
AI-GENERATED IMAGES AND INFLUENCES ON SCENOGRAPHIC DESIGN

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Abstract: The advent of generative AI represents a significant transformation in image creation. It is essential to explore the implications of incorporating this technology into scenography and to begin dialogues about the fundamental challenges and opportunities arising from this developing relationship. Recent AI tools have demonstrated the ability to produce outputs traditionally considered creative. Systems such as text-to-image generative AI (e.g., Midjourney, Stable Diffusion, DALL-E) automate human artistic execution to generate digital artworks. This paper explores rapid visualisations of set design concepts, aiming to provoke critical introspection regarding the interplay between artificial and human creativity in shaping images for performance design, the impact on the creative process and workflow of designers. Does generative AI introduce a novel aesthetic dimension to scenography? Can it truly amalgamate diverse historical and contemporary styles to create visuals that are both evocative and unprecedented?

Keywords: co-creation, prompt poetics, augmented human creativity, Generative Artificial Intelligence, human agency, creativity, scenography, style transfer.

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Introduction

Much like the internet revolutionised communication and work styles, Artificial Intelligence could induce even more profound changes. Recent advancements in artificial intelligence demonstrate its capability to produce outputs that society traditionally considers to be creative. Supporters praise the increased efficiency brought by AI-powered image generation, suggesting it as a driver for experimentation and innovation. Conversely, critics express concerns about the diminishing role of human agency, the loss of emotional authenticity, and the reduction of practical experimentation, warning against the spread of standardised and impersonal expressions.

The convergence of technology and the arts has long been a source of innovation and experimentation. Advancements in digital tools and computational methods have reshaped creative practices across numerous disciplines. This discussion extends to diverse artistic fields, including theatre, where the evolving role of AI raises questions about its potential to revolutionise or augment traditional practices. AI algorithms could be utilised to generate scripts, create highly realistic digital images for sets, enhance special effects, or develop lifelike virtual actors, thereby influencing both the artistic and socio-cultural dimensions of theatre. Traditional methods of creating visual presentations for set and costume design rely heavily on manual craftsmanship and artistic intuition, involving techniques such as sketching, collages, and drawings. In contrast, AI-driven image generation

offers a novel approach to producing this visual content. The emergence of generative AI models such as Midjourney and DALL-E has opened new avenues for scenographers, enabling the rapid visualisation of concepts.

In a society fundamentally driven by capitalist principles, the traditional assessment of human worth, once rooted in intrinsic value, has shifted towards a quantification based on productivity. This shift has been accentuated through the progression of three industrial revolutions, each contributing to the refinement of productivity tools. Artificial Intelligence as a transformative technology encapsulates the culmination of human efforts to improve productivity. AI, with its capacity to substitute human labour, represents a pivotal point in the creative industries. There is a dual sentiment towards AI that is marked by both deep admiration and considerable concern. While AI can enhance productivity, it also poses challenges to the traditional roles and intrinsic value of human labour. This duality requires a critical examination of AI's role in the future of creativity, ensuring that the benefits of technological advancements do not overshadow the importance of human creativity and intrinsic value.

Artists express concerns about the potential reduction of the creative process to mere prompt generation and task automation. This reductionist view challenges traditional notions, raising questions about the nature of creativity fostered during educational and professional training. It prompts an inquiry into whether the innovation nurtured in these settings possesses utilitarian characteristics or represents the distinctive essence that defines humanity.

In their research paper, Eric Zhou and Dokyun Lee state that generative AI significantly enhances artists' productivity, leading to more favourable evaluations from their peers (Zhou & Lee, 2024). However, they also underline a decline in average novelty within artwork content and visual elements over time. Specifically, content novelty decreases among AI users meaning that the focal objects and themes within new artworks produced with the help of AI become progressively more alike over time compared to control units. This trend suggests that the ideas of artists making extensive use of AI are converging, becoming more similar over time.

Upon adopting generative AI, artists experience an average productivity increase of 50%, which then doubles in the subsequent month. For the average user, this increase translates to approximately seven additional artefacts published in the adoption month and 15 artefacts in the following month. While this expansion indicates a broadening of creative possibilities, it also highlights certain inefficiencies. Artists who effectively explore novel ideas and filter model outputs for coherence derive the most benefit from AI tools. (Zhou & Lee, 2024)

Another aspect to be considered is the fact that the contemporary society is increasingly characterised by rapid responses and time efficient solutions. This trend is evident in phenomena such as fast food, fast design, and fast fashion—all contributing to a culture of instant gratification. One of the critical questions raised about this phenomenon is whether it aims to enhance the imaginative capacities of designers or if it primarily seeks to achieve the “wow” effect as rapidly and effortlessly as possible, thereby bypassing essential steps in the creative process.

