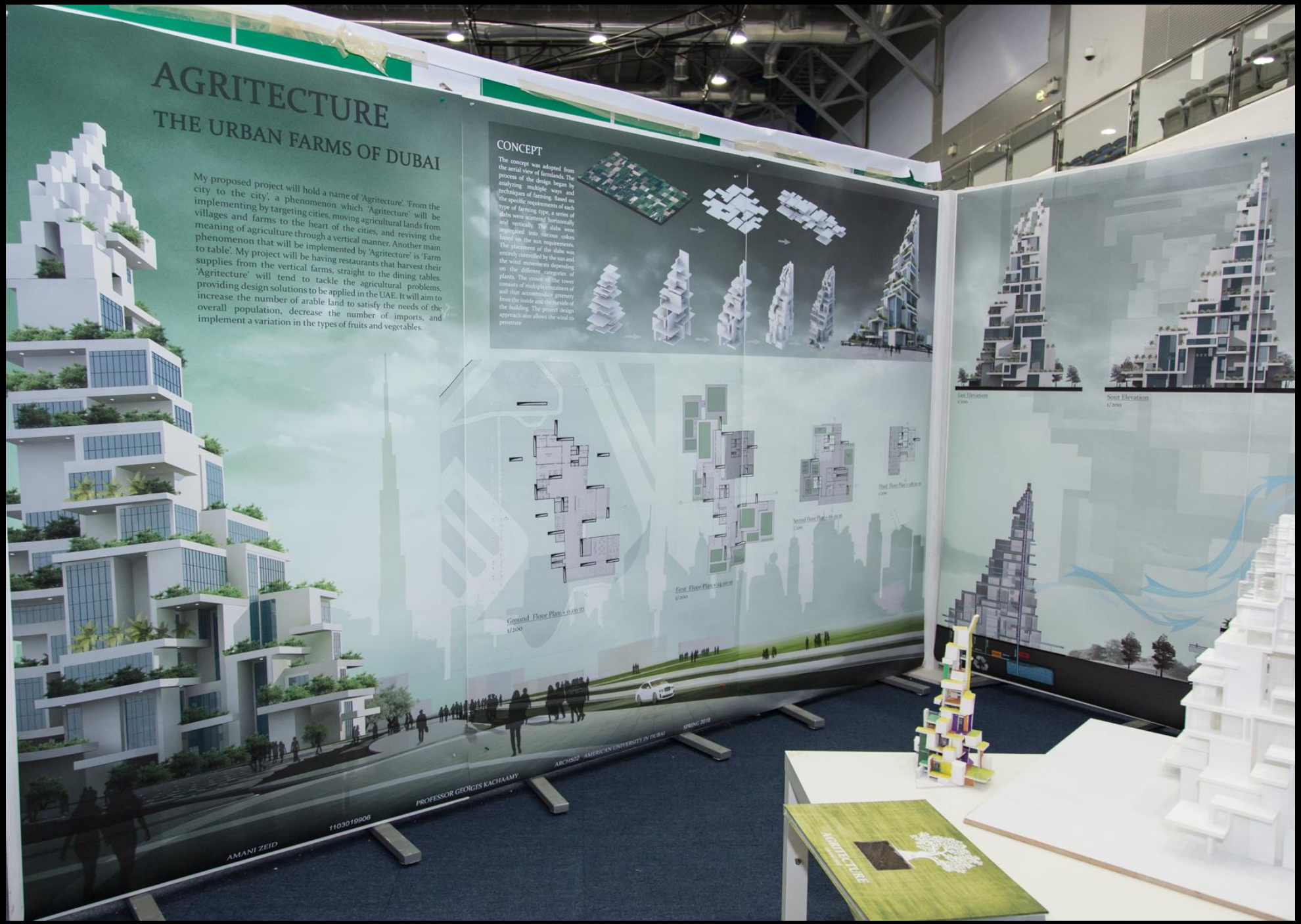
STACKING UNITS

ZONING


N
4 SITE PLAN
1 Level 7
2 Level 6
3 Level 8
CIRCULATION


AGRITECTURE
THE URBAN FARMS OF DUBAI
My proposed project will hold a name of Agritecture' From the city to the city, a phenomenon which 'Agritecture' will be implementing by targeting cities, moving agricultural lands from villages and farms to the heart of the cities, and reviving the meaning of agriculture through a vertical manner. Another main phenomenon that will be implemented by 'Agritecture' is 'Farm to table' My project will be having restaurants that harvest their supplies from the vertical farms, straight to the dining tables. 'Agritecture' will tend to tackle the agricultural problems, providing design solutions to be applied in the UAE. It will aim to increase the number of arable land to satisfy the needs of the overall population, decrease the number of imports, and implement a variation in the types of fruits and vegetables.
CONCEPT
AMANI ZEID
1103019908
PROFESSOR GEORGES KACHAAMY
ARCH502


AGRITECTURE
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CONCEPT
The concept was adopted from the aerial view of farmlands. The process of the design began by analyzing multiple ways and techniques of farming. Based on the specific requirements of each type of farming type, a series of slabs were scattered horizontally and vertically. The slabs were segregated into various colors based on the sun requirements. The placement of the slabs was entirely controlled by the sun and the wind movements depending on the different categories of plants. The crown of the tower consists of multiple containers of soil that accommodate greenery from the inside and the outside of the building. The project design approach also allows the wind to penetrate
Ground Floor Plan +0.00 m
1/200
First Floor Plan +4.00 m
1/200
Second Floor Plan +8.00 m
1/200
Third Floor Plan +12.00 m
1/200
East Elevation
1/200
South Elevation
1/200
AMANI ZEID
1103019906
PROFESSOR GEORGES KACHAAMY
ARCH502 - AMERICAN UNIVERSITY IN DUBAI
SPRING 2018
AGRITECTURE


