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Bias Variation Inconsistencies In AI-Based Architectural Form Using Architecture Theory-Driven Prompts

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Abstract. For most of the designer, Artificial Intelligence or AI generators are often seen as tools that translate imagination into visual form from various perspectives. In architecture, theory serves as a conceptual framework that guides the design process toward coherent and meaningful outcomes. Therefore, using theory-based keywords becomes important when generating representative images with AI. This study critically examines how artificial intelligence generates images from architectural prompts, focusing on its ability to align outputs with theoretical definitions. A series of hierarchical diagram of incremental word variations experiment were developed to analyze how AI interprets gradual semantic changes. The expected outcome is a set of simplified sketches that can be understood as algorithmic translations of architectural aesthetics. The results reveal noticeable inconsistencies, particularly when AI processes terms with similar theoretical weight. These differences are documented through visual comparisons and tabulated analysis. Overall, these findings highlight the potential and limitations of AI in bridging architectural theory and visual representations using simple keyword prompts, as shown in the hierarchy diagram. They also illustrate how transforming keywords using architectural theory can produce varying biases and inconsistencies which will be very important in idea generation and form exploration in architectural design thinking and exploration.
Keywords. Artificial Intelligence, Image Generation, Architecture Theory, Algorithmic Aesthetics, Hierarchical Model, Visual Interpretation

1. Introduction

There is a growing interest in the application of artificial intelligence (AI) within the discipline of architecture. AI has the potential to support architects by accelerating the design process, facilitating explorations of form, and expanding the scope of experimental design practices. [1]. Artificial intelligence emerges as a collaborative tool that expands architectural design possibilities. Advanced neural networks and generative design algorithms enable computational systems to analyze extensive datasets, generate complex design iterations, and optimize architectural solutions across multiple dimensions of structural integrity, environmental performance, and contextual responsiveness[2]. Beside architecture

AI tools are increasingly influential during the initial stages of concept development and visualization.[3],[4]. The presence of artificial intelligence can therefore be utilised to address complex challenges within design. This approach positions AI as an opportunity to analyse problems and to generate optimal solutions. According to [5], AI draws upon technological advancements, including computational, iterative, reproductive, and developmental methods. AI tools show a remarkable capability in generating architectural images with a higher degree of creativity and understanding of architectural styles.[6]. These advancements have given rise to intelligent and productive tools that contribute significantly to the field of architecture. AI is also capable of manipulating data with ease and developing innovative solutions to complex problems, thereby extending creative capacities beyond the limits of traditional methods.[7].

For beginners, using the AI image generator cannot be done immediately without going through a series of processes. The challenge lies in the fact that the resulting images are often unrealistic and structurally unfeasible. Moreover, applying these ideas to real architectural design requires significant adjustments, and originality cannot be fully achieved when using AI.[8],[9]. The results are often unsatisfactory when the prompt is unclear and the training dataset fails to represent particular styles or architects. The visual dependency inherent in the process may also restrict imagination, creating limitations in the way architects think, as they may be inclined to follow forms that are popular within the AI dataset rather than innovating beyond them. According to [10] quantitative measurement of AI performance and integration with architectural theory, not just practice, still needs further research. Inconsistency in architectural drawings can occur across multiple dimensions, including geometric misalignment between views, instability in AI generated visual outputs, and conceptual ambiguities in representation. In architectural drawings, there are inconsistencies between drawings in terms of scale, orientation and elements, so additional interpretation is needed [11]. Furthermore, according to research, AI often produces inconsistent images, changing and unstable shapes and geometries [12]. Digital representation can produce architectural drawings with distortion of form and visual ambiguity so that they are not always accurately representative [13]. According to [14], prompts that lack specificity are less likely to generate appropriate design outcomes. Dependence on prompts is explained by the quality of the output is often heavily influenced by the input text. If the textual description is too simple, the model may produce only generic images or fail to capture distinctive characteristics. [15].

For the reason above, in this article, we perform a series of research to analyse how inconsistencies appear. The method is based on a hierarchical diagram employed as structured prompt input, in which the generator produces outputs grounded

in architectural theory presented in the third column. The sketch type picked the AI generator will be used simplify the process and will be analysed with differences and how inconsistencies occur.

1.1 The effectiveness as the aids in architecture idea

AI is now recognised as an innovative tool in the process of generating text to image outputs, which greatly facilitates the visualisation of ideas. Architects and designers can utilise AI as an input to enhance their creativity. Visualisation using AI is faster and more cost effective than conventional rendering. A locality based model was incorporated to obtain representative depictions. Architects use text or prompts to generate visual ideas, explore materials, and experiment with lighting and architectural styles without the need for manual drawing. This process produces ideas and imaginations of forms and atmospheres that were previously unconsidered. The advantages of AI lie in its ability to process large numbers of images at high speed, as well as to detect details rapidly. In addition, it can generate generalisations from existing image samples and apply them to similar situations.

However, the results of the AI generator image will cause problems if they do not comply with the procedures and validation of the results is carried out repeatedly. According to Magomedov [16], errors may also occur in recognising details, for example through the misidentification of objects when images are unclear or contain confusing elements. Accordingly, there is a need for representative training data to ensure that the generated images are not affected by bias or overfitting [16]. AI has the capacity to enhance both productivity and efficiency, whilst also enabling designers to explore a wider variety of forms and to discover design solutions that might otherwise have remained unconsidered, thereby expanding creative options. However, not all architects and designers are yet familiar with or adept at using AI, which can create technical limitations and may result in a loss of creative control if AI becomes overly dominant. Such reliance on tools and data risks rendering the human role in design more passive and may lead to a homogenisation of design outcomes, thereby reducing diversity and raising questions of authorship. Consequently, the quality of text to image generators depends on their training data and on how effectively the text is able to convey the desired spatial characteristics. Nevertheless, there remains a risk of insufficient detail and potential inaccuracies in the generated outputs. [17]. The presence of risks such as bias, hallucination, and hyperrealism can blur the boundary between reality and fiction, leading to misunderstandings. Although mitigation measures are applied in the use of AI, vulnerabilities remain, including the generation of false facts, the presence of bias, and the production of irrelevant generalisations. Semiotic understanding through the use of prompts can explain and enhance why certain prompts are more successful in realising the desired image. This is because the AI system interprets and employs visual codes and styles, seeking references that are recognisable to the model or image. [18]. The issue of bias and dataset representation poses a problem, a dataset may be dominated by popular styles or references, causing local styles, cultures, contexts, and building typologies rooted in local wisdom to be overlooked or underrepresented. These styles are often derived from globally popular aesthetics circulated through various digital media, which consequently limits the resulting images. Moreover, such outcomes do not accurately represent the extent to which global or local styles exert influence. [19], [20]

