Reading Summary

Course: CEN4721 Human-Computer Interaction

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Reading: Norman, D. A.(1992). Design principles for cognitive artifacts.

In today's modern world, products and artifacts are built upon concepts and sources that are more abstract and complex. As a result, the design principles for these artifacts need to be adjusted to take into consideration of user experience and action. This paper gives a thorough analysis of how devices that are "designed to maintain, display, or operate upon the information to serve a representational function" need to take the "human action cycle" into consideration during the design process to ensure their own "execution and evaluation" (Norman, 1992).

The paper analyzes how humans process information and interact with the world through the human action cycle and the circle of execution and evaluation. Thus, for an artifact to have any function to humans, it needs to be designed accordingly. Based on the intended functionality of the artifacts, whether it requires a passive information processing system or an active one, it needs to have an internal representation allowing it to process the input information and give meaningful feedback. In other words, to support execution. For evaluation and communication between the user and the artifact possible, the artifact needs a surface representation that allows it to carry out effective communication (Norman, 1992). Most importantly, such an artifact needs to be complementary to humans' abilities. However, one of the confounding variables and challenges in this design principle is humans. Humans are complex and act differently. How is a design that satisfies all different human interactions possible? How can such a principle be used to design one product that will be used by most people and people that have different needs?

The paper is revolutionary in the academic community in the sense that it encourages the thinking and consideration of human-centered design principles. It sparks a new conversation about how we should view the role of users and their cognitive process during the design process. Interestingly, one of the recent hot topics in machine learning is reinforcement learning which is designed and developed based on the concept of the human action cycle as well. Thus, I think the paper has impacts beyond simply designs of artifacts but also on the role of human cognition in the world of information and machines.

Reference:

Norman, D.A. Design principles for cognitive artifacts. Research in Engineering Design 4, 43–50 (1992). https://doi.org/10.1007/BF02032391