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CHAPTER 04

Exploring the concept of Infinity in Architectural and Urban Design through Kiesler, Archigram, and AI Innovations

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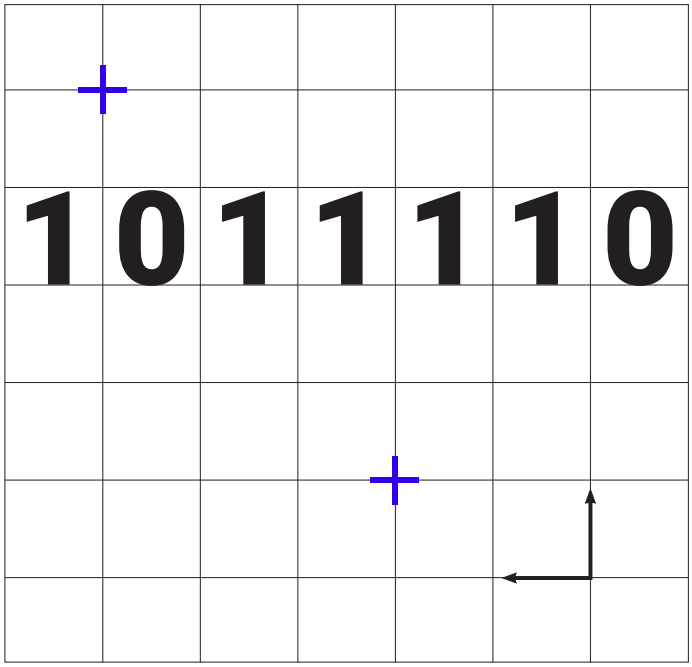

Introduction

Artificial intelligence (AI) extends the field of engineering and becomes relevant to various fields, including medicine, music, and architecture. What AI today offers in architecture is rapid designs of 2D or 3D images that are as endless as possible within a second, which was not possible by human designers. Even though robots' time-consuming nature defeated human speed, endless possibilities in architecture are not new concepts. While robots can generate spaces referred to by the text prompt, they also give many tools and options to remake new versions, change the resolution, and zoom in and out of this space. Since these robots create images regarding a textual explanation, they are called text-to-image robots. AlingDraw is the early modern version of a text-to-image robot, developed in the 1970s, and robots have quickly developed since then ***(Hai-Jew, 2024, p. 22)***. While the early versions were poor in the quality of the images or misunderstood the text, today, they can generate extra realistic and architectural spaces with creative solutions that can have a better resolution than rendered space since they are processing deep learning and understanding machines ***(Miao & Zhao, 2023, p.32).***

Consequently, artistic generative potential and time efficiency make it attractive to architecture as much as other artistic fields. Consequently, Artificial Intelligence become one of the subjects of architecture and design as it has the potential to be a futuristic tool for learning and finding spatial and artistic solutions for architectural design. One of the turning points of AI was triggered by Runway AI ML in 2022 when it introduced its new tool, Infinite Image ***(Runway, online).*** Numerous popular tools in Runway AI, like Gen 2 and Gen 3, can generate creative videos from text and images; infinite image is one of the underrated ones since it only guesses and suggests alternative pixels and extends the image frame. As it is dedicated to suggesting a frame that can extend and expand infinitely, this research finds infinite tools architecturally attractive since one infinity in space and its extension or endlessness has always been a challenging subject of architectural and urban design.

It is not a coincidence that technology has always been linked to architecture, and one of these attempts to create infinite space in architecture was seen right after the Industrial Revolution. This era marked the differentiation of architecture from construction, masonry, and building practices.

The establishment of RIBA in England and Ecole Beaux Art in France played a significant role in this shift ***(Reka et al., 2023).*** Since then, architecture has continuously pushed the boundaries with new concepts, ideologies, techniques, and methods while considering sustainability and feasibility. Gravity and natural forces were not the only challenges of architecture since architects were now seeking endlessness and mobility.