Site Plan
1/1000
Second Floor Plan + 66.00 m
1/200

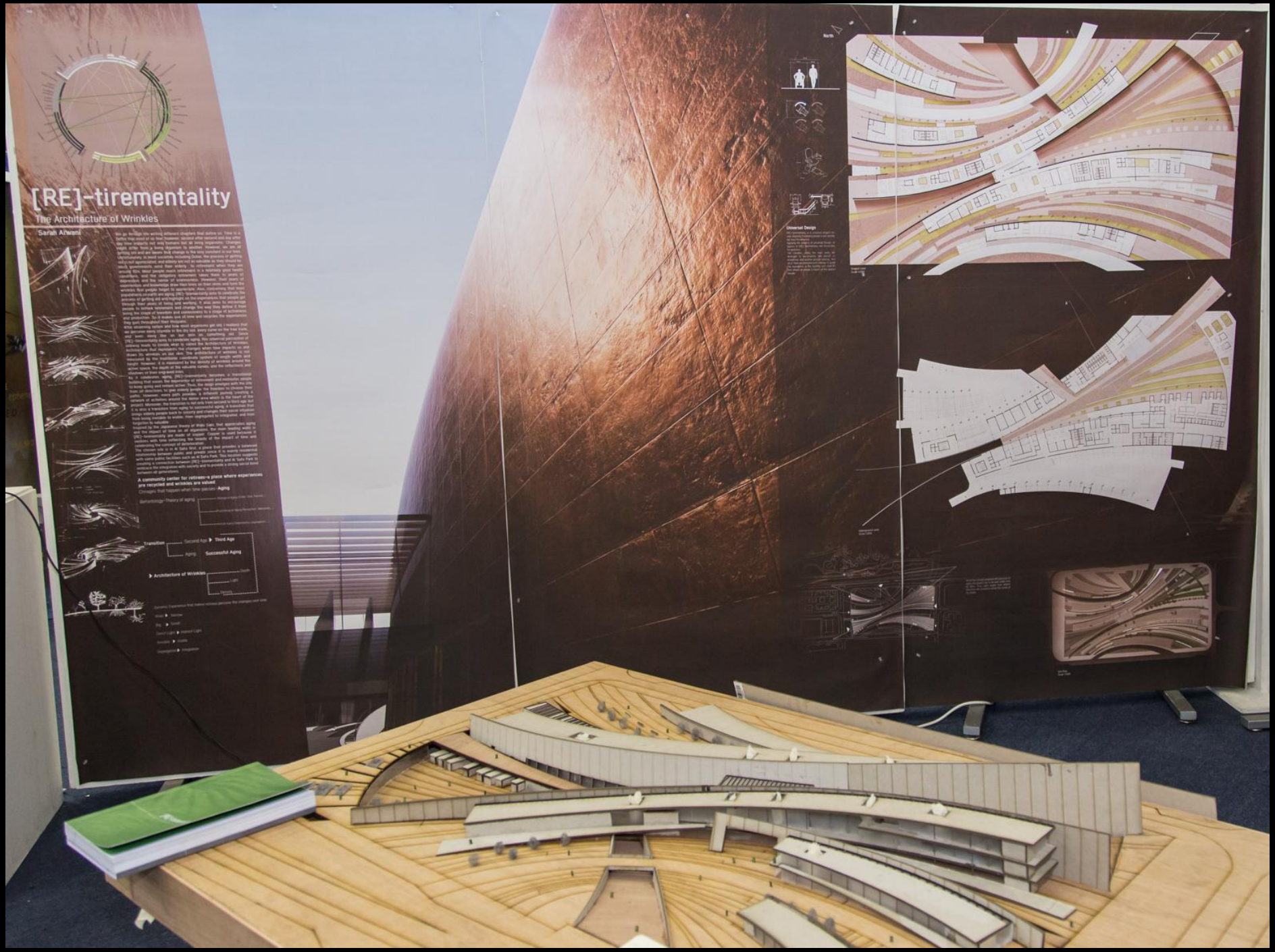

EBULOSITY


tamorphosis
MIMETIC RETREAT
Water Purification
Exhilaration
Serenity
The Meditative Platform
Hydroponic Reflections
Euphoria
The Epiphany
Topography

