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Exploring the coexisting relationship between Artificial Intelligence-Generated Content (AIGC) and designer

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Abstract. This paper focuses on how designers can find the right balance and new foundation between themselves and Artificial Intelligence Generated Content (AIGC) at a time when the current artificial intelligence trend is invading the design industry like a wave. This study uses two methods of text analysis and semi-structured interviews to explore the coexistence between AIGC and designers. The results show that, for now, AIGC can help solve some of the fundamental problems in the design process but not all of them. Almost all designers dare not underestimate the possibility of AIGC in the future, and the arrival of AIGC is already an irreversible fact. This study explores the future impact of AIGC on the creative design industry through the perspective of designers and critical theory. It provides practical inspiration and some valuable thinking for the design industry.

Keywords: Artificial Intelligence Generated Content (AIGC), Designer, Digital Technology.

1. Introduction

Content production, especially creative work, has always been regarded as human beings' exclusive and intelligent embodiment. The last decade was defined by user-generated content (UGC). Artificial intelligence (AI) is making strides in digital content production nowadays. Artificial intelligence-generated content (AIGC) is regarded as the next stage of content generation after professionally developed content (PGC), and user-generated content (UGC). With this new paradigm of human-machine collaboration in digital content production emerging, like it or not, we can't escape the immediate impact of it. Now, many design-related AIGC tools have emerged. In terms of design, it covers everything from the divergence of early creative thinking, mid-stage production and post-stage editing, special effects, and typesetting. In the form of generation, from text, images, video, and 3D assets to virtual people, everything. This brought a big shock to the design industry. So, when the trend of AI continues to move forward like a wave and invade the design industry, what will change and what will not? For designers, who are an essential part of the creative process, how do they anticipate their future functions and find the right balance and a new foundation between themselves and AIGC? This study aims to connect AI technology and designers with contemporary issues relating to the rapidly evolving technology from the perspective of critical theory and understanding the future impact of AIGC on the creative design industry. Based on the above, this paper attempts to explore the coexisting relationship between AIGC and designers from several aspects and questions below: (1) Positive aspects of AIGC; (2) Challenges and limitations of AIGC, what kinds of designer's abilities that AIGC cannot

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replace; (3) How do designers prepare for this technological revolution. AIGC will push our thinking in a new direction with big questions about the future; maybe the answer to these questions is indeterminate and abstract, but we hope we can get some valuable thinking through the results of this research.

2. Literature review

AIGC is not new, so why it become the spotlight once again today? Overall, the explosion of AIGC in 2022 is mainly due to technological innovations in deep learning models. Integrating innovative generation algorithms, pre-training models, and multi-modal technologies has brought about technical changes in AIGC. The AIGC model, with features such as universality, foundation, multi-modal, multiple parameters, a large amount of training data, and high quality and stability of generated content, has become a part of the abortion line of automated content production. The development of AIGC is driven by user demand. AIGC is regarded as the next stage of content generation, after PGC and UGC. Some creative design industries have also gradually started experimenting with AI drawing capabilities. Many designers already use image-generating models like Stable Diffusion and Midjourney to design or enhance designs.

