

Impact of Artificial Intelligence on the Graphic Design industry

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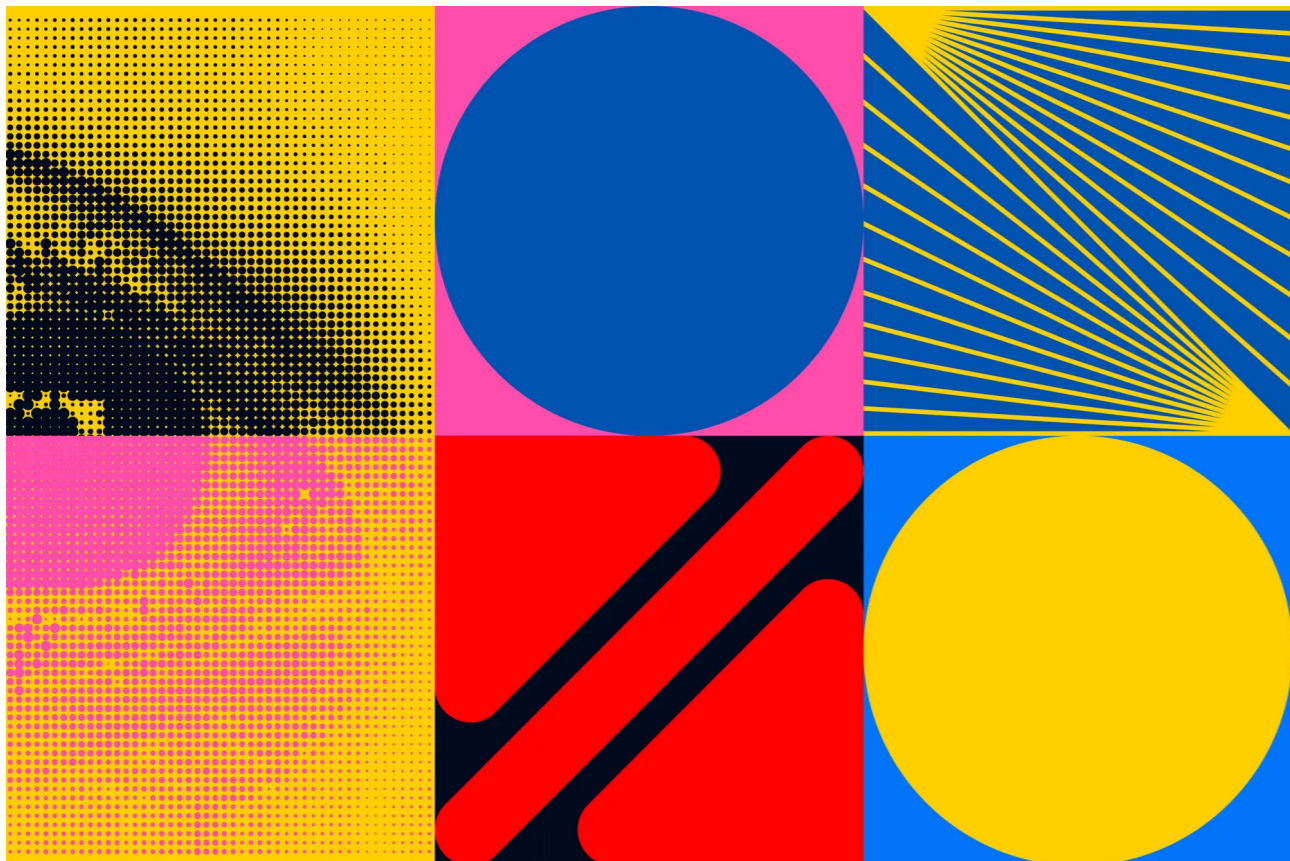


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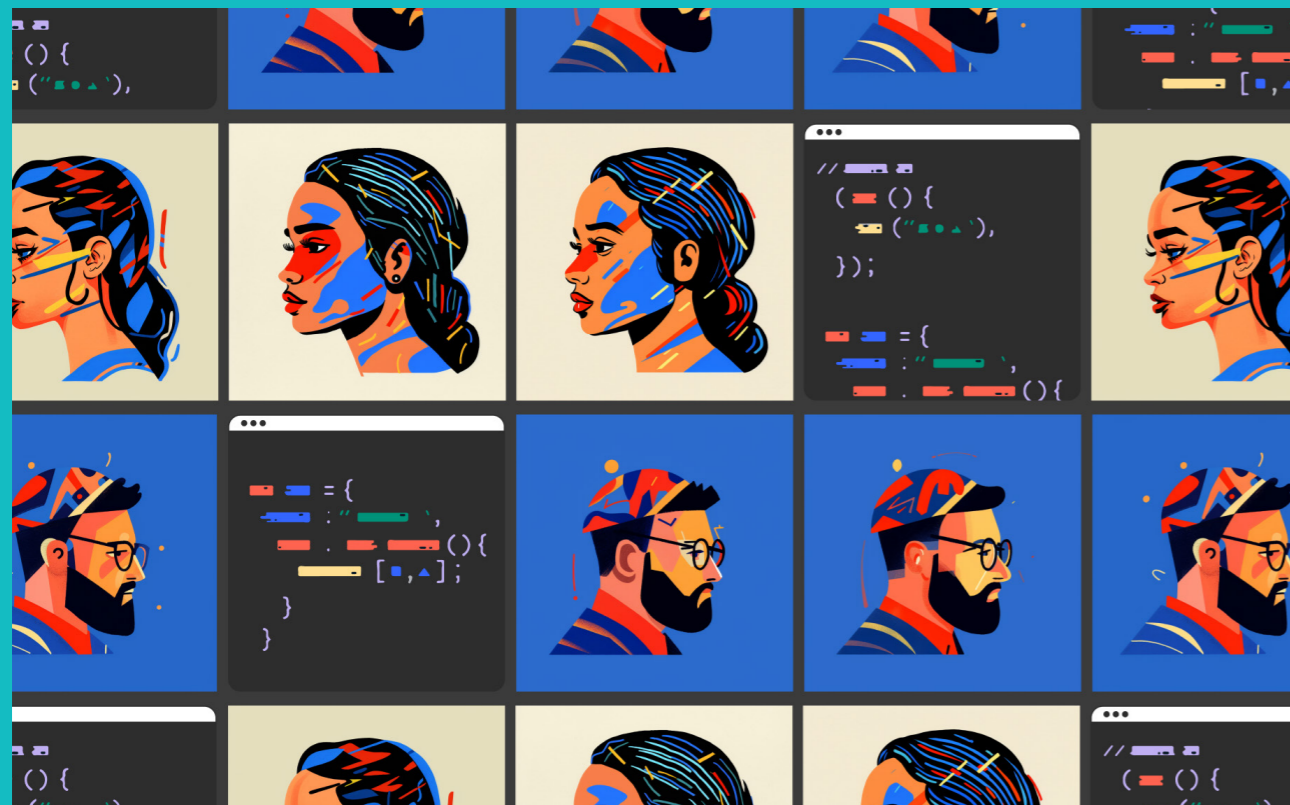


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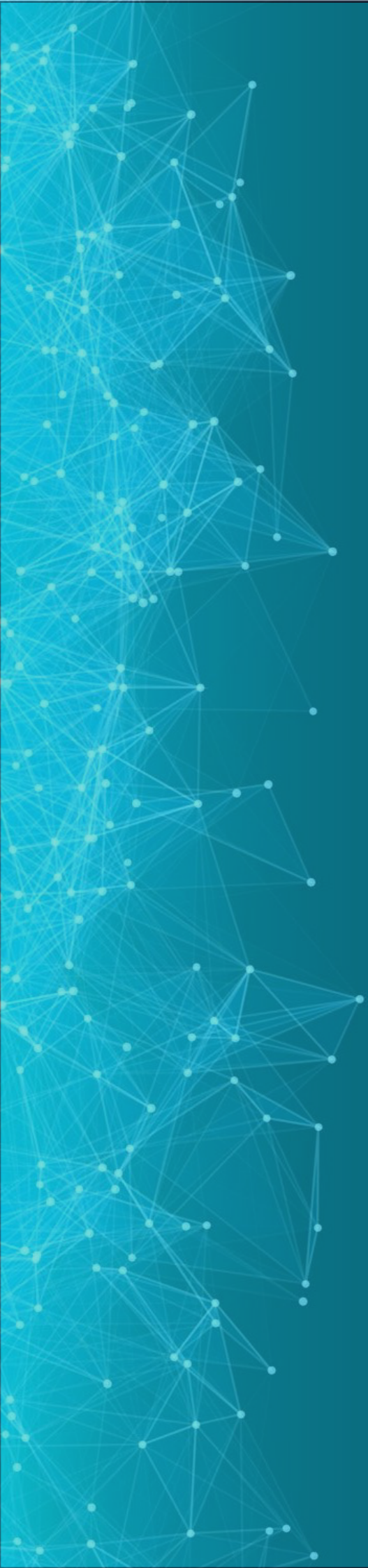