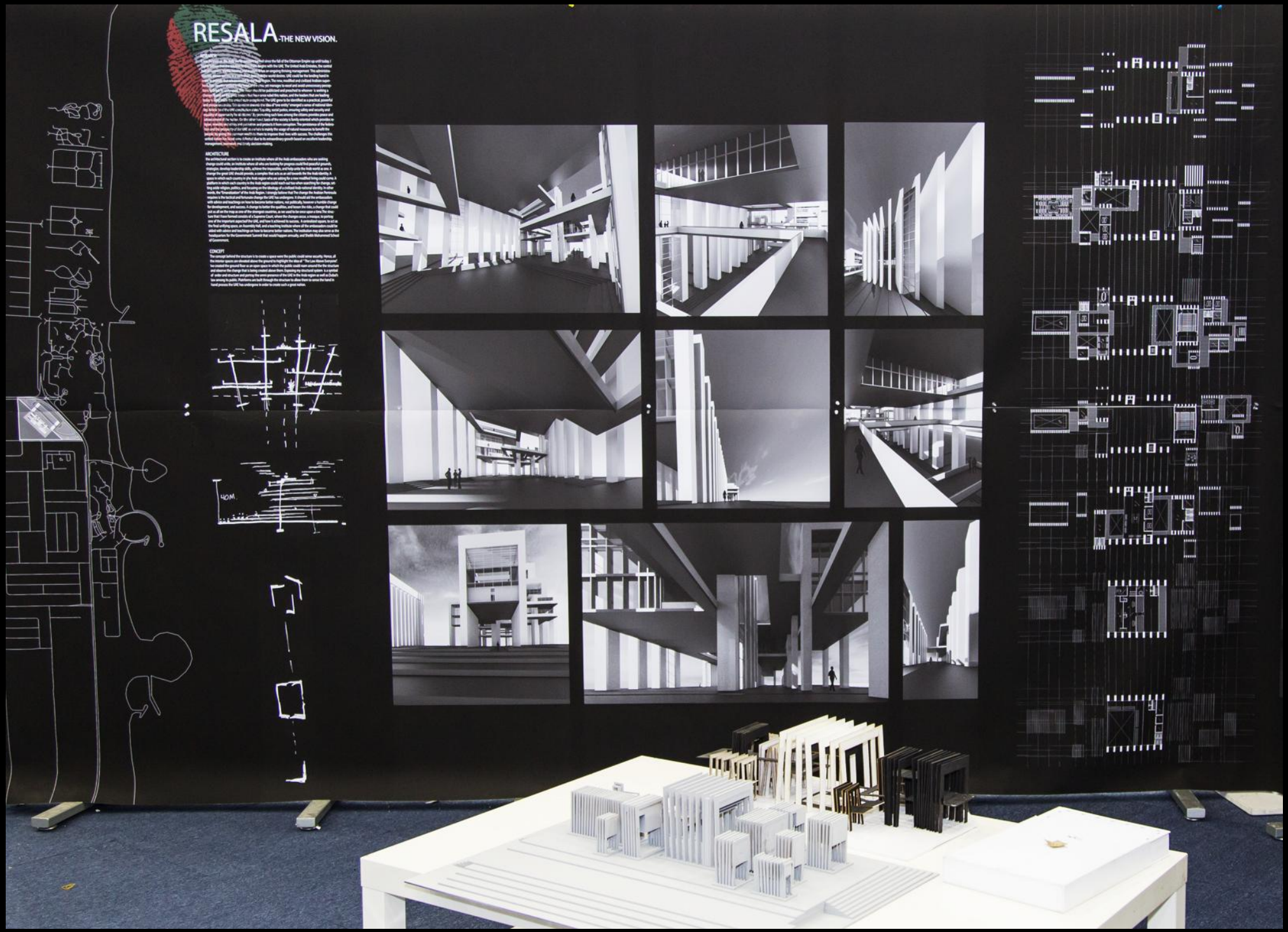

INFINIUM

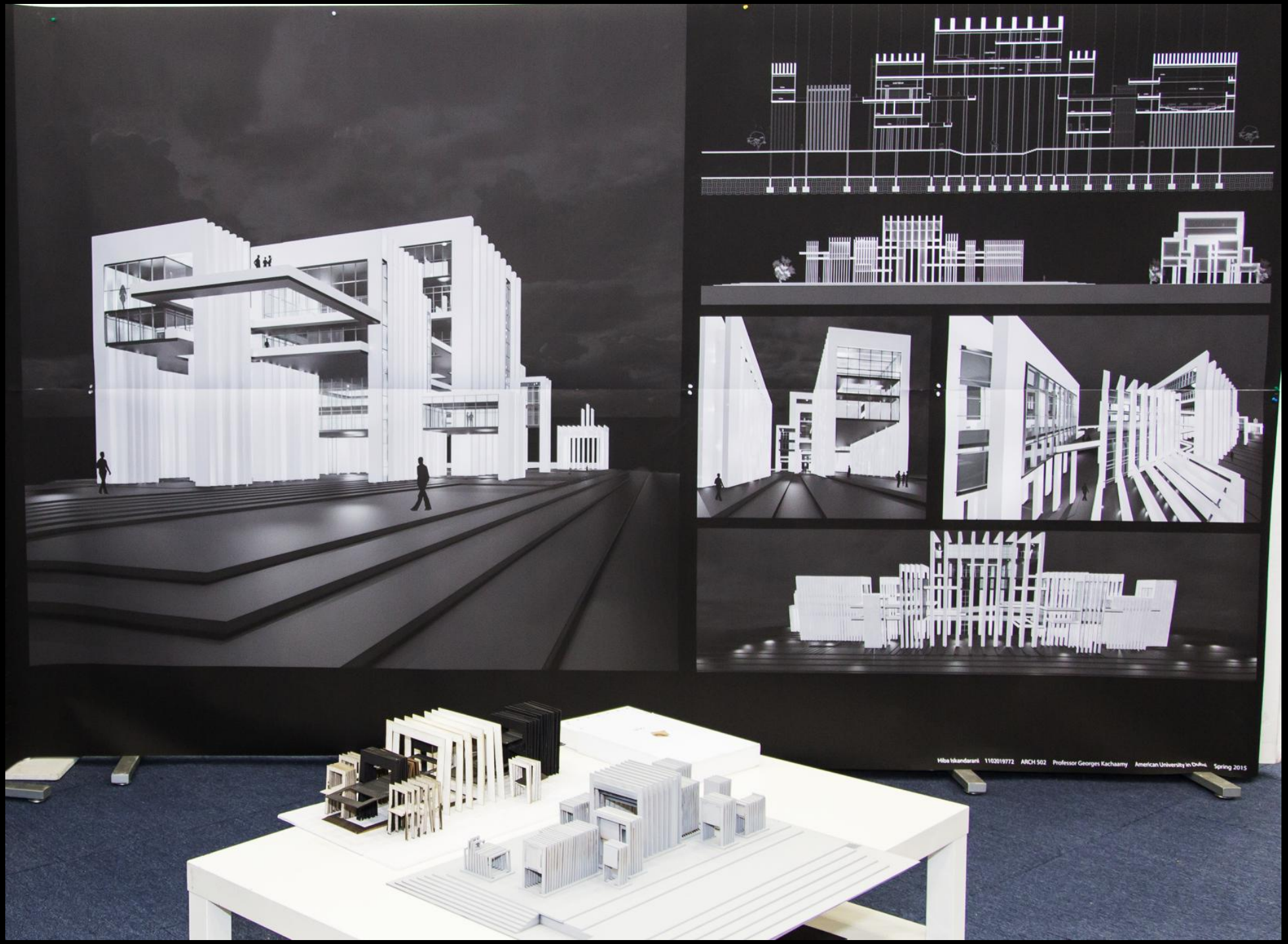

KNIGHTS


[RE]-tirementality
The Architecture of Wrinkles
Sarah Ahearn
[RE]-tirementality
Sarah Ahearn


[RE]-tirementality
The Architecture of Wrinkles
Sarah Alwani
Universal Design


RESALA. THE NEW VISION.

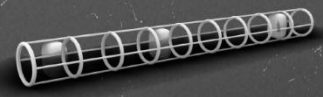

RESALA -THE NEW VISION.
ARCHITECTURE
CONCEPT
40M.


Hiba Iskandarani 1102019772 ARCH 502 Professor Georges Kachaamy American University in Dubai Spring 2015

Project Special Elements

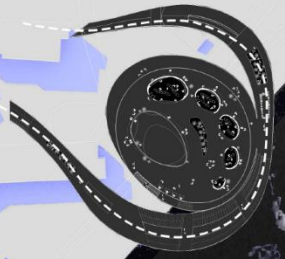
The Monorail Bullet Capsule

At the end of the Journey, a Bullet Capsule with 3 stations: 1 at the entrance at JBR, 1 at the parking core, and 1 at the contemplation space, shoots the visitor back for a quicker return



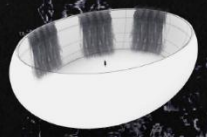
Ramp - The Fool's Journey

The Major Arcana of Tarot, an inspiration for Esoteria, tells of the "Fool's Journey" through the story arc of Tarot. It is an expression of the hero's journey - the culmination of curiosity, quest, challenge and growth before returning home, altered by the journey itself. The Ramp winding throughout Esoteria represents the visitor's very own Fool's Journey