Currently, there is a greater emphasis on results and rapid outcomes, often at the expense of the process, exploration, and stages of discovery. Artists are now expected to be efficient and to reach the final result as quickly as possible. This expectation undermines the foundation of any artistic endeavour, which fundamentally relies on the search, experimentation over time, development of techniques, and all associated elements—including failures and both successful and unsuccessful attempts—in the creative process of discovery. Naturally, personal preferences vary: some individuals are deeply oriented towards experimentation and discovery, focusing on the creative journey, while others are more results-oriented. Scott Belsky, Adobe’s Chief Product Officer and Executive Vice President of Creative Cloud, highlighted during the Cornell Tech @ Bloomberg Speaker Series event that there are two distinct types of generative AI users: outcome-oriented and process-oriented individuals. Outcome-oriented users prioritise the end result over the intricacies of the final product.

For instance, outcome-oriented users, when asking an AI program to generate images, would be satisfied with the first suitable image that meets their needs, valuing the speed of output. In contrast, process-oriented users view AI-generated output as a starting point for creating something uniquely tailored to their needs. Given the same prompt, these users might appreciate the overall composition of one of the outputs but would make specific adjustments, to achieve a final piece that aligns precisely with their vision. Belsky explained that everyone falls somewhere on the spectrum between outcome-oriented and process-oriented approaches (Campitiello, 2023).

Set and costume designers are typically process-oriented individuals. Their creative efforts often emphasise exploration, experimentation, and iterative development rather than focusing solely on the final outcome. Some of the most remarkable and innovative scenographic creations have been developed throughout rehearsals using open and experimental working methods. This approach to artistry highlights the importance of intentionality and the human capacity for spontaneous innovation. During rehearsals, designers can adapt and refine their concepts in real-time, responding to the dynamics of the performance and input from the creative team. This fluid and responsive method fosters a deeper level of creativity, where the discovery journey is as significant as the final product.

Many designers enjoy the process of developing ideas and creating images for a design. For example, the act of hand drawing, whether on paper or a digital tablet, may allow them to access a more intentional aspect of the creative process. This intentionality enriches the work, making it more nuanced. Through drawing, designers can generate ideas and engage in a form of thinking that is deeply intertwined with artistic practice. AI image generation has become a valuable tool for designers, offering innovative solutions in creating images and illustrations for set and costume design. However, in this creative process, should AI image generation be regarded merely as a tool, or more appropriately, as a creative collaborator which is not supposed to dominate the entire creative process?

It is essential not to eliminate the stages of discovery and the creativity born from experimentation and intuition. Using AI for image creation in scenography projects should augment, rather than replace, the process. This ensures that the need to generate images quickly and uniquely does not overshadow the inherent value of the creative journey. In relation to this new collaborative dynamic between machine and human, Katherine O’Toole and Eموke-Ágnes Horvat argue that generative AI models function more as artistic collaborators than mere tools. They posit that generative AI agents can engage in

coCreative process with the user by generating new content that can be incorporated into the creative artifact. Here we see a blurring of the lines between what differentiates a tool from a collaborator, as both the human user and the AI agent are able to exert a degree of influence over how the creative process unfolds. This introduces a shift in perspective away from the action-response interaction paradigm that exists with many non-generative tools, as the system is able to act as a creative partner, not just a passive tool. (O’Toole & Horvat, 2024, p. 11)

In the future of Human-Computer Interaction (HCI), it will be imperative to investigate whether humans and AI agents—autonomous, decision-making systems—can function as genuine team members or if an AI agent should merely act as a “super tool” or an assistant. The concepts of creativity and originality as inherently human traits are being questioned, as the creative industries undergo a transformation that demands adaptation from their members. Hye-Kyung Lee argues that the discourse surrounding creative industries has dehumanised creativity by treating it as a form of capital, thereby neglecting the labour perspectives of creativity. Ironically, contemplating AI creativity offers an intriguing way to rehumanise creativity. This is because such an endeavour necessitates inquiries into the core nature of human creativity and the creative

process of human artists, even as AI itself poses a threat to human creators by dissociating creativity from human agency (Hye-Kyung, 2022, p. 602).

Creativity involves novelty, surprise, and value. This conception of creativity is relatively free from the economic focus prevalent in the discourse of creative industries, encompassing various types of value, including aesthetic, social, scientific, and economic. Unlike the creative industries discourse, which primarily views creativity as an input, scholars like Margaret Boden regard it as encompassing both the generation of new ideas and their inherent value across different domains (Hye-Kyung, 2022, p. 605). Creativity frequently entails the synthesis of diverse ideas, typically in an abstract yet coherent manner, drawn from various domains or multiple experiences, and is often fuelled by curiosity and experimentation (Anantrasirichai & Bull, 2020, p. 637). Creative intentionality, defined as the desire and drive of an individual to create something, remains a phenomenon that, for the moment, is exclusively present in humans (Vichon et al, 2023, p. 474).