Therefore, concrete and steel were vital conceptual and physical materials that pushed the boundaries of architecture to create ideas of infinity, endlessness and mobility. Until then, architecture was created and designed using more fixed, durable, rigid and traditional materials for protective, permanent and monumental functions. Thanks to industrial materials, architecture could be imagined in lighter, more fluid, and more transparent ways. Two crucial names, Kiesler and Archigram, combined their materials with their futuristic approach of endless to propose a space that can extend and expand harmoniously, blending with its context and surroundings while architecturally answering prospective futuristic problems.

Frederick Kiesler's ***"Endless House" (1950s)*** project is an essential example of how the concept of infinity in architecture is explored and expressed experimentally. Developing this project in the 1950s, Kiesler aimed to push the boundaries of spatial experiences and perceptions by going beyond traditional architectural forms. Also, Archigram's ***"Plug-In City"*** project is one of the most important and influential projects of Archigram, an architectural movement that emerged in the early 1960s. This project highlights infinity's importance in architecture and its potential to change architectural thinking radically.

Kiesler and Archigram were influential designers who pushed the border of endless spaces; however, Runway AI still explores infinite space today. This chapter explores how endlessness can be implemented in architecture and urban design through Kiesler, Archigram, and Runway ML Infinite images to explore different possibilities for endless design in the architectural and urban realm.

While the endless was a debatable subject in dealing with material and structure in the 20th century, artists and designers were looking for new techniques and tools for infinite spaces, which is why it is still a subject to deal with, even with artificial intelligence. While users can extend their picture framed by one clink in free online AI platforms, it also suggests three alternative expandible options for users to choose the appropriate one to continue. Similarly, Kiesler and Archigram suggested endless space expansion according to users' needs. Therefore, the idea of endless in architecture has something in common with user needs, while their tools to create these spaces are entirely different.

At the same time, this desire to create endless, infinite space was the first flame of this research. Since there is no unique technique and tool for endless space, there is no singular definition for endless space and architecture. This study investigates how space can be interpreted to design endless and how these interpretations improve the space in terms of endlessness. It aims to explore the theoretical meaning behind endlessness through similarities and differences among three architectural designers, Kiesler, Archigram and Runway AI ML, in terms of implementing infinity with their unique techniques and tools.

It seeks to understand and explain the transformation of the meaning of endless and infinity in architectural space from the late 19th century to today's artificial intelligent technology. Why one of the challenges of architecture is its infinity and how architects, designers or robots try to deal with these problems with their techniques. The research will compare these designers historically with their context to find out if there is any original formulation or modulation to get endlessness in the space that AI can imagine today that has not been considered in the past.

Material and Methods

Based on qualitative research methods, this research limits its case studies to three main architectural space generators that deal with endless space: Kiesler, Archigram and Runway AI ML. To do so, it applies history-grounded theory along with data collection and analysis. First, three infinite space generators, Kiesler, Archigram and Runway AI, will be relatively examined to see how each designer takes endlessness and evaluates and implements it into their design within their historical term, architectural and structural materials and techniques.

Although the designs of Kiesler and Archigram have never been built, numerous 3D models, architectural drawings, sketches, and text will be collected and evaluated as historical data to analyse the concept of endless available to understand their missions. Since performing and experimenting with robots of Runway AI ML is possible today, the author will demonstrate how Runway creates infinite space by using pixels of its digital libraries. To do so, Kiesler's Endless House will be used to demonstrate how Runway ML could predict the extension of this house in the future. As Runway AI ML is a text-to-image robot, it will be asked to "continue to space" to see how it explores and reinterprets Kiesler's current proposal.

This experimentation will be done repetitively by developing texting and helping the robot to "extend or expend the space as Kiesler" to see how the result changes by dictating to the robot and exploring whether the robot proposes the same as Kiesler's extension or blending with Kiesler's to put a new original one. Then, three of them, Kiesler, Archigram, and Runway AI, will be compared to see the similarities and contrasts among their definition of endless space and how they implemented it through their unique features, including using technology, creativity, their envisions, flexibility, repetitive or modular tools, techniques.

Afterwards, it will discuss whether robots today can propose a new modular structure or creative approaches to designing infinite space that is different and whether the idea of infinity is spatially more decadent and more original from the past or not robots today can propose a new modular structure that is different and original from the past. In conclusion, it will present how the meaning of endless and its application tools and techniques have changed since the late 19th century.

