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## Simulating Propaganda Spread in a Presidential Election

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### *Abstract*

The presidential election process in a democratic country entails a political campaign that includes the spread of propaganda which refers to any information that aims to persuade voters to elect a candidate. This information may be in a form of a tagline or slogan that briefly explains why a candidate is running for office. Within the context of the 2016 Presidential Election in the Philippines, the purpose of this paper was to simulate through the Rumor Mill Model the spread of a presidential candidate's tagline as propaganda; and to determine whether the speed and extent of propaganda reach was translated into votes. To accomplish this, a one-on-one correspondence of each presidential aspirant's tagline, with the parameters of the model was created. A specific assumption for each parameter was formulated. Then based on the computer instructions of the model, the spread of propaganda was simulated. The result did not match with the official results of the 2016 Philippine presidential race. Hence, the Rumor Mill Model failed to predict who won in the election. It is therefore necessary to design additions and extensions to improve this model as an agent-based simulation model.

Key words: Rumor Mill Model, political propaganda, presidential election, tagline, Netlogo, Model

### *Introduction*

An election for President of the Philippines occurs every six years on Election Day, held every second Sunday of May (Article VII of the 1987 Constitution of the Philippines). On May 9, 2016 a presidential election (Final Results, 2016) was held. There were four popular presidential aspirants: Rodrigo Duterte, Manuel Roxas II, Grace Poe, and Jejomar Binay. As part of every presidential election process, the candidates campaigned across the country to explain their views and plans to voters.

In a democratic country such as the Philippines, this phenomenon seems indispensable. The literature calls this information 'political propaganda' which may be truthful or partly truthful. A propaganda

may take the form of a slogan or a tagline. It is designed by either the candidate or his or her supporters, not so much to inform but to shape an opinion or lead a voter to a point of view held by a political candidate or his or her propagandist. It typically consists of a phrase or a tagline that embodies the candidate's platform, personality, promise or dream for the nation. Thus, during the campaign, the tagline is often reiterated. It is reused all the time in order to create a dramatic effect, and to capture the core value of the voters so that it will impress them and lead them to vote for the candidate associated with the tagline. The tagline as propaganda may be propagated in several ways, e.g., through radio, television,

social media, or by word of mouth relayed to whoever is geographically closest to the propagandist. The propaganda is diffused until it reaches its saturation point; its main goal, however, is to influence or manipulate votes. This study claimed that the more people who hear about the propaganda, and the more number of times the propaganda is heard, the more likely the people would vote for the candidate associated with that propaganda. It seems that the determining factor for the success of the candidates' campaign rests on the reach of their propaganda. This assumption led the researchers to search for an unconventional way to verify its possibility.

Because a tagline is intended to sway votes, it can be perceived as rumor which when viewed through the lens of political science and marketing strategy has two characteristics: 1) The lack of specific standards of evidence, hence can be told and transmitted in the absence of a clear standard or proof blurring the line between 'true information and misinformation' (Fine & Ellis, 2010; see also Allport & Postman, 1947, cited in Berinsky, 2012); and 2) Its emergence during times of crisis and uncertainty and hence are merely 'fringe beliefs' and 'frivolous statements' lacking veracity that can have serious political consequences (Berinsky, 2012). In this paper, rumor is interchangeably used with the term political propaganda in the form of a tagline which represents the candidate's simplistic solution to a complex problem.

The literature shows the link between rumor (tagline as propaganda, henceforth) and campaign strategy. For example, by using a telephone survey, Weeks and Garrett (2014) established the belief-vote link during the Obama campaign in 2008. They theorized that belief of rumor predicts vote choice. Other studies showed the utilization of Twitter to propagate false rumors during the 2012 presidential election (Jian, Bar, Driscoll, & Chin, 2012). Another study that utilized content analysis also shows the nexus between political branding and political campaign (Adolphsen, 2009). None of these is concerned about determining a 'tagline as propaganda'

spread based on spatial proximity through computer simulation. To address this gap, we utilized the Rumor Mill Model to simulate the spread of tagline as propaganda. Of all the models found in the NetLogo library, this model was used because the behavioral data contained in the Rumor Mill Model fit into the observable spread of tagline as propaganda that occurred during the 2016 electoral process in the Philippines. Furthermore, the Rumor Mill Model is categorized under the NetLogo's social science' group which affirms that the model used in this paper is appropriate.

### *Objectives*

This paper had two objectives: 1) to simulate in the computer through Rumor Mill Model the speed and extent of the spread of the propaganda of the four presidential aspirants during the 2016 Philippine Presidential Election; and 2) to compare the reach of their propaganda in order to determine whether the reach was translated into votes.