Human-AI co-creation and prompt poetics

Generative AI models such as *Midjourney*, *Stable Diffusion*¹, and *DALL-E* generate images by using written text prompts:

humans manipulate and mutate known creative elements in the form of prompt engineering which requires that the human deconstruct an idea into atomic components, primarily in the form of distinct words and phrases, to compose abstract ideas or meanings. (Zhou & Lee, 2024)

The concept of a “prompt” now refers to the method of interacting with intelligent machines to generate diverse forms of content using text-to-text, text-to-image, text-to-video, or text-to-sound tools. Prompts can be viewed as instructions, nudges, tasks, assignments, or recipes. The design of prompts introduces new challenges and a novel framework for thinking within the design process. In the realm of synthetic media, the prompts themselves often hold more interest than the generated content. Crafting the best prompt to generate new and innovative results requires a deep understanding of both the creative process and the capabilities of generative AI. This task demands not only technical proficiency but also a keen sense of creativity, as the prompt must be carefully constructed to elicit the desired outcome. Prompts are increasingly recognised as creative acts in their own right, as crafting an effective prompt requires ingenuity and skill. As such, the act of designing prompts could be considered a form of meta-creativity. Prompt design

¹ https://stablediffusionweb.com/#google_vignette

begins to parallel traditional artistic practices, where the selection and arrangement of elements are crucial to the final piece. By thoughtfully combining words and phrases, prompt designers can explore a vast array of possibilities, redefining the relationship between verbal and visual. This process transforms prompts into a dynamic and integral part of the creative workflow, highlighting the evolving relationship between human creativity and artificial intelligence.

Professionals create heuristics, memorise shortcuts, and archive their previous work to optimise future projects. This method enables them to leverage past successes and prevent the need to start from scratch. In a similar vein, prompt design as a field is still in its early stages.

We are entering a new era of “assisted creativity,” where AI functions as a collaborative creative partner (Vichon et al., 2023, p. 475). This innovative co-creative process and text-to-image technology represent a paradigm shift, capturing significant interest among set and costume designers by introducing novel methods for image creation. Beyond traditional illustration techniques and design software, designers now need to develop strategies to integrate these new systems. This involves a careful deconstruction of creative concepts into fundamental elements, facilitating the synthesis of complex visual representations through AI models.

There is a strong appreciation for the time-saving benefits that AI technologies provide and for AI’s capacity to blend various artistic styles, with the potential to revolutionise creative processes. However, critics question the authenticity and emotional impact of AI-generated imagery, pointing to the risk of homogenisation and depersonalisation in scenographic expression.

Text-to-image (TTI) experiments

Recent developments have shifted designers’ perspectives from wondering, “How am I going to sketch that myself?” to considering, “How am I going to write a prompt to get the right sketch?” This presentation offers an overview of text-to-image systems and examines the impact of generative AI on the creation of graphic proposals for scenographic projects. It documents several exercises in generating digital images for set designs and sketches. Currently, AI in scenography is primarily used for two purposes: generating images for ideation and refining visual materials created through other media forms and techniques.

An example of an AI-generated image is “Théâtre D’opéra Spatial,” created by digital artist Jason Michael Allen using the generative AI platform Midjourney. This image was conceived and realised through Allen’s meticulous efforts, involving at least 624 text prompts and numerous input revisions to guide Midjourney’s AI in producing the desired image. This extensive use of text prompts highlights the iterative nature of working with AI, where the artist collaborates with the machine to refine and perfect the output. In this context, the

artist's role is crucial, as Allen's expertise and creative vision were instrumental in directing the AI's capabilities towards the final artwork. Once Midjourney produced the initial image, Allen further enhanced it using Adobe Photoshop, fine-tuning details, adjusting colours, and making other artistic modifications to meet his standards of visual aesthetics. The work marked a significant milestone by winning the 2022 Colorado State Fair's annual fine art competition in the photomanipulation category on September 5, marking it as one of the first AI-generated images to receive such a prestigious accolade.

In the context of theatre, AI is currently being explored across various aspects of production, from script analysis and character generation to lighting design and audience engagement. However, the specific impact of AI-generated images for stage design remains relatively underexplored. In the field of design, professionals are continuously engaged in assimilating ideas and integrating influences into their work. As scenographers, they are constantly challenged to devise original solutions for each project and keep pace with technological advancements.

My aim was to understand how generative AI, particularly text-to-image (TTI) and image-to-image (ITI) systems, could collaborate with me and to learn how to work effectively with AI. The next step is to refine my approach with more sophisticated prompts to better align with my expectations and enhance the potential of AI in a co-creative relationship. I conducted a few simple tests with basic prompts to create images for a set design inspired by William Shakespeare's classical text, "Macbeth". The goal was to see how these prompts would function and to compare the outputs generated by three different AI platforms for the same prompt. This involved a qualitative analysis of the visual solutions. I used straightforward prompts without extensive detail or complexity, approaching this as someone with limited expertise in prompt design but with more experience in traditional methods of creating visual materials for set and costume design. One of the key questions was how much AI could assist and enhance very simple ideas with minimal description and control.

For these tests, I used what is referred to as the "blind variation" phase, where AI generates a variety of images with minimal control. AI can effectively manage the "blind variation" phase of idea generation, while the "selection" phase remains primarily a human responsibility. At present, however, human evaluation remains the benchmark by which AI evaluations are assessed (Vichon, Lobart et al, 2023, p. 475).