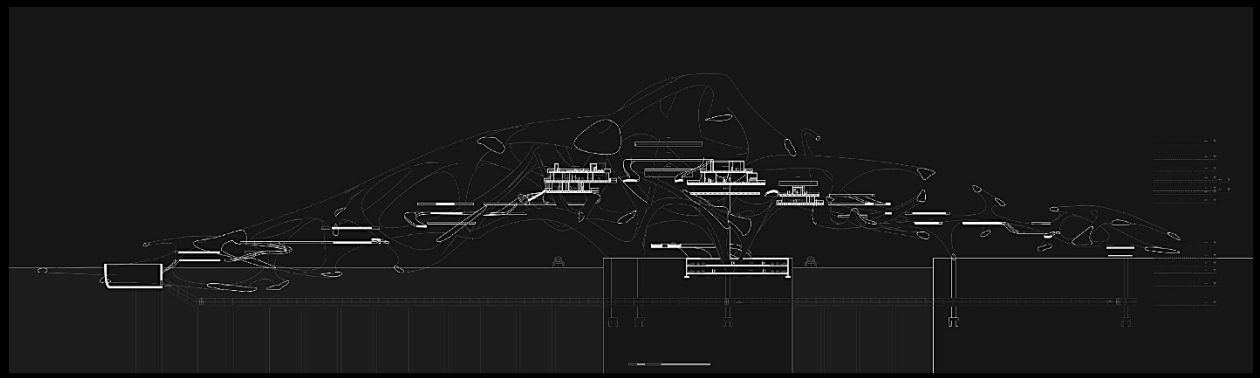


Contemplation Space

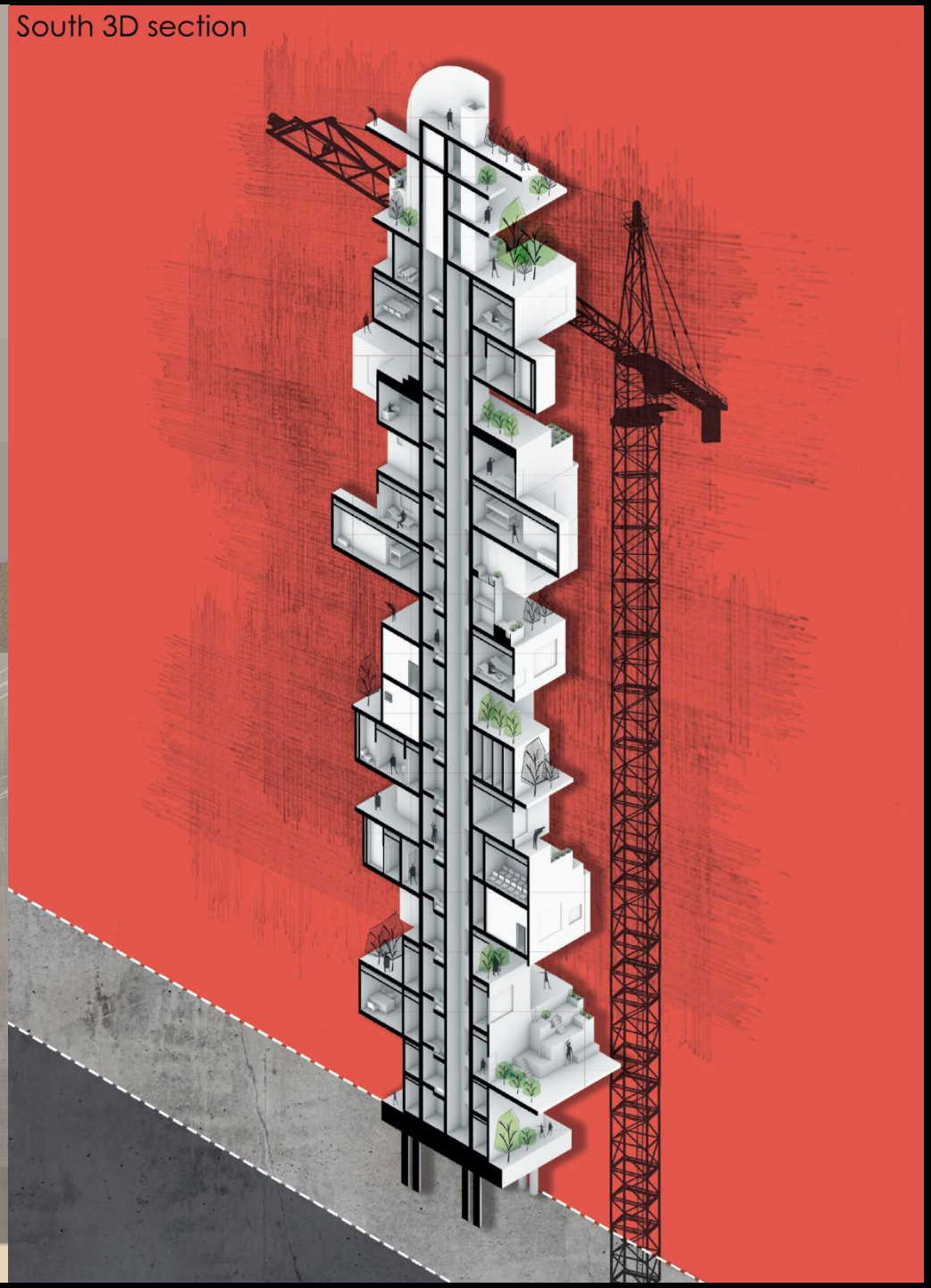
At the end of the Journey, the contemplation space is completely removed from Mundania - or the everyday world - as it dips below the sea level and funnels water in to surround the meditator in a wondrous waterfall and the clear sky above

