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CREATIVE PROTOTYPING

Patrick Parra Pennefather: *Creative Prototyping with Generative AI.* Apress, New York 2023, p. 442.

The appearance of Generative AI engines in 2022 made a significant impression on media audiences and creators worldwide. The ability of these engines to produce convincing text and visual content prompted discussions on whether human creativity has been replaced. However, a closer look at creative processes involving the use of Gen-AI allows a deeper understanding of how this technology changes human creation as opposed to replacing it.

'Creative Prototyping with Generative AI' is a book published by Springer Apress in 2023. The author, Dr Patrick Parra Pennefeather, is an assistant professor at the University of British Colombia within the Faculty of Arts and the Emerging Media Lab.

In this work, Dr Pennefeather explains in simple terms the mechanisms behind Generative AI and introduces readers to the basic terminology associated with using and programming GenAI. Consequently, the author presents case studies demonstrating various applications of GenAI, mainly in the creative processes of writers, visual artists or game developers, but also touching on GenAI-assisted work of scientists and researchers. Finally, the author elaborates on GenAI's role in the future of academic research, the development of the labour market and copyright law controversies.

The book puts working with GenAI in the context of the Design Thinking methodology, the creative and human-centred design approach, a result of collaborations between psychologists, industrial researchers, and designers. This methodology has been developed simultaneously in various research fields and several research centres, most notably at Stanford University's Center for Design Research since 1957 (Auernhammer, Roth 2021).

Current research on the subject of GenAI and creativity focuses on of whether this technology can replace humans in creative endeavours. Some scholars believe that GenAI's capacity can surpass humans in some creative tasks (Cropley 2023; Bender 2024), but even in these works, we find general consent that GenAI is more likely to enhance human creativity rather than replace it. This belief is shared by many researchers worldwide in different areas of science (technology and innovation (Cropley et al., 2023), art and creative industries (Lee 2022), psychology (Runco

2023), economy (Doshi, Hauser 2023) as well as marketing and media studies (Pagani, Wind, 2024)) as the subject of AI and creativity is most often approached from a multidisciplinary angle. 'Creative prototyping with Generative AI' follows this line of thinking while also giving compelling case studies to prove it.

'Creative prototyping with Generative AI' is a 486-page monograph consisting of 13 chapters and an Appendix. Chapters 1–4 focus on the theoretical approach to creativity and AI, while chapters 5–6 are highly practical and based on case studies. Chapter 13 is the author's deliberations on the future of AI and creative work.

In the first chapters, Dr. Pennefeather introduces his ideas on the nature of Generative AI. The author views GenAI as a tool to support the creative process. There, he presents the term *muse* in the context of AI and creativity studies, a generative AI technology that assists creatives and/or researchers in a fashion similar to the ancient Greek's understanding of the term. GenAI is described as a neutral tool, neither good nor bad, with no intention or purpose in itself. Its 'creativity', perceived by many based on the convincing content it generates, is, in fact, an illusion – Dr Pennefeather proves that by explaining the mechanisms behind GenAI's functioning. The author's comparison of GenAI to *The Wizard of Oz* is a helpful parallel for anyone who wishes to better understand GenAI's reality. It is worth noting that from the perspective of available research, the functioning of GenAI alone would not fulfil the criteria of any of the five traditions in creativity research, which expose either the role of a gifted human individual or the role of cooperating collectives in true creativity. (Andersen 2022).

Subsequently, the author takes the reader through the history of technological innovations and draws parallels between past interactions of people with technology (from mechanical dolls to the Enigma machine) and current possibilities for integrating GenAI into creative processes. Then, the author proceeds to reflect upon the ancient Greek concept of *mimesis* as akin to the core principle that guides GenAI – another helpful explanation for anyone who wishes to understand these processes. What follows is a short history of first language-based models that laid the ground for today's AI tools and examples of their application.

As an introduction to the more practically oriented chapters, Dr Pennefeather offers his considerations on approaching the framework of collaborating with GenAI. The author demonstrates a thorough understanding of Design Thinking tools and proposes direct applications of these principles when working with GenAI – recommends creating personas, indicates moments in the prototyping stage where GenAI would be most useful and emphasises the importance of the testing stage.

In Chapter 6, *Building Blocks*, the author explains *building blocks,* the modification capabilities built into the GenAI system that are used in order to generate the final result. Case studies involving the use of GenAI, mainly in image generation, with some examples of text and music generation, accompany the explanation and allow for a better understanding of this concept.

Chapter 7, *Generative AI Form and Composition*, discusses the form and composition of AI outputs and puts this in the context of GenAI's perceived 'creativity'. This is followed by a chapter entirely dedicated to the art of prompting, with multiple interesting case studies that illustrate the concept. A significant conclusion from this part would be that creating a good prompt still requires some 'traditional' skill and knowledge of different creative endeavours. For example, the author prompts GenAI to create a piece of writing in the style of Shakespeare. The generated result was largely improved when the author used his in-depth knowledge about the composition of Shakespearian writing in his prompts.

It is important to note here that AI-generated images have improved significantly since 2021–2023, when the book was edited and published. The illustrations accompanying mentioned case studies would have been of higher quality if generated today, Additionally, some of the GenAI limitations discussed in case studies are no longer relevant. The author includes a disclaimer informing that he is aware of the rapid changes that would have happened after the publication of the book.

Chapter 9, *The Master of Mashup*, elaborates on how GenAI produces cross-media content and combines different styles to achieve more interesting results. The author reflects on how this ability results in unexpected ideas, which, in his opinion, can serve as inspiration for innovation. This approach to working with GenAI has been echoed by other scholars (Bender 2024). On a more practical level, this chapter briefly explains the functioning of GANs (Generative Adversarial Networks, which are other AI models) and their role in creating NFTs (Non-Fungible Tokens).

The final chapters of the book are dedicated to the dilemmas accompanying any use of GenAI. The key concept of *uncanny valley* is mentioned – the unease and unsettling feeling in the face of technology that mimics human behaviour. Examples are given of times when the *uncanny valley* effect created unease in video game players while interacting with hyperrealistic characters in video games *L.A Noire* and *Heavy Rain*. The author stresses the importance of critical reflection, research and fact-checking in all academic and creative endeavours.

Dr. Pennefeather invites readers to increase their awareness and use GenAI responsibly. He also ponders on the future of creative work in a world where GenAI is integrated into research and creative processes. The discussed issues include the need for a new approach to academic research and knowledge verification, the issues of copyright infringement; the increasing creation of deep fakes and controversial content; the phenomenon of replacing office workers with GenAI. These chapters also include a broad explanation of GenAI *hallucinations*, and the creation of nonsensical or inaccurate outputs. The author offers several content verification methods that can be applied to prevent and recognise false GenAI outputs: proposes websites and tools that allow for checking where generated content comes from; recommends cross-checking and re-creating generated content to ensure its usefulness; shows examples of prompts that cause GenAI to self-correct.

In conclusion, 'Creative Prototyping with Generative AI' is an extensive work on the recent state of the use of Generative AI, supported by multiple practical examples. It will be helpful for creatives looking to have their work assisted by GenAI, as well as researchers who wish to understand more about the reality of using

GenAI in creative fields. The author is familiar with various applications of GenAI and effectively explains key concepts that are indispensable to understand andthis landscape correctly. Dr Pennefeather proposes an unequivocally positive approach to using GenAI in creative fields.

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