The succeeding section shows how these objectives were carried out. First, the model was described and explained how it worked. Second, a one-to-one correspondence between the parameters of the model, and the circumstances in which the tagline as propaganda of the four candidates for president was constructed. Third, four candidates with their corresponding taglines were selected on the basis of their popularity. Assumptions were also indicated vis-à-vis the parameters of the model. The candidates were given labels e.g., P1, P2, P3, and P4 where P stands for presidential; Fourth, by following simulation instructions, the spread of propaganda for each candidate was simulated and recorded in the tables; and Fifth, the analysis was done based on the personal observations of the researchers on what transpired during the campaign period. These may, however, be verified from the local and national news (e.g., Go, 2016; Philippines election 2016).

### *Methodology*

From the NetLogo Models Library, the

Rumor Mill Model was selected to simulate the spread of political propaganda of each of the four presidential aspirants in the Philippines during the 2016 national elections. According to Wilensky (1997):

This program models the spread of a rumor. The rumor spreads when a person who knows the rumor tells one of their neighbors. In other words, spatial proximity is a determining factor as to how soon (and perhaps how often) a given individual will hear the rumor.

The neighbors can be defined as either the four adjacent people or the eight adjacent people. At each time step, every person who knows the rumor randomly chooses which neighbour to tell the rumor to. The simulation keeps track of who knows the rumor, how many people know the rumor, and how may “repeated telling” of the rumor occurs.

Wilensky (1997) explains that to use this program, there is an ‘eight-mode? switch that determines whether at each time step the rumor spreads to one of four randomly chosen neighbors, or one of eight such neighbors.’ He also makes it clear that ‘as with any rumor, it has to start somewhere, with one or more individuals’, and that there are three ways to control the start of rumor: 1) single source, 2) random source, and 3) choose a source with mouse. Explaining further, Wilensky continues by saying that ‘to run the model, you can either “step through each time step using the STEP button or allow the model to simply run continuously using the GO button. The model will stop when everyone in the population knows the rumor.’ Wilensky also mentions three plots: rumor spread, successive differences and successive ratios; and further illustrates that ‘the monitor CLIQUE% is the percentage of people that has heard the rumor’. The interface of the monitor shows coloring buttons that illustrate ‘when heard’ and ‘times heard’.

In order to determine the reach of the

‘tagline as propaganda’, two numbers are established in this paper: 1) ‘7.5’ which assumes that the target population in which the rumor is set to spread is 3/4 of a country’s populace; and 2) ‘2.5’ which assumes that the target population in which the rumor is set to spread is 1/4 of a country’s populace. The hypothetical population of the state for this paper is 100,000.

How this Rumor Mill Model was translated into this study is shown below. The first column contains the important terms found in the model. The second column reflects how the model’s terms were translated into the phenomenon of propaganda spread that occurred during the 2016 presidential race.

Table 1 indicates three columns. The first column shows the parameters of the rumor mill model and the second column shows the description of the switch, the source and the plots of the model. The third column shows how the rumor mill model is being applied in the study.

Table 1. Application of Rumor Mill Model in the 2016 Presidential Election

RUMOR MILL MODEL		RUMOR MILL MODEL APPLIED TO the 2016 PRESIDENTIAL ELECTION
RUMOR		Political Propaganda in a form of Presidentiables’ Tagline
EIGHT-MODE	a switch that determines whether at each time step the rumor spreads to one of eight randomly chosen neighbors.	a switch that determines whether at each time step the spread of political propaganda of presidentiables spreads to one of eight randomly chosen population
FOUR- MODE	a switch that determines whether at each time step the rumor spreads to one of four randomly chosen neighbors	a switch that determines whether at each time step the spread of political propaganda spreads to one of four randomly chosen population
SETUP-ONE	Single source	Spread of Political propaganda emanate from one source
SETUP-RANDOM	Random source	Spread of Political propaganda emanate from different sources
SETUP-ONE SPREAD-RUMOR-WITH-MOUSE	Choose source with mouse This “seeds” the rumor randomly by choosing a percentage of the population that knows the rumor initially. This percentage is set using the INIT-CLIQUE slider.	Percentage of population chosen that knows the political propaganda of presidentiables from a single source
SETUP-RANDOM SPREAD-RUMOR-WITH-MOUSE	Choose source with mouse: Press either SETUP-ONE or SETUP-RANDOM, then press the SPREAD-RUMOR-WITH-MOUSE button. While this button is down, clicking the mouse button on a patch in the view will tell the rumor to that patch.	Percentage of population chosen that knows the political propaganda of presidentiables from a random source
SETUP-RANDOM SPREAD-RUMOR-WITH-MOUSE	Choose source with mouse This “seeds” the rumor randomly by choosing a percentage of the population that knows the rumor initially. This percentage is set using the INIT-CLIQUE slider.	Percentage of population chosen that knows the political propaganda of presidentiables from a random source
SETUP-RANDOM SPREAD-RUMOR-WITH-MOUSE	Choose source with mouse: Press either SETUP-ONE or SETUP-RANDOM, then press the SPREAD-RUMOR-WITH-MOUSE button. While this button is down, clicking the mouse button on a patch in the view will tell the rumor to that patch.	Percentage of population chosen that knows the political propaganda of presidentiables from a random source