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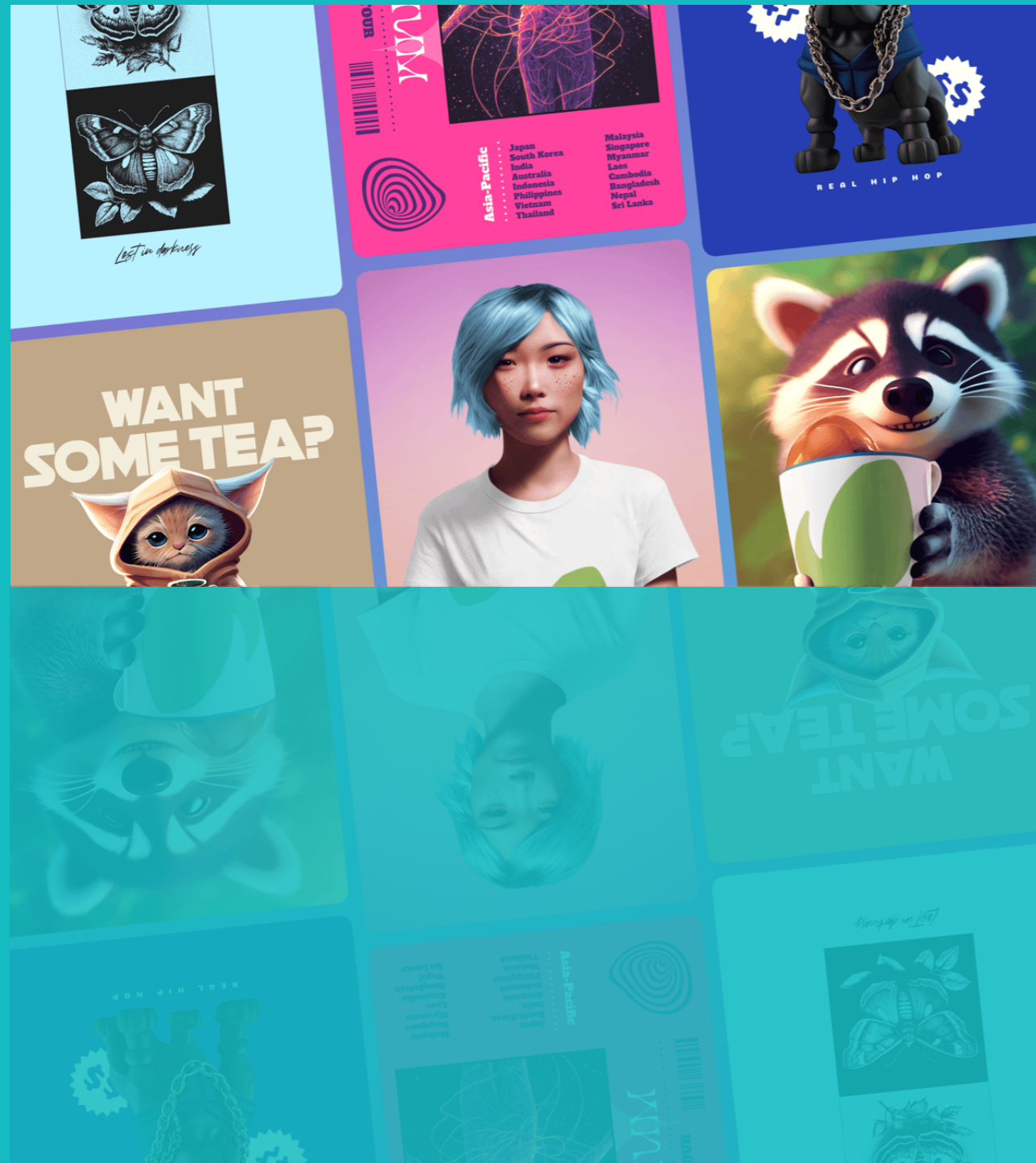


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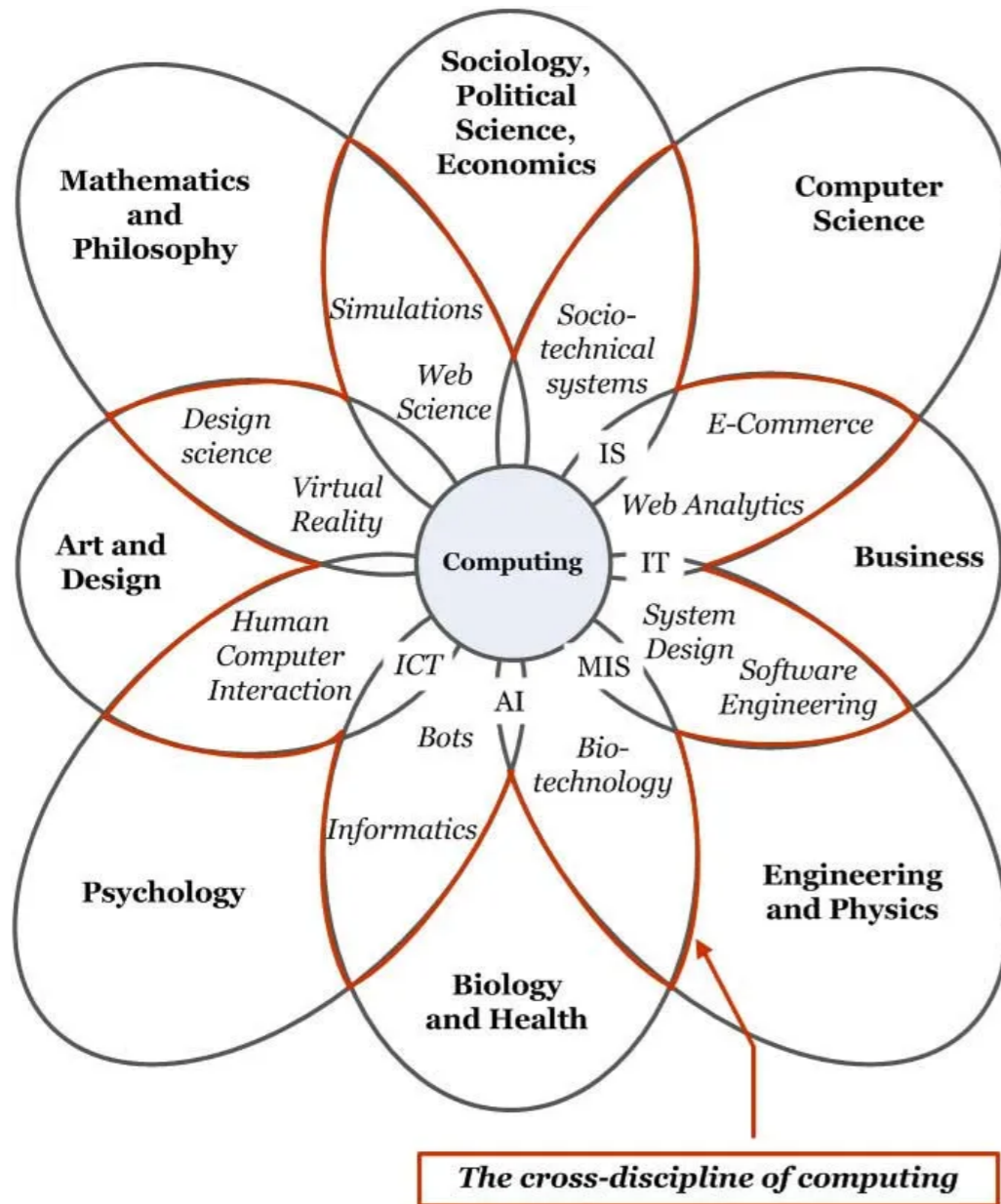


Fig.5 Diagram of AI Crossover

Abstract

Artificial Intelligence and Generative AI are beginning to impact graphic design practice and the work of designers. Programmes such as Chat GPT, DALL-E and other websites that involve AI, are, appropriately, beginning to make designers apprehensive for the future of the industry.

Graphic designers today do not know exactly what this big change to the industry will involve. It could allow just anybody to be a designer, or an artist, due to the capabilities of these Generative design websites and platforms. Designers now must make a choice to either stay away from this technology, or embrace it as part of their everyday working life. As with any new development that involves huge amounts of data, there are ethical and copyright issues that artists and designers may have concerns about.

AI has been around for a long time, with many years of research and development, from early computer games, where the user could play against the computer, without the need for another player, to things such as spell check or other 'helpful' functions. AI has now, however, evolved to become a new 'scary' thing with unknown possibilities for its evolution moving forward. Experiments have shown that Generative AI should not replace the designer, as the results do not compare to a professional's work and suggest that it may even help the designer, by making the first initial steps of creative work quicker or easier. AI may even prove to be a helpful tool, assisting rather than replacing the designer, although only time will tell.

AI is a machine's ability to perform the cognitive functions we associate with human minds, such as perceiving, reasoning, learning, interacting with an environment, problem solving, and even exercising creativity

(Mckinsey, 2023).