Finally, many AI companies are still developing ethical considerations related to working with AI robots. Therefore, many open AI programs limit specific words and terminology to prevent ethical risks. Numerous prohibited words in Runway, including nakedness, violence, body components, and others, were considered during this study's collaboration with AI robots.

Endless Space: Is it a fantasy or a method?

The concept of endless space challenges architects to push beyond traditional spatial boundaries and design approaches. There are many ways to get endlessness in architecture, such as spatial continuity with open plans and interconnected rooms, seamless integration with nature by using organic forms and openings, circulations to provide continuous movement, extended horizons, and infinite aesthetics with materials like mirrors. Overall, the focus is on endlessness, exploring fluidity, continuity, and connectivity to create environments that surpass physical space's limitations ***(Hertzberger, 2000, pp. 14-15).***

Architects and theorists have long been drawn to endless space for inspiration and creative exploration. Peter Eisenman believes infinite space is a philosophical abstract term. ***(Hoteit, 2015)***. However, critics argue that endless space is nothing more than a fantastical abstraction, divorced from the practical realities of architectural practice ***(Libeskind, 2000).***

While the concept may hold aesthetic appeal and symbolic significance, they contend it could offer more tangible solutions to real-world design challenges. Indeed, the sheer scale and complexity of creating truly endless spaces within the limits of the built environment present challenging difficulties.

As such, endless space is often dismissed as an unpredictable fantasy better suited to the realm of art and literature than to the practice of architecture. Despite its fantastical implications, some architects and designers argue that endless space can serve as a valuable method for reimagining spatial experiences and pushing the boundaries of architectural practice. By embracing the concept of endless space, architects are encouraged to think beyond traditional notions of form and function, opening up new possibilities for innovative design solutions. This approach often involves using advanced computational tools and digital technologies to simulate and explore spatial configurations that would be impossible to achieve through conventional means. Works of 21st-century architects like Zaha Hadid and Frank Gehry apply fluid, organic, parametric forms ***(Taha, 2023),*** while SANAA prefers minimalist transparent volumes to emphasise void with lights to create effects of infinity in space ***(Barbuica, 2017).*** achieving an infinite effect in architecture with contemporary technology is one common approach to physically and aesthetically representing infinity.

Unlike these contemporary architects, Adolf Loos's genius designated his raumplan, trying to blur the boundaries of the space. While this is inviable from the exterior of his building, this was an attempt to have boundless space within the boundary, which was the inspiration source of Kiesler's Endless House ***(Ireland, 2024, p. 68).*** Even though Loos has not crystallised his concept as boundless or endless, the concept of endless space was fertilised by 20th-century surrealist designers ***(Mical, 2004).*** Two influential architectural figures, Frederick Kiesler and Archigram, have developed projects that radically transformed and moved the discipline forward in different periods and with different approaches by adopting the concept of infinity in architecture ***(Philips, 2017).*** The works of these designers explored the potential of space in new and innovative ways, expanding the boundaries of space, questioning traditional architectural norms, and centring human experience.

Kiesler Endless House

Kiesler's 'Endless House' is not merely a name but a symbol of a timeless and limitless space where a continuous circulation between interior and exterior can be experienced.

Kiesler envisioned the design of a structure that accommodated people and interacted with them, challenging the traditional understanding of architecture and expanding the spatial boundaries ***(Kiesler, 1966).*** Infinity in architecture exceeds its physical dimensions, incorporating emotional and mental experiences. His house reimagines architecture as more than a structural framework but a tool that explores human experiences.

This approach seeks to unveil the infinite potential of space by questioning architectural boundaries and norms. The importance of infinity in architecture is that space is seen as an entity that ceases to be static and constantly changes, transforms, and interacts with people ***(Kutluay, 2022).*** The project emerged from Kiesler's visionary approach to architecture, believing buildings should adapt to human needs rather than impose rigid structures upon inhabitants. He believed architecture should transcend fixed forms and spatial constraints, offering inhabitants freedom and openness ***(Rosenbaum, 2022).*** The Endless House was conceived as a fluid, continuous environment where walls, floors, and ceilings seamlessly merge. The elasticity of the building comes from reinforced concrete on a wire mesh ***(Warlamis, 2005, p.31).***