SETUP-RANDOM	Choose source with mouse This "seeds" the rumor randomly by choosing a percentage of the population that knows the rumor initially. This percentage is set using the INIT-CLIQUE slider.	Percentage of population chosen that knows the political propaganda of presidentials from a random source
SPREAD-RUMOR-WITH-MOUSE	Choose source with mouse: Press either SETUP-ONE or SETUP-RANDOM, then press the SPREAD-RUMOR-WITH-MOUSE button. While this button is down, clicking the mouse button on a patch in the view will tell the rumor to that patch.	
RUMOR SPREAD	plots the percentage of people who know the rumor at each time step.	The percentage of people in a population who know the political propaganda of presidentials
SUCCESSIVE DIFFERENCES	plots the number of new people who are hearing the rumor at each time step.	The number of new people in a population who hear the political propaganda of presidentials
SUCCESSIVE RATIOS	plots the ratio of the number of people who have now heard the rumor compared to the number of people who had heard it before.	The ratio of the number of people who have now heard the political propaganda of presidentials compared to the number of people who have heard it before
IN IT CLIQUE%	The percentage of people that have heard the rumor.	The percentage of people in a population who have heard and know the political branding of the presidentials

Table 2 indicates three columns. The first column shows the four presidential aspirants. They are the ‘agents’ referred to in the model; the second column shows the model’s parameters and the corresponding assumptions regarding the background of the candidates’ taglines.

Table 2. *One-on-one Correspondence of the Presidentials, Presidentials’ Assumptions, with the Rumor Mill Model’s Parameters*

Presidential (P)	Parameter	Assumption
P1 (Duterte)	Set Up 1:	The tagline as propaganda is assumed to emanate from Candidate P1 himself/herself. Hence, P1 having personally devised the propaganda has personal control over the spread of his/her entire identity as presidential.
P2 (Poe)	Set Up Random:	The tagline as propaganda is believed to have been packaged by a marketing specialist who happens to be part of his/her family. Hence P2’s researched-based propaganda spreads like a well-packaged product in the market.
P3 (Roxas)	Spread Rumor with Mouse (Set Up One):	The tagline as propaganda is thought to have been omitted on behalf of P3 by a sophisticated government-owned political machinery. Hence P3’s propaganda having been established in the immediate past spreads vis-à-vis actual real life situation
P4 (Binay)	Spread Rumor with Mouse (Set Up Random):	The well-crafted tagline as propaganda is supposed to have been propagated for a time period by P4 himself / herself via his/her microcosm locality. Hence, the propaganda spreads via expensive, private yet limited machinery claimed to have been tested and proven in said prototype locality.

The campaign taglines as propaganda associated with each presidential are found below. These taglines are the explicit pronouncements associated with the respective agents’ propaganda. The basis for assigning the model’s parameter corresponding to an agent’s propaganda was the candidate’s political profile vis-à-vis his/her respective scheme and strategy to win the election.

1. P1 (Rodrigo Duterte)  
Tagline: ‘Tapang at Malasakit’ (literally Courage and Compassion)
2. P 2 (Grace Poe)  
Tagline: ‘Gobyernong May Puso’ (literally Government with a Heart)
3. P 3 (Mar Roxas)  
Tagline: ‘Ituloy and daang matuwid’ (literally Continue the Straight Path)
4. P 4 (Jejomar Binay)  
Tagline: ‘Kay Binay Gaganda ang Buhay’ (literally With Binay, Life Will Get Better)

Each of these taglines represents the propaganda, or to a marketing strategist, the brand of the product which in this paper, represents the agent or the presidential. According to Adolphsen (2009), a political brand has an internal structure, namely: 1) The brand’s ‘boundary conditions’ which are the functional and economic value of the presidential, e.g., the hard, tangible benefit gained by the voter; and 2) The brand ‘differentiators’ or ‘emotional wrappers’ of the presidentials represented by their psychological, social or cultural appeal to the voters. This internal structure would serve as the framework for the recommendations on how the model may be extended or added.