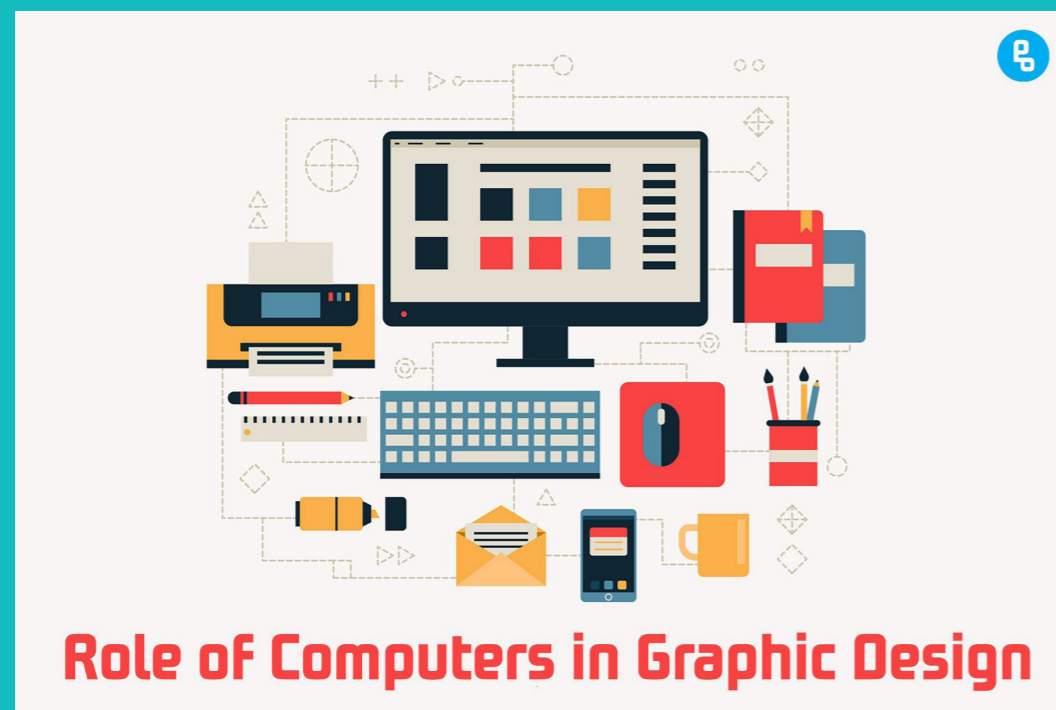


Fig.6 Role of Computers in Graphic Design

Chapter One

Introduction

This dissertation will discuss the different areas of Artificial Intelligence (AI) that relate to graphic design and how these will impact the design industry. It explains the history of AI and how it evolved through time. It considers whether AI can be a powerful tool for the designer if used in the correct way and references how use of AI technology may present ethical issues for the graphic designer.

It discusses iterations of the newest commonly available AI software, such as Chat GPT and Canva and examines how use of these could be a problem for the design industry, as it could take work away from designers. AI is relatively new to the everyday user, even though it has been emerging over decades; as it grows and advances it could change how the user interacts with the software and by doing so the programmes themselves could learn and change. Due to yet unknown factors, there is not a lot of evidence to demonstrate whether this technology will be for the better, or to the detriment of the design industry. This dissertation undertakes experiments to broadly demonstrate how AI may work for the designer, with an analysis provided of the results of experiments undertaken.

AI has gone through many years of tests, research and prototyping to get to where it is today. AI is in the category of 'computer science', it processes data and performs like a human, using problem solving techniques and an extreme amount of data from all aspects of life to be able to replace a human in doing certain tasks, with aspects of human prompts to achieve a desired outcome.

Artificial Intelligence (AI) has been spoken about for many years, with scientists researching and developing this technology. There has been a lot of research, funding and time spent on AI programmes and possibilities. The work began in the 1900's for developing AI and has passed different milestones and work of various people who made AI possible and what it is today.

Tableau.com states the other important dates and events that led to the advancements of AI, the first person and key date would be in the 1950's, when 'Alan Turing published Computer Machinery and Intelligence, which proposed a test of machine intelligence called The Imitation Game (tableau.com, 2023). Then, two years later, Arthur Samuel invented the first game of checkers, which was programmed to play as a one player mode against a computer.

functional tool... that had led her to experiment in a way which opened up new avenues of serendipitous design

(Eskilson, 2007, pg. 349)



Fig.7 April Greiman 'Does it make sense?' Poster for Design Quarterly.

Chapter Two

History

One of the greatest innovators in the field was John McCarthy, widely recognized as the father of Artificial Intelligence, due to his astounding contribution in the field of Computer Science and AI.....It was in the mid-1950s that McCarthy coined the term Artificial Intelligence, which he would define as "the science and engineering of making intelligent machines" (Tenaio-ai blog, 2023).

Due to the major increase in digital technology and social media presence, this has meant that designer now has various platforms and devices to be designing for, which has been a big influence on the workings of programmes such as Adobe, seeing the integration of AI tools into this type of software. AI has presented both new leads and 'challenges' since its introduction into the design industry, introducing changes in the way the graphic designer works today.

With regards to the work of the graphic designer, AI presents a big change, in the sense that it has the capacity to take time away from mundane tasks. Generative AI is a programme that is under the umbrella term of AI. This uses algorithmic, and enormous amounts of, data, along with prompts from the designer to choose creative outcomes; it can work with the designer to help 'generate design variations and even predict user preferences' (Setiawan, 2023).

The design world saw the rise of the desktop computer, with the phrase 'desktop publishing' conceived by Paul Brainerd (1947), suggests Eskilson (2007, pg. 350). Artist April Greiman (1948) was one of the first designers to buy a Macintosh computer, viewing it as a 'functional tool...that had led her to experiment in a way which opened up new avenues of serendipitous design' (Eskilson, 2007, pg. 349). The Macintosh was one of the new desktop computers, launching in 1984. Greiman designed a poster for 'Design Quarterly' in 1986, in which she deconstructed a 32 – page magazine into one horizontal poster. The image was created using programmes on the Macintosh called Macvision image digitizer and Macpaint.

According to robpdesign.com (2023), there has been a big transformation over the last ten years, from traditional analogue design techniques to more of a digital design approach. This has been known as the 'Digital revolution'.

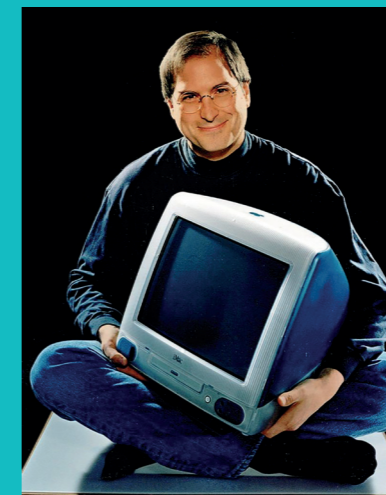


Fig.8 Steve Jobs with early computer

Today, we stand on the precipice of a whole new chapter in graphic design history. The advent of augmented reality and virtual reality, the pervasiveness of smart phones, and the promise of 5G and the Internet of Things all point to yet another dramatic shift in the evolution of graphic design technology. We're ready for it. Are you?

(Franco, 2023)

Fig.9 Vintage Univac computer system

Chapter Three

The rise of AI in Graphic Design Software

One of the biggest players in the evolution of graphic design software is the current industry titan, Adobe Systems. Before Adobe swallowed up its competitors to become the industry leader it is today, other major software producers were Aldus, Altsys, Macromedia, Quark, and Xerox PARC (Franco, 2023).

AI today would not be where it is currently, if it was not for the software that came before, such as one of the first image editing programmes 'superpaint', according to Franco, (2023). This became a driving force for various programmes, such as; PageMaker, which was widely used in the 1990s for desktop publishing, allowing graphic designers to transform their drawings and sketches digitally.

Other programmes included Freehand, Dreamweaver and Flash which was a multimedia programme. Although Flash became a lot less popular with the introduction of the new 'Adobe Creative Suite and introduction of AfterEffects and Premier Pro; Adobe became the leading software for designers.

'Adobe and Aldus – came together in the mid -1980's in such a way that they established a totally new system for graphic designers'

(Ekilson, 2007, pg.350)



Fig.10 AI Graphic of data

AI software companies, such as ChatGPT and DALL-E, have been about for many years, but only recently have become a huge talking point within the design world. This is largely thanks to the release of their newest version of the DALL-E software, where users can create instant artwork. Users type in word prompts, can select an art style, and the programme uses the data stored in the block chain system to create the artwork.

This artwork does not always create what the user asks for and has issues with human hands, for example, with some images created having several fingers on one hand.

There are also times the AI does not understand what is being asked, leading to outcomes that are completely unrelated to the prompts.

This is largely due to the AI database and the fact that not many hands and/or specific information on some categories have been in the system to take enough inspiration from, according to Dixon (2023).

The examples of these mistakes by AI are shown in Fig Six and Seven. These companies have applied AI to devices such as Alexa the smart speaker.

The outcomes of these images can be quite questionable and not to what the users may have intended. 'There is a difference between a regular tool used by a person and a tool like AI, whose function is determined by the structures within it' (Davis, 2023).

Other sites such as Canva have been developed for people who may not have the same design skillset as trained graphic designers.

They allow the user to design with predesigned layouts, templates, typography and animation effects, without having any professional knowledge of graphic design (Meron, 2022). Canva too has now introduced an AI component. Other sites such as Canva have been developed for people who may not have the same design skillset as trained graphic designers. They allow the user to design with predesigned layouts, templates, typography and animation effects, without having any professional knowledge of graphic design (Meron, 2022). Canva too has now introduced an AI component.

Software products now use AI algorithms to generate multiple permutations of designs based on user-defined objectives. They then parade the permutations within a single user interface, enabling the user to evaluate them visually. Additionally, some products feature evaluation metrics that simplify the comparison process. This is known as generative design, and it uses automation to provide better insights regarding a design, thus enabling faster and better decision making (Kevin,2023).

In recent years, AI powered tools, such as Generative AI, have been incorporated into design programmes graphic designers use today, like Adobe and Figma, This has been a huge change for the industry, creating problems, while also presenting possibilities for future ideas for design.

With all the software and programmes designers have today such as; Figma, Adobe Suite, which includes Photoshop, Lightroom, Illustrator, After effects, Premier Pro and more, it is no surprise that AI powered tools have made their way into the design world, creating possibilities for enormous changes in graphic design practice.

