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You are Not a Beautiful and Unique Snowflake

My project began last summer while at Shad Valley Calgary, a summer enrichment program for grades 11-12. It was there that I heard the phrase “emergence and complexity” for the first time.

I was fascinated by the ability of individuals to create, as a group, emergent phenomena. I’ve always been interested in modelling the spread of religion, and finally I was equipped with the tool I needed: Net Logo, a programming language conducive to modelling emergent phenomena.

I formulated my hypotheses and began work on a model. Unfortunately, I soon found that my first model didn’t have enough basis in actual scientific findings to show me concrete conclusions. That is when I thought of *The Tipping Point*, written by Malcolm Gladwell. He was actually raised in Elmira, Ontario, only a few kilometres from my home. I had heard a lot about the book, given that the author was so local, but I didn’t find the time to investigate it myself until 2005. Once I read it, though, my whole view of society was radically changed. With *The Tipping Point* as a basis for my work, the pieces fell into place.

A Brief Summary of The Tipping Point

Gladwell refers to the three rules governing epidemics using the following terms: stickiness factor, the power of context, and the Law of the Few.

Stickiness factor is a property of a given disease or fad that refers to how virulent or catchy it is. A sticky slogan in a commercial is the type that people will remember, and perhaps sing to themselves later.

The power of context is a factor unrelated to a disease or fad itself, but that has a great effect on it. The environment in which a disease or fad spreads has a dramatic effect on its outcome.

In my computer model, however, these first two factors were controlled, leaving only the Law of the Few. Essentially, the **Law of the Few** states that there are four types of people. The first, regular people, make up the largest proportion of our population. There are three special types of people, at least when it comes to social epidemics, but they are few in numbers.

Mavens are knowledge-seekers. They always want be ahead of the trend by finding new ideas, but they also have a compulsion to share those ideas with their limited circle of friends.

Connectors are well recognized because of the popular concept of "six degrees of separation." They are people who simply have an extraordinary number of acquaintances. They also have a compulsion to bring like-minded people together, creating ties between opposite ends of their social circles. Most of the Connectors I've encountered are very pleased when they find such a connection. For example, my father frequently uses the phrase "it's a small world" when he finds one of these ties.

Salesmen are the third type of people instrumental to a social epidemic. They are able to persuade, and may actually feel a compulsion to persuade others. They do not necessarily have a large number of acquaintances, however.

None of these people can begin an epidemic on their own. Mavens are connected to Salesmen by Connectors. Salesmen take the idea and modify it enough to be able to pitch it successfully to the mainstream public. Connectors then connect Salesmen to the public. If a given person has a combination of more than one of these abilities, this process is shortened.

The process is difficult to harness even for those who recognize the Connectors, Mavens, and Salesmen around them, largely because each of the three types feel a compulsion to do what they do in relation to an epidemic. They extract pleasure from carrying out their responsibility, and may not even recognize that they are engineering a social epidemic as it happens.

Purpose and Hypothesis

The purpose of my model was to simulate the effects of multiple epidemics on a society with the stickiness factor and context controlled. Since all Canadian religions are in the context of a secular democracy and since every religion is an answer to the meaning of life, they are equally sticky; therefore, I called my fads religions.

I conducted three experiments and a control. Each involved one or more Mavens moving between 20 Connectors, 20 Salesmen, and 200 people for 200 time units ("ticks"), competing for followers. I ran each experiment and the control for 20 trials each, totalling 80 trials.

The control trial had one Maven try to attract followers. The first experiment had two Mavens competing for followers. The second experiment had five Mavens competing for followers. The third experiment had two Mavens lasting 100 ticks competing for followers with one Maven lasting for 200 ticks.

White it is intellectually stimulating to experience Gladwell's explanation of his ideas while reading his book, once one understands them it is very simple to intuitively predict the result of a social epidemic if given all conditions. My hypothesizing was done from this lucky position, and so I was able to make my predictions intuitively. A common occurrence in each of the 80 trials was "tipping," which can be loosely defined as the change in an epidemic's spread from stability to rapid growth.