The simulation began by following the computer instructions. The results for spread of propaganda given the number of minutes and the number of population hearing the rumor were recorded in the tables.

*Results*

This paper argued that the more people who hear the propaganda, and the more times the propaganda was heard, the more likely people vote for the candidate linked to that propaganda. The result of the simulation shown in Figure 1 below indicates that it was presidential aspirant Grace Poe who would most likely win if one of eight adjacent neighbors will spread the propaganda in a high population. Binay ranked 4th place.

Rank	RANK per simulation results	
1	Grace Poe	(P2)
2	Mar Roxas	(P3)
3	Jejomar Binay	(P4)
4	Rodrigo Duterte	(P1)

Figure 1. The model's prediction based on the spread of rumor or political propaganda, in an 8-mode switch at 7.5.

The figure above was based on Table 3 and the rank was based on the number of new people in a 50% population who hear the political propaganda of presidentiables as reflected in Table 3.

Table 3 indicates that when the model was tested at 8-mode (at 7.5 population), P2 got more SD (1,460). The implication is that as more people initially hear the propaganda, the information transfer reaches more people.

Table 3. Spread of Propaganda in a High Population Tested at 8 Mode

P1			P2			P3			P4		
RS	SD	SR	RS	SD	SR	RS	SD	SR	RS	SD	SR
10%	55	1.06	10%	1150	1.00	10%	54	1.07	10%	66	1.04
20%	80	1.03	20%	1220	1.57	20%	87	1.03	20%	90	1.03
30%	105	1.01	30%	1148	1.64	30%	115	1.03	30%	110	1.03
40%	128	1.03	40%	1350	1.46	40%	118	1.04	40%	123	1.03
50%	131	1.03	50%	1460	1.38	50%	149	1.01	50%	139	1.01
60%	154	1.01	60%	1430	1.29	60%	154	1.01	60%	154	1.01
70%	155	1.01	70%	1380	1.26	70%	173	1.01	70%	169	1.01
80%	158	1.03	80%	1020	1.15	80%	151	1.01	80%	125	1.00
90%	89	1.03	90%	810	1.08	90%	99	1.01	90%	86	1.01
100%	1	1.03	100%	0	0.99	100%	4	0.99	100%	3	1.04

Legend:  
 RS - Percentage of population who know the political propaganda  
 SD - The number of new people in a population who hear the political propaganda  
 SR - The ratio of the number of people who have now heard the political propaganda compared to the number of people who have heard it before  
 P1- Rodrigo R. Duterte  
 P2- Grace Poe  
 P3- Mar Roxas  
 P4- Jejomar Binay

However, it would be Jejomar Binay who would most likely win if one of four adjacent neighbors (4-mode) will spread the propaganda in a high population, while Grace Poe came only second (Figure 2)

Rank	RANK per simulation results
1	Jejomar Binay (P4)
2	Grace Poe (P2)
3	Rodrigo Duterte(P1)
4	Manuel Roxas II (P3)

Figure 2. The model's prediction based on the spread of rumor or political propaganda, in a 4-mode switch at 7.5.

This is supported by Table 4 and the rank was based on the number of new people in a 50% population who hear the political propaganda of presidentiables.

Table 4 shows that when the model was tested at 4-mode at 7.5, P4 has the most number of SD (1,190); the number of people who know the propaganda has reached to 1,190 as soon as 50% of the high population has already heard the propaganda. Given the same percentage of population which is 50%, P4 is followed by P2 (SD= 799); P1 (SD= 115) and P3 (SD106), respectively. In other words, information sharing for P4 covered more and faster than the rest.

Table 4. Spread of Propaganda in a High Population Tested at 4 Mode

P1			P2			P3			P4		
RS	SD	SR	RS	SD	SR	RS	SD	SR	RS	SD	SR
10%	46.3	1.04	10%	360	1.32	10%	43	1.04	10%	1200	1.11
20%	69	1.03	20%	583	1.42	20%	72	1.03	20%	958	1.50
30%	68	1.03	30%	691	1.35	30%	87	1.00	30%	986	1.45
40%	101	1.01	40%	793	1.25	40%	105	1.03	40%	1188	1.44
50%	115	1.03	50%	799	1.25	50%	106	1.03	50%	1190	1.33
60%	114.4	1	60%	805	1.14	60%	122	1.01	60%	1160	1.24
70%	126.2	1.01	70%	729	1.1	70%	133	1.00	70%	1090	1.18
80%	90.7	1	80%	590	1.1	80%	142	1.01	80%	940	1.11
90%	65	1	90%	355	1.04	90%	71	1.00	90%	560	1.06
100%	3	0.97	100%	0	1.01	100%	0	1.00	100%	10	0.97