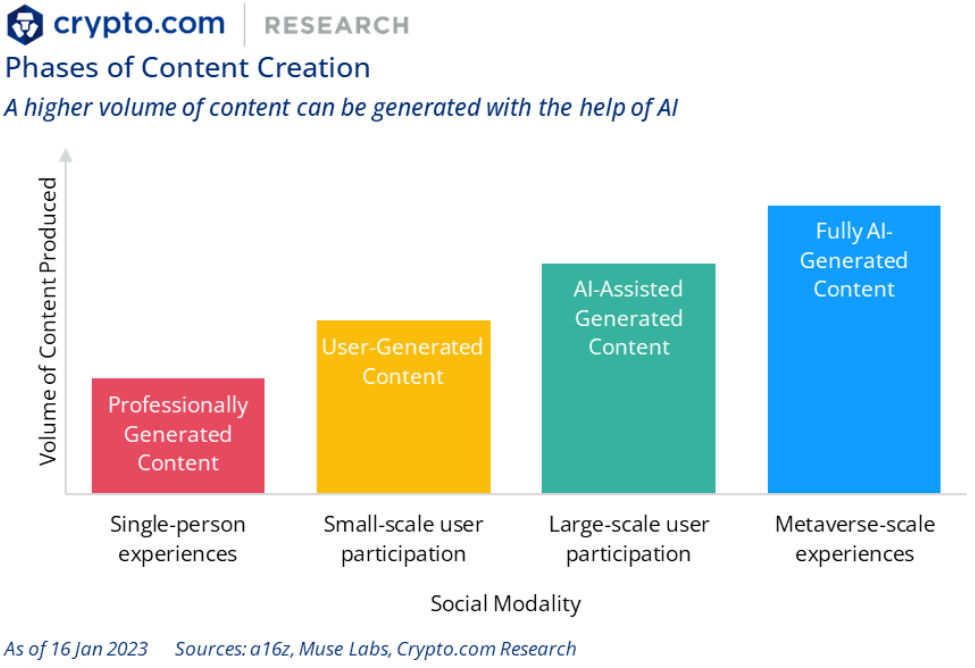

Figure 1. Phase of content creation (https://crypto.com/research/ai-generated-content-web3) [1]

Michael Wooldridge, head of Oxford University's School of Computing, wrote that "writing interesting stories" was listed as one of AI's "far from achieved" tasks [2]. Nowadays, AI is making strides in digital content production. AIGC not only achieved “human-like” performance in many fields of writing, painting, and composition but also demonstrated extraordinary creative potential based on extensive data learning. Five years ago, Erika Hall noted that "Conversation is not a new interface. It's the oldest interface. Conversation is how humans interact with one another and have for millennia. We should be able to use the same principles to make our digital systems easy and intuitive by finally getting the machines to play by our rules [3,4]." She said exactly what we are experiencing now, such as asking ChatGPT daily questions or designers feeding some keywords on Midjourney to get inspiration. The dialogue between people and AIGC tools is already becoming a part of our everyday lives.

They have gone fast since the end of last year because the number of AI applications has increased quickly. Professor Jone Maeda mentioned that 88% of designers surveyed believe that it will be at least five years or more until AI replaces visual designers; AI can already do a lot right now [4]. According

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to the AIGC development trend report from Tencent, 10%-30% of image content will be generated by AI in the next five years, which is expected to create more than 60 billion market space [5]. Recording to the paper GPTs are GPTs: An Early Look at the Labor Market Impact Potential of Large Language Models, which was published on March 17 this year: Our findings indicate that approximately 80% of the U.S. workforce could have at least 10% of their work tasks affected by the introduction of GPTs, while around 19% of workers may see at least 50% of their functions impacted. The influence spans all wage levels, with higher-income jobs potentially facing greater exposure [6]. All these data were just published a few months ago, meaning AIGC and the whole AI technology will continue to develop rapidly, and the challenges and opportunities designers have faced are more significant than ever.

The table below shows us the AIGC basic model and application development forecast. From this table, we can see that it predicts that AIGC will be able to produce the final draft of images during the design process by 2025 [7]. However, from my research interview, I learned that they already use AIGC to quickly generate mature proposals and directly finalize some projects without copyright issues. So, for the design industry, maybe the timeline of what will happen in the future will be earlier than the timeline predicted in this table.

Figure 2. https://www.sequoiacap.com/article/generative-ai-a-creative-new-world/ [7]

3. Methods

This study used two research methods to gain better insight into the relationship between AIGC and the designer. For AIGC, I used text analysis, such as finding pre-existing authoritative resources and data published online. For designers, semi-structured interviews were conducted with three design team leaders in southern China. I chose semi-structured interviews as a research method because we can already find several online articles and analyses on this topic. I thought I needed to collect more real experiences and specific cases using semi-structured interviews to see different contents and enrich this topic. Then, I can ask some more complex questions, and I can selectively investigate some particular issues.

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Table 1. Interviewee Demographic Information

	Pseudonym	Age	Location	Education	Years of working in my current company	Specific occupation	Industry of the company	Number of team members	Interview method
P1	Kun	35	Hunan, Changsha	Master	Six years	Ability Development Team Research Leader	E-commerce	Eight people	Telephone interview (about 35min)
P2	Wei	42	Hunan, Changsha	Master	Nine years	Creative Director	Culture and Entertainment	30 people	Face-to-face interview (about 40min)
P2	Liang	36	Hunan, Changsha	Master	13 years	3D Advertising Production Team Leader	Digital Advertising Creativity and Technology	8 people	Online interview (WeChat, about 30 minutes)

The selection principles of the participants to be interviewed in this study include: (1) With five years of working experience in the design industry; (2) Give preference to those designers whom the interviewer has a preliminary understanding to allow the interviewer to judge the content of the interviewee better; (3) Take samples from different companies in media, advertising, e-commerce industries to make the research results more diverse; (4) Ensure the participation in this research is entirely voluntary.