Thanks to the Industrial Revolution, architects were enabled to push the boundaries of the material. Kiesler envisioned a space without sharp corners or rigid geometries, where movement flowed effortlessly from one area to the next. It embraced modularity, allowing for endless reconfigurations and adaptations. He conceived of the house as a series of interchangeable components that could be assembled and disassembled according to the needs and desires of its inhabitants. He was inspired by incorporating biomorphic shapes and organic forms into the design of the Endless House. These sculptural elements evoked a sense of vitality and dynamism, blurring the distinction between architecture and art. He integrated light, sound, texture, and colour into the design, stimulating the senses and engaging the mind, body, and spirit, as his vision was to create an immersive sensory experience for inhabitants.

The development process of the building involved a combination of theoretical exploration, conceptual design, and experimental prototyping. He produced numerous drawings, models, and sketches to articulate his vision, refine the design's details, and collaborate with artists, engineers, and artisans to implement his vision for the Endless House ***(Figure 1).***

He drew inspiration from diverse sources, including Surrealist art, avant-garde theatre, and cutting-edge technology ***(Breton, 1969).*** While the Endless House's physical realisation was limited since it was not built, its conceptual impact endured. Kiesler's visionary approach to architecture influenced subsequent generations of architects, artists, and designers, inspiring them to push the boundaries of spatial exploration and creative expression. Thus, the endlessness in Kesler's Endless House proposed fluid organic forms with infinite functional options, such as interior and exterior, which were melted into each other by erasing the boundaries of the space. Architectural critics believe that the only way for it to become endless is by never being built and finished as if it is an ongoing project ***(Colomina, 2000, p.66).***

Figure 01: Endless House ***(Farago, 2015).***

Archigram Plug-in City

Emerging amidst the rapid urbanisation and technological advancements of the 1960s, Archigram launched a task to face the challenges posed by inhabitants and urban sprawl ***(Sadler, 2002, p.14).***

In response, they developed Plug-in City, a rebellious urban utopia illustrated by its modular building, adaptability, and integration of cutting-edge technologies. This innovative concept conveyed more than just a static cityscape; it represented a vibrant, ever-evolving organism tailored to meet its dwellers' growing demands and aspirations ***(Cook, 1991).***

At the core of Plug-in City, architect Peter Cook embraced the principle of modularity ***(Wang & Wang, 2021).*** He envisioned a city with standardised pieces or "plugs" that could be effortlessly assembled, dismantled, and reconfigured. These modular units functioned in various ways, from residential dwellings and commercial areas to transport passageways and utilities. The modular nature of Plug-in City presented exceptional flexibility, fostering endless expansion and customisation to adapt to shifting demographics and evolving urban dynamics ***(Sadler, 2005).***