Fig. 11 Examples of AI Generated images of Hands



Undoubtedly, graphic design entails creativity and is under the influence of the automation process. As technology advances and the process of graphic design continues on computers, artificial intelligence applications inevitably enter the design industry. Today, it is possible to design a logo on a creation websites using artificial intelligence codes, without the need for a graphic designer. A person without design experience is able to design a website on web pages developed for that purpose, again, without the 'need' for a designer. However, creativity and originality of these works, in terms of design, is a matter of debate

Fig. 12 AI Generated hand image



(Ezgi, Pg 184.185, 2018)

‘While artificial intelligence that is not generative is still useful, generative AI is transformative. We’ve only just begun to experience how and where it will help us to achieve results that would have either taken much longer or not been possible at all’

(Adobe.com, 2023)

Fig.13 AI Generated Art

Chapter Four

AI in design practice

With the advancements of AI in design programmes made for users without design experience, there have been questions around how this could affect the design world in general. At present, you can now make a logo yourself without the need for a designer by using just a website with a few word prompts, or an image for a book without the need for a designer or illustrator. It could either help Designers to complete more mundane tasks, or take work away from the professionals who trained hard to get to where they are today.

(Webb, 2023) describes AI as having some bias results, such as racism and gender discrimination, as most of the prompts produced results based on white men and not women or men of colour, no matter how much Webb tried. The prompts even included ‘a CEO of a company that makes tampons’ (Webb, 2023), yet the website did not know what a tampon was and outcomes were ridiculous.

The updates to Adobe such as Adobe Firefly have the potential to be more helpful to professional designers, as these updates are on software that designers use in a regular basis.

Incorporating Generative AI can make making mood boards and research very easy and much quicker, as with only a few prompts Generative AI can create content for your work. Companies today that want to make use of AI as part of their everyday business practice will need to create training experiences for their employers, as it is a fast-growing and complex area.

An example of how AI has been used within the industry for the first time is the cover of Cosmopolitan magazine. The magazine collaborated with Open-AI who are the developers of DALL-E and DALL-E 2 and also artist Karen X.Cheng. The team experimented with a number of different ideas, one of them being ‘a woman holding a martini glass’ (Liu, 2022).

The results and attempts to add different items into the glass seemed very frustrating. The team also typed in the prompt ‘Darth Vader on a Cosmopolitan magazine cover’ (Lui, 2022) and the results came out as: ‘it dresses him in a gown and gives him hot-pink lipstick’ (Lui, 2022) after a lot of trial and error the artist Karen X.Cheng had created what the team really envisioned for the cover. The word prompts used was ‘a strong female president astronaut warrior walking on the planet Mars, digital art synthwave.’ (Lui, 2022).



Fig.14 World's first AI Magazine cover Cosmopolitan

'A strong female president astronaut warrior walking on the planet Mars, digital art synthwave.'

(Liu, 2022)



Fig. 15 Outcomes from AI Magazine cover ideas

ChatGPT: Optimizing Language Models for Dialogue

Fig.16 Chat GPT Graphic

We've trained a model called ChatGPT which interacts in a conversational way. The dialogue format makes it easy to answer followup questions, admit its mistakes, correct premises, and reject inappropriate requests. A sibling model to InstructGPT is trained in a prompt and response format.

Chapter Five

AI Experiment one: Chat GPT

By way of research on this topic, I asked Chat GPT to write about the future use of AI for graphic designers. The following is a transcript of the results of this process which was created with the exact word prompts 'Can you write me a thousand-word essay on the future of graphic design' it created exactly what was asked with different sections and subheadings signposting each section.

Title: The Evolution of Graphic Design: Navigating the Impact of Artificial Intelligence

Introduction

The advent of Artificial Intelligence (AI) has brought about transformative changes in various industries, and graphic design is no exception. As AI technologies continue to advance, the role of a graphic designer is undergoing a paradigm shift, with both challenges and opportunities emerging on the horizon. This essay explores the effects of AI on the role of a graphic designer, delving into how these technological advancements are reshaping creativity, workflow, and the overall landscape of graphic design.

I. Automation and Efficiency

One of the most immediate impacts of AI on graphic design is the automation of routine and time-consuming tasks. AI-powered tools can handle repetitive processes such as resizing images, formatting layouts, and even generating initial design concepts. This automation allows graphic designers to focus more on the creative aspects of their work, unleashing their artistic potential and pushing the boundaries of design. AI algorithms can analyse vast amounts of data to identify design trends, user preferences, and emerging styles. By processing this information, AI tools can assist designers in making informed decisions, streamlining the design process, and enhancing efficiency. Consequently, graphic designers may find themselves spending less

time on mundane tasks and more time on ideation and refining their artistic vision.

II. Enhanced Creativity and Collaboration

AI is not replacing human creativity; rather, it is augmenting it. Machine learning algorithms can analyse a designer's previous works, understand their style, and suggest innovative ideas based on patterns and trends. This collaboration between human designers and AI can lead to the creation of unique and compelling designs that seamlessly blend the best of human intuition and machine intelligence.

Moreover, AI facilitates collaboration among designers across geographical boundaries. Cloud-based platforms powered by AI enable real-time collaboration, allowing designers to work simultaneously on projects, share ideas, and receive instant feedback. This collaborative environment fosters a rich exchange of perspectives, enhancing the creative process and resulting in more diverse and well-rounded designs.

III. Personalization and User Experience

As AI gains the ability to understand user behaviour and preferences, graphic designers are presented with new opportunities to create highly personalized and targeted designs. AI algorithms can analyse user data to predict individual preferences, tailoring designs to cater to specific audiences. This level of personalization not only enhances user experience but also increases the effectiveness of visual communication strategies. For instance, AI-driven tools can optimise web layouts based on user interactions, ensuring that the most engaging content is prominently featured. In the realm of branding, AI can assist designers in creating visual identities that resonate with target demographics, fostering a deeper connection between brands and their audiences.

IV. Ethical Considerations and Challenges

While the integration of AI into graphic design



Fig.17 AI Generated Image

brings forth numerous advantages, it also raises ethical considerations and challenges. One of the primary concerns is the potential displacement of human designers by AI-powered tools. As routine tasks become automated, there is a risk that certain design jobs may be rendered obsolete, leading to job displacement within the industry. Striking a balance between the capabilities of AI and the irreplaceable human touch in design is crucial for ensuring a sustainable and inclusive future for graphic designers. Additionally, issues related to data privacy and bias in AI algorithms pose challenges in the ethical application of AI in graphic design. Designers must be mindful of the data used to train AI models, as biased data sets can perpetuate stereotypes and result in unintentional discrimination in design outputs. Maintaining transparency and accountability in the development and use of AI tools is essential to mitigate these ethical concerns.

Conclusion

The evolution of graphic design in the era of AI is a dynamic and multifaceted phenomenon. Automation, efficiency, enhanced creativity, and personalization are among the positive impacts reshaping the role of graphic designers.

The collaboration between human creativity and AI capabilities has the potential to unlock new possibilities and elevate the standard of design excellence.

However, ethical considerations and challenges surrounding job displacement and bias in AI algorithms underscore the need for a thoughtful and responsible approach to the integration of AI in graphic design.

Striking a harmonious balance between human ingenuity and technological innovation is key to harnessing the full potential of AI while preserving the unique and irreplaceable qualities of human-driven creativity in the world of graphic design.

As the industry continues to evolve, graphic designers must embrace the opportunities presented by AI while actively addressing the ethical implications to ensure a future where both technology and human creativity thrive in tandem.

Source: OpenAI. (2023). ChatGPT [Large language model]. <https://chat.openai.com>



Fig.18 Logo Design from
AI Logo Website

Chapter Six

AI Experiment 2: Design a Logo

By way of research on this topic, I asked logo.com to design a logo for an independent art shop. The following is the result from the experiment including screenshots of the process and how simple it is to use.

When starting this experiment, a name was needed for the logo to be created and inputted to the starting page, then the webpage asked for some more information, such as, slogan (optional), which industry the business was related to, colour palette, style of typography and adding a maximum of five keywords to help with icons for the logo.

After the initial stage of gathering information for the AI, the website then creates different variations of the logo based on the user's input. The website offers more to the user if they sign up for a subscription, such as mock ups and social media design templates. Below are the logo results from the website.

As the essay largely discussed generative AI another experiment that would be interesting to include would be a generative art website to see what art for designers and non-designers it can create and how good the quality could be.



