Notice of the Final Oral Examination
for the Degree of Master of Science

of

ARIEL WEBSTER

BA (St. Mary's College of Maryland, 2012)

"Stability of Certainty and Opinion on Influence Networks"

Department of Computer Science

Monday, April 18, 2016
10:00 A.M.
Engineering and Computer Science Building
Room 467

Supervisory Committee:
Dr. Valerie King, Department of Computer Science, University of Victoria (Co-Supervisor)
Dr. Bruce Kapron, Department of Computer Science, UVic (Co-Supervisor)

External Examiner:
Dr. Gara Pruesse, Department of Computer Science, Vancouver Island University

Chair of Oral Examination:
Dr. James Tanaka, Department of Psychology, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

This thesis introduces a new model to the field of social dynamics in which each node in a network moves to the mass center of the opinions in its neighborhood weighted by the changing certainty each node has in its own opinion. An upper bound of $O(n)$ is proved for the number of timesteps until this model reaches a stable state. A second model is also analyzed in which nodes move to the mass center of the opinions of the nodes in their neighborhood unweighted by the certainty those nodes have in their opinions. This second model is shown to have a $O(d)$ time complexity, where d is the diameter of the network, on a tree and is compared with a very similar model presented in 2013 by Frischknecht, Keller, and Wattenhofer [22] who found a lower bound on some networks of $\Omega\left(\frac{3}{2}\right)$.