Legend:  
 RS - Percentage of population who know the political propaganda  
 SD - The number of new people in a population who hear the political propaganda  
 SR- The ratio of the number of people who have now heard the political propaganda compared to the number of people who have heard it before  
 P1- Rodrigo R. Duterte  
 P2- Grace Poe  
 P3- Mar Roxas  
 P4- Jejomar Binay

Rank	RANK per simulation results
1	Grace Poe (P2)
2	Jejomar Binay (P4)
3	Mar Roxas (P3)
4	Rodrigo Duterte (P1)

Figure 3. The model's prediction based on the spread of rumor or political propaganda, in an 8-mode switch at 2.5.

This is supported by Table 5 and the rank was based on the number of new people in a 50% population who hear the political propaganda of presidentiables.

Table 5 shows that when the model was tested at 8-mode at low population, 2.5, P2 has the most number of SD (1,076); the propaganda reached to 1076 new people in a 50% population and has been heard by them. Given

the same percentage of population which is 50%, P2 is followed by P4 (SD= 1021); P3 (SD= 146) minutes) and P4 (SD=134), respectively. In other words, information sharing for P2 covered more and faster than the rest.

Table 5. Spread of Propaganda in a Low Population Tested at 8 Mode

P1			P2			P3			P4		
RS	SD	SR	RS	SD	SR	RS	SD	SR	RS	SD	SR
10%	64	1.06	10%	487	1.70	10%	66	1.06	10%	475	1.72
20%	92	1.06	20%	748	1.56	20%	97	1.06	20%	681	1.54
30%	118	1.04	30%	840	1.46	30%	110	1.04	30%	918	1.40
40%	133	1.01	40%	1025	1.33	40%	130	1.03	40%	990	1.32
50%	134	1.00	50%	1076	1.26	50%	146	1.03	50%	1021	1.24
60%	163	1.03	60%	1050	1.22	60%	162	1.01	60%	1053	1.22
70%	176	1.01	70%	933	1.14	70%	186	1.03	70%	1021	0.18
80%	135	1.03	80%	874	1.11	80%	143	1.03	80%	776	1.11
90%	93	1.01	90%	613	1.07	90%	81	1.00	90%	435	1.07
100%	4	0.97	100%	8	0.99	100%	3	0.97	100%	0	1.00

Legend:  
 RS - Percentage of population who know the political propaganda  
 SD - The number of new people in a population who hear the political propaganda  
 SR - The ratio of the number of people who have now heard the political propaganda compared to the number of people who have heard it before  
 P1- Rodrigo R. Duterte  
 P2- Grace Poe  
 P3- Mar Roxas  
 P4- Jejomar Binay

Nevertheless, at 4-mode at 2.5 (See Table 6), P2(Grace Poe) has the most SD (1,250). Based on Table 6, Grace Poe would most likely get elected.

Rank per simulation results	Presidential Aspirants
1	Grace Poe (P2)
2	Manuel Roxas II (P3)
3	Rodrigo Duterte(P1)
4	Jejomar Binay (P4)

Figure 4. The model's prediction based on the spread of rumor or political propaganda, in 4-mode switch at 2.5.

This is supported by Table 6 and the rank was based on the number of new people in a 50% population who hear the political propaganda of presidentiables.

Table 6 shows that when the model was tested at 4-mode at a low population, 2.5, P2 has the most number of SD (1,250); the propaganda reached to 1250 new people in a 50% population and has been heard by them. Given the same percentage of population which is 50%, P2 is followed by P3 (SD= 117); minutes) P1 (SD=116) and P4 (SD= 107), respectively.

In other words, information sharing for P2 covered more and faster than the rest.

Table 6. Spread of Propaganda in a Low Population Tested at 4 Mode

P1			P2			P3			P4		
RS	SD	SR	RS	SD	SR	RS	SD	SR	RS	SD	SR
10%	49	1.1	10%	1178	1.0	10%	51	1.0	10%	53	1.1
20%	65	1.01	20%	966	1.58	20%	66	1.01	20%	64	1.04
30%	79	1.03	30%	1008	1.54	30%	87	1.01	30%	83	1.01
40%	106	1.01	40%	1080	1.43	40%	114	1.01	40%	94	1
50%	116	1.01	50%	1250	1.33	50%	117	1.01	50%	107	1.01
60%	122	1.01	60%	1240	1.26	60%	144	0.99	60%	122	1.01
70%	137	1.01	70%	1150	1.19	70%	132	0.99	70%	124	1.01
80%	95	1.03	80%	840	1.13	80%	192	0.99	80%	94	1.01
90%	64	1	90%	620	1.08	90%	48	0.97	90%	62	1.01
100%	0	0.99	100%	0	0.99	100%	1	0.99	100%	8	1