Fig.19 Logo Design from
AI Logo Website

Fig.20 Screenshot from Logo Design AI Website

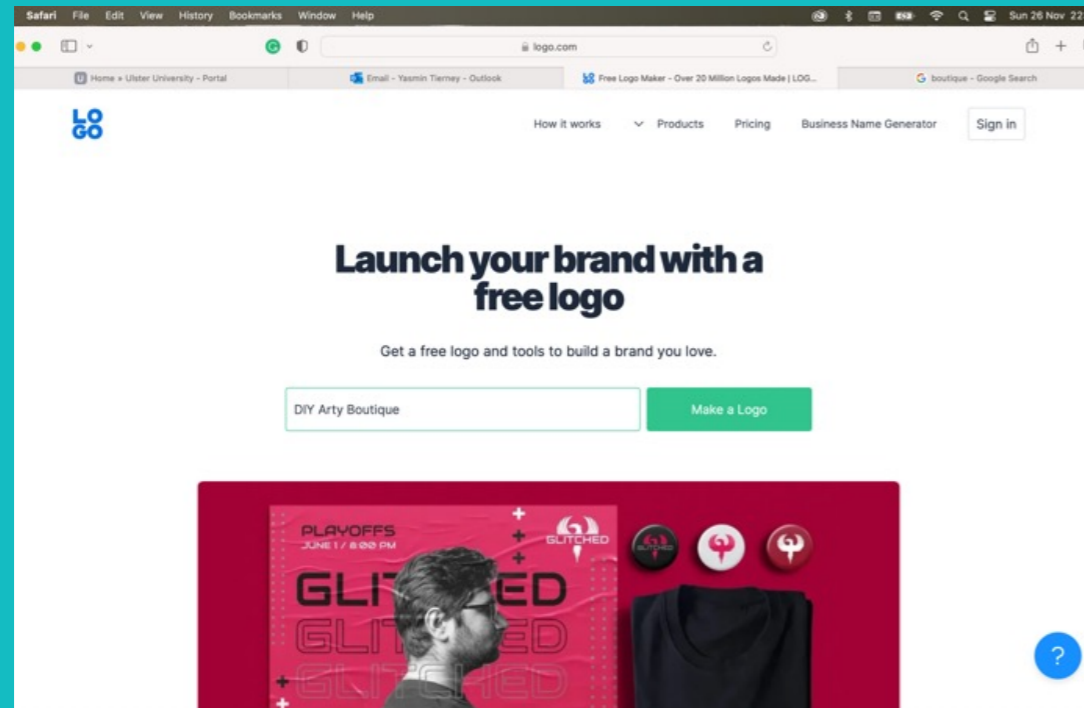


Fig.21 Screenshot from Logo Design AI Website

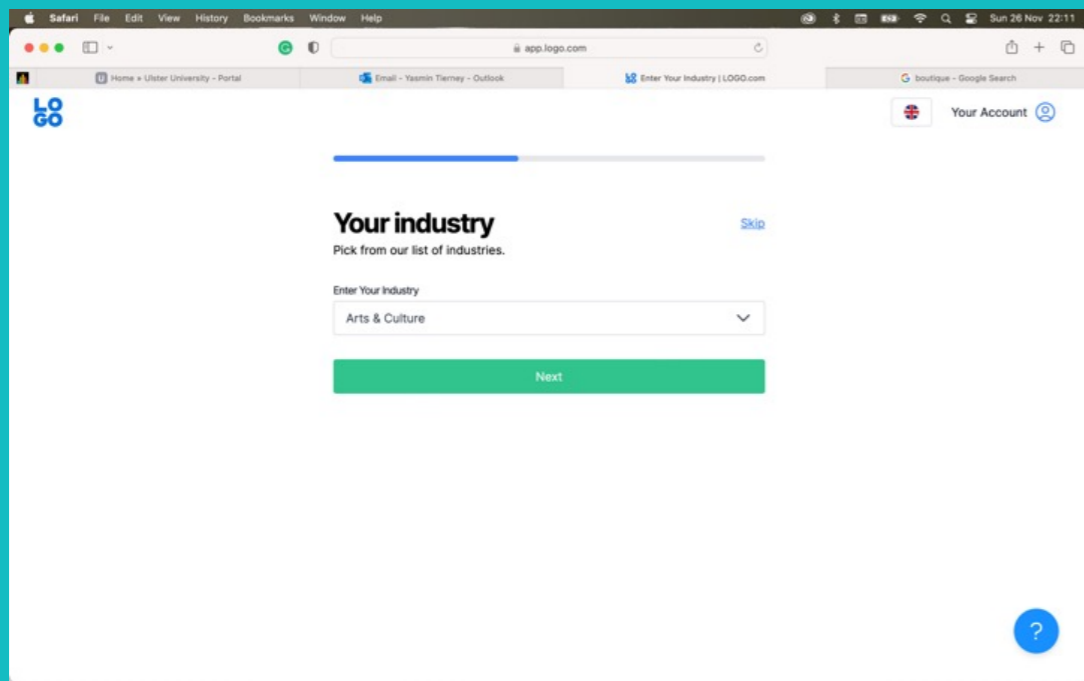


Fig.22 Screenshot from Logo Design AI Website

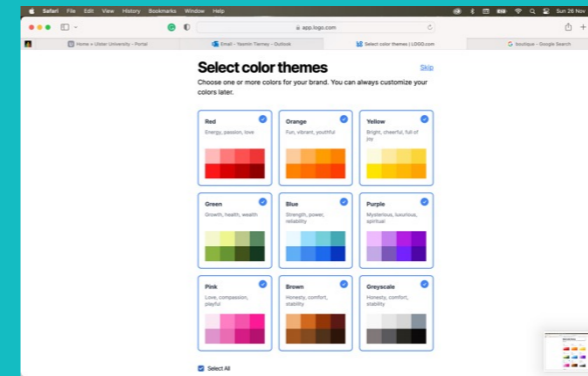


Fig.24 Screenshot from Logo Design AI Website

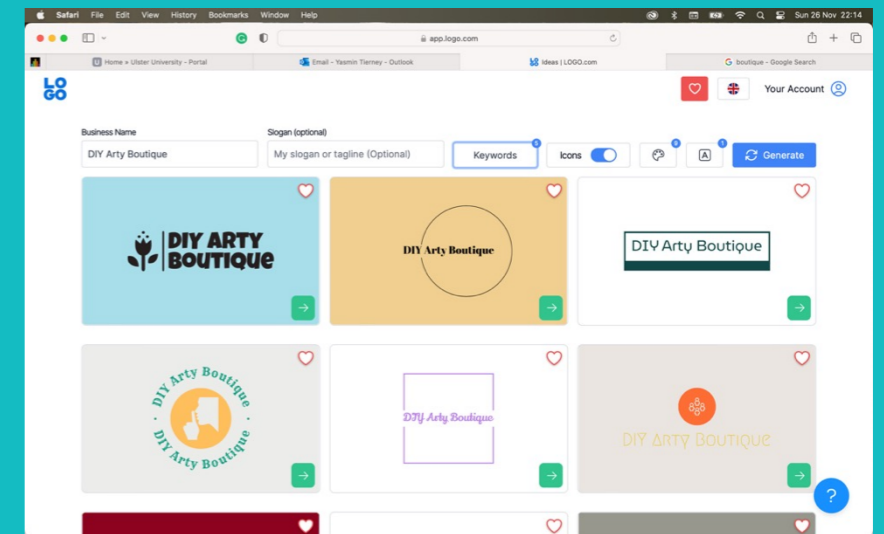


Fig.25 Screenshot from Logo Design AI Website

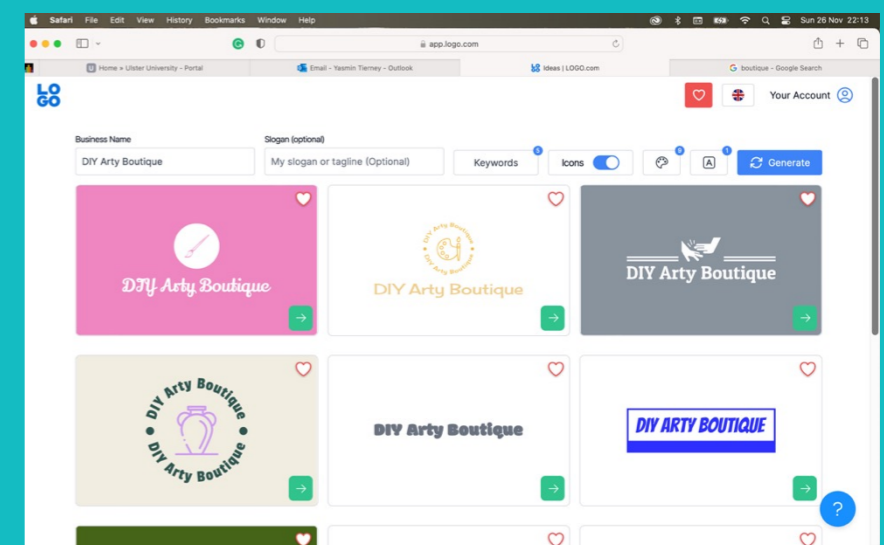
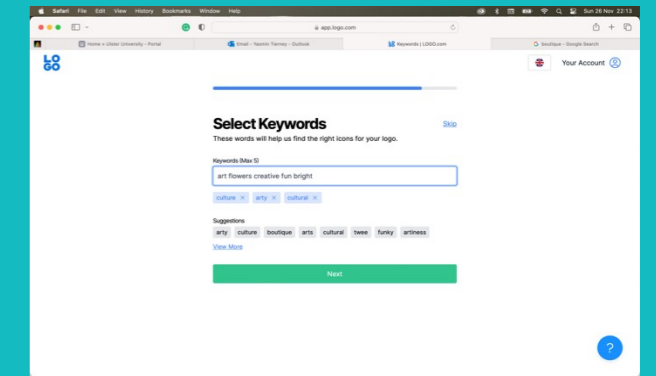