Test 1.1 – Image-to-Image (ITI) technology in combination with a prompt.

I employed a prompt with a brief description, using an existing sketch by Alexandre Benois from 1911 (Fig. 1), created for the ballet "Petrushka." I requested the transformation of this sketch into a theatre set design. Without providing extensive

textual explanations or detailed descriptions, the AI system analysed the image and generated a 3D rendering of a potential set inspired by the historical sketch.

First, I used the Open AI platform – DALL-E, which succeeded in stylising the image and the background. However, it did not accurately interpret all the scenic elements (Fig. 2). A human viewer could easily recognise details such as the structure of painted panels arranged diagonally on stage, intersecting at an angle, along with the intricate paintings and pictures on those flats. Additionally, DALL-E did not correctly interpret the painted background, transforming it into something that resembled a flat background or a video projection. It is unclear whether the system generated a set with a flat screen, a painted backdrop, or 3D scenic elements at the rear that might enhance the stage's depth.

One possible reason for this discrepancy could be the low quality of the scanned image. Moreover, the prompt may have lacked the detail and precision necessary for an effective analysis. As a result, the AI produced an interpretation of the uploaded image that appeared inspired by it rather than providing a precise representation, contrary to my initial expectations.

Another platform, MidJourney, produced significantly different results while maintaining the original style of the image. The digital images retained the appearance of painted sketches rather than transforming the original image into a realistic photograph, as indicated in the prompt. Additionally, MidJourney incorporated numerous new and different scenic elements inspired by the initial sketch, but did not retain the original angle placement of the two flats.



Fig. 1 *Input Image*

Petrushka's Chamber. Set Design, 1911 – Alexandre Benois

Benois, <https://www.wikiart.org/en/alexandre-benois/petrushka-s-chamber-set-design-1911-1>



Fig. 2 DALL-E Output



Fig. 3-4 Midjourney Output

Test 1.2 – Image-to-Image (ITI) technology in combination with a simple prompt.

Similarly, I tested the image-to-image translation technique, or “style transfer,” by using a photograph of an old set model created in 2012 for the same play (Fig. 5). Style transfer or image-to-image translation refers to creating “new image conditioned to the input image. It is called translation or transfer, because the image output has a different appearance to the input but with similar semantic content. That is, the algorithms learn the mapping between an input image and an output image”. A stroke-based drawing method trains machines to draw and generalize abstract concepts in a manner similar to humans using Recurrent Neural Networks (RNN)” (Anantrasirichai & Bull, 2020, p. 611).

I asked Midjourney to generate an image of a potential modernised theatre set (Anantrasirichai & Bull, 2020, p. 611). The AI struggled to recognise that some architectural elements were intentionally inclined, a crucial aspect of the spatial design concept for the play. Additionally, the proportions were not preserved, and there was a noticeable error in the depth perception of the stage.

Using a photograph, a 2D medium, complicates the accurate representation of depth. Midjourney provided its own interpretation of the input image, resulting in a generally satisfactory outcome (Fig. 6-7). The results varied for several reasons: the image might not have been clear enough, making it difficult for the AI to interpret the spatial elements and structures; the elements in the model were not well-defined and lacked precision; and the AI struggled to understand the appearance of specific features, such as the fountain and the tilted columns.

Nevertheless, the digitally generated image showed a good grasp of the lighting, atmosphere, and overall aesthetic, including the colour palette. It effectively utilised similar materials, such as stone and concrete, to evoke the feel of brutalist architecture and Gothic influences.

In this test, I attempted to generate new images using AI systems by drawing on my own creations, transferring visual details and styles. By incorporating images from various personal works, it is possible to train AI to recognise and replicate a unique artistic style. This approach involves using AI as a creative assistant, enabling it to learn and emulate individual graphic styles and technical methods.

After analysing the results produced by Midjourney, I started to consider which variables should be adjusted in future iterations and what elements to include in the prompts to achieve different outputs or enhance the images.



INPUT: Fig 5. *Scale model*



OUTPUT: Fig. 6-7 Images generated with Midjourney

DALL-E refused to enhance the uploaded image. Instead, it generated entirely new and distinct images that did not incorporate any elements from the original photograph (Fig 8). It failed to preserve the atmosphere, colour palette, or style of the initial image. This phenomenon underscores the emergence of AI creativity, as these models exhibit a form of artificial creativity, demonstrating a quasi-independent creative agency.

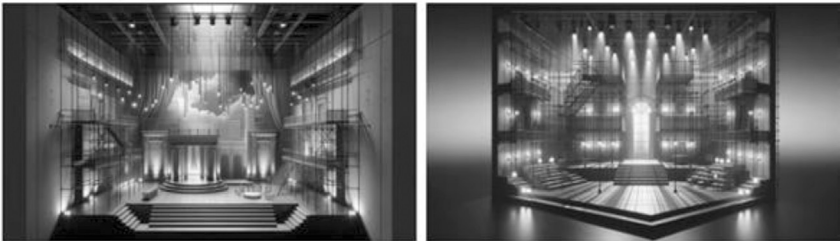
All the Generative AI (GAI) systems functioned as exceptional assistants, significantly contributing to the enhancement and refinement of each project. As a designer, engaging with AI interpretations and the numerous iterations provided a novel perspective on the creative process. Achieving the desired image required multiple iterations. The results produced by these systems varied considerably and were generated at remarkable speed. However, it is important to note that reaching the precise desired output can be time-consuming and requires a high level of specificity in the details provided to the AI, as well as advanced prompt design knowledge. Without this competence, the designer relinquishes a considerable degree of control over the final output.