Legend:  
 RS - Percentage of population who know the political propaganda  
 SD - The number of new people in a population who hear the political propaganda  
 SR - The ratio of the number of people who have now heard the political propaganda compared to the number of people who have heard it before  
 P1- Rodrigo R. Duterte  
 P2- Grace Poe  
 P3- Mar Roxas  
 P4- Jejomar Binay

Overall, it is apparent that the people who have heard the rumor when it was spread to one of eight randomly chosen neighbour and spread to one of four randomly chosen neighbour did not appreciably differ much. An increase of 370 new people hearing the propaganda even if more people initially heard it, does not bring into conclusion that more people hearing the propaganda warrant an extensive spread.

Discussion

The results of this study demonstrate the capability of the Rumor Mill Model to predict the extent of spread of the presidentiable's propaganda given a number of population. For example, in both 4-mode and 8-mode, we observed that as the population increases, the time of rumor spread increases. But the SD surge stopped at a certain point even if the time period the propaganda spread continued to soar. In the case of this simulation, the crescendo of time reached its peak as soon as the propaganda saturated 60% to 80% of the population, irrespective of the size of population. We also noted that after reaching this high percentage, the number of people hearing the propaganda decreased.

The extensive surge of the rumor spread that started too early, and consequently stopped before the official campaign, probably explains why P4 did not win in the election even if this aspirant’s propaganda promised prosperity through dole-outs given in advance to several barangays (sitio) nationwide. P4’s rumor spread did not only cease to swell after a number of barangay heads all throughout the country received gifts, e.g., ambulances, the rumor spread did not also create an impact that can be translated into votes. That the people did not vote for P4 was probably due to the premature campaign activities that were compounded by several factors: the so-called short memory of the voters who received P4’s favor, the corruption issues faced by P4, and the cases filed against his family members. As these factors became evident at the time the campaign period officially started, it likewise became obvious that P4’s gifts to the barangay heads did not matter. The opposition’s so-called demolition job created distrust due to credibility issues fabricated by the opposition. Hence, it was apparent that P4s supporters voted for another more trustworthy candidate. This validates a research finding which states that ‘the probability of voting for a candidate decreases when rumors about that candidate are believed, and believing rumors about an opposed candidate reinforces a vote for the preferred candidate (Weeks, 2014, p.1).

On the other hand, the simulation showed that the propaganda of P2 has a more extensive reach notwithstanding a smaller population. The model’s prediction is not quite accurate for P2. We assumed earlier that P2’s propaganda is well packaged, and hence, the propensity to be more attractive to the voters. While this marketing style was effective as revealed by P2’s popularity during the electoral surveys, P2’s personal circumstances, however, became questionable. The electorates’ nationalism and patriotism weighed against P2’s logical and well-researched assertions. This implies that even if a propaganda is systematically crafted and hence, has the likelihood to spread faster, pre-election

surveys conducted before the election negated the simulation’s result. There are a number of factors that will probably explain this: P2 did not rely on how she was neatly packaged by her supporters. Rather, her family history boosted her popularity. For example, her adoptive parents were famous national actors, not to mention the fact that P2 could be riding the crest of her father’s popularity especially when he was allegedly cheated during the previous election, and when her father passed away ostensibly because of this deception.

Thus, if the propaganda is supported by a strategy that is geared towards increasing the ability to reach and communicate with people through the Internet, social media, and TV media, then it spreads faster.

*The Actual Election Results*

The results of the 2016 Presidential election were unexpected (Figure 3). It was P1 (Rodrigo Duterte) who won in the polls even if the model showed that the propaganda spread was slower and expanded to a very limited number of persons who were hearing the information, whether in a huge or tiny population.

Rank	Official Election Results	VOTES	PERCENT
1	Rodrigo Duterte (P1)	16,601,997	39.0%
2	Manuel Roxas II(P3)	9,978,175	23.4%
3	Mary Grace Natividad Poe-Ilamanzares	9,100,991	21.4%
4	Jejomar Binay (P4)	5,416,140	12.7%

Source: ‘Final results’ (May 16, 2016)

Figure 5. P1 (Rodrigo Duterte) garnered the most number of votes during the 2016 presidential election.