I want to state why I chose these three people as my interviewees. Objectively, time and numbers are limited, so I wondered how to find interviewees who could conduct high-quality, informative interviews. And then, I eliminated junior and mid-level designers and company bosses. Because I was worried that the answers from junior and mid-level designers would be too simplistic. For bosses, who are more likely to care about the results than the design process, they are easily seduced by the efficiency of AIGC. These three interviewees are all team leaders in their company with long working experience in design and a comprehensive understanding of the design process and new technologies, as well as the actual work situation and mentality of the designers in the team. Kun's team has 8 people who are mainly responsible for AIGC research, exploring the transfer of their traditional business to AIGC. Still, their company's creative team has about 140 designers, which means I can get more persuasive information from this one person.

Due to our schedules being inconsistent, interviews were conducted in 3 ways: (1) Face-to-face interview, (2) Telephone interview, (3) Online interview. And they lasted approximately 30 to 60 minutes each. Dialogues of face-to-face and telephone interviews will be audio recorded with iPhone 14 pro; online interviews will be recorded as text documents, and all documents on the laptop will be imported and transcribed with the WPS office.

In the interview process, the interviewer should follow five interview principles to facilitate the acquisition of research data: (1) Being ethical and protecting the interviewee's privacy, ensuring participants fully clear about study purpose and all interviews will be anonymized; (2) Don't interrupt the conversation and avoid leading and sensitive questions during the interview; (3) Always pay attention not to deviate from the topic, and the order of questions will be flexibly adjusted according to the situation of the interview; (4) The interview content and environment are centers on interviewees, and the interviewer should not express opinions freely as affect the interviewees.

The main questions of this study include: (1) What AIGC applications have you used so far? Which applications are used the most? (2) Does AIGC currently replace any procedure of your work? Which procedure? (3) Which of the designer's abilities do you think AIGC can't replace? (4) Do you feel anxious or worried about it? Or are you looking forward to it? (5) What do you think designers should do to prepare? (5) Describe the possible impact of AIGC on the future design industry. (7) Do you see any potential challenges for AIGC now? In other words, what are the disadvantages to the industry?

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4. Findings & Results

From our conversations with the three interviewees, I learned the following ideas: what they said and shared is sincere and thoughtful.

(1) What AIGC applications have you used so far? Which applications are used the most?

Usually, the AIGC tools they use are ChatGPT, Midjourney, Stable Diffusion, PS beta, Invoke, Canva, and so on. ChatGPT and Midjourney should be used the most because they have a lower barrier to learning and use. Stable diffusion is more challenging to use because it needs to set up its server, and then the learning cost is higher since it has many more complex plug-ins.

(2) Does AIGC currently replace any procedure of your work? Which procedure?

The standard answer to this question is that AIGC can replace basic design processes, such as using ChatGPT to brainstorm or using Midjourney to find references. Kun said it can replace about 15-20% of the workload. Wei said in some projects when you don't need to be concerned about copyright issues, it can quickly generate mature proposals and be directly finalized; because his team just completed a project, the customer required seven days to complete a whole set of design proposals, including the primary visual illustration, cultural and creative products, packaging, and so on. They finally finished with AIGC in a week, which might have taken one or two months before. Liang mentioned that before the advent of AIGC, they thought that what they did could score 8 points. Still, the drawings generated by AIGC were better in the overall look and feel, reducing the content of their previous 8 points to 3 to 5 points, so now they use AIGC tools to improve scenes and make them more beautiful. Therefore, the overall efficiency of the drawings will be faster and easier for designers to work with AIGC, and the results will be better.

(3) Which of the designer's abilities do you think AIGC can't replace?

Controllability, decision-making ability, and control of direction and details are common answers. They all mentioned that the uncontrollability of AIGC is still an unstable factor, full of random and unknown results, which is currently impossible to compare with designers. But Wei said that AI's learning ability and speed are so fast that maybe this problem will be significantly improved in a month; nobody knows. Kun mentioned beginning and terminal, which he thought is the ability of two ends; the first end is the beginning; that is designer always has a picture in his mind when he makes a new thing at the very beginning; he has an idea, AIGC tools can't do it for him, AIGC just participates in the process, for example, you want to inspire, you want to do a sketch, it can help you. And then the other end is the landing end, which is when you need to implement the final draft; these tools can't do it. Their company has recently done a general survey, which should be considered quantitative. Much of the designer's feedback is that the result of the drawing is uncontrollable. It reflects that they cannot get what they want. Their overall creative team satisfaction with the current AIGC tools is negative 50%. So, it should be a bad experience.

