CS 6795 Spring 2024 - Individual Exercise 4

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***Abstract*—For this assignment I will be focusing on Herbert Simon's parable about the ant's route in search of food on the beach and explaining the seemingly complex behaviors of the ants as required. Furthermore, I will analogize to human cognition to present similar examples.**

Keywords—Ants, Congnition, Behavior.

I. Ant's Behavior Complexity

After seeing only the tracks created by the ants searching for food on the beach, I first wondered why the ants didn't take a straight line (i.e., the shortest distance between two points) to get to the food. The photo of the beach given on the homework explains why the ants developed this complex route.

The ants did not travel in a straight line to obtain food because there were obstacles on the beach that they could not cross, and these obstacles limited the direction of movement available to them at a given spot. As a result, the ant's movement path becomes a complex curve, and the formation of the curve seems inevitable.

II. Ant's Cognition vs. Human Cognition

I learned from Herbert Simon's parable that ants' cognition is related to the purpose of their actions or cognition itself and to the external environment in which they act. Or there is an interaction between the ant's cognition and the external environment. Obstacles on the beach alter the ants' routes in search of food, and the traces the ants leave behind become part of the external environment in return. Human cognition has a similar relationship with the environment.

My choice to work in the industry for three years before returning to school is a good example. Many people (including my parents) expressed dismay when I resigned from my previous position and went back to school - more people pursue a master's degree after their undergraduate and then work full-time, and losing a good income seems to put my life at risk. Instead, a combination of the working environment and my intention led me to this decision. Not only did my last position not give me the growth and knowledge I expected, but it also gave me a lot of unnecessary headaches. As a junior programmer, I don't want to waste my early career on meaningless work and a toxic environment. Coupled with having always thought of pursuing a higher degree, I decided to quit my job and return to school. Like the ant in the parable, instead of going straight to graduate school after my undergraduate, I chose to go back to school after some time in the industry - and I still feel that I made the right choice now because not only did my work experience leave me some saving to support my study financially, but it also gave me a much deeper understanding of the subject of computing comparing to my new grad years.

Another example is the behaviour of many engineers looking for another position during the wave of layoffs in the tech industry over the past two years. It is more difficult to find a new job in a bad climate, and there are some engineers whose careers are affected, slowed down, or even stopped because of the layoffs. People's cognition will gradually realize the impact of this external circumstance, and their positive responses with different initiatives during this period can also make this crisis end faster. This example is also similar to Simon's ant parable in which environment, behaviours, and cognition can influence each other simultaneously.