1.2 Working principles of ai algorithms

Evolutionary algorithms have played an important role in advancing computational principles within architectural design. Building upon the concept of evolutionary algorithms, generative algorithmic methods have been applied to identify the most efficient solution [21]. The workings of Artificial Intelligence (AI) can be understood as a series of interrelated processes. The initial stage begins with data analysis, where the algorithm utilizes data as the primary source to identify and understand the patterns contained within. Next, in the model training stage, the data is processed using mathematical and statistical approaches to create a model capable of making fairly accurate predictions or classifications. Afterward, the AI system continues to develop through an iterative learning process, utilizing feedback to correct errors and adjust its internal parameters, resulting in increasingly precise and reliable performance over time.

1.3 Architecture Theory about Aesthetic

1.3.1 Unity

According to [22], The basic principle of unity is that each part supports the whole, so that no element is unrelated to the whole or stands alone. Therefore, proportion, rhythm, and form make a unified whole. Unity forms the basis of a coherent and strongly identified design, ensuring that every visual and functional element contributes to the totality of the design. Several opinions on this principle of unity include[23]:

The thoughts of Vitruvius, Leon Battista Alberti, and Le Corbusier all emphasize that architectural beauty arises from complete integration, both through the integration of proportion and structure, the harmony of all parts in one unit (concinnitas), and the unified relationship between form and function.

1.3.2 Harmony

Harmony is the harmony between design elements that creates a sense of harmony, calm, and balance, both visually and emotionally. The principles of harmony serve as design guidelines so that buildings feel integrated with their context and proportional to their environment and to the human users. The characteristics applied in harmony are [23] harmony of form, colour, texture, and proportion, avoiding excessive conflict between elements, and creating a pleasant sense of order. The views of Aristotle, Andrea Palladio, and Immanuel Kant show that beauty is closely related to order and harmony, whether through the principles of symmetry and clarity, the application of proportions inspired by music, or the balance between sensory perception and human rationality.

1.3.3 Balance

The principle of balance is the visual and structural stability between design elements, creating a sense of stability and balance. This principle provides visual stability and psychological comfort, which is important in the composition of facades, spatial layout, and building structures. Applications of this principle can be symmetrical (classical) or asymmetrical (modern), equal distribution of visual weight, or creating a sense of stability and control. Some opinions that express the principle of balance include [23] the thoughts of Vitruvius, Leonardo da Vinci, and Walter Gropius, along with Gestalt theory, show that balance in architecture is rooted in the proportions of the human body and the tendency of visual perception to naturally seek stability and harmony.

1.3.4 Contrast

The principle of contrast provides strong visual character and expression; it is used to highlight important parts of a building or create a design identity. Its application involves deliberate differences or opposition between design elements to create dynamics and visual interest. Common applications include differences in shape, color, texture, or scale; drawing attention and highlighting certain elements; and providing rhythm and aesthetic visual tension. Several opinions that express the principle of contrast include [23] the views of John Ruskin, Robert Venturi, and Gestalt theory suggest that contrast. such as light, dark or rough, smooth differences, not only creates visual interest, but also strengthens aesthetic expression, emphasizes primary forms, and establishes hierarchy in visual perception.

1.4 Architecture Theory about High Technology

According to [24], architecture using high tech architecture will provide structural reliability and material efficiency with a combination of modern materials and advanced structural techniques that can potentially optimize performance against loads. According to [25], High Tech Architecture (High Tech Architecture) is a design movement that emerged in the late 1960s and 1970s and developed rapidly in the 1980s. This style is characterized by a modern technological aesthetic, emphasizing structure, utility, and the use of advanced materials. Several important theories that form the basis of this architecture were developed by figures such as Norman Foster, Richard Rogers, Renzo Piano, Michael Webb, and the Archigram group. The three main pillars of high tech architecture theory are exposed structure and utility, use of high tech materials and emphasis on flexibility and functionality.

1.3.2 Theory of Exposed Structure and Utility

This theory is based on the idea that technology is aesthetics itself. Richard Rogers and Renzo Piano popularized this principle through the Centre Pompidou project (Paris, 1977), where all structural elements and utilities, water pipes, air conditioning ducts, stairs, steel columns, even elevators were placed on the exterior of the building. Structures should not be hidden, but rather exposed as part of the architectural expression. Utilities become visual elements, transparently revealing the building's machinery. It emphasizes the honesty of materials and the honesty of construction.This idea later became the basis of high tech aesthetics: buildings appear like exposed industrial machines, revealing how they work.

1.3.3 Theory of High Tech Material Use

This theory focuses on the use of modern materials capable of achieving high structural efficiency. Norman Foster, as the leading proponent of this style, introduced the use of Lightweight steel (high tensile steel), High tech glass (low-E glass, double skin facade). Aluminum, composites, and space frame structures, Prefabricated and modular technology. Buckminster Fuller influenced the use of geodesic structures and lightweight materials to achieve a high strength to weight ratio. The core of his theory is that future architecture should utilize materials with high performance, energy efficiency, and greater durability. Materials are not only structural elements but also part of a futuristic aesthetic.