The Rumor Mill Model’s forecast was understandable because the agent (P1) did not have a systematic and comprehensive political machinery or an expert marketing manager. Again, even if the model says the rumor spread is very limited, the pre-election assessment and the actual polls revealed otherwise. P1 was not only popular during the election campaign, he won by a historic record- breaking unparalleled wide margin. Perhaps, what accounts for this phenomenon was the voters’ thirst for change. Incidentally, P1’s authentic persona can identi-

fy with the majority's sentiments (across social classes), e.g., fight against drugs, crimes and corruption.

Comparing P2 and P3, P2's propaganda had a more extensive reach than P3. Pre-election survey confirmed this: P2 is more admired than P3 despite the former's citizenship issues. Post electoral campaign, however, showed that P3's votes were a little higher than P2. This is expected because P3 has the political machinery because he is the personal choice of the incumbent head of state. P3, however, did not win. Although his propaganda was very viable, the status quo was not convincing enough to be sustained with an upward direction. Besides, P3 accordingly had not proven his worth because of the way he managed the nation during one state of calamity, among others.

Overall, on the basis of the extent of information shared to a huge number of people, the simulation pointed to P2 as the candidate who would most likely win in the national election. When further ranked based on SD, P3 come second, and P4 come third. Rumor Mill envisaged that P1 has the least chance of winning because the diffusion of his propaganda is too slow to infiltrate even to a small number of people.

Based on the result of the national election in May 9, 2016, however, P1 ranked first followed by P3, P2 and P4. This implies that in an electoral process the number of people who initially hears the propaganda and the number of people where the spread of information reaches, has no significance to the number of votes a candidate acquires. The patronage a candidate gets from the voters is not gauged on how many are informed of the propaganda but more on how many believed in the propaganda.

### *Conclusion*

The study assumed that if more people hear the propaganda, and if the propaganda is heard many more times, more people will vote for the candidate associated with this propaganda. The simulation results were different from

the official results of the 2016 Philippine presidential election. President-elect Rodrigo Duterte won, and not Grace Poe or Binay – possible winners per computer-generated data. Although the simulation showed the possibility of predictive modelling to gauge the spread of the presidentiables' propaganda, it could not predict if the number of retellings can be transformed into votes. The model's forecast was based on who hears the propaganda, how often it is heard, and who may retell the propaganda to the neighbour. Since the Rumor Mill Model is limited to spreading propaganda with 'spatial proximity' as the sole determining factor, this model, therefore, has several limitations that suggest possible extensions and additions.

Moreover, the model cannot calculate the 'boundary conditions' (Adolphsen, 2009) that the candidate's political brand bears, e.g., what matters most to voters. For instance, the model showed that P1's propaganda has the least reach, but what the model failed to measure is the 'functional value' of his propaganda: 'Tapang at Malasakit'. For the majority of the voters, solution to corruption and drug addiction, for instance, was a clearer, tangible and an indispensable benefit than love (P2), straight path (P3), and better life (P4). Hence, P1's votes were as many as the crowd that he gathered during his miting de avance. It is difficult to fathom P1's phenomenal superior brand image that led to victory. This is probably because P1's political brand was conceived by the voters as having 'functional value'. The voters believed this brave, tough-talking presidentiable will indeed imprison and kill the pundits, if elected into office.

Moreover, P1s 'differentiators' were more appealing to the voters than the soft, democratic and systematic policy stance of P2, P3 and P4. For example, the majority of the voters' "value preferences" are identical with the P1's proposed speedy solution to the rising drug-related crimes afflicting this society since time immemorial: 'I will kill the drug lords in 3-6 months'. This brand image cannot only be illustrated by the model, but also defies

conventional wisdom, even the tenets of all types of religion, culture, and social standing.

A word of caution though, any additions and extensions in the model must be based on empirical data in order for the model to be more predictive. In any case, a few questions must be considered: Are persons sharing information driven by their desire to make strategic choices? Or are persons spreading the rumor do it randomly without any motivation at all? Are the propaganda accurately circulated? Or is it retold with a few embellishments either as a means of campaigning for the candidate or as a matter of character assassination? The reconstruction of the model canal so be improved to address issues such as these.

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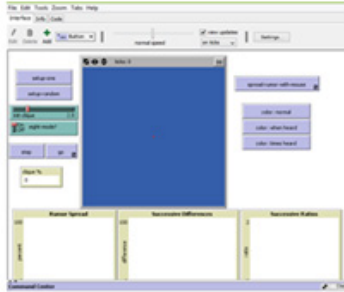
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## Acknowledgment

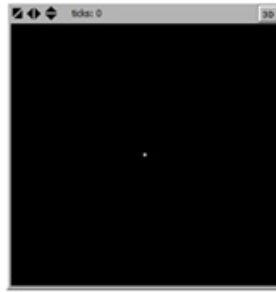
This study is made possible with the generous funding of the Bukidnon State University Research Unit.

