

Daniel Chai and Etai Liokumovich

Option A, Wicked Problem, Avoiding World War

AvoidWar.py

CSE 415, Assignment 4

April 28th, 2017

How is “Avoid World War” a wicked problem?

Criteria of wicked problem:

1. There is no definitive formulation of a wicked problem
 - a. There were many causes of World Wars in the past and there will be many causes leading up to the next World War, if there will be one, so there cannot be a definite formulation of this problem.
6. Wicked problems do not have an enumerable set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.
 - a. Maybe the highest level of foreign relationship advisors has some sets of secret steps that they take to avoid wars between countries. However, I hope that this wasn't true since that would be evil. In the eyes of public, foreign relationships are not something that can be solved by following sets of moves (although many might believe this to be true).

Steps in Problem Formulation

- **Describing a need** – World Wars were one of the bloodiest conflicts that humanity has ever seen. With the advancement of military technology, the next World War, if it were to happen, would obliterate humanity and the society we live in.
- **Identifying resources** – some resources we can use are: Websites that speculate the cause of World War 3, current political issues, etc.
- **Restriction and simplification** –
 1. Nuclear Weapon will probably become the primary method of destruction in the next World War. So, we assumed that the number of nuclear weapons in the world represented how close we are to the next World War. Lower the number, lower chances. Although this may seem like an overly simplified situation, we thought that reduction of numbers represented much more than just less threat on Earth. It signified that the countries were willing to give up the weapons to achieve peace.
 2. We assumed there will be no further weapons developed as that would lead to “nuclear proliferation”
 3. “It is possible to disarm the nuclear weapon” – If this statement was not true, we would not be able to

- **Designing a state representation** – List of 9 numbers that represent the number of weapons.

- **Designing a set of operators** –
 1. Removing a certain number of nuclear weapon from a country
 - a. A country might want to take small actions to avoid next World War
 2. Removing all the weapons from a single country
 - a. A country might make a radical move to remove all the weapons they hold.
 3. Removing all the weapons from every country
 - a. The entire nuclear-weapon-holding countries might want to remove everything they have.

Retrospective

- a) We worked on the initial problem formulation using the guidelines given in the lecture slides. Through this, we were able to have a general understanding of our end-goal. We then talked about the general idea behind the Operators and each of their mechanics. After that, we separated to work on our own codes and came back to see which one was more suitable for this assignment.

- b) **Daniel** – Through this assignment, I learned more in-depth about how Operators work. During assignment 3, it was very simple to implement the operators because of the static nature of the eight puzzle, but by changing the problem, it was obvious that I did not have a deep meaning of Operators. I was having trouble with the way to code it as well as the general concept behind the preconditions and other things that go into an Operator.

- Etai** – I learned how to approach a wicked problem and trying to tame it using the guidelines.