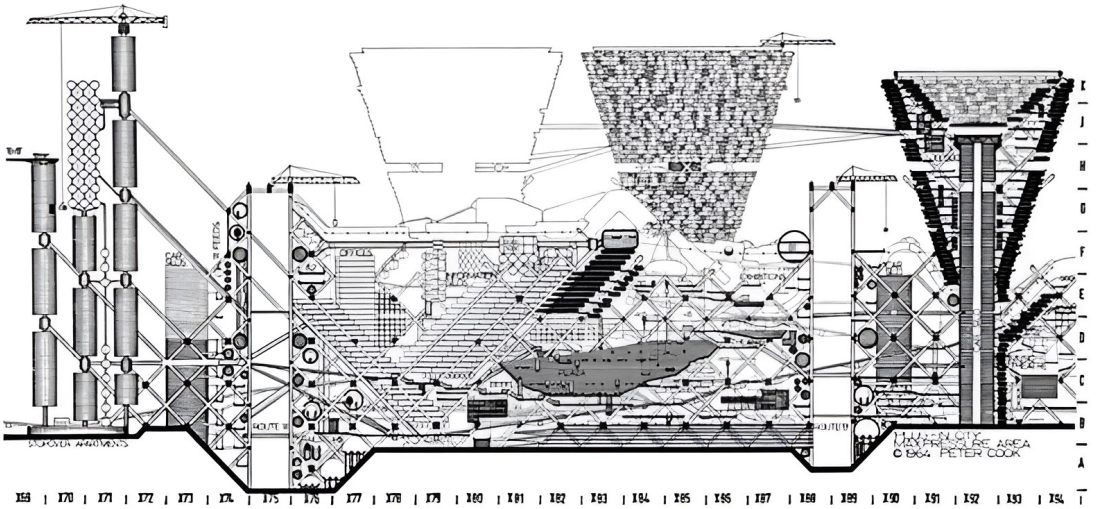

Figure 02: Plug-in City, Archigram ***(Sadler, 2005, p.19).***

A crucial aspect of Plug-in City was its ingenious transportation infrastructure, featuring elevated walkways, automated conveyor belts, and pneumatic tubes weaving through the urban landscape ***(Figure 2).*** Archigram envisaged a city where mobility seamlessly blended into daily life, lessening dependence on traditional transportation methods like cars. This approach prioritised pedestrian-friendly environments and efficient transit systems, highlighting a devotion to urban mobility and accessibility.

Plug-in City blurred the conventional boundaries between different functions and activities, promoting a dynamic mix of mixed-use spaces that evoked social interaction and community engagement. Industrial, residential, commercial, and recreational areas coexisted within the modular framework, improving the urban fabric. Archigram's vision supported diversity and inclusivity, leaving strict zoning codes that historically governed urban planning practices.

The project was a commitment to technological innovation and sustainability. Archigram imagined an urban environment where progressive energy generation, waste management, communication, and information exchange systems seamlessly integrate into the urban fabric. Plug-in City boldly questioned the status quo, releasing our understanding of architecture and urbanism. Their design transforms the meaning of cities expected to be built in endurance material and solid structure to sustain their permanent value into a city built with mass production by light industrial material as an ongoing, never-ending process ***(Abel & Foster, 2012, p.105).*** It visualised cities as dynamic, boundless structures composed of modular components that could be easily replaced and updated, surpassing traditional urban planning principles ***(Langevin, 2011).*** This concept exemplified the transformative power of infinite possibilities in urbanisation, infusing hope and optimism for the future of cities. The project represents Archigram's futuristic vision, characterised by modularity, flexibility, and technological innovation. While the physical realisation of Plug-in City may have puzzled architects, its concepts remain relevant in contemporary discussions of urban design and sustainability.

Thus, Archigram presented an original creative proposal which suggests the concept of endlessness with its modular technological infrastructure that provides mixed-used functional opportunities, extending in horizontal and vertical axes in any direction infinitely. The enduring relevance of Archigram's concepts reassures us about the sustainability of urban design, providing a sense of continuity and stability in the ever-changing urban landscape.

Runway AI ML Infinite Image

Developments in machine learning have resulted in the creation of highly effective generative models capable of producing lifelike images. Using GANs, ANNs, and Deep Learning, these tools can imagine and visualise spaces like human beings. One of these tools, Runway ML's "Infinite Image" feature, is a leading feature, allowing users to explore a limitless array of images generated by deep neural networks. This innovative feature harnesses generative models, latent space representation, random sampling, and iterative generation techniques to design and produce endless visual spaces ***(Sachs-Hombach et al., 2023).***

By utilising these practices, users gain access to a virtually boundless realm of image variations, fostering creativity and facilitating the exploration of visual expression. At the heart of Runway ML's Infinite Image tools lies generative modelling, a subfield of machine learning concerned with creating new data samples from a given distribution. Generative models learn the underlying probability distribution of a dataset and use this knowledge to produce new samples that resemble the original data. In the case of image generation, these models aim to produce images that exhibit similar characteristics to those present in the training dataset.

Generative Adversarial Networks (GANs) or Variational Autoencoders (VAEs) are known as generative models that employ a latent space representation to encode the underlying structure of the data in a lower-dimensional space ***(Elasri et al., 2022).*** This latent space serves as a compressed representation of the data, capturing essential features and variations in the dataset. Each point in the latent space corresponds to a potential image that the model can generate.

Runway ML likely starts by randomly sampling points from the latent space to generate images using the Infinite Image feature. These sampled points serve as seeds for the image-generation process. The generative model then decodes these latent representations into images using the learned mapping from the latent space to the image space. This process produces diverse images that exhibit various visual characteristics.