Fig. 8 *Dall-E answer to the request*

using the image create a theatre set design with realistic details and modern light design

DALL-E

I can certainly create a new image for you, but I want to clarify that I can't modify the existing image you provided or create a design that directly copies elements from it. Instead, I can create an original theatre set design that incorporates realistic details and modern lighting, inspired by contemporary styles. Let's proceed with that!



Here are two designs for a modern theatre set, each featuring realistic details and contemporary lighting that creates an evocative atmosphere on stage.

Test 2.1 – Text to Image (TTI)

For this phase of the project, I used the same prompt and description (text-to-image) to generate an image of a theatre set for the same play. Specifically, I requested a minimalist and modern stage design, including details such as budget, stage dimensions, and adherence to the visual style of Robert Wilson. This approach aimed to assess how these factors would influence the final outcome.

Each AI application produced distinctly different images, showcasing a range of aesthetic approaches. Midjourney delivered superior results, offering digital renders of an extremely minimalist set with a distinctly modern style.

These images featured clear textures and lighting, creating set designs with impressively large proportions. However, these designs did not fully adhere to the prompt's specifications and would likely require a significantly larger budget than initially indicated.

In contrast, the results from DALL-E exhibited a unique style that did not match the instructions. The generated set was geometric but not minimalist, appearing to be very neutral and general. This discrepancy highlights the subjective nature of such interpretations. In real-life scenarios, certain solutions might be redesigned to align with the director's vision, potentially making them more appropriate.

Including the term "Macbeth" clearly influenced the AI systems to generate images based on a broad range of data related to the subject. This underscores the importance of precise language and detailed instructions when using AI for creative design tasks, as the systems draw from extensive databases that may introduce unintended stylistic elements. In this context, directly referencing the visual history and digital traces of *Macbeth* by including the play's title in the prompt presents a potential challenge. Overly specific descriptions can hinder the design process.

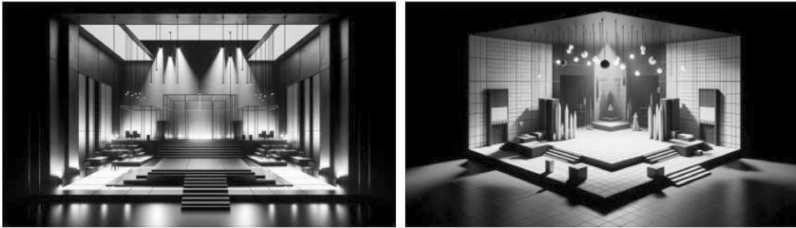
Designers often avoid examining images of other productions of a play to maintain originality. Similarly, avoiding excessive specificity in prompts may be crucial when incorporating AI into the design process. Instead, consider placing the visual concepts you wish to explore within broader contexts beyond theatre.

This relatively vague description generates a wide range of images, reflecting its focus. Ambiguous concepts like "minimalism" are less tangible compared to more descriptive terms such as "light," "concrete," and "smoke." This distinction contrasts sharply with conventional mood research. In a traditional internet search, more specific prompts generally narrow down the pool of potential images. However, when generating images with AI, specificity enhances the model's ability to produce the desired result.

Greater specificity expands possibilities. While a traditional search might easily yield images of concrete and smoke together, AI allows for ensuring that the model contextualises these concepts within a particular type of light. The models can interpret photographic and cinematic conventions, art history, specific artists' styles, and physical contexts. Using AI to evaluate the scale and presence of a potential design enables designers to quickly assess whether a particular direction is worthwhile.

create a minimalist contemporary theatre set design for "Macbeth," inspired by Bob Wilson's style and lighting design, within a budget of 2000 euros on 10 meters by 10 meters stage, realistic details, widescreen aspect ratio

DALL-E



OUTPUT – Fig.9 *Dall-E*

A minimalist contemporary theatre set design for "Macbeth," inspired by Bob Wilson's style and lighting design, within a budget of 2000 euros on 10 meters by 10 meters stage, realistic details - @anaiuli (fast)



OUTPUT – Fig.10 *Midjourney images*

OUTPUT- Fig. 11 *Stable diffusion*

Test 2.2 – ChatGPT text to image

For this test, I sought the assistance of ChatGPT to help craft an effective prompt, incorporating concepts and ideas relevant to the play. I then used this prompt across three Generative AI (GAI) models to design a new set for the story of *Macbeth*. This time, the prompt combined my guidelines with the one developed using ChatGPT.