1.3.4 Theory of Emphasis on Flexibility and Functionality

This theory focuses on buildings that are adaptable, flexible, and responsive to changing user needs. Archigram, an avant garde group in the 1960s, along with Cedric Price (through the Fun Palace project), introduced the concept of : Buildings like machines that can change; Spaces that can be expanded, reduced, or rearranged; Principles of plug-in, modular, and movable components. Norman Foster later applied this theory of flexibility and functionality to his projects, such as Willis Faber Dumas Building, lthe core structure is external to create flexible interior spaces. The core of his theory is that architecture should support changing functions and needs, rather than being a static object. Flexibility is part of the future of architecture

2. Research methodology

Architecture Theory as an Input Prompt

Theoretical definitions in architecture have been developed throughout the course of the discipline's evolution. In formulating such definitions, various social and cultural developments have influenced architecture. As a result, across history, numerous definitions of architecture have emerged that are nuanced, complex, and at times poetic. Several theories and terminological definitions will be synthesised from a range of existing architectural frameworks. The manner in which changes occur within a hierarchy will be demonstrated, with the aim of facilitating their use as structured inputs for an AI generator. Fig.1 shows the flow of this research, it appears that the prompts taken from architectural theory with keywords displayed in the hierarchy in Fig.2, and input into the AI generator. The resulting images are shown in Fig.3 to 10. Analysis of the images against the AI generator display is entered into the analysis results table in Tables 3 to 9.

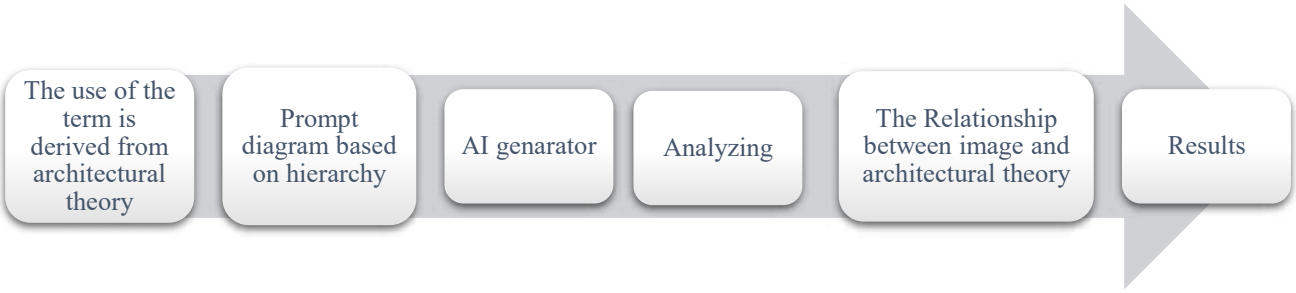


Fig.1 Flow Diagram

The artificial intelligence tool employed in this study is ChatGPT, a widely adopted generative AI model in contemporary research and creative practices. The comparison uses Gemini from Google which is also easy to access and free. Each result set comprises three generated images, corresponding to three independent conversational sessions within the chat interface. A systematic comparative analysis was conducted across these images to identify and evaluate potential biases, which were subsequently organized and presented in tabular format. The final stage of analysis involved comparing hierarchical transformations from an initial baseline condition (without modifications) to configurations incorporating theory driven keyword adjustments. This methodological framework enables the examination of sequential bias evolution and hierarchical shifts resulting from controlled input variations.

Figure 1 is a hierarchical diagram model designed to facilitate modifications through the substitution of words at the same level. The experiment was conducted by inserting prompts into each hierarchy, structured within a sentence. At the third level of the hierarchy, a change was introduced to the key word in the prompt. For example, the word *aesthetic* was replaced with another term, resulting in four different variations of key words. An example of the prompt used is: *"create a sketch of a shell structure for a mosque with an aesthetic design, measuring 10x10 m, and employing hightechnology materials."* This prompt contains the key words *shell*, *mosque*, *aesthetic*, *10x10 m*, and *high technology*. In the subsequent prompt, the term *aesthetic* was replaced with *unity*, and so forth, in accordance with the hierarchical diagram presented in left side.

