

How does Owen Barder define development? How does he extend Amartya Sen's definition to include the idea of complexity?

Owen Barder uses Amartya Sen's definition of development, stating that development is "enlarging people's choices, capabilities and freedoms, so that they can live a long and healthy life, have access to knowledge, a decent standard of living, and participate in the life of their community." He also portrays that when a community or population goes through development, their lives become much more complex, as they go through a complete transformation.

What was the toaster project? What did Thomas Thwaites attempt to do? Was he successful? What is the significance of this example in the context of complexity?

The toaster project was when Thomas Thwaites attempted to make a toaster completely from scratch. It took him nine months to create this toaster, and it worked for 5 seconds before bursting into flames. This showed him that even the simplest toaster has hundreds of complex parts that need to be put together just right, otherwise the toaster would be ineffective. It also showed him that having a system to receive all of the ingredients needed would lead to faster creation, and more development.

According to Barder how successful have economic models been at describing and predicting growth over the past 50 years?

Barder thinks that economic growth models are unable to explain why some populations are able to experience economic growth while others do not. This is because the economic growth models used are fairly simple, while economics are constantly changing and becoming more complex.

Who was Steve Jones? What did he do at uni-lever? Was he successful? How significant were his results?

Steve Jones was an evolutionary biologist who was hired to create a better nozzle for machines to create soap. He was able to make a nozzle for the machines that worked hundreds of times better than the original nozzle, which was very significant. He was able to increase production greatly by only focusing on one part of the production process.

What is a complex adaptive system? What are some of its important features?

A complex adaptive system is a system that has many different parts that are controlled separately but work together. These systems are impossible to predict, but it is possible to make broad predictions about the system as a whole.

Who was Haile Sellasie? According to Barder (and Kapuscinski), how did Ethiopia during the time of *The Emperor* exemplify the suppression of emergent systemic change?

Haile Selassie was the Emperor of Ethiopia until 1974. He did not want to know anything about the poverty that people experienced in the country, and he instead focused on having wealth around himself. By not knowing about the issues in his own country, he was unable to help them, which suppressed them from developing into a more advanced country.

Why does Barder recommend resisting engineering as a policy implication? What did he mean by iso-morphic mimicry?

Barder believes that evolutionary processes often outperform engineering processes. This is because in evolutionary processes, we are able to test multiple different random adaptations and then use whichever one works the best. Iso-morphic mimicry is when a group of people suggest a certain system to another population, which they then use to try to expand their growth. This often results in failure because the populations do not fully understand the systems and are unable to accurately manage the system they have created.

What does Barder mean by "resist fatalism"? Who was Norman Borlaug and what is the green revolution?

Barder means that we should use evolutionary processes to create more economic development, similar to how Norman Borlaug started the green revolution. He started the green revolution by cross breeding crops to make them more reliable. This led to crops being easier to grow and becoming much more abundant, which helped to save over a billion people from starvation.