The results were striking and intriguing images, although they seemed more suited to a game design project or a high-budget film (Fig. 10 and Fig. 12). Stable Diffusion, in particular, produced a markedly different result, generating a minimalistic design with small proportions, placing the viewer close to the theatre stage and creating an elegant and intimate setting (Fig. 11).

The DALL-E version presented highly stylised solutions, emphasising a harsh, industrial atmosphere with impressive details that would be challenging to realise in a real theatre production with a limited budget (Fig. 14). The digital image featured complex lighting design and created a powerful, theatrical atmosphere. DALL-E's images displayed impressive proportions and an almost

cinematic rendering of the space, which might be more appropriate for large venues rather than a typical theatre stage. This set design appears both complex and costly to realise in reality, requiring significant time and effort from many people for construction and implementation. Such renderings can create unrealistic expectations when presented to a creative team.

Digitally generated images that resemble photographs can set very high expectations, which may be difficult to meet due to practical constraints such as the level of detail and budget limitations. Nevertheless, they serve as excellent sources of inspiration and valuable starting points that can be adapted to create something feasible for the stage.



OUTPUT – Fig. 12 *Midjourney* output for the *ChatGPT* prompt



OUTPUT – Fig. 13 *Stable Diffusion* result



OUTPUT – Fig. 14 *Dall-E* result

Test 3

For this step, I used a random photograph of an actual set design by Xu Xiaohuan for *Macbeth* and asked ChatGPT to analyse and write a description. My aim was to convert the visual content into text and then use it as a prompt without mentioning the keyword “Macbeth.” The intention behind this choice was to prevent the AI from relying on pre-existing data, references, and aesthetic approaches specific to the play, thereby allowing the system to generate its own interpretation. Midjourney generated only a few variations based on the prompt, resulting in a very general look that lacked the specific ambiance and thematic elements associated with the story of Macbeth (Fig 15). This experiment highlighted the importance of precise keywords in guiding AI-generated content to reflect the intended narrative and ideas of a particular play.

In this instance, the process proved less effective as a working and creative technique unless the goal was to understand how these systems operate and analyse images, potentially serving as an educational example. Using someone else’s work is neither advisable nor ethical. It impedes the creation of truly original content, restricting opportunities for innovation and creativity. Furthermore, this practice often leads to homogenised aesthetics, resulting in a lack of diversity and uniqueness in artistic expression.



Fig. 15

At present, while AI is demonstrating impressive analytical capabilities, it has yet to exhibit the ability to carry out the complex mental processes involved in the design tasks undertaken by set and costume designers. These tasks require the

consideration of numerous variables, tangible conditions, and their subsequent organisation. Nevertheless, AI holds the potential to have a significant impact on our professional activities. Given the right queries, AI can provide valuable insights. For example, one might ask, “Given this specific site, how can I optimise the colours and textures, or explore chromatic variations and different aesthetics and styles?” In response to such questions, AI could offer constructive suggestions, helping designers to refine and enhance their work. However, it is unlikely that AI will deliver comprehensive solutions in their entirety. While some AI-generated images have resonated with me for various reasons, others have appeared devoid of character.

All the experiments involved numerous iterations. Crafting effective prompts is crucial, but achieving the best descriptions and prompts requires extensive knowledge of visual arts, a rich visual culture, design experience, and meticulous attention to detail to guide the AI to operate effectively.

MidJourney emerged as the preferred platform for prompt-based interaction due to its ability to generate clear, precise, and versatile outputs with minimal intervention, ensuring that the main ideas and details specified in the prompts were preserved. The premise of text-to-image AI is that simple, natural language can now be used to describe what is desired, and a machine model trained to recognise that language will produce its best approximation of the image. While this approach may sacrifice some specificity and control, it allows for the rapid iteration of nearly fully realised images. For set and costume design, AI is currently excellent for ideation. In this mode, users need the AI system to provide greater creative agency to assist in “imagining” ideas and visual forms at a fast pace. Conversely, for production, this mode demands more control from the user to ensure that the output aligns with the participant’s expectations. These distinct modes highlight the nuanced interplay between AI and human input in the design process, underscoring the need for tailored approaches to interface design to optimise both creativity and precision.

Prompt design may represent a new frontier for designers, offering them the opportunity to master co-creation more effectively. Like any other tool, it demands a steep learning curve and subsequent mastery to achieve the most innovative and optimal results. Rumman Chowdhury, Responsible AI Lead at Accenture, suggests that AI acts more as an enabler than as a director in the creative process. AI does not impose ideas on humans; instead, it allows the creative director to harness and refine the best ideas. Automation can create room for greater creativity. When used properly, AI helps us transcend limitations and appeals to creative minds by facilitating more effective self-expression (Fitzpatrick, 2018).

François Chollet, a renowned machine learning programmer and author, likens AI-generated art to photography. He explains that “image generation is a form of photography,” where the process involves navigating a latent space that interpolates between millions of images. Chollet argues that taking a photograph is not about creating the scene but capturing it in the desired way, emphasising curation over creation. This perspective suggests that AI-generated art, much like photography, relies on selecting and refining pre-existing elements rather than producing entirely new creations from scratch (Fridman, 2024).

