Davangoria: A Revolution Simulation

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Abstract

The goal of this project is to create an application that can be used to help political science students learn about the process of overturning an authoritarian government. The situation represented in the simulation is similar to the Arab Spring uprisings. The simulation is presented as a turn-based game that is meant to be played in a classroom setting. In this paper we discuss the development process of this application as well as go into more detail about how the game is played.

1 Introduction

This paper is about a student project that is currently under development at Doane College, a private liberal arts college in Crete, Nebraska. The project is a collaboration between a computer science student and a political science professor. The goal of this paper is to describe the project itself, the development process, and the tools that are being used for the project.

This paper will be organized using the RADIS software development framework. RADIS is an acronym. It stands for Recognize, Analyze, Develop, Implement, and Support. Each section of the paper will address one of these steps in the development process of the project.

2 Recognize

The first step in the RADIS framework is to recognize what problem needs to be solved or what goal can be achieved. Basically, this step is about deciding what the client would consider a successful project. In this section we will discuss the original vision for the project and give an overview of the game as a whole.

The underlying goal of this project is to create an application that can be used to help political science students learn about the process of overturning an authoritarian government. Democratic revolutions have been a topic of international attention in recent years. As such the importance of being able to teach effectively about them has increased.

One of the biggest difficulties in teaching about anti-authoritarian protest movements is that there are numerous historical examples to choose from, but it is not immediately obvious how they relate to each other or what differentiates them. There are many factors that affect whether a revolution is successful or not and it can be difficult to summarize them. This is the problem that the project attempts to solve.

The idea is to make a game that simulates the process of a revolution against an authoritarian government and to use this game to help explain what causes such a movement to succeed or fail. By having students take on the role of either the dictator or the opposition movement the hope is that they will gain a better understanding of the decisions and circumstances involved in a revolution.

In short, the goal of the project is to give help professors teach about different types of revolutions, by involving the students in interactive examples. With the goal of the project established we can move on to analyzing it to determine how best to achieve it.

3 Analyze

Now that we have identified the overarching goals of the project, it is time to decide on the specific methods with which to achieve these goals. In this section we will discuss the methods and technologies that are used in this project and why they were chosen.

3.1 General Game Structure

One of the first decisions made was that the simulation should be web-based as opposed to installed directly onto the client computers. Since the game is a rather simple simulation, it does not cause a meaningful drain on resources and as such, there is no noticeable difference in performance between running the game locally and running it on a server. Plus making the game web-based has other advantages. It allows the game to be played without any significant initial setup. It also provides the opportunity for the game to be played outside of a classroom setting.

It was decided that the game should be turn-based. There were a couple of reasons for this decision. The primary reason is that the game was designed with a classroom setting in mind and it easier for teams of students to all contribute to the strategy of play when there is not a strict constraint on the amount of time they have to make moves. The secondary reason was that with a turn-based game the professor could easily stop the game to illustrate a point without interrupting the flow too much.

The game is similar to a discrete event simulation, but it does not fulfill all the necessary requirements. The main similarity is that nothing happens between turns. Each turn represents a week of time and events are only simulated at the end of each turn. However, this simulation does not fulfill the other requirements of a discrete event simulation and thus cannot be labeled as one.

3.2 Tools

Several different tools were used in the creation of this simulation. Visual Studio was the development environment. The programming language was Visual Basic, and SQL Server was used for the database functions. The main reason these tools were chosen is because they are fairly common development tools, and a secondary goal of this project was to introduce the student developer to technologies that he might encounter in the field.

At this point we know the simulation will take the form of a web-based game that uses turns in a similar manner to a discrete event simulation. Now that the general structure of the game had been outlined, we can on to the specifics of how the game is played.

4 Design

In this section we will discuss the specifics of how the game is played. This will include a description of the setting for the game, the users involved, how a turn progresses, and the conditions for winning or losing the game.

4.1 Davangoria

A good place to start explaining the game is probably to explain what Davangoria means. Davangoria is one of the two working titles for this game. The other working title for the game is "Dictator vs. Dissidents." Davangoria is also the current name for the fictional country where the events of the game take place. For the purposes of this paper, Davangoria will refer to the country within the game and not the game itself. The game will be referred to as Dictator vs. Dissidents, when it is referred to by name at all.

The current state of Davangoria is represented by several global conditions. These global conditions have numerical values and are stored in a SQL database. The global conditions are:

Economic Performance - The degree of economic well-being within the country.

Public Order - The level of law and order and the overall effectiveness of the state.

International Pressure - The economic impact of international efforts to isolate the authoritarian regime.

Public Fear - The extent to which fear of violence dissuades citizens from protest or involvement with the opposition.

Level of Protest - The amount of protesters on the street.

Opposition Size - The number of people who are involved or associated with the opposition movement in some way.

Opposition Unity - The extent to which the disparate groups making up the opposition movement are unified in their aims and coordinated in their actions.

Level of State Violence - The actual amount of force directed at opponents of the government.

Military Loyalty - The degree to which the military is likely to obey orders to repress a mobilization, as opposed to refusing to fire or defecting to the opposition.

Opposition Support - The level of public popularity of the opposition movement.

Regime Support - The level of public popularity of the regime.

On each turn, players can affect these global conditions by assigning Power Points to different categories. These categories represent different strategies or priorities and are unique to each player. The Power Points represent how much effort is spent in each of these categories. Each player has 10 Power Points to spend these points refresh each turn.

4.2 Users

There are three different categories of users involved in the Dictator vs. Dissidents game. These categories are the administrator, the dictator, and the opposition. A user's role is attached to their log in credentials. There is nothing a user can do to choose or change their role. When a user's role is assigned when a new user is created.