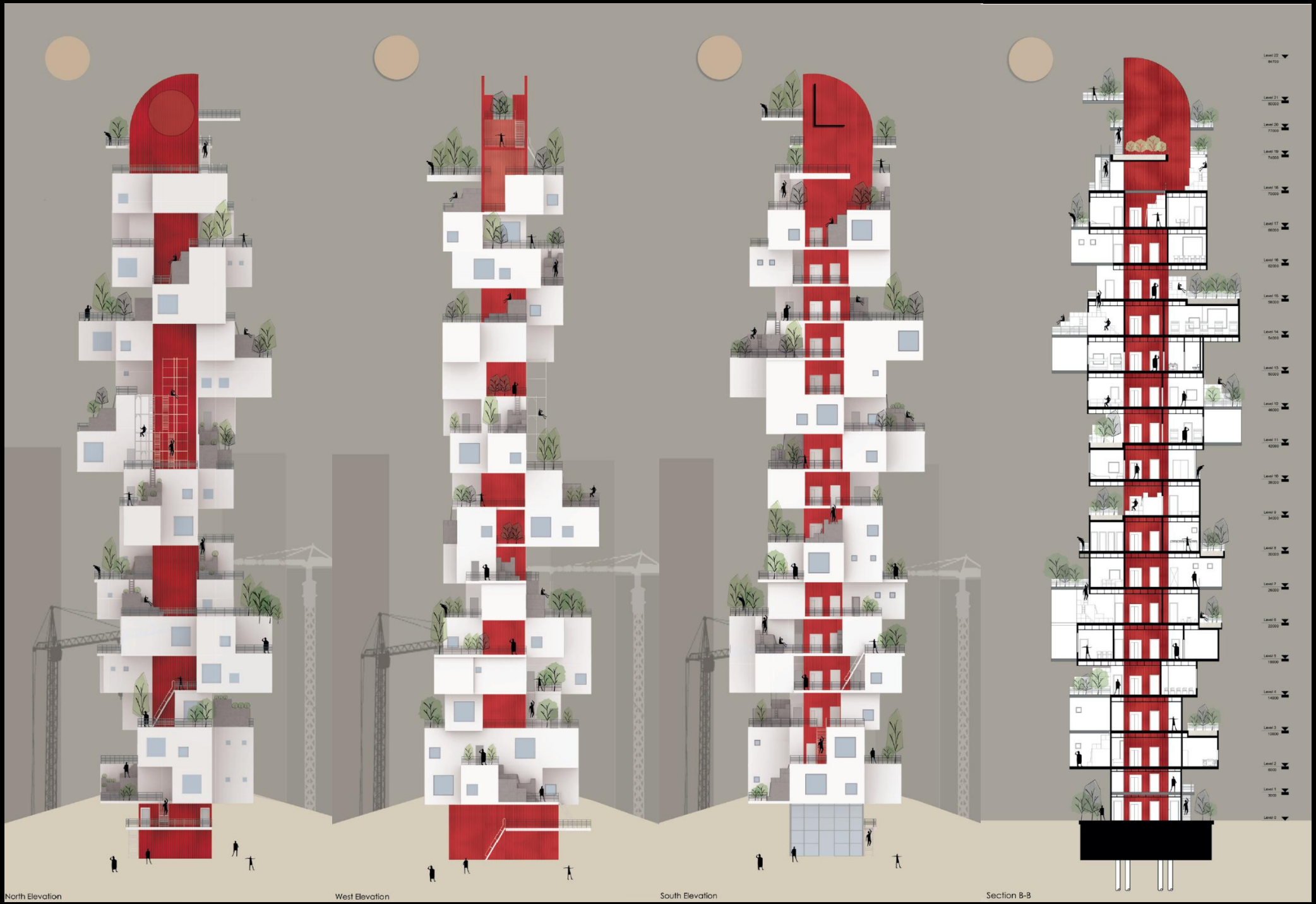


Site Plan

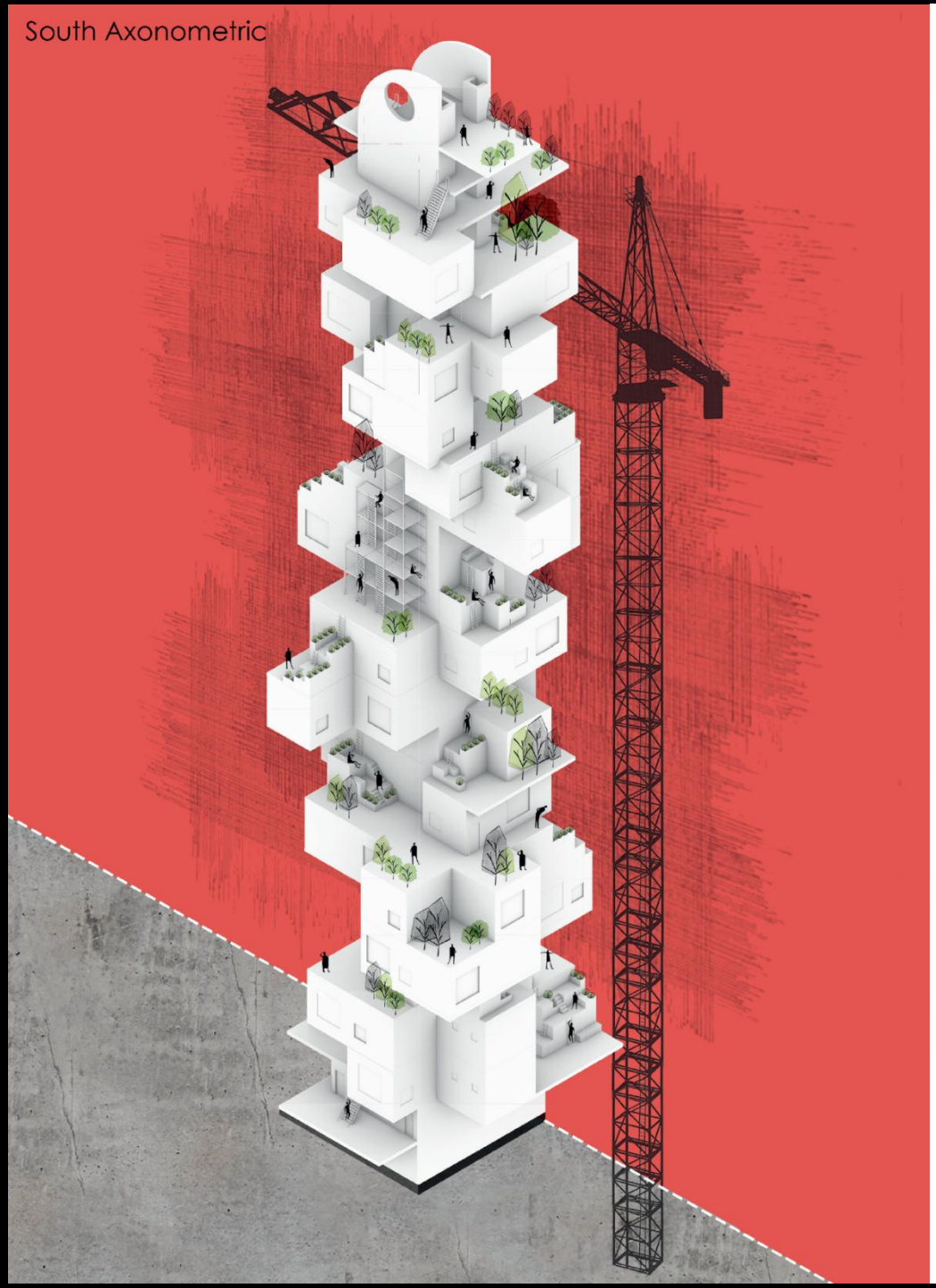


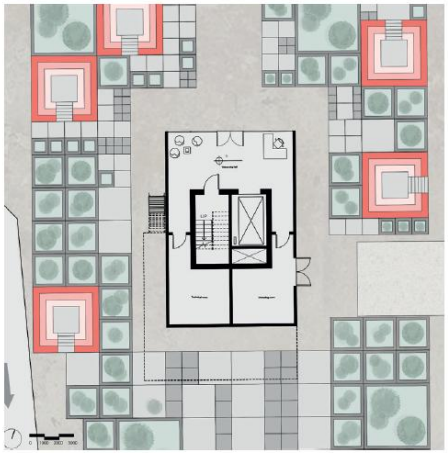
South 3D section

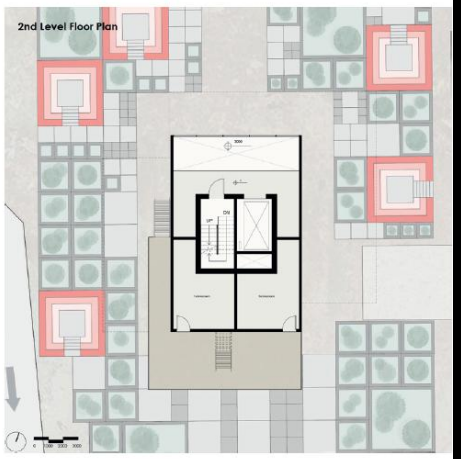


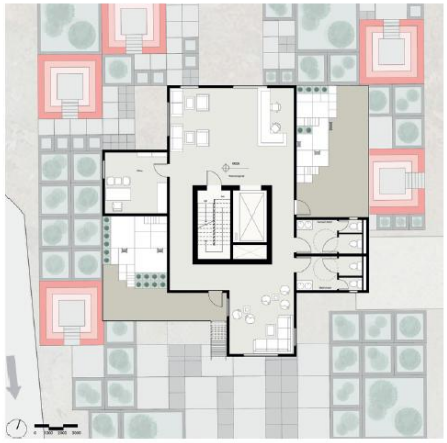

North Elevation
West Elevation
South Elevation
Section B-B

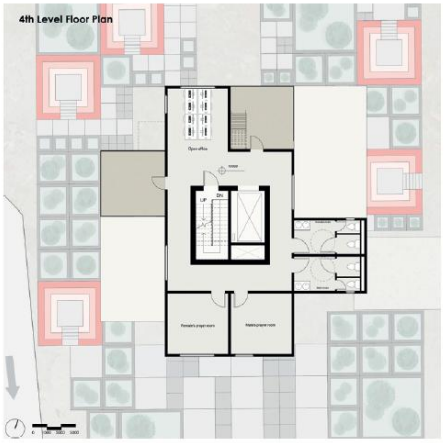
South Axonometric

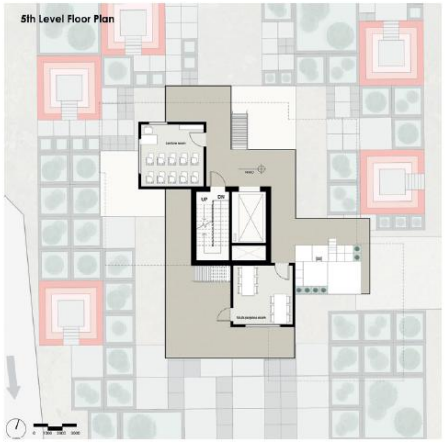


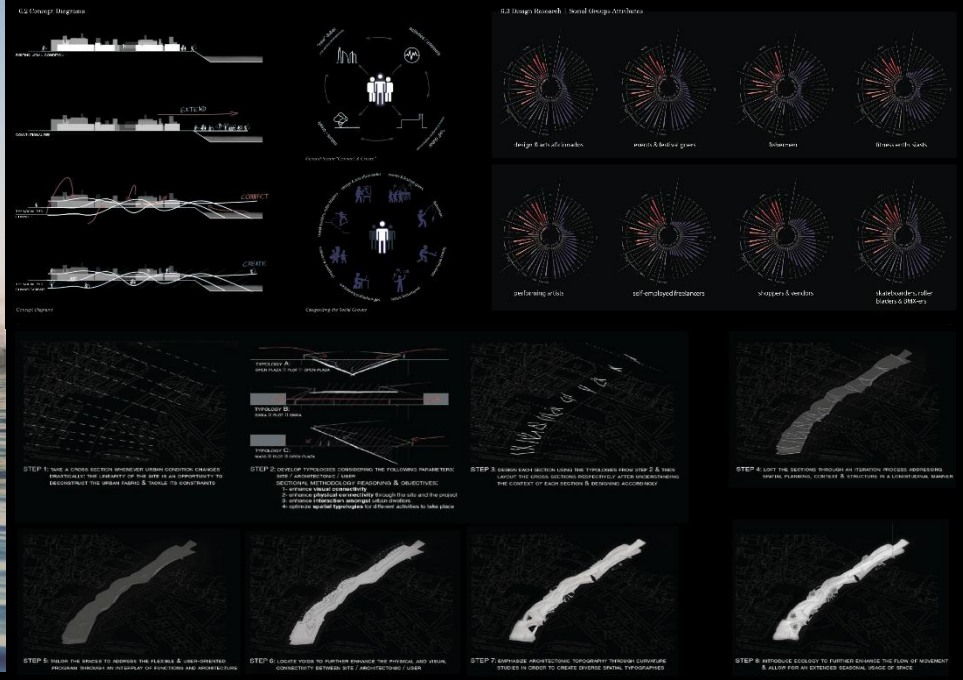












6.3 Design Research | Functions' Layering

An important aspect of The Social Pier is its ability to host the 8 social groups & provide an inclusive network of versatile spaces where they could congregate.

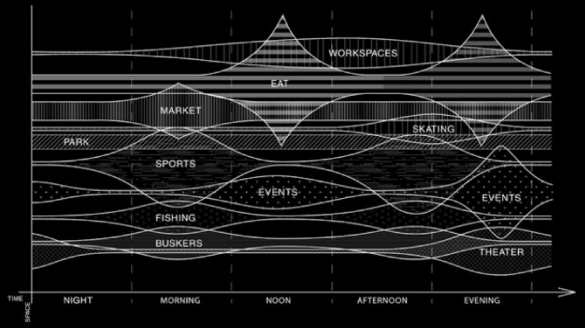
To do so, the spaces need to defy the conventional single-use spatial occupancy, and adopt spatial typologies that are able to interchange Functions on a continuous 24 hours cycle.

The scheme on the left shows how the project achieves that based on the researched activities of the 8 social groups, organized over Time and Space.

With this understanding, we deduce that The Social Pier is a product of 3 overlaps:

1. *User Overlap*
2. *Time Overlap*
3. *Spatial Overlap*

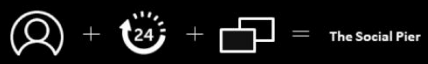
These overlaps allow for flexible spaces that are continuously shifting in function in order to accommodate the social groups' different needs on a 24h cycle.