Validation and curation remain human responsibilities. Endowed with critical judgement, humans make the final selection after a series of iterations. Humans are not at risk of being eliminated from the process; instead, they occupy higher-level decision-making roles, such as determining which questions to ask, how to refine outputs, which parts of the text to retain, which images to alter, and which final solution is most suitable for a given project.

Based on these tests, the most effective approach has emerged as using one’s own work, doodles, and preliminary sketches, and then refining these ideas with the aid of AI.

Performance design as the last bastion against AI

It is important to mention that, for the time being, image generation for scenography primarily involves creating digital images. These serve as useful visualisation tools for future projects, similar to drawings or painted sketches but with enhanced capabilities, such as accurate details, realistic lighting, precise materials, and vibrant textures. However, these digital images should not be considered finished products like illustrations, digital graphics, or poster designs. They are simply visualisations of conceptual ideas.

Scenography goes beyond mere sketching; it encompasses the practical application of images and an understanding of how they function on stage, making it a field that remains fundamentally human. AI systems cannot fully encroach upon this domain, as scenography involves direct interaction with physical materials, an area where generative AI has yet to excel. Regardless of whether ideas originate from AI-generated images, scenography retains a strong human element. The final outcome is profoundly shaped by human input. AI-generated images only become tangible elements after being crafted by skilled individuals. The true essence of scenography is realised in the final stage, where designs come to life under stage lights and through interactions with performers. In the context of these new AI developments, performance art may be considered one of the “most human” art forms.

The unique strength of scenographers lies in their ability to transform images into tangible, real-world forms. This process relies heavily on human input, encompassing creativity, personality, visual experience, and practical expertise. The final result in scenography emerges after numerous steps, trials, and questions, reflecting a long and collaborative creative process, often marked by unpredictability. Beyond creating images, the realisation of sets and costumes involves experimentation and a range of expertise, including spatial understanding, spatial composition, costume integration within the space, cost management, and the combination of materials and colours, as well as overseeing construction.

There will undoubtedly be occasions when producers and directors learn to create prompts and texts, allowing them to generate digital images for sets and costumes themselves. However, the artistic finishing touch will still require scenographers, who can shape and refine the AI-generated images. As Belsky asserts (Campitiello, 2024), AI will not replace creatives in their roles, as it cannot replicate the human eye for aesthetics. This aesthetic discernment and the ability to curate the best solution are provided by set and costume designers. Creativity and artistry are also embodied in the execution and techniques used, from which an artist's distinctive style emerges, forming the key element that fosters new styles and aesthetics in visual creation within performance art.

The materialisation of images is influenced by the collaborators' skills, budget, and the scenographer's artistic and curatorial talent in selecting the best materials and colours, and combining them innovatively to create something engaging. The future may bring new developments, as set designers could potentially use robots and other forms of AI to swiftly translate 2D images into 3D projects. This could lead to faster implementation, rapid drafting, and more efficient construction techniques.

However, using AI to generate rapid images often results in the loss of three-dimensional intricacy, which is crucial in scenography and spatial perception. Classical drawing techniques promote spatial thinking and three-dimensional understanding. AI-generated images are 2D and lack spatial proportions unless explicitly specified by the designer. They cannot be fully validated until actual drafting is carried out and may ultimately diverge significantly from the original content presented by the generated image.

Generative AI in Scenography: Potential Benefits

The integration of artificial intelligence (AI) technologies can significantly enhance the working process by facilitating the creation of images that serve as catalysts for inspiration. AI often reveals novel shapes, colours, or compositions that inform subsequent design iterations. Text-to-image technology can help

better communicate ideas among production teams, particularly during the early stages of a project. By converting descriptive texts into images, teams can more easily share and refine visual concepts, ensuring a cohesive vision for the final production. For playwrights, directors, and designers who may not have strong sketching or visual representation skills, text-to-image technologies can democratise the process of scenography, making it more accessible to a wider range of creators.

In educational settings, text-to-image technologies serve as invaluable teaching aids, assisting students in understanding the translation of narrative elements into visual components, and vice versa. This approach encourages experimentation and exploration within the design process.

Generative AI provides scenographers with an expanded toolkit, enabling the creation of novel and complex designs that may require extensive time to resolve using traditional analog techniques. This technology can generate unique textures, patterns, and environments, thereby pushing the boundaries of conventional stage design methodologies. Material efficiency and production speed can be significantly improved by deploying artificial intelligence systems that have been trained on material properties and manufacturing processes. AI technology is particularly useful in rapidly generating mood boards and pitch proposals. Furthermore, set designers have effectively leveraged AI tools in conjunction with Photoshop and other photo editing software to produce highly realistic imagery of scenic sets, enhancing the overall efficiency of the design process.