Fig.23 Screenshot from Logo Design AI Website



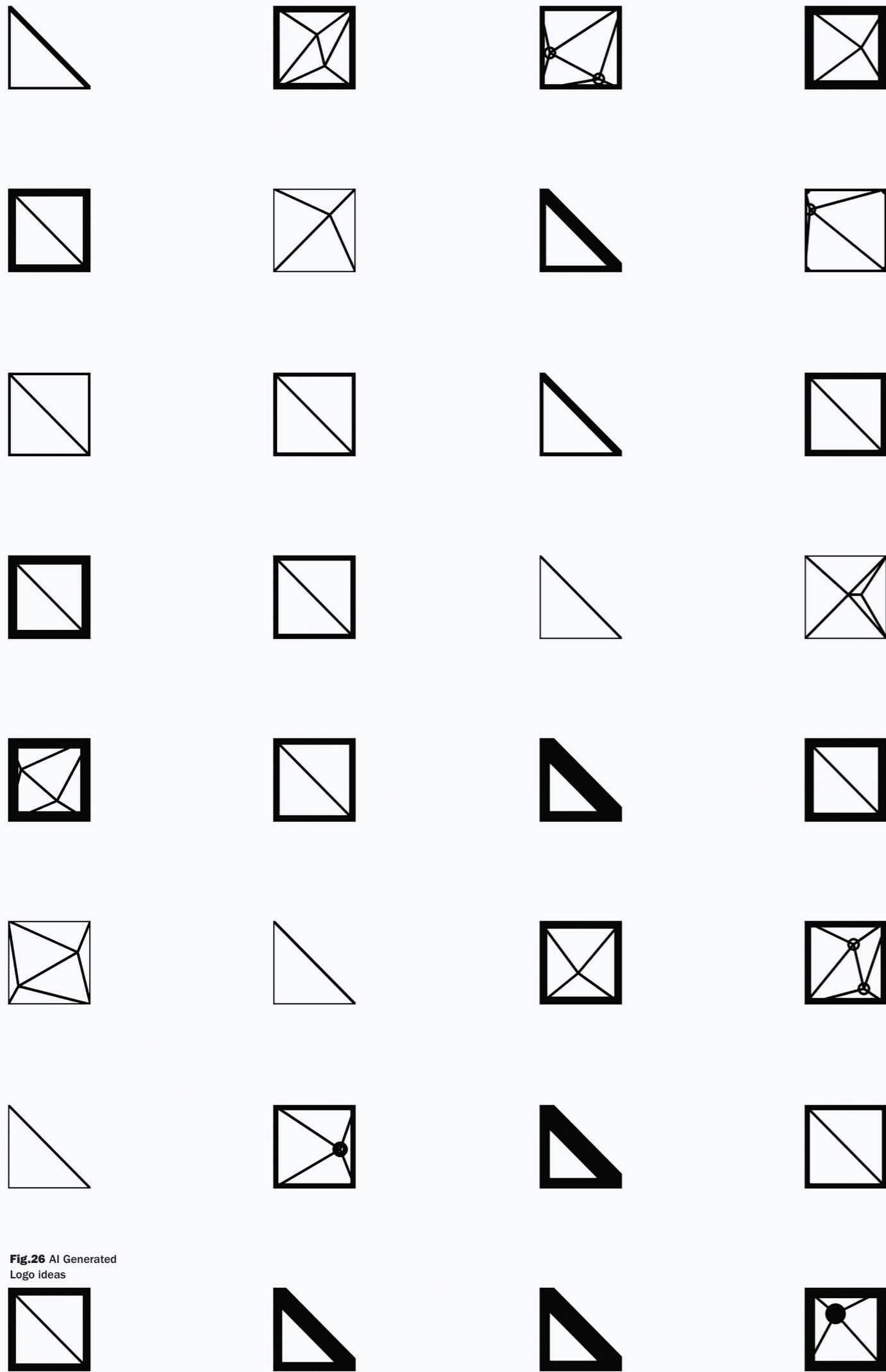


Fig.26 AI Generated Logo ideas

Chapter Seven

AI Experiment 3: Create an image using a generative art AI website with word prompts

The website used for this experiment was <https://app.simplified.com/graphic-design/tools/text-to-image>. The website has a very friendly and easy to use interface.

All that is needed are around five word prompts and to click a style (optional) if wanted. It then generates a number of different options to choose from. It does this by searching through heaps of data and words related to the word prompts and combines both to create a unique image. Although the results can be questionable.

For the experiment the word prompts were Biblical Character, Holding Beer, and Big-Hands. This was typed into the word prompt box and it only produced two outcomes, displayed in fig .



Fig.27 AI Generated art experiment result one



Fig.28 AI Generated art experiment result two

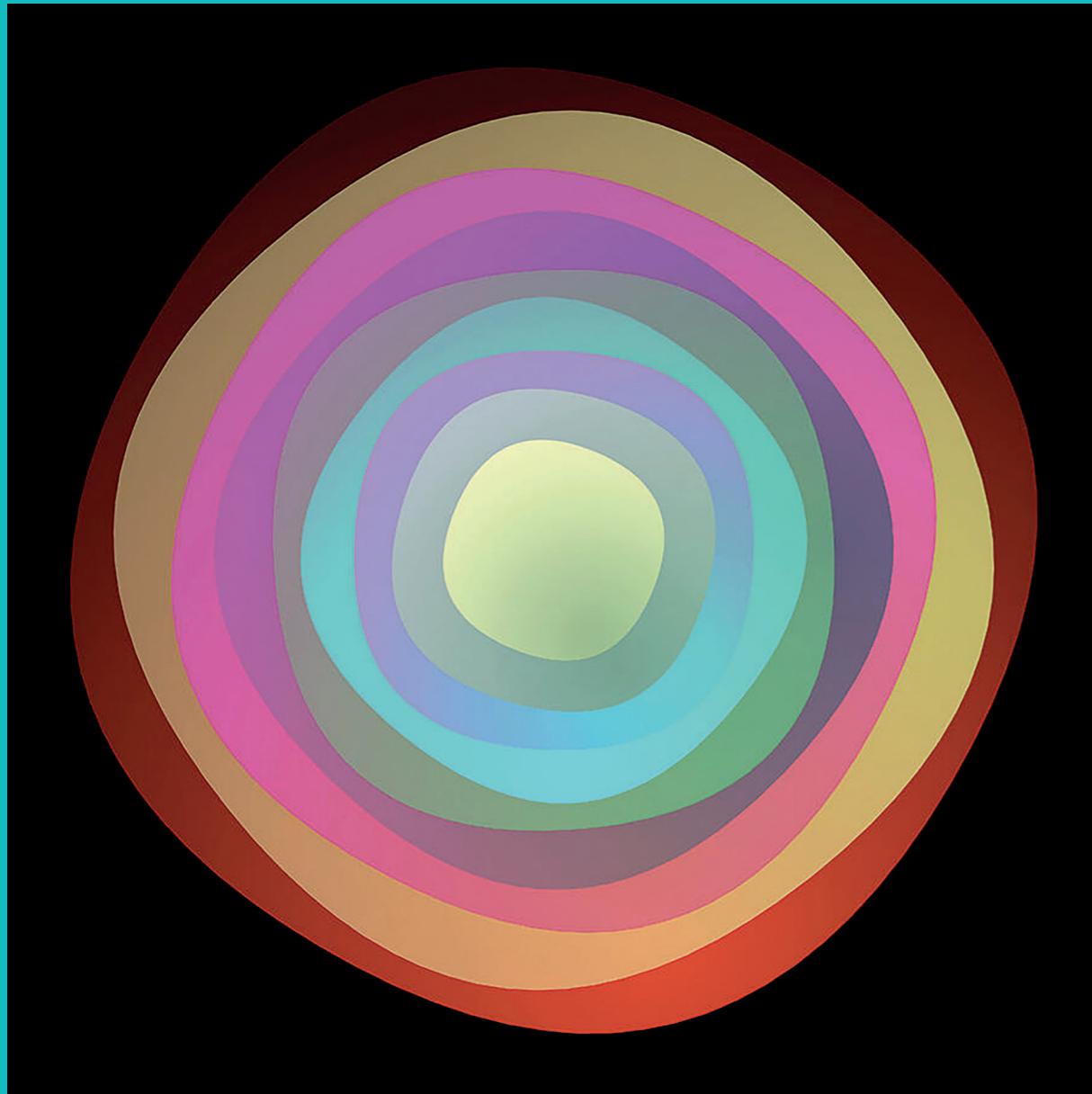


Fig.29 Orb, 2022 AI Art

Chapter Eight

Analysis of experiments above

The experiments above yielded interesting results. The written experiment was similar in many ways to what I had discovered in my research, such as the ethical side to AI and AI powered software that is made for the non-designers that might have an impact on the workload for the professional graphic designer.

Also, how it may help and not necessarily hinder the designer, in assisting in smaller tasks, such as researching and generating ideas. The experiment showed that AI powered software can help the designer in ways such as re sizing images, generating initial design techniques and layouts. This can help designers focus on more significant creative tasks. The AI generated essay also explains the ethical side to AI in design, as the dissertation explains above. It discusses possible job misplacements, a topic that was discussed previously around the new AI software that non-professional designers now can access, such as in Canva and other AI generated design software. The second experiment was to make a logo using an AI powered website that uses words prompts to create a logo for the users desired business.

The website was very easy and quick to use, although parts could only be accessed by a subscription, yet the user is still able to create a logo for a business. The outcomes were not professional, or to a high standard. A graphic designer could most certainly produce work to a higher standard than this website. The outcomes were naive, appearing as though like they were made using 'clip art', basic shapes and patterns.

The last experiment undertaken was to produce a generative art AI website, where the user could make an image using only about five keywords. The words that were inputted and the resulting outcomes had some similarities, but not exactly what the keywords were saying.