Scenario:	active hours	space occupied
market	morning	S1
eat (F&B)	noon/evening	S2
workspaces	afternoon	S3
theater/events	late evening	S4

Conventional Scenario:

The Social Pier Scenario:



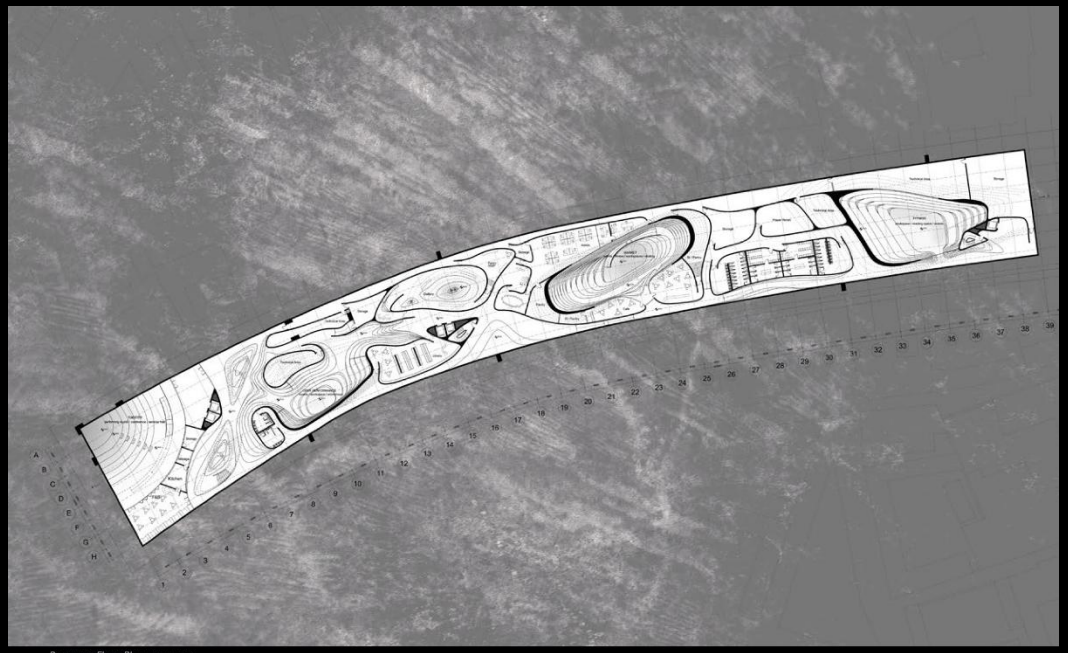
6.3 Design Research | Multi-Functional Scheme

Longitudinal Section with a diagram showing the breakdown of each zone and the potential activities that take place in that zone over 24h.