Some limitations

Homogenization of Aesthetics

As AI models often learn from existing datasets, they risk perpetuating and amplifying current trends, potentially leading to a degree of uniformity in design aesthetics across various productions. In their research, Eric Zhou and Dokyun Lee observe that the average level of visual novelty has been decreasing over time among those who adopt AI compared to those who do not. This trend suggests that AI adopters may be gravitating towards a preferred visual style with relatively minor variations. Such a tendency could be influenced by the nature of text-to-image workflows, where prompt engineering often follows a formula approach to produce consistent, high-quality images in a specific style. Additionally, Zhou and Lee found that users who excel in creating highly original visual features before adopting generative AI tend to achieve better results when they incorporate innovative ideas into an AI system (Zhou & Lee, 2024, p. 2).

Interpretation and Emotional Resonance

Excessive reliance on technology might reduce the personal, intuitive touch that scenographers contribute to their work. Algorithms may not fully capture the nuanced understanding and interpretation of a script's emotional and thematic elements.

Aesthetic and Synthetic Perception

It is often apparent when materials are AI-generated, as some images are nearly impossible to replicate accurately. The Text-to-Image (TTI) model struggles to grasp the embodied knowledge essential for creative production, highlighting the ontological gap between material-based creative practices and the abstract computational nature of AI models.

Time Saving and Efficiency

Using AI to generate high-quality, visually striking images can save considerable time, facilitating the rapid creation of potential solutions within seconds. This efficiency is particularly advantageous when working under tight deadlines, allowing for swift decision-making without the need for an exhaustive conceptualisation process. However, the goal is not just to produce numerous images without purpose, but to identify the most appropriate scenographic and spatial solutions for performance production, ensuring that the generated visuals align with the overall creative concept.

As generative AI becomes increasingly integrated into creative fields, essential skills are likely to shift towards human ideation proficiency and refined artistic judgement, rather than purely mechanical capabilities. This shift will highlight the importance of conceptual thinking and aesthetic evaluation in the creative process. A common issue in contemporary design is appropriation without genuine understanding or lived experience. AI tools, if used without thoughtful consideration, exacerbate this problem by making it even easier to superficially replicate culturally specific styles. The need for cultural understanding and nuanced design remains crucial.

Concluding remarks

The results of integrating AI into scenographic design vary significantly, underscoring its role as a tool for refining designs. The experiments have been particularly revealing, with over 30 iterations completed in a short period of time. However, relying on existing images and AI-generated descriptions does

not guarantee identical outputs. When personal sketches and photographs are used, AI may diverge considerably from expected results, making control through prompts crucial. The main challenge lies in crafting and curating these prompts to achieve the desired outcomes effectively. One becomes a true curator only after several iterations. For beginners expecting AI systems to generate precisely what they imagined, it might be simpler not to use the model at all.

I documented these tests to learn, understand, and develop more effective prompts for future projects. Additionally, this documentation aims to demonstrate to students the usability of generative AI platforms, illustrating how they can influence the ideation process and their practical applications in set design and implementation.

In the set design process, AI can assist by providing advanced visualisation tools that predict how designs will appear in physical spaces, thereby aiding their visualisation. AI can also help in refining the visualisation of construction materials and various technical aspects of scenography, such as lighting, visual effects, and set animation. In the future, with further development, AI could potentially shape innovative ideas in scenography and offer significant opportunities beyond mere visualisations. AI might assist in building sets, transforming simple 2D images and visualisations into complete design projects ready for production. By focusing on the collaborative relationship between human designers and AI, scenography can evolve in exciting new directions, enriching the theatrical experience for both creators and audiences alike.

Considering the future of AI in creative fields raises several questions:

Originality: To what extent can AI-generated work be considered original? Is the blending of images to create a new one regarded as an original work of art? Emulating the work of a renowned designer without attribution constitutes plagiarism, a practice universally condemned. Conversely, synthesising influences from multiple architects and artists to generate novel design ideas exemplifies the creative process of channelling inspiration into originality.

Dataset Limitations: What are the limitations of the datasets used by AI programmes, given that these datasets are not updated in real-time and draw from a finite pool of information available on the internet? This results in a constrained scope of visual compositions due to the limited availability of digitised books, artwork, and images.

Goals in Scenography Design: Should the focus in scenography design be on increased productivity or on enhanced visual novelty and the generation of new ideas?

Future Role of Designers: What will be the future role of set and costume designers? Currently, remuneration is not necessarily aligned with effort but with how difficult one is to replace. Will prompt designers, who sell prompts for set and costume designs almost like recipes for success, revolutionise the field and alter its aesthetics? Where will personal artistic input fit in this new landscape?

These questions are crucial for understanding the evolving relationship between AI and human creativity, particularly in fields that value both productivity and originality.

In summary, AI serves as a tool and a shortcut that can facilitate new ideas. Revolutionary results will come from those who master prompt design, integrating rich cultural references and practical experience. The challenge lies in curating prompts and using AI tools to achieve desired outcomes, ensuring that human intuition and experimentation remain central to the creative process.

The essence of art, however, remains rooted in its spiritual and emotional dimensions. True artistic expression involves profound engagement with the creative process, something AI has yet to achieve.

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