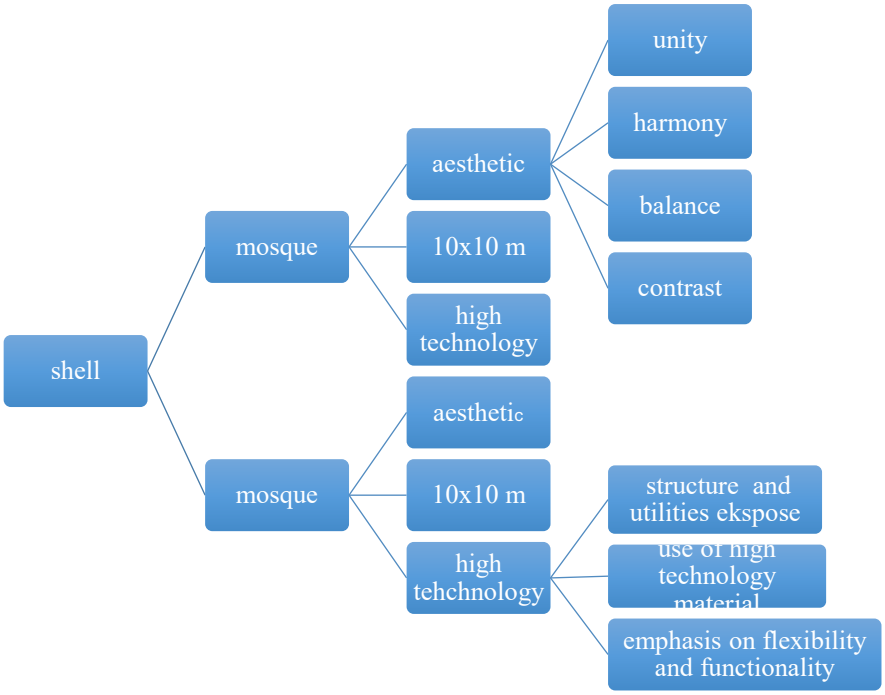


Fig.2. Hierarchical Diagram Model

The analysis used qualitative analysis with displayed images generated from the chat boxes of both AI generators. A to X show images and analysis from the Chat GPT AI generator, while A' to X' show images and analysis from the Gemini AI generator. Tables 3 to 8 show analysis of image changes from different keywords, while each table represents the same keyword. Meanwhile, the analysis in Table 9 describes the image descriptions with the differences in each change in each image. A to V is an example of changes in each image in each chat box in the chat generator. A to V, B to W, C to X represent three different chat boxes from Chat GPT, while A' to V' and so on are from Gemini.

3 Results

The analysis will show each image containing three different images with different chat boxes but using the same image generator. The other three images will show three different images with the same keywords and image generator but using different chat boxes.

3.1 The Main Keyword without Forth Layer

The Fig.3 is the main result for the main keyword for the prompt in generator AI. Keyword for prompt are: Shell, mosque, aesthetic, 10x10m, high technology. A, B and C are the image shows the changes in the image with the use of the same prompts in different chat box in chat gpt. A', B' and C' are the results of an image using a different chat box than using Gemini.

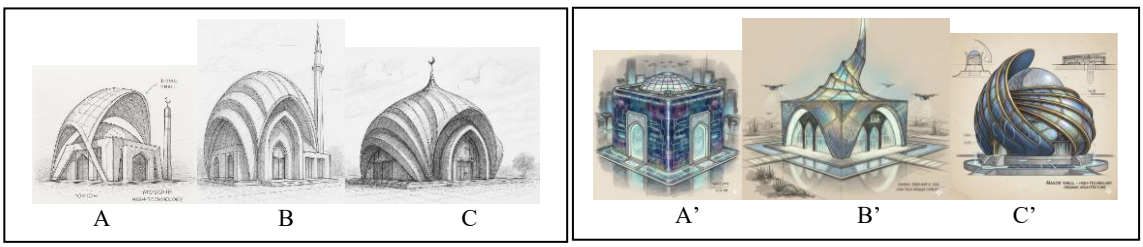


Fig.3. The picture of main keyword without forth layer

A	B	C	A’	B’	C’
Inconsistent with shell, furnicular formation appears	Pure shell	Pure shell	Pure shell	Pure shell	Pure shell
Rectangular box in main building, one side sloping facade , grid shading in shell	Rectangular box in main building	Wall unity with shell	Shell functions as roof, rectangular box in main building	Shell functions as roof, rectangular box in main building	Wall unity with shell
The most modern high tech look then 2 others	Classical High tech look	Classical look with no high tech	Modernist high tech shell	Advanced shell roofing system	Monolithic structural shell roof

Table 1. *Image Compare Analysis Fig.3*

Table 1 shows the comparison for A, B, C that models A, B, and C mainly differ in shell integration and architectural expression. Model A appears less consistent with the shell concept because of the funicular formation, rectangular box form, and sloping façade treatment, giving it a more modern high-tech appearance. Model B combines a pure shell form with a rectangular main building, creating a classical high-tech impression. Meanwhile, model C shows stronger unity between wall and shell elements, resulting in a more classical appearance. In contrast, models A’, B’, and C’ present a more integrated shell development. Models A’ and B’ use the shell as the main roofing system, while C’ emphasizes wall-shell unity, producing a monolithic structural shell roof character.

3.2 Replacement aesthetic with unity

D, E and F are the image shows the changes in the image with the use of the same prompts in different chat box in chat gpt. D’, E’ and F’ are the results of an image using a different chat box than using Gemini. Changing the keyword by replacing aesthetic with unity does not show any significant changes with Fig.4 . The only difference lies in the darkening of the dome area in both images D and E and the protrusion of the rectangular box in image E. Keyword for prompt are: Shell, mosque, unity, 10x10m, high technology.

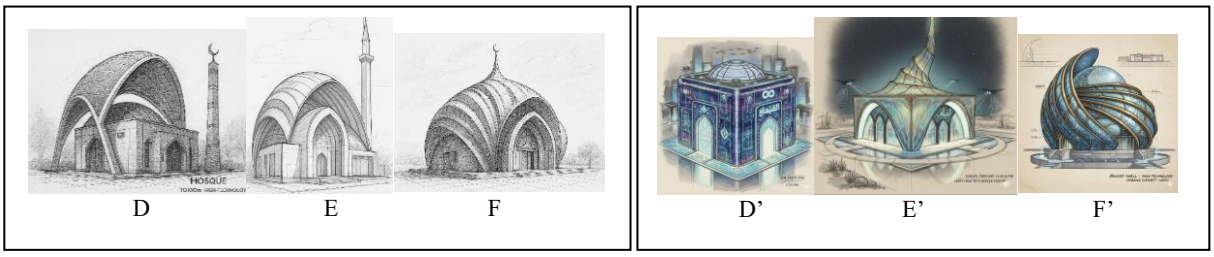


Fig.4. The picture of replacement aesthetic with unity

Table 2 indicates several differences in the shell images after the unity-based aesthetic replacement process. D tends to be less consistent because the shell form mixes with furnicular characteristics and darker shading elements. E and F produce clearer shell expressions, although E still contains distortion on one side, while F shows a stronger classical character through the wall and shell composition. In the modified images, D’ introduces adaptive facade ornaments, E’ creates a more dramatic visual effect through background adjustment, and F’ retains the shell form in monolithic structural shell with no change from before (C’).