APPENDIX 1: SET UP ONE LOW ON

**10%**



SET UP ONE LOW ON  
INITIAL NORMAL

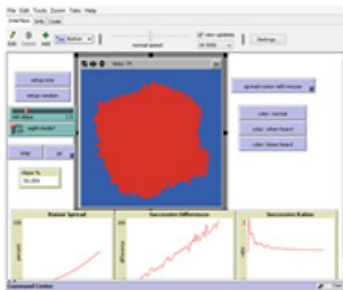


INITIAL WHEN HEARD

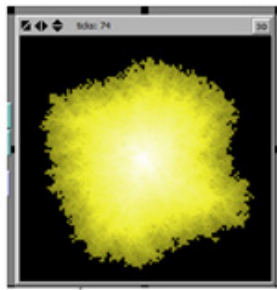


TIMES HEARD

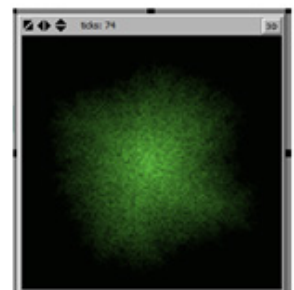
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50% normal

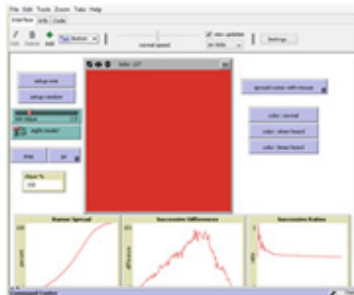


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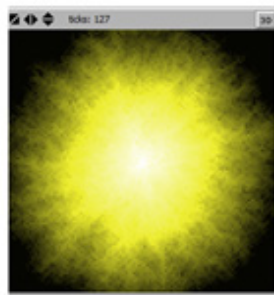


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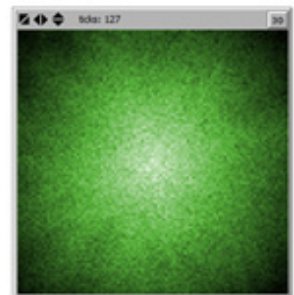
**100%**



100% normal



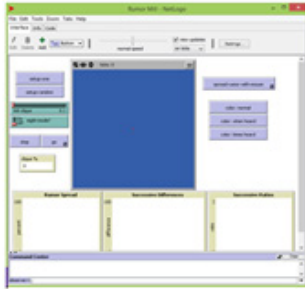
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100% times heard

APPENDIX 2: SET UP ONE HIGH ON

**10%**



Set up one initial high

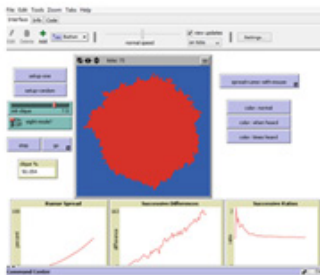


initial when heard high

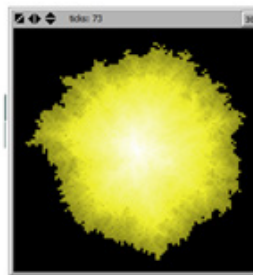


initial times heard high

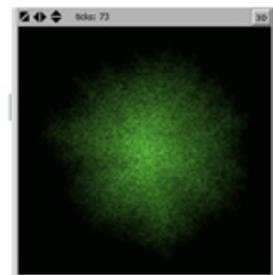
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50% set up one high on Normal

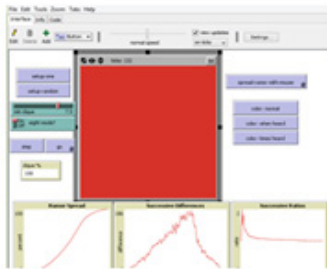


50% bset up one High On When Heard

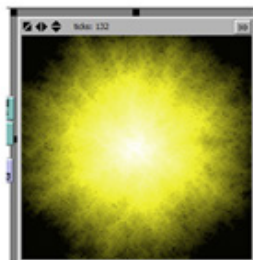


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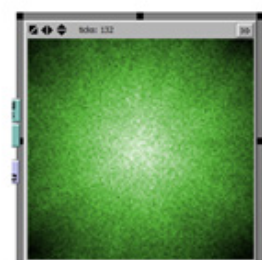
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100% set up one high on when heard



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