4.2.1 Administrator

The administrator controls the game. In most cases the administrator will be the professor, but it could conceivably be someone else. Either way the administrator can control most aspects of the game. The game is designed to be playable without input from the administrator beyond the creation of a new game, but they also have several tools at their disposal.

The administrator can tweak any of the global conditions as they see fit. They can set the game so that turns will not advance until they have given their approval. These options allow the administrator to customize the game in order to illustrate a specific point. They can also send messages to either player through the game's interface.

4.2.2 Dictator

The dictator player represents the authoritarian regime. Their goal is to stay in power through force or cunning. To this end they can use their Power Points on the following tactics:

Repression - The degree of ongoing regime activity devoted to coercion and the use of force.

Surveillance - The extent of efforts to track disloyalty and potentially threatening opposition (both outside and within the regime).

Cooptation - The extent of effort to buy off or win over leaders and groups that are currently or potentially supporters of the opposition movement.

Legitimation - The regime’s efforts to generate positive publicity, through propaganda, organizing pro-government rallies, influence on the media, etc (along with efforts to discredit the opposition).

4.2.3 Opposition

The opposition player represents the resistance movement to overthrow the current regime. Their goal is to remove the dictator from power either by force or bargaining. To this end they can use their Power Points on the following tactics:

Publicity - Efforts to build awareness and support of the opposition movement within the country, including mobilization by the internet, media appearances, public events, etc.

Protest Action - The actual mobilization of public protest.

International Lobbying - Efforts to cultivate international awareness of the opposition's campaign, and international pressure against the regime.

Consultation - Coordination and dialogue among the different groups, factions and leaders that participate in the opposition movement, in an effort to maintain unity.

4.3 Game Progression

4.3.1 Turn Progression

During each turn both the dictator and the opposition players distribute their Power Points between the different tactics however they see fit. These choices have a cumulative effect. Each time a player assigns Power Points to a particular tactic the game adds those Power Points to the sum of the Power Points assigned to that tactic throughout the game. This number is used in the calculations at the end of the turn.

For example, assume the opposition player decides to dedicate 10 Power Points to the Publicity tactic on the first turn and does the same thing on the second turn. This would make 20 the value stored in the database for Publicity therefore 20 would be the value used for Publicity in the calculations at the end of the second turn.

Each player may be able to take special actions during their turn as well. There are several different special actions. The special actions become available based on the global conditions and can only be used once each. The special actions provide either a one time boost to a global condition or apply a modifier that affects all actions for the rest of the game. Special actions are not guaranteed to work. Their success is determined by global conditions as well as a factor of randomness.

After both players have made their moves, the turn ends either automatically or once the administrator approves it, depending on how the game is set. Once the turn has officially ended, the program puts the current values for the 8 different tactics and the current values for the 11 global conditions into several formulas that are specifically designed to simulate what the result of the players' choices would be in the real world. These formulas are based on current political science research on anti-authoritarian revolutions. The products of these formulas are set as the global conditions for the next round.

4.3.2 Ending the Game

The game continues in this manner until one of the showdown scenarios is reached. These showdowns occur when one of the players takes a specific action. The outcome of the showdown scenarios is determined based on its own set of formulas. These formulas also use some of the global conditions, but they also have an element of randomness to them.

The main showdown of the game is a *Mass Mobilization.* This is instigated by the opposition, and represents a call for massive protests in public spaces in the capital city and elsewhere. The size of the mobilization is determined by the current level of protest, the level of public fear, the relative support for opposition and dictatorship.

Faced with a mobilization, the regime may opt to attempt a negotiated resolution to the confrontation. If they choose not to, or this effort fails, they may opt for a *Decisive Crackdown.* The success of this crackdown is primarily determined by the size of the mobilization and the existing level of military loyalty which are both represented as global conditions.

At any time, the regime may call an *Election*, which the opposition may participate in or boycott. The outcome of the election is determined by the relative popularity of the two sides, as well as by the amount of fraud that the dictator decides to use in the election. A decision to undertake fraud may result in the election being followed by a return to the *Mass Mobilization* showdown (with the amount of fraud acting as a positive modifier for the size of the mobilization).

Finally, at any time the opposition may opt for a violent *Insurgency*. The likelihood of a successful overthrow of the regime is generally low; the level of success depends mostly on the military loyalty and international pressure conditions.

5 Implement/Support

In this section we will discuss how the project can be used once it is complete. We will focus on how it can be used in an educational environment. There are most likely other applications for the project, but it was designed with a classroom in mind.

5.1 Application

The simulation is intended to reinforce an understanding of key concepts that are central to the study of democracy and authoritarianism. Similarly, playing the simulation, and discussing it following its conclusion, offers an opportunity to highlight causal explanations for the success or failure of efforts to promote a democratic transition. The simulation may further serve as a counterpoint to a discussion of actual examples of successful or failed civil resistance, providing insight into the strategic dilemmas faced, and choices made, by regime and opposition. The experiences of simulated confrontations can be compared to similar experiences observed in the real-world cases examined in a class; or, they may serve as a counter-factual scenario to the examined cases.

5.2 Future

An eventual goal of the project is to allow individual students to play against each other outside of class. This would generate a potentially wide variety of possible outcomes that can be discussed in class. An additional future goal is to create a digital manual and source book that illustrates the different tactics and variables of the game through the use of historical examples. When completed, the incorporation of this information will hopefully facilitate students' ability to make connections between abstract concepts and strategies and real world historical and current events.

6 Conclusion

In conclusion, this project has been very educational in the process of software development. It has the potential to be a useful tool for political science professors, and I am grateful for the opportunity to work on it.

References

- Matloff, Norm. *Introduction to Discrete-Event Simulation and the SimPy Language*. Rep. N.p., 2008. Web. 19 Mar. 2013.