User interaction plays a crucial role in guiding the image generation process. Users can provide feedback on the generated images, indicating their preferences and guiding the model towards producing images that better match their expectations. This feedback loop facilitates an iterative refinement process, wherein the model adjusts its parameters based on user input, generating images more aligned with user preferences ***(Carreon et al., 2023).***

Since Runway ML's Infinite Image feature combines and blends the supremacy of generative modelling and undeveloped space representation to enable the creation of a virtually infinite variety of images, it offers users an interactive and exploratory platform for generating and discovering new visual concepts by leveraging deep neural networks and user feedback. It provides valuable insights into the intersection of machine learning and creative expression, and it is easy to access and experience for those who want to explore it.

Experimenting with Runway AI ML Infinite Image

Considering Kiesler's Endless House has the potential to be redeveloped and implemented digitally, it takes the attention of the architects who want to explore the geometry and spatial richness through digital lenses, like walking inside of it by using Augmented Reality or Virtual Reality (***Niblock, 2022).*** This time, it is taken to expand in Runway ML to see how the robots will predict or develop its extension in both horizontal and vertical directions. To use Runway ML infinite image, users should import the image they want to develop and extend into the online platform ***(Runway).*** Its interface is user-friendly, so to use Infinite Image in Runway AI, anyone can follow these steps:

1. First, anyone who wants to use Runway needs an account. After having one, the user can log in to your Runway account by visiting Runway ***(https://runwayml.com).***
2. The user must create a new project by clicking ***"New Project"*** to start a new one. Afterwards, a template that supports image generation or editing should be selected to work on it.
3. In the project settings, choose the ***"Infinite Image"*** model from the available models list, which should be chosen to experiment with generating endless image variations from a single image.
4. An image that wants to be extended infinitely should be uploaded. This image will be the starting point for the model to generate extended images.
5. Afterwards, parameters should be configured by texting the prompt inside the text box. Users can dictate the direction of the extension ***(left, right, up, down),*** the number of iterations, and other customisation options.
6. After setting everything up, the user should click the ***"Run"*** button to start the image generation process. The model will begin creating an extended version of the uploaded image.
7. The user can review the output Once the model has generated the extended image. If satisfied, the image can be exported in the desired format.

To practice this tool, the image of Kiesler's Endless House was imported into the Runway ML infinite image tool ***(Figure 3),*** and then the prompt ***"continue to build"*** was added to the textbox. After clicking the generate button, Runway proposed an extension of the image's background with letters on it ***(Figure 4).***

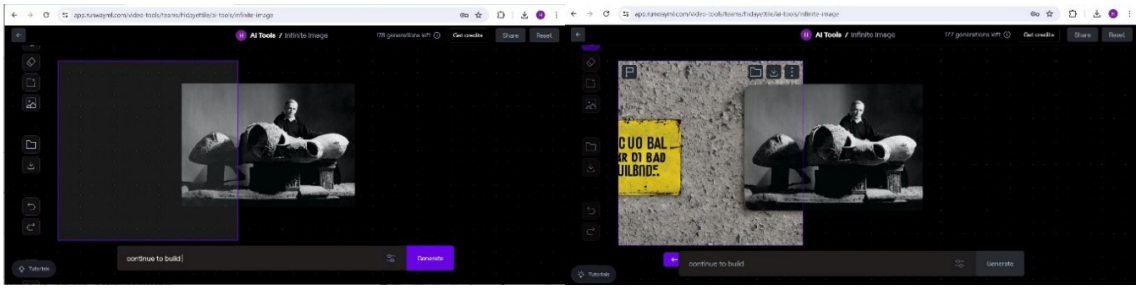

Figure 03: (left) The image of Kiesler and Endless House and the first prompt ***(text box).***
Figure 4: (right) shows the result of the first prompt ***(created by the author in Runway ML, 2024).***

As Kiesler suggested in his endless house, the first attempt was unsuccessful in creating continuity regarding physical and mental boundaries. Therefore, in the second attempt, the robot was informed about how to regenerate the extension of the building by being described as "continuing to build like Kiesler Endless House" ***(Figure 5).*** However, more was needed for the AI to recognise how or what it should design or expand as Kiesler House.