There is a lot of data for websites such as the one that was used for this experiment, the source material has few references to the word prompts; it seems like it is still in the early stages of developing this technique in Generative AI. The outcomes from this experiment were not very professional, appearing childish in nature, or as though created by someone with little design knowledge. In addition, it was difficult to find a website that did not charge for their services, so the research acknowledges it might be possible to yield better outcomes with similar experiments from paid sites.

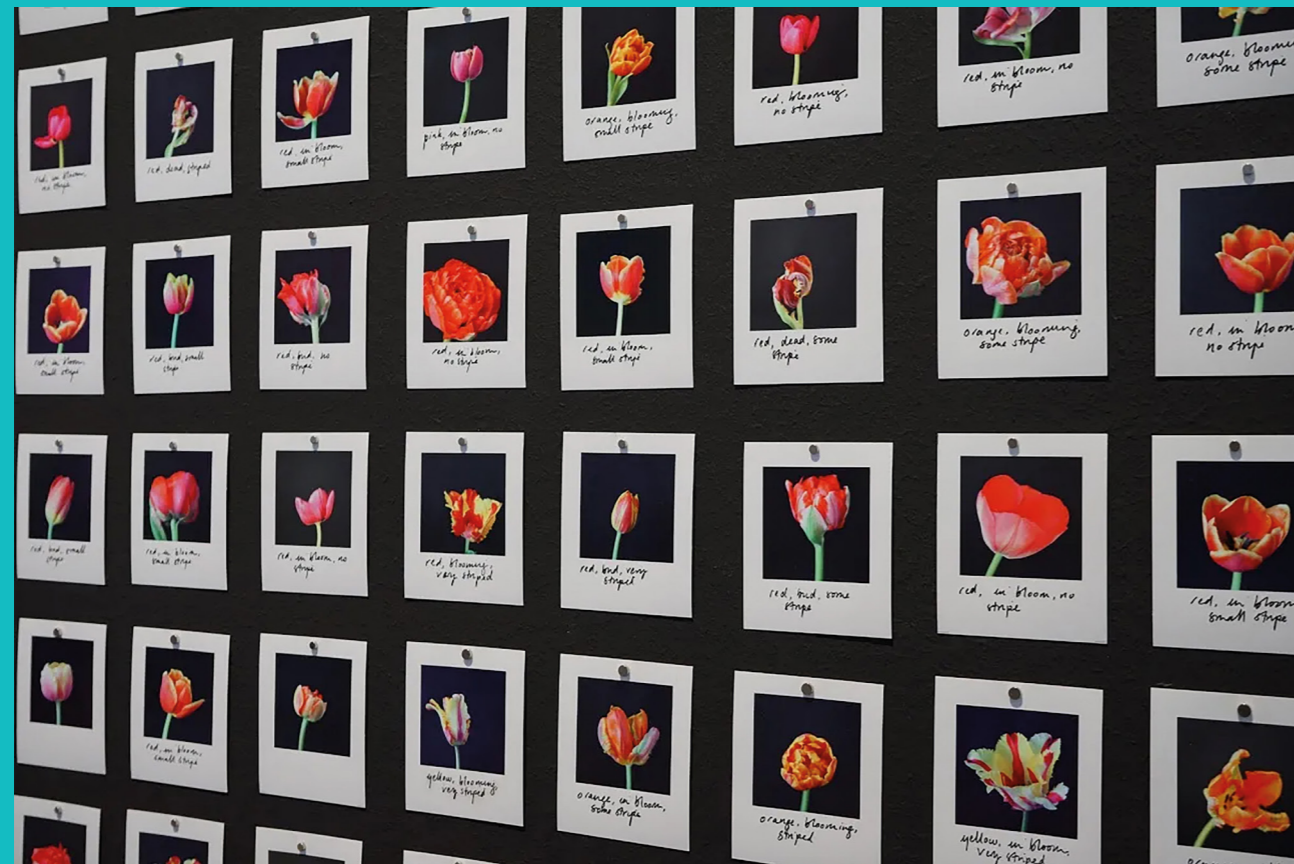


Fig.30 AI Generated Art

Chapter Nine

Conclusion

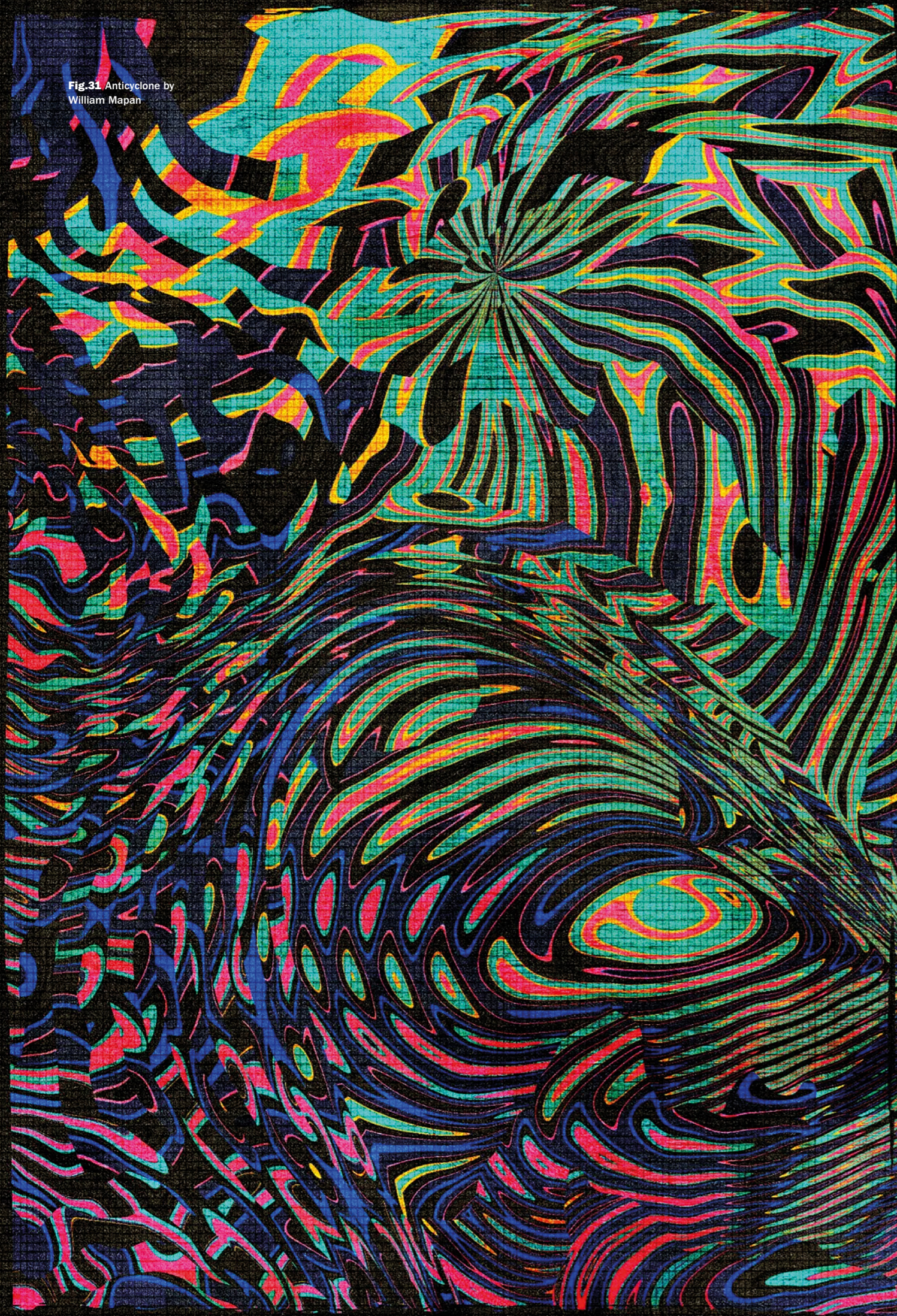
Researching AI and how it may affect the practice of the graphic designer made the unknowns of this technology seem a lot less daunting. It seems that there is still some more work that needs done within AI, especially Generative AI, in order for it to pose a significant threat to the professional designer. While graphic designers may be apprehensive about what might lie ahead in the industry use of AI, it may be that, for now, they could embrace this technology, even using it to their advantage.

As with many new technological developments, there may be positives and negatives. Already artists have filed lawsuits against Midjourney and other sites that generate AI art. VanDusen, (2023) discusses how these sites use source material from art online, created by existing artists.

This poses ethical questions surrounding AI or Generative AI; 'AI is best a collage of professional images' (VanDusen, 2023). After researching AI tools that are new to programmes such as Adobe, it is the conclusion of this research that designers should embrace the change, which is reminiscent of the digital revolution, where designers thought desktop publishing was going to take work away from the industry, yet it improved possibilities for production of work and assisted designers.

Having undertaken experiments relative to the work of a designer, results showed how the industry (as things stand for now) should not perceive AI to be a threat. The results of the visual experiments were at best unsophisticated. While the design world is definitely seeing significant advances in AI technologies and possibilities, it seems that, for now, the work of the graphic designer will continue to have significant value over and above what AI can do.