D	E	F	D’	E’	F’
Inconsistent with shell, furnicular formation appears	Pure shell	Pure shell	Adaptive facade ornaments	Background replacement	Monolithic structural shell roof
Rectangular box in main building , darkening of shading in shell	Expose rectangular box in main building	Wall unity with shell		Looks more dramatic with background	
The most high tech look than others	High tech look, distorsion in one side off shell (unrealistic shell)	Clasical look more clearly shading then C			

Table 2. *Image Compare Analysis Fig.4*

3.3 Replacement aesthetic with harmony

Changing the keyword with keyword for prompt are: Shell, mosque, harmony, 10x10m, high technology. G, H and I are the image shows the changes in the image with the use of the same prompts in different chat box in chat gpt. G’, H’ and I’ are the results of an image using a different chat box than using Gemini. The images shown in this keyword in Fig,5 with emphasize in the smoother shading than picture before.

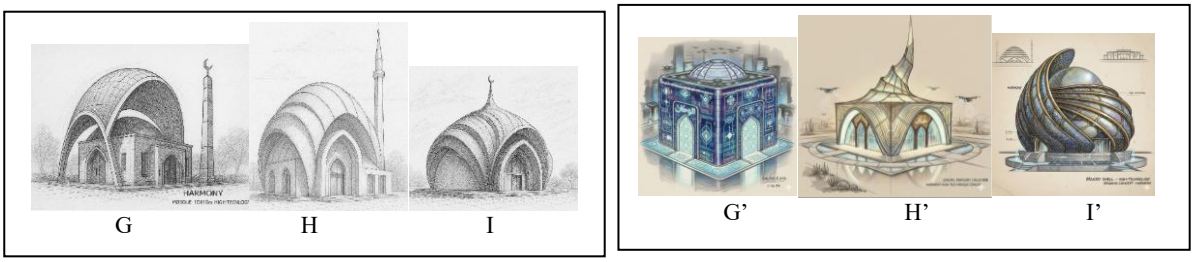


Fig.5. The picture of replacement aesthetic with harmony

Table 3 explains the following : G maintains the original shell form while introducing a rectangular pattern, producing smoother shading and a more regular opening. H returns to a simpler pure shell appearance with a less noticeable box element and softer darkening compared to E. Meanwhile, I strengthens the shell curvature and removes the side opening to create a cleaner form. The modified versions G’, H’, and I’ do not show major visual differences from the previous results.

G	H	I	G’	H’	I’
Same shell with adding rectangular pattern	Back to normal pure shell than E	Smoother darkening than F	No special changes	No special changes	No special changes
Darkening shading in D becomes smoother.	Box becomes unobtrude	The emphasize clearer curve			
The opening becomes more regular	Smoother darkening than E	Erasing the door in one side			

Table 3. *Image Compare Analysis Fig.5*

3.4 Replacement aesthetic with balance

From replacement aesthetic with balance, so keyword for prompt are: Shell, mosque, balance, 10x10m, high technology. J, K and L are the image shows the changes in the image with the use of the same prompts in different chat box in chat

gpt. J', K' and L' are the results of an image using a different chat box than using Gemini. In general, the patterns in this keyword more regular and more emphatic. The picture of this keywords as shown as Fig.6.

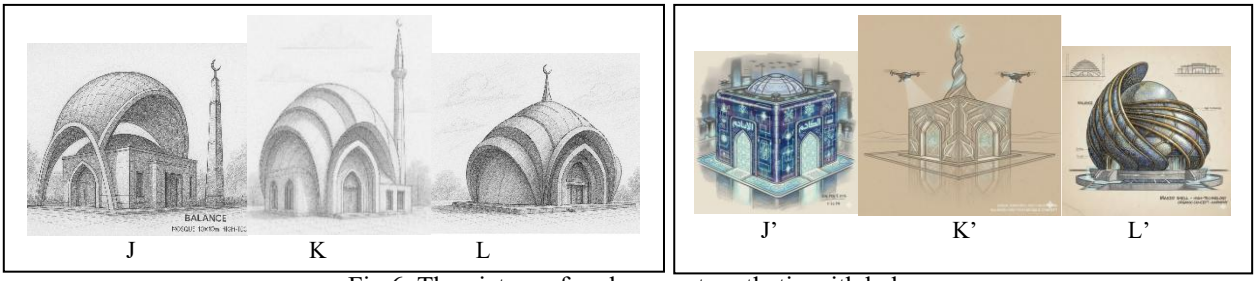


Fig.6. The picture of replacement aesthetic with balance

J	K	L	J'	K'	L'
Smaller dome in box roof than before	The shell patterns more regular than H	The shell patterns more regular than I	No special changes	Flatter shading changes	No special changes
One opening disappears	Classical smooth and more aesthetic	Classical and more aesthetic		More enhanced visual lightness	

Table 4. *Image Compare Analysis Fig.6*

Table 4 indicates that models J, K, and L mainly experience changes in geometric composition and shell configuration. In model J, the dome on the box roof becomes smaller and one opening disappears, altering the facade composition. Models K and L show increasingly regular shell patterns, resulting in a smoother and more classical aesthetic appearance. In contrast, models J', K', and L' demonstrate relatively minor visual modifications. Model J' and L' show no significant changes, while model K' presents flatter shading and a stronger impression of visual lightness. Overall, the first group emphasizes formal and pattern refinement, whereas the second group mainly affects visual perception and shading quality.

3.5 Replacement aesthetic with contrast

From replacement keyword for prompt are: Shell, mosque, contrast, 10x10m, high technology. M, N and O are the image shows the changes in the image with the use of the same prompts in different chat box in chat gpt. M', N' and O' are the results of an image using a different chat box than using Gemini. In general, the replacement aesthetic with contrast show darkening contrast building with expose on white and black expression. The picture of this keywords as shown as Fig.7.