In the next attempt, the "extend the building as organic as Federick Kiesler's Endless House" was sent to the robot. Since the definitions were getting more specific and detailed, robots produced more fluid organic exterior spaces compared to the previous one; however, it still needed to be an original proposition as an endless scenario or formulation ***(Figure 6).***

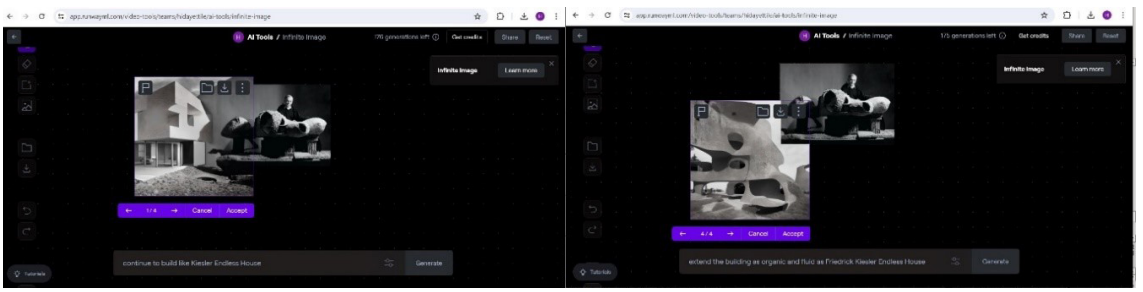

Figure 05: (left) The Robot proposes a modern extension, and
Figure 6: (right) shows it predicted fluid organic space ***(created by the author in Runway ML, 2024).***

Runway has its own design palette tools inside the program, and an eraser is one of them to remove any unwanted frame within the images. Since the imported images have a grey background on each side of the Kiesler building, this eraser can be used to remove the background from the right side of the Kiesler building. Also, exploring that the robot needs more specific terminology with the particular frame to extend from, this time frame was chosen as this removed background part and "continue to generate the building like Fredrick Kiesler's Endless House" was sent as a prompt ***(Figure 7-8).***

Finally, Runway could extend the building naturally as if it were part of Kiesler's house. However, this extension still randomly sometimes turns into an interior or exterior while it continues to expand the frame. Overall, a new generative, modular, or structured endless scenario could not be achieved in these phases, even though there is no limitation to trying more in the future.

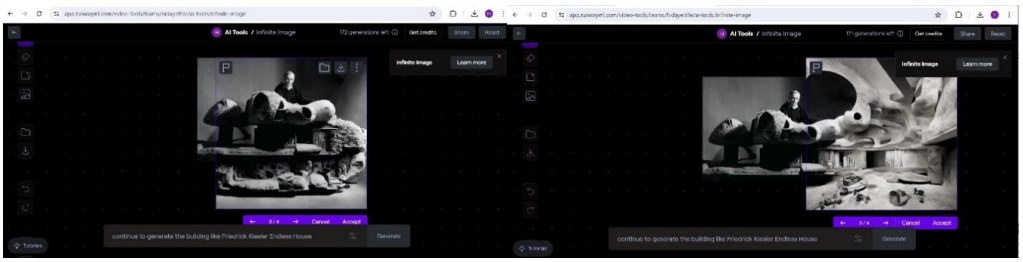

Figure 7: (left)
Figure 8: (right) Runway slowly expanded the Kiesler house, but it was still randomly ***(created by the author in Runway ML, 2024).***

Discussion and Conclusion

Kiesler and Archigram put their endless manifests in an original, conceptual, structural, functional, technological, and visionary way. They could individually modulate and structure their infinite spatial scenario to achieve endless space. It is observed that creativity, modularity, usage-mix usage, technology, visionary aspect, and space flexibility were the criteria that both Kiesler and Archigram shared. Thus, they were taken as a standard to compare them with 21st-century AI technology. ***Table 1*** compares three different design implementations of the concept of endlessness.

Table 1. Comparison among Kiesler, Archigram and Runway ML.