Fig. 31 Anticyclone by William Mapan



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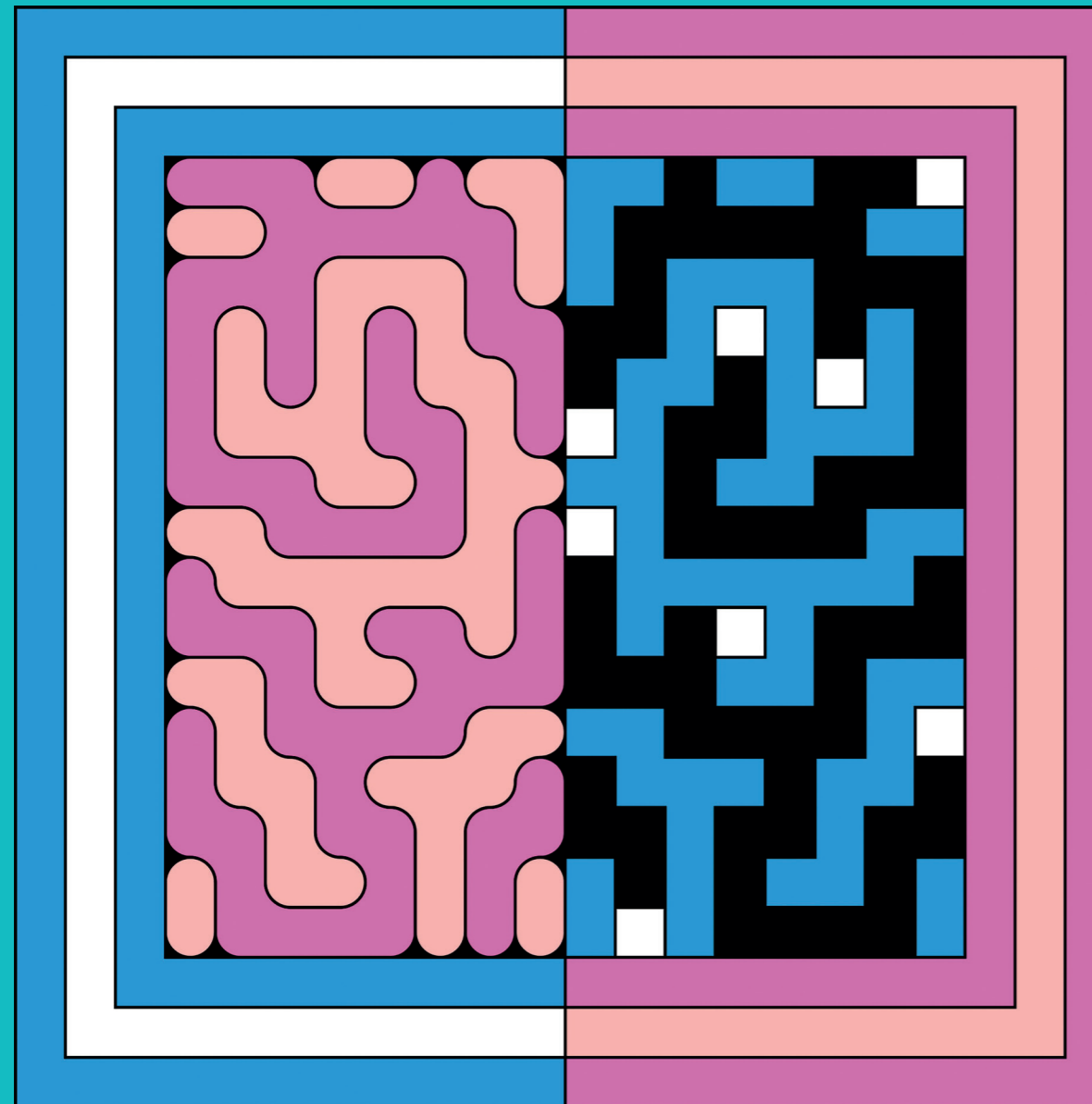


Fig.32 AI Animation

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    nav > ul > li > a:hover > .sf-sub
    nav ul #search-btn a:hover span, #
    nav .sf-menu > li.current-menu-it
    .hover .icon-salient-cart,.ascend
    !important;color:#ffffff!impor
    header#top nav>ul>li.buttr
    .widget-area-toggle a i
    header-outer.transparent

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Appendix

When reading and experimenting with AI software I became curious about the Generative art websites. The outcomes I thought can be very odd and not similar to what the word prompts say at all, I wanted to put this to the test with my seven year old son and see how could give the best outcome with the word prompts provided.

The word prompts used was 'A lego man with a sun in the sky'. This was wrote at the bottom for my son and I asked him to draw what he read. I also done this with an AI Generated art website. The idea behind this was to see if a child could come up with a better outcome than the website .

The results were not what I expected and really surprised me with what the computer provided compared to my son's drawing. The AI image did not have anything to do with lego, it had suns and weird looking geometric shapes. The picture my son drew had exactly what I had asked for with the words prompts.

This shows that even though AI has changed dramatically it still has a lot of work to be done behind the scences.

I have provided both the images to compare.

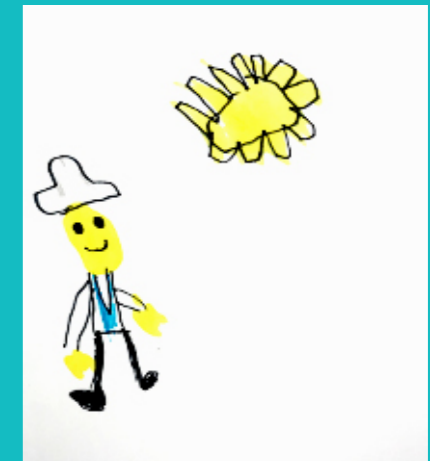
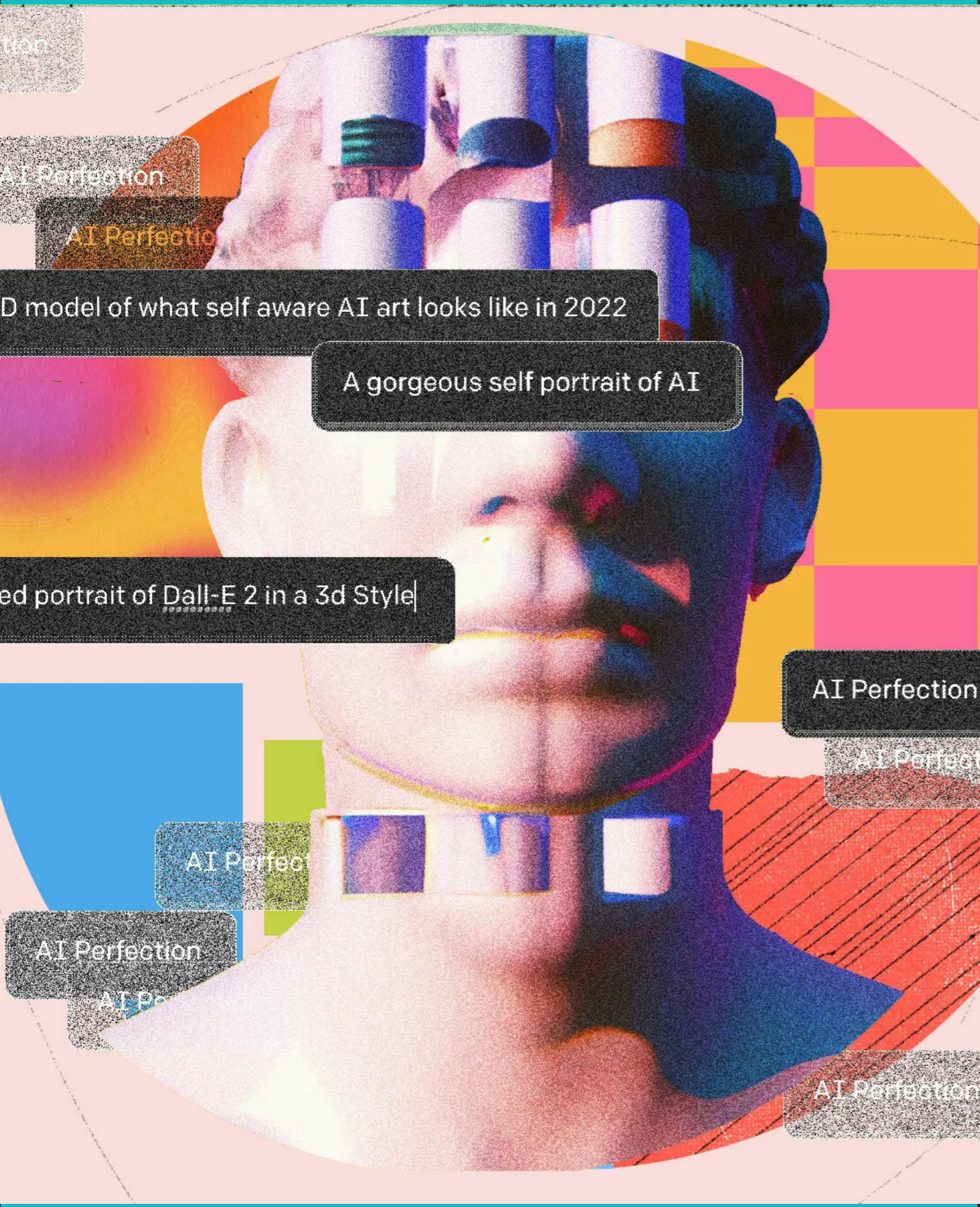


Fig.33 Picture by 7 year old



Fig. 35 Image created on Generative AI website



tion

AI Perfection

AI Perfection

D model of what self aware AI art looks like in 2022

A gorgeous self portrait of AI

ed portrait of Dall-E 2 in a 3d Style

AI Perfection

AI Perfection

AI Perfection

AI Perfection

AI Perfection

AI Perfection

