Photographic Portfolios in "Simplifying Complexity"

Authentic Assessment Symposium

Simplifying Complexity

Simplifying Complexity is a course that deals with Complex Systems.

In shorthand, a complex system is any large system where the interactions between the components is of equal or greater importance than the behavior of the components in solitude.

- Ant colony
- Starling Murmurations
- Social Networks
- Immune System

Complex system: a system in which large networks of components with no central control and simple rules of operation give rise to complex collective behavior, sophisticated information processing and adaptation via learning or evolution.

As defined by Melanie Mitchell in *Complexity: A Guided Tour*, the de facto textbook for the course.

Course Learning Outcomes

1. Identify complexity in the global society in multiple fields ranging from biology to physics.

2. Utilize the methods of complexity theory to propose possible solutions to unsolved problems.

3. Explain the key differences between systems based approaches and reductionism.

4. Evaluate how complexity is shaping the interaction between humanity and the global environment.

Assessing Outcome 1

Traditional methods might be to ask students directly the question, "What is a complex system?"

Question 3 (left)

Question 3 | Not yet answered | Marked out of 1.00 | ⚑ Flag question | ⚙ Edit question

Below are five explanations given to the question, "Is a smartphone an example of 'complexity'?" Choose which explanation is the best.

Select one:

○ a. A smartphone is built on reductionism. Although it's construction is complicated, all of its behaviour can be broken down to the behaviour of its constituent parts.

○ b. Each new model of smartphone causes new adaptations in human behaviour and in turn, these lead to new innovations in smartphone technology. Some unplanned properties of communication and information are emerging out of this interaction without central planning or control

○ c. A smartphone is designed to process information in sophisticated ways. This is something that complex systems can do. Therefore a smartphone is a complex system.

○ d. A smartphone has a lot of different components and they interact with each other so it is an example of complexity.

○ e. A smartphone is hard to make and to understand its workings. Therefore it is a complex system.

42%

Question 3 (right)

Question 3 | Not yet answered | Marked out of 1.00 | ⚑ Flag question | ⚙ Edit question

Below are five explanations given to the question, "Is the rapid growth in the use of smartphones amongst humans an example of 'complexity'?" Choose which explanation is the best.

Select one:

○ a. Each new model of smartphone causes new adaptations in human behaviour and in turn, these lead to new innovations in smartphone technology. Some unplanned properties of communication and human social behaviours are emerging out of this interaction without central planning or control

○ b. Since humans become addicted to smartphones and stop paying attention in lecture, they stop processing information which is a common feature of complexity. Therefore the use of smartphones is not a complex system.

○ c. A smartphone is designed to process information in sophisticated ways. This is something that complex systems can do. Therefore a smartphone is a complex system.

○ d. A smartphone is hard to make and to understand its workings. Therefore it is a complex system.

○ e. A smartphone is built on reductionism. Although it's construction is complicated, all of its behaviour can be broken down to the behaviour of its constituent parts.

80%

Photographic Portfolio

Whatever the assessment method is, a challenge remains to check to see if students can do more than just recall the definition of a complex system.

These systems are around us in our daily lives but student awareness of this may be limited.

On the first day, the assessment is introduced. Students are asked to work in pairs and recommended that they try to complete a draft individually, then peer-assess each other's work and turn in the better one.

The optimistic hope is that students will then spend the better part of the semester looking for complex systems in their daily lives.

Age

Popularity

Environment

Culture

Complexity In Style
Fashion Trends and Complexity in a Hong Kong Context

Autumn 2016. Wearing ripped denim jeans, New Balance shoes, a deep green round cut shirt finished with an oversized cardigan, walking out into the city observing repertoires of outfits passing by. Whether we are interested or not, the presence of fashion in our daily lives is ubiquitous. It is powered by a combination of individual preference trends within the market. It is difficult to forecast the behaviour of these trends. With the properties of a complex system, fashion is not regulated, and is generated by different elements interacting with each other which when combined aggregates a certain behaviour.

In the old days, fashion used to be solely determined by the producer side; yet nowadays, the choices of individuals constitute the fashion trends in a bottom-up manner (Evans, 1989). Without the presence of a "central planner", the collection of people forms a self-organizing network and behaves in a rather complicated and hard-to-predict way.

In the network model, each person is represented with a node. Links between people matter since we hardly choose to wear something entirely out of our "own will"; quite the contrary, in the fashion system, a node's behaviour is highly influenced by the local environment, or in the language of network theory, its neighbours (or the nodes that are only a few steps away from it). Two major theories may explain this influence, namely the "social requirement" and the "bandwagon effect". The "social

As mentioned in the lectures, the nature of our social network is both small-world and power-law. These properties explain how fashion trends can go viral. Since the network is small-world, it takes a short time for a trend to spread; and since the network is power-law, once a fashion is adopted by a highly-connected celebrity, it gets known by large number of people. Sub-networks within the network can also be observed; examples are different age, racial and professional groups, and some sub-cultures like Gothic and Lolita.

The fashion trends in Hong Kong shows all the above-mentioned traits as well as some unique phenomena. According to Law et al. (2004), "The lack of uniqueness and any distinguishable fashion culture is the key feature of Hong Kong fashion". With a strong influence from work culture, black, grey and white are the dominating colours of a typical Hong Kong closet, and the variation in style is rather limited; moreover, the bandwagon effect seems to play a particularly vital role in Hong Kong culture. With the effects combined, from the eyes of a foreigner, young Hong Kong people tend to dress in a very similar way and it's easy to spot random people wearing the same clothes.

References

Evans, M. (1989). "Consumer Behaviour towards Fashion". European Journal of Marketing. Vol. 23. Iss. 7. pp. 7 – 16.

Law, K.M. Zhang, Z.M. Leung, C.S. (2004). "Fashion change and fashion consumption: the chaotic perspective". Journal of Fashion Marketing and Management: An International Journal. Vol. 8. Iss. 4. pp. 362 – 374.

Nakayama, S. Nakamura, Y. (2004). "A fashion model with social interaction". Physica A: Statistical Mechanics and its Applications. Vol.337(3). pp.625-634.

Challenges

- Students are not trained in the assessment method.
- The assessment requires creative risk taking which is not a course learning outcome.
- The first year the course ran, students did creative work but were discouraged by a lack of exemplar work from previous years. To combat this is later years, I provided some articles about complexity in urban settings. This has yielded a large number of submissions about pedestrian crowd dynamics on Upper University Street.
- Students ask for informal feedback on work that is not only unfinished but largely unbegun. I.e., "I want to do something about clouds. Is that OK?"

Ideas for Further Development

Offer a choice between submitting photos presented in a poster format or a short video.

Simplify the grading rubric.

Retitle the assessment.