(4) Do you feel anxious or worried about it? Or are you looking forward to it?

These three interviewees, for their part, are very open-minded about AIGC's coming. Because they know that this may be the future, whether you accept it or not, AI will continue to develop because it is an advanced productivity. But some designers around them feel anxious and threatened. Kun said this is divided into two situations. First, for those junior designers, because we do not allow them to come up with ideas or do the final draft when we divide the labor, they are more involved in the process, and there is a high possibility that AIGC can replace this process so that they will have some sense of crisis. And for some senior designers, there is no way to replace them. The senior designer has a firm judgment on the control of the creative direction and how to reflect the selling points of their products; these AIGC tools cannot judge it. Liang thought AI is only a helper for the time being, and for many design fields, it only solves part of the problem of pictures and cannot be put in place in one step. He expects AIGC to transform the designer's intention more effectively and make it easier for the designer.

(5) What do you think designers should do to prepare?

They all mentioned that designers should keep an open mind, avoid hostile attitudes, and keep curiosity and independent thinking because unique ideas are always scarce. Except for Wei, he thought AIGC is just a tool that designers can choose to learn or not because the design is ultimately commercial,

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no matter what device you use, depending on whether your client will pay for your output. Kun believes that first of all, designers need to keep an open mind, it is a new thing, a new tool. Don't resist it; it can assist you well, and your design process will iterate quickly. He gave a good example that just like the previous Alphago broke the human Go player; in fact, many human Go players also have a potent hostility toward Alphago, but then Alphago will gradually be used as a tool for the human Go player to improve their ability. You will find that you will contact progressively with it, or it will enhance your ability after more use. In his opinion, the principle of AIGC is the same.

(6) Describe the possible impact of AIGC on the future design industry.

They all thought that the development of AI was already irreversible. Wei gave an excellent comment about it. He said AI is like the invisible hand, and AIGC is a tool in the hidden network of AI that accelerates the survival of the fittest in the design industry. Kun has seen some reports; in fact, in 2023, it is still in the early stages of AIGC. The more mature time is in 2015 and 2030. Then it may be fully automatic, and designers don't need designers to input keywords because AI can play with itself; that is, this AIGC tool plays with that AIGC tool, like a fully automatic AI design workshop, it only takes one or two designers to control specific parameters of it.

(7) Do you see any potential challenges for AIGC now? In other words, what are the disadvantages to the industry?

Liang said many people who do not understand AI will have cognitive errors, coupled with some dramatic propaganda of AIGC on the network, making people feel as if AI can do everything, which will bring some troubles to the work, and some designers will unthinkingly follow. At the same time, AI will lead to homogenization, which may limit the thinking of designers who rely on AIGC. Because the learning ability of AI's power is too quick, it may push people's aesthetic threshold high or wear down the designer's creativity. If an artist creates a work that AI has long generated, then his creation may have no value or meaning. Another point I didn't think of is that they don't worry about copyright issues. They believe that human beings' entire creative design process is very similar to the current generative design. The logic of AIGC is fuzzy; that is, when you input some keywords or pictures into it, it will break it up, then blur it, and then create something new. For designers, we don't make things out of air; we also will look at a lot of materials, looking for more inspiration, and then knead them together into a new something.

5. Discussion

In response to their answers, there are 3 points that I would like to discuss and share my thoughts.

(1) When I asked Kun what thought designers should do to prepare, Kun gave an excellent example that he thought the principle of AIGC is just like Alphago; in fact, many human Go players also have a potent form of hostility toward Alphago after Alphago beat the human Go player in 2016, but then Alphago will gradually be used as a tool for the human Go player to improve their ability. You will find that you will contact progressively with it, or it will enhance your ability after more use. To verify if what he said was true, I found a recent study published in the Proceedings of the National Academy of Sciences; researchers found that human Go players have become more unpredictable in recent years. The professional level of the experienced players improved slowly before 2016, but in 2018, compared to 63% in 2015, 88% of the games featured combinations that had not been seen before [8]. It's an exciting turn of events. I want to give another example, just as photographers were worried that photography would destroy painting, and when Photoshop came along, people thought it would ruin photography, it was an enhancement. So, whether human designers can inspire more creativity by working with AIGC, I think this question is worth waiting and seeing soon.