For the first experiment, I hypothesized that one religion would tip near the beginning, and that the other would tip near the end or not at all. In the second experiment, I hypothesized that zero, one, or two religions would tip at some point. For the third experiment, I hypothesized that the religion with two Mavens would tip first, followed by the religion with one Maven.

Procedure

First, I coded a model with inputs for important constants like the distribution of people and the numbers of Connectors and Salesmen. For each trial and for each experiment, then, the appropriate conditions were entered into the input areas at the side of my model. The model was initialized and then begun. As soon as all Mavens were gone from the screen and every person on the screen had returned to following no fad, the execution was stopped. The graph of the counts of people in each religion over time was then copied from the model into a separate file.

Once I had all 80 graphs, I grouped them by how similar their results were, and then analyzed them by arranging them together in a single file and noting trends and anomalies.

Observations and Conclusions

My model simulates a specific instance of the rules in *The Tipping Point* acting upon a population. Each experiment yields different conclusions. The control trial, for instance, shows how the rules in *The Tipping Point* accurately depict real life and that they are intuitive enough to be understood by almost anyone. Each of the 20 graphs in this trial bore a strong resemblance to the rise and fall of every fad I can remember from my childhood.

The first experiment yielded three different groups of results: one religion tipping first followed by the other, both religions endlessly battling for followers, or one religion consistently out-performing the other. More than anything, this demonstrates that the models are chaotic; given the same conditions, three different results can arise. Though I didn't realize it at first, this

was actually due to the setup of Connectors. Converting Connectors that were found near the centre of the model was more effective than converting Connectors near the edges; Connectors near the centre took less time to reach and less time to be reached by Salesmen.

In the second experiment, in which five religions fought for followers, I also noticed that if there were more Connectors near the centre, the population could support more religions tipping. Usually this manifested by one religion tipping rather than none, yet in one of the 20 trials two religions tipped simultaneously. This is attributable to an excess of well-connected Connectors (those near the centre). The book *Six Degrees* even suggests that a fad's spread has less to do with how sticky it is, and more to do with how well-connected its network is.

In the third experiment, I found my most interesting result, which deviated from my hypothesis: it is more effective to have one Maven for 200 ticks than to have two Mavens for 100 ticks. For example, it is more effective to have an advertisement run less frequently for a longer time than to have an advertisement run very frequently for a short period of time. Again, the rules are almost intuitively apparent, yet *The Tipping Point*'s rules allow one to quantify them.

Except for the third experiment, my hypotheses were, for the most part, correct. I attribute this again to the intuitive nature of the model I used. The results are important in understanding society, psychology, and group dynamics, and an understanding of the rules is imperative for understanding how one could engineer a social epidemic of one's own.

Acknowledgements

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Bibliography

Barabási, Albert-László. *Linked*. New York: Plume, 2003.

This is a book that is useful in extending the concepts introduced in *The Tipping Point*, by showing that all networks, social or otherwise, are dominated by certain nodes that are instrumental in keeping the network together.

Gladwell, Malcolm. *The Tipping Point*. New York: Little, Brown and Company, 2002.

Gladwell describes recent findings about the causes of social epidemics in layman's terms, and brings together ideas from several different disciplines to form a cohesive and structured theory about the spread of social epidemics.

Palahniuk, Chuck. *Fight Club*. New York: W. W. Norton and Company, 2005.

This is an excellent fictional example of a Maven/Salesman who uses revolutionary ideas and compelling arguments to harness Connectors, galvanizing American males into a social revolution.

Watts, Duncan J. *Six Degrees*. New York: W. W. Norton and Company, 2003.

Watts details research that expands upon Stanley Milgram's original experiment with the Boston stockbroker that gave rise to the phrase "six degrees of separation." It is, like *Linked*, an interesting expansion of social science beyond *The Tipping Point*, and a basis for further research into cutting-edge sociological topics.