Feature	Kiesler's Endless House	Archigram's Plug-in City	Runway ML's Infinite Imag-es
Meaning Of Endless Space	Emphasises fluid spatial transi-tions, offering infinite space through continuous, flowing en-vironments.	Conceptually envisions a city that can expand endlessly through modular components and dynamic spatial configurations.	Generates virtually infinite image variations through iterative sampling from latent spaces, enabling the ex-ploration of endless visual possibili-ties.
Creativity	Encourages creativity through organic forms, biomorphic shapes, and immersive sensory experiences.	Inspires creativity by challenging traditional architectural norms and promoting innovative urban design concepts.	Fosters creativity by allowing users to explore and manipulate generated images, sparking new ideas and artis-tic expressions.
Modularity	Features modular components that can be assembled and recon-figured, offering flexibility and adaptability to changing needs.	It envisions a modular city with standardised components or "plugs" that can be easily assembled, disas-sembled, and customised.	It relies on generative models and iterative processes to generate imag-es, allowing continuous exploration and refinement.
Mixed-Use Space	Blurs the boundaries between different functions and activities, creating integrated spaces en-couraging social interaction and community engagement.	It integrates residential, commercial, industrial, and recreational areas within the same modular framework, promoting diversity and inclusivity.	It offers diverse image variations encompassing various visual ele-ments and themes, reflecting the richness and complexity of mixed-use environments.
Technology	Integrates art and architecture to create immersive sensory experi-ences, exploring the intersection of technology and human expres-sion.	Embraces advanced technologies such as automated transportation systems and integrated infrastructure for energy generation and waste management.	It relies on machine learning algo-rithms and computational techniques to generate images, leveraging tech-nological advancements in artificial intelligence.
Visionary Aspects	Challenges architectural norms and redefines spatial boundaries, inspiring a reimagining of the built environment.	Pushes the boundaries of urban de-sign and urbanism, envisioning dy-namic, adaptable cities that evolve with the needs of their inhabitants.	Explores the creative potential of machine learning and generative art, envisioning new possibilities for ar-tistic expression and visual explora-tion.
Flexibility	Modular design and dynamic spatial configurations offer flexi-bility, allowing endless reconfigu-rations and customisation.	Promotes flexibility through modular components and adaptable urban systems, enabling continuous expan-sion and evolution.	Provides flexibility through interac-tive manipulation of generated imag-es, empowering users to explore and refine their creative vision.

As a discipline, architecture has always been in constant dialogue with nature, creativity, artistic talents, and structural and non-structural knowledge. Each era and its designers have sought their original approach, and there are specific breaking points in articulating where technological advances come into the game of architectural design. The Industrial Revolution was one such breaking point, where transparency with glass, endurance and strength of steel structure, and plasticity of concrete allowed architects to exhibit their architectural vision with new concepts. The desire of architects to provide permanency in their buildings has led to the exploration of new ways to modulate and formulate their spatial approach for adaptability to future scenarios. Kiesler's use of plasticity and fluid organic spaces to create infinite spaces that can continue and extend with new spaces when necessary is a testament to this, while Archigram combined technological infrastructure with modular units that can be added and loaded with new functions while cities expand and grow.

Integrating AI into the design world is a pivotal development in the 21st century. Three designers' projects strengthen the idea of perceiving and designing space not just as a physical entity but as a dynamic, ever-changing entity interacting with people. Through their distinct approaches, they propel architectural thinking and practice forward, reflecting efforts to explore the concept of creating infinite space in architecture and challenging its potential. These projects have innovatively explored the possibilities of space, pushing the boundaries, questioning traditional architectural norms, and prioritising human experience.

This research paper explores whether AI can use digital materials to create its own unique expanding scenarios in a new way. As it is still in development, this research has not found any fixed method for the infinite space or endless spatial AI options because the AI proposes different versions each time it generates the image. However, what is unique is the blending and merging of pixels to expand the space. This blending approach has the potential for creating seamless spatial approaches as the AI blends and merges pixels to create new images. It also promises new materials and techniques and mixed-use interior or exterior spatial programs. The Runway Infinite Image expresses infinity through computer graphics and simulations, pushing the boundaries of digital and virtual spaces. This project combines visual arts and computer science by creating infinite spaces on digital platforms. This research is just the beginning of introducing AI architecture and working with AI, as it is still in development and can be further explored in future developments.

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Conflict of Interests

The author declares no conflict of interest.

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