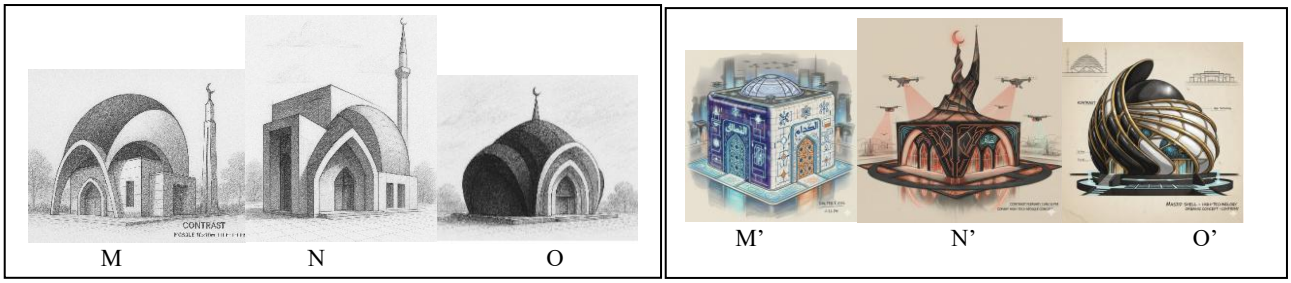


Fig.7. The picture of replacement aesthetic with balance.

M	N	O	M'	N'	O'
The contrast of darkening shell	Shell and furnicular entrance becomes weird and distortion	Black dark shell with contrast in furnicular entrance	The contrast of side wall colour	Monochrome and dark colors	Monochrome and dark colors
The box becomes move forward	Super big box and unscale proportion with others			Back to the visual clarity	

Table 5. *Image Compare Analysis Fig.7*

Table 5. shows that models M, N, and O mainly explore contrast and proportion changes. Model M emphasizes the darkened shell and shifts the box element forward, while model N creates visual distortion between the shell and funicular entrance with oversized proportions. Model O applies a darker shell surface with stronger entrance contrast, producing a heavier visual character. In contrast, models M', N', and O' focus on colour treatment and visual clarity. Model M' highlights side wall contrast, whereas N' and O' apply monochrome dark colours that create a more unified appearance overall.

3.6 Replacement high technology with structure and utilities expose

Keywords: Shell, mosque, aesthetic, 10x10m, structure and utilities expose that the images shown in Fig.8. P, Q and R are the image shows the changes in the image with the use of the same prompts in different chat box in chat gpt. P', Q' and R' are the results of an image using a different chat box than using Gemini. A drastic difference is apparent when high technology is transformed into structure and utilities expose. Several strange and non functional structures and utilities appear to indicate that the keyword input for architectural theory has become biased nd chaotic.

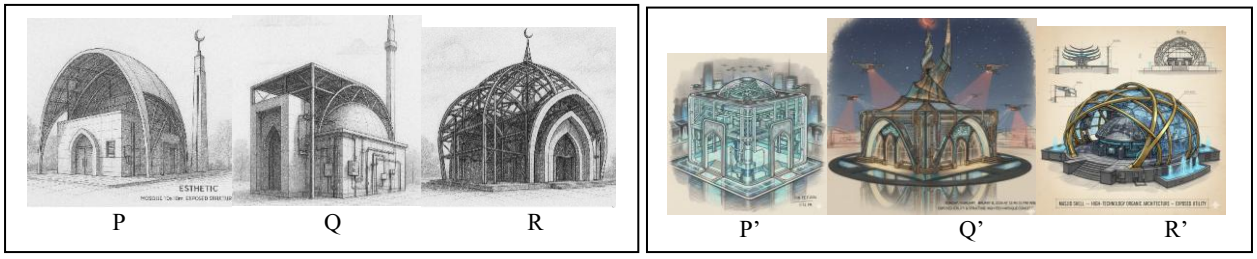


Fig. 8. The picture of replacement high technology with structure and utilities expose

P	Q	R	P'	Q'	R'
Opening shell and expose frame structure of shell	Weird utilities exposure	Uncovered frame Shell	Transparent envelopes exposing utilities	The material of wall and roof becomes luxurious	Shell form changes with utilities transparency on shell
Unscaled proportion of opening or windows	Addition with frame structure , unfunctionally impressed	Weird expression	Opening becomes different from before	Looks more dramatic with background (night background again)	The shell exposes structures but a bit strange

Table 6. *Image Compare Analysis Fig.8*

Table 6 indicates that models P, Q, and R mainly emphasize structural exposure and unconventional shell expressions. Model P opens parts of the shell to reveal the frame structure, although the window proportions appear unbalanced. Model Q exposes utility elements and adds visible frame structures that seem less functional, while model R leaves the shell frame uncovered, creating an unusual architectural expression. In contrast, models P', Q', and R' focus more on material transparency and visual atmosphere. Model P' applies transparent envelopes that expose utilities and alter the opening composition, whereas Q' introduces more luxurious wall and roof materials with a dramatic night background effect. Meanwhile, R' combines shell transparency with exposed structural elements, although the overall appearance still feels visually unusual.

3.7 Replacement high technology with use high tech material

Keywords: Shell, mosque, aesthetic, 10x10m, use of high tech material that the images shown in Fig.9. S, T and U are the image shows the changes in the image with the use of the same prompts in different chat box in chat gpt. S', T' and U' are the results of an image using a different chat box than using Gemini.The bias is focused on the use of high tech materials that resemble composite panels. Their use is generalized across all facades and shells, creating a monotonous appearance.