Diagram showing the interchange of functions on the pier zone over 24h

Site Plan - Not To Scale

Ground Floor Plan - Not To Scale

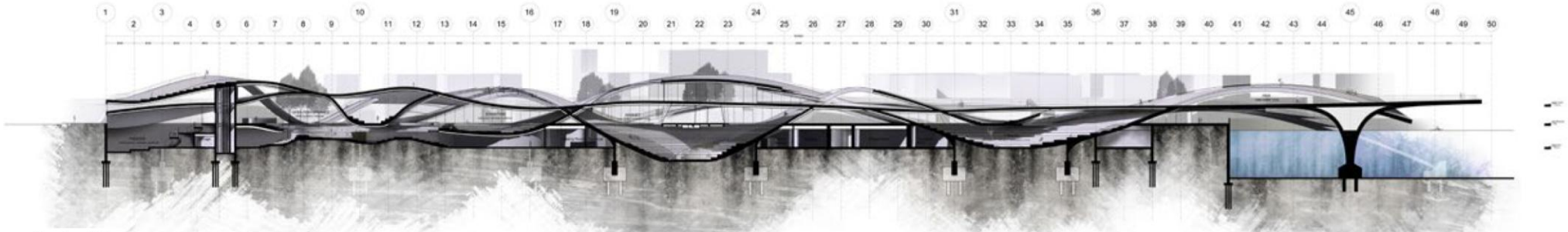


Basement Floor Plan - Not To Scale

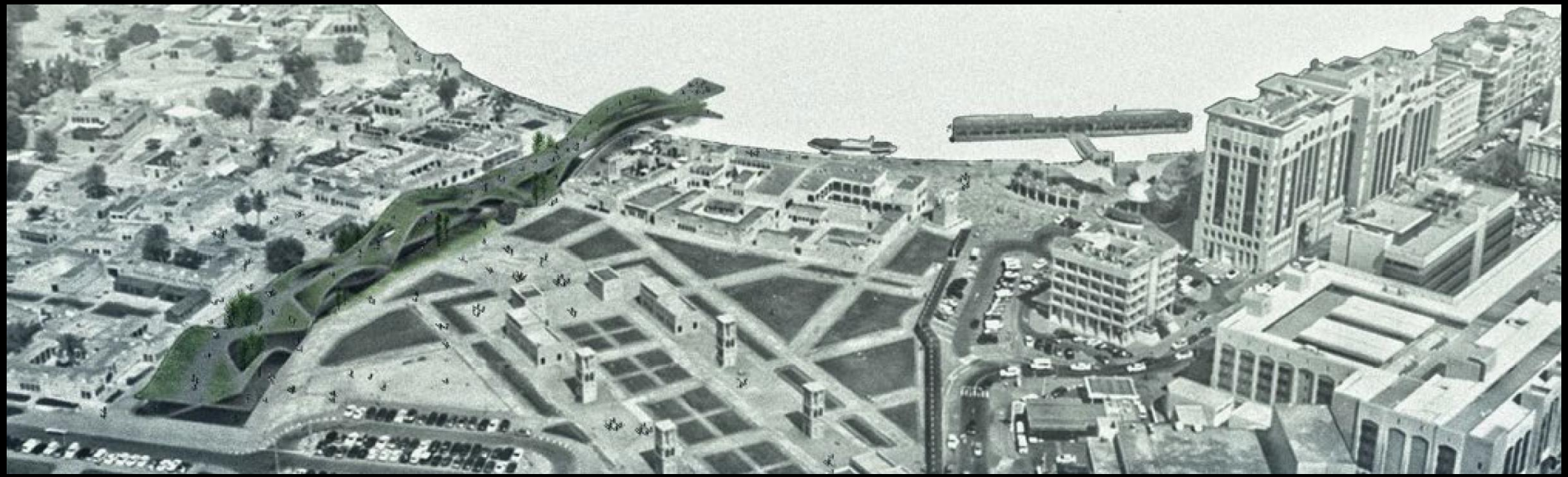
Upper Floor Plan - Not To Scale

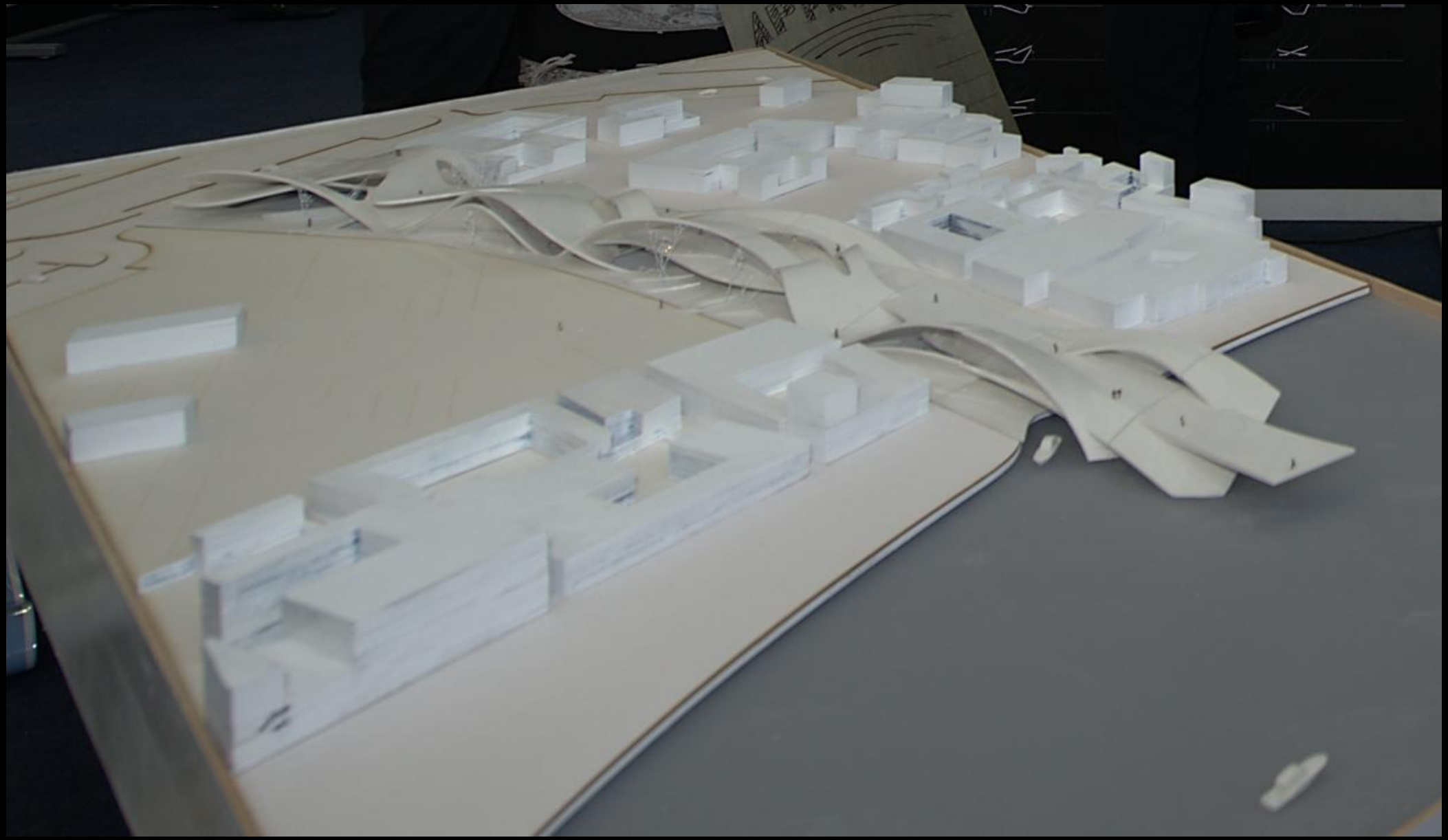
East Elevation - Not To Scale

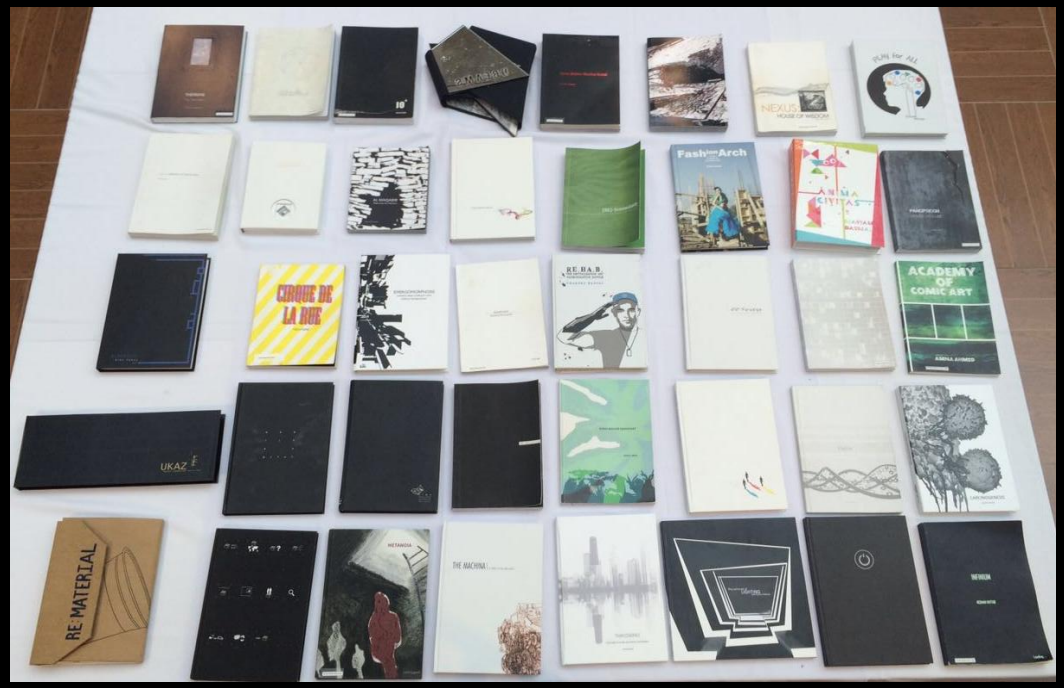
South Elevation - Not To Scale



Section AA - Not To Scale



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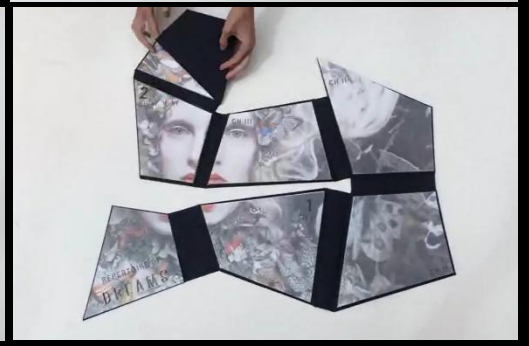

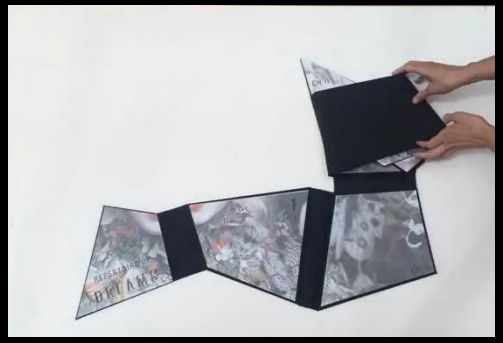

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