Computer Programming Education and Creative Arts

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Abstract

In December 2013, the American president, Barrack Obama released a video on YouTube encouraging youth to embrace computer programming and practice coding. His video kicked off the nationwide Computer Science Education Week, in which there was a one-hour school tutorial introducing students computer programming.

The New York Mayor Bill de Blasio recently claimed, "Hundreds of thousands of good jobs will be accessible to those with coding and other essential skills." In a recent viral social media post, "Stop Teaching Programming, Start Teaching Computational Thinking", Tom Igoe from the NYU, Interactive Tele-communications Program questioned the pragmatic purpose of learning programming and suggested learning to program can make you a more expressive person.

The presentation invited three early practitioners in Hong Kong creative art/design scenes to address the issues and concerns of offering coding education in the creative industries.

Introduction to the Panel

The panel authors are practicing artists and designers in Hong Kong and at the same time, they also teach programming in universities in both Hong Kong and oversea. In the panel, CHUNG planned to draw similarity between the visual composition principles in graphic design with computer programming; LAM intended to share his extensive creative experience in web design and creative coding education between Hong Kong and Taiwan contexts, and SOON addressed the social and cultural aspects of codes and software practices.

Bryan Chung: Graphic design principles and computer programming

Computer programming education often focuses on the algorithmic design, with its step-by-step problem solving and thinking process. Logic and procedure are the building blocks for most education materials for teaching and learning computer programming. Students spend a lot of efforts to struggle with the syntactic correctness of the codes and the semantic soundness of the logic. Gradually, they developed the tendency to avoid every form of bugs and errors. On the other hand, media art and digital design practices have adopted increasing use computer programming to deliver the outcomes. In creative arts, we, however, treasure students' risk-taking and self-exploratory abilities, and that may go in the opposite direction with the error avoidance attitude they develop in the encounter of computer programming.

The presentation proposed the investigation of visual composition principles of graphic design in order to understand and relate with the practices of computer programming. Classic texts in graphic design, such as books from Wucius Wong and Ellen Lupton have already incorporated the use of computer software to illustrate and explain the visual concepts with the use of computer-generated examples. [1] [2] In the presentation, I would like to further establish the missing link between visual grammar and the linguistic grammar of the procedural programming languages. Students' sample works and teaching materials will be drawn from one of my courses, Evolutionary Graphics, from the Academy of Visual Arts, Hong Kong Baptist University, and Generative Arts, from the School of Creative Media, City University of Hong Kong.

Pong Lam: The aesthetics of codes, from multimedia design to creative art education

The author was often reflexively inspired by his own creative outputs in coding that may suggest mysterious hints in our universe. The presentation will trace his twenty years of creative journey as both multimedia designer and art educator, in two different regions, Hong Kong and Taiwan, through the exploration of mathematics, computer coding, visual design and musical performance.

Being an early pioneer of interactive media design in the Hong Kong creative industries, the author traced the historical development of both the aesthetics and technology of professional web design in Hong Kong, with his substantial portfolio. While bringing his skills

and knowledge to the education sector, the author also compared and contrasted the use of creative coding between the commercial environment and the education communities. As a part-time lecturer in Tainan, he would further elaborate the cultural differences in the reception of computational creativity between the Hong Kong and Taiwanese audience.

Winnie Soon: Software art and design: computational thinking through programming practice and critical code theory

Code-based technologies have become commonplace in the fields of Media Art, Digital Design and Software Studies. The term 'creative coding' emphasizes code as an expressive material, exploring code concepts and producing creative works through experimentation. While we are experiencing the digital world in which data is constantly generated, captured, monitored and analyzed, the critical aspects of code become increasingly important for us to understand this networked and ubiquitous techno-culture. The courses and seminars in higher education seem to primarily focus either on programming practices or critical aspects of code, however not many of them have been established to address both the practical and critical study of code. We argue that having a computational thinking through both programming practice and critical code theory would offer a different learning approach to understand code-based technologies.

This presentation will discuss a parallel strategy with two inter-linked courses of 'Software Studies' and 'Aesthetic Programming', running together within the same semester. The strategy refers to ways of thinking about software culture through both practical and analytical assignments to understand wider political, cultural, social and aesthetic phenomena beyond its functional application. Through emphasizing programming as critical work in itself, the two courses offer the possibility to open up new insights into art and design processes, and to offer new perspectives on cultural phenomena increasingly subject to computational procedures and logics. The presentation will address the inter-linked structures, outcomes and challenges of the two courses, in which students require to demonstrate reflective and critical thinking through coding practices.

References

1. Wucius Wong, Principles of Form and Design (New York: Van Nostrand Reinghold, 1993), 15.
2. Ellen Lupton and Jennifer Cole Phillips, Graphic Design: the new Basics (New York: Princeton Architectural Press, 2008), 9.