(2) These 3 interviewees did not worry about the copyright issue of AIGC for now. They think the entire creative design process of human beings is very similar to the current generative design process. They believe that legislation, market, and related companies will strike a balance between innovation and regulation about AIGC. It reminds me of what Plato said, tracing back to the history of art concept; Plato first defined the essence of art: art is imitation. In this regard, perhaps AI and human art creation are similar. Human artistic creation is the tracing and expression of physical objects based on the

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absorption, appreciation, learning, and imitation of countless works of countless predecessors. AI's artistic creation is based on inductive learning and deductive creation of thousands of human jobs, and the principle is also imitation. Liang thought copyright issues and intellectual property protection issues are not new; they are problems that had always existed in this industry. Now that AIGC has appeared, can the problems that have not been solved before be solved now? I can't answer the question that he put forward; copyright protection is clearly defined, that is, the similarity of the work, but when the AIGC comes, the boundary of the parallel is blurred, I think that the AIGC technology itself is not a problem, but it does need to protect the intellectual property rights of the AIGC works. Still, the author should be the person who uses the AIGC, not the AIGC tool or AI itself.

(3) The last point I want to discuss is one that I think is interesting. When Wei talked about the possible impact of AIGC on the future design industry, he mentioned that AI is like the “invisible hand”, and AIGC is a tool in the invisible network of AI that accelerates the survival of the fittest in the design industry. To be more precise, I would like to say AI is an “invisible artificial hand”. The term “invisible hand” first appeared in Adam Smith’s famous work, The Wealth of Nations [9]. The invisible hand is a metaphor for the unseen forces that move the free market economy. Through individual self-interest and freedom of production and consumption, the best interest of society is fulfilled. Last month, Gita Gopinath, the First Deputy Managing Director of the International Monetary Fund (IMF), delivered a speech at the University of Glasgow. If Adam Smith were alive today, she asks, what would he think of AI? The ideal economic development envisioned by Adam Smith, she argues, is to develop an economy that benefits all, not just a few. Today, however, the market for components to build AI tools is highly concentrated, and only a few large companies will likely have the computational and data capabilities to create high-end models in the future. The future trend is increasingly inclined to allow small, flexible teams to do more things; for example, Midjourney's team is only 11 people, and OpenAI's team is also tiny. With better tools, employing fewer people may be the company's future shape. While Adam Smith would have been impressed by the emergence of such a powerful technology, he might also have realized that the "invisible artificial hand" may not be enough to secure the broad interests of the whole society. I think not only in the field of design but also in many fields, the “invisible artificial hand” has not been enough to ensure the broad interests of society for quite some time.

6. Conclusion

Finally, I want to emphasize that these interviewees can't represent the answer for everyone, but these conversations point to some of the issues surrounding the AIGC. Whether the results of AI are good or bad, humanity will not hold back just because science and technology progress to the next stage. Usually, we just try our best to cross the river. According to the result, almost all designers dare not underestimate the possibility of AIGC in the future. Using AIGC tools is an irreversible process. Currently, AIGC can help solve some fundamental problems in the design process, but not all of them. There is no change in the human being at the core of creation: AI is task-oriented, and humans are creation-oriented.

On the one hand, human information systems are far more complex than a few "prompt" inputs can summarize. On the other hand, the nourishment for the growth of AI is still provided by people, and the reliability of AI also depends on people's use and feedback. The design has multiple levels and complexity. If a more profound method involves a detailed understanding of how people behave and their unspoken or unperceived needs, AIGC can only do that after a certain point.

There is a classic saying about creation from Thomas Alva Edison: Genius is 1% inspiration and 99% perspiration. Success is 1% inspiration and 99% perspiration. Edison thought the 1% inspiration was the most important. AIGC has shown us that 99% perspiration can produce qualitative change. So, for designers, the ability to cross disciplines is essential, and the leverage effect of AIGC tools on professional designers is more significant. Suppose the gain for ordinary people is from 0 to 1. In that case, it may be from 1 to 10 for professional designers so that they can concentrate on higher-level and more valuable things such as concept, style, composition, element combination, and post-processing, or how to find a better solution in the pre-production of as diverse a demo as possible. AIGC is also becoming a new professional ability, and pioneers who are good at imagining and creating are constantly

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developing the nearly unlimited potential of AIGC and leaving works on social platforms that make people look at the world. The demand for interdisciplinary talents will increase with the melting of discipline boundaries. Maybe just like what Charles Darwin said three centuries ago: It is not the strongest of the species that survives, nor the most intelligent that stays. It is the one that is most adaptable to change.

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