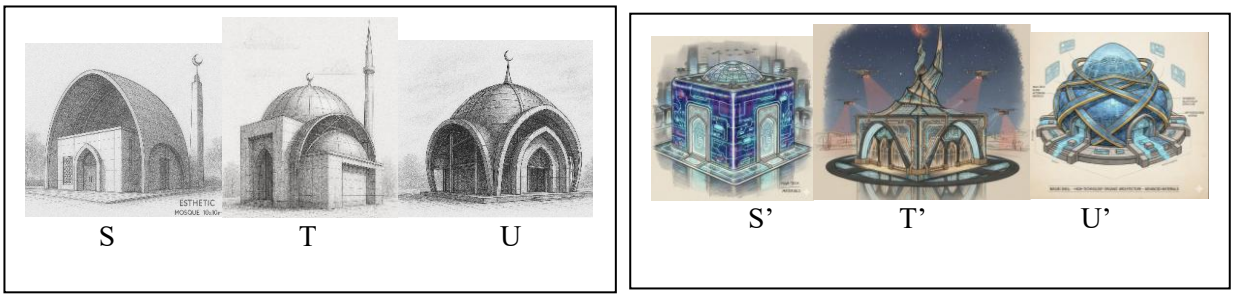


Fig.9. The picture of replacement high technology with use high tech material

S	T	U	S’	T’	U’
Use of box materials such as composite panels on all facades and roofs	Shell unfunctionally structure part	Use of box materials such as composite panels on all facades and roofs	Use of unic character (looks like electronic sircuits) of fasad materials.	No special changes	Shell and the structure of fasad not united
	Opening become disappear				The outermost structure becomes nonfunctional
	Use of box materials such as composite panels on all facades and roofs				Shell form changes

Table 7. *Image Compare Analysis Fig.9*

Table 7 shows that models S, T, and U mainly emphasize material application and shell functionality. Models S and U apply box materials such as composite panels across facades and roofs, creating a more uniform surface appearance. In contrast, model T presents shell elements that appear less functional, accompanied by the disappearance of openings and excessive use of box materials. Meanwhile, models S’, T’, and U’ focus on facade character and structural relationships. Model S’ introduces a unique facade pattern resembling electronic circuits, while T’ shows no significant visual changes. Model U’ demonstrates a lack of unity between the shell and facade structure, causing the outermost structural layer to appear nonfunctional and altering the original shell form.

3.8 Replacement high technology with emphasis on flexibility and functionality

Keywords: Shell, mosque, aesthetic, 10x10m, emphasis on flexibility and functionality that the images shown in Fig.10. V, W and X are the image shows the changes in the image with the use of the same prompts in different chat box in chat gpt. V’, W’ and X’ are the results of an image using a different chat box than using Gemini.This replacement in general, show even unfunctional and distortion form and structure.

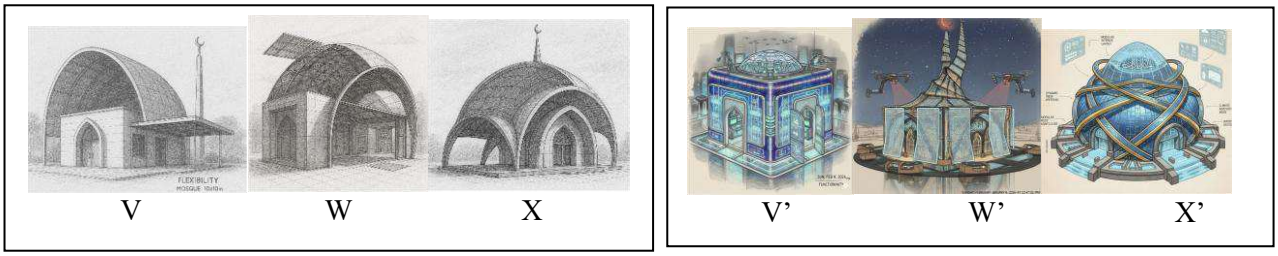


Fig.10. The picture of replacement high technology with emphasis on flexibility and functionality

V	W	X	V'	W'	X'
Shell becomes continuous furnicular	Distortion and unfunctionall opening shell and expose frame	Distortion and unfunction opening shell and furnicular	Door becomes open, other is no door panel	The shell becomes odd with two conical ends	The entrance way becomes clear than before
	Box becomes wane and half changed with double opened entrance (the other one looks less functional)	The space becomes wane and opened	The wall still with unic texture (looks like electronic circuits)	There are folding panels that are like curtains (unusual function)	

Table 8. *Image Compare Analysis Fig.10*

Table 8 compares the design outputs generated through different AI platforms by grouping them into V, W, X and V', W', X'. The variables V, W, and X represent the forms generated using ChatGPT-based prompts, where the results still maintain the main shell concept although several distortions appear in the openings, spatial arrangement, and functional elements. V tends to preserve the continuous furnicular form, while W and X show increasing inconsistencies such as exposed frames, irregular openings, and weakened functional clarity. In contrast, V', W', and X' represent outputs generated using Gemini prompts, which produce more experimental transformations. V' creates a more open façade condition, W' develops unusual shell forms with conical endings and folding panel elements, and X' presents a clearer entrance composition compared to previous variations. These differences indicate that each AI platform interprets architectural prompts differently, resulting in varied formal and functional outcomes.

From the analysis before, we can conclude different changes from replacement of keyword with similar architecture theory words. The changes will be classified in one chat box in ai image generator with chat gpt. Every part is different ai generator chat box (A to V, B to W, C to X). Table 9. Shown the general changes for every replacement words. This table also summarizes those changes, as well as the change from A'to V' which uses a different chat box than B' to W' and C' to X'. All three use gemini as the image generator ai.

The changes	A to V		B to W		C to X	
Aeshtetic	A	Furnicular appears	B	Classical High tech	C	Classical shell
Unity	D	Shading in shell roof and openings	E	High tech look, unrealistic shell	F	No meaningful changes
Harmony	G	No meaningful changes	H	Shells form back to B's looks	I	Opening disapear
Balance	J	Inconsistence with opening forms	K	Reguler shell's patterns	L	No meaningful changes
Contast	M	Splitting furnicular start appears, with black darkening shell	N	Strong form differences and shading	O	Composition dark shading and white
Structure and utilities expose	P	Half dome shell, totally different with before, furnicular still unite with shell,	Q	Weird utilities expose	R	Uncovering shell frame
Use of high tech material	S	use of box materials such as composite panels on all facades and roofs	T	Shell becomes weird cutting and ordinary material	U	use of box materials such as composite panels on all facades and roofs
Emphasis on flexibility and functionality	V	Shell becomes continuous furnicular	W	Distortion and unfunctionall opening shell and expose frame	X	Distortion and unfunction opening shell and furnicular

The changes		A' to V'		B' to W'		C' to X'
Aeshtetic	A'	Shell as a Part of Building Roof	B'	The shell appears unique, curving upward, and the overall appearance of the building displays beauty through the reflection of the structure on the site surface.	C'	The shell is highly unique, enclosed in form, and enhanced by a glossy material that creates a sense of beauty.
Unity	D'	Addition of Facade Ornament and The door is in an open position	E'	The building's color becomes lighter, the wall texture becomes simpler, while the other elements remain unchanged.	F'	The sense of beauty becomes reduced compared to the previous design, due to the simplified textures and more muted colors.
Harmony	G'	The door returns to its original position	H'	Relative to the previous iteration, the design undergoes further simplification in both texture and color, producing a more flattened visual expression.	I'	It becomes even simpler than before in terms of texture and color
Balance	J'	No special changes	K'	The building looks extremely light and flat, resulting in a less lively appearance in the rendering.	L'	No special changes
Contast	M'	One side of the facade changes to white, the doors become closed, and the shade of white on that side is different.	N'	The rendering of the building becomes darker, with a tone resembling copper.	O'	The colors appear sharply contrasted due to the shift between black and white, and light can be seen shining out from the door.
Structure and utilities expose	P'	The building becomes transparent through the use of glass materials, allowing the pipes and utilities to be visible	Q'	The building render becomes fairly realistic again, using materials that resemble copper.	R'	The building's form undergoes a drastic transformation. The shell wall becomes transparent, exposing the internal pipes, while large curved structural elements are expressed on the shell surface, creating a somewhat unusual impression.
Use of high tech material	S'	The materials shift to shades of blue and purple, creating a luxurious impression. A glossy finish enhances the sense of elegance across the entire	T'	The colors become brighter with improved light and shadow effects, along with the addition of stronger render outlines.	U'	The building undergoes a drastic formal transformation, and the structural changes to the shell seem strange and impractical.

		facade, while the doors appear more refined with a silver like material that has a polished shine. The dome turns transparent.				
Emphasis on flexibility and functionality	V'	One door opens in a slightly distorted position, while the other door loses its leaf. On the facade, a projecting plane emerges as an element that emphasizes the doorway.	W'	The addition of folded façade planes further creates a sense of non functionality and even obstructs movement within the building. The rendering also becomes flatter than before.	X'	No prominent changes are observed compared to the previous iteration, although the building appears more volumetric in its upper portion.

Table 9. *The general changes for every replacement words*

4 Findings

The results of this study indicate the following conclusions:

There are inconsistencies and biases in the use of architectural theory. The use of keywords substituted for equivalent words taken from architectural theory shows variations ranging from slight variations in the image to significant variations in the representation of each equivalent word. However, these changes sometimes appear highly biased and create conflicting perceptions. Tables 3 to 9 show a comparative analysis of image results on keyword changes. Using images directly to display keywords cannot be done solely using simple keywords, which can lead to image bias. The resulting inconsistencies can even lead to inconsistencies between keywords entered into different AI generator chat boxes, the differences can be quite significant.

5 Discussion and Conclusion

Using AI images as the sole reference cannot be relied upon precisely due to the high degree of bias and inconsistency. Therefore, AI images should only be used as initial pre designs to generate ideas that must be further refined by the architect, or simply as a reference, to create a building design that is valuable in terms of structure, function, and form. In academics, a creative and reflective pedagogical approach is emphasised, in which students explore imagery conceptually by employing elements of randomness, arbitrariness, and found objects to stimulate creativity [26]. This helps those accustomed to structured visual habits to break free from rigidity. Furthermore, the emphasis on process rather than product is crucial, as experimentation, the combination of references, and the development of visual expression become essential. Such an approach helps to avoid instant results, allowing room for exploration and creative failure. The integration of intuition and theory is also significant, as it combines fundamental architectural values, aesthetics, and references, ensuring that visual ideas possess an architectural foundation rather than existing merely as context free art [27]. AI should therefore be regarded solely as a tool to support creativity, rather than as a replacement for the designer. A combination of human capability and AI capacity is required in order to achieve designs that are richer and more meaningful. [19]. This is in accordance with [28], AI should be regarded as an auxiliary tool rather than a replacement for human creativity, allowing designers to integrate intuition, local context, aesthetic values, and personal identity into each design. and also regarding the authenticity of the work, [29] critique the notion of authorship questioning who can truly be regarded as the "author" when the output is the result of collaboration between human and machine, as well as exploring the distinction between artificial and human intelligence within the creative context. Moreover, for beginners, developing an AI generator trained on an appropriate dataset can be particularly challenging. The further development of datasets is essential; however, concerns remain regarding their originality [2], [8]. However, the usage of Artificial Intelligence (AI) as a branch of computer science that enables machines to simulate human intelligence, such as learning, reasoning, problem-solving, and creativity have been very promising in other research of built environment. It uses algorithms and vast amounts of data to identify patterns, make decisions, and act independently without direct human intervention. [31].

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8.2 Competing Interests

We declare that we have no known financial or non-financial interests that are directly or indirectly related to the work submitted for publication

8.3 Ethics Declaration

We declare no conflict of interest. This manuscript is original, has not been published previously, and is not under consideration for publication elsewhere. This study did not involve human participants or animals; therefore, ethical approval was not required.