A Behavioral Framework for Crowd Management

Gerard J.H. van den Dobbelsteen
TNO Human Factors
P.O. Box 23
3769 ZG Soesterberg
The Netherlands
+31 346 356 224
gerard.vandendobbelsteen@tno.nl

Keywords:
Crowd Modeling, Crowd Behavior, Crowd & Riot Control

1. Introduction

One of the main questions in the field of Crowd and Riot Control is why at a certain point in time a group of sensible people can turn into an angry mob that shows aggression towards both control forces and the direct environment. Which triggers and circumstances initiate and aggravate this process? What can be done to prevent this? What actions should a control force apply to at which point in time? These questions are the core subjects of a research we conducted for the Royal Netherlands Marechaussee (more or less equivalent to Military Police) that will have to lead to a simulation environment that shows realistic group and crowd behavior. For now, we started with an attempt to model the continuum in which crowds and control forces interact.

2. Crowd Behavior Continuum

The behavior of a group can be arranged from normal to worrisome all the way to extreme and excessive behavior. The recognition of the different behaviors of the crowd is a difficult but very important starting point to be able to respond and intervene in an appropriate way. For example Raskins III et al (2004) show that there are many crowd variables that are related to violent behavior. Members of control forces have to try to explicitly influence the behavior of crowds or individuals within a crowd in such a way that negative group processes are moved in a less destructive direction. Because we focus on the perspective of the control forces we only take observable behaviors of the crowd into account. We made a list of observable behaviors and tried to place them in the continuum of crowd behavior.

Van de Sande (2001) divides the process of controlling a crowd into three phases; Crowd Management, Crowd Control and Riot Control. Crowd Management is the guidance of crowds with the purpose to create a preferred order. By creating this order a mass demonstration will proceed orderly and profitable. To provide these circumstances arrangements have to be made in order to make things as easy as possible for the group, and the group has to be properly escorted. Crowd Control focuses on the prevention of riots. Its main goal is to maintain the existing order. Ways to do this are prevention and pro-action with the crowd. The phase of Riot Control occurs when maintaining the order did not succeed. The goal of this phase is to reinstate the no longer existing order, or in other words, to suppress riots. Beside these three phases that are mentioned by Van de Sande (2001) we used a Normal state, where individuals are not yet part of the group, and a phase called Crowd Combat. The Crowd Combat phase occurs when riots are close to urban warfare (for example a demonstration in Iraq). So, the Crowd Behavior Continuum we use exists of five phases.

In each of these five phases certain behaviors can be observed, that show that a group or a part of a group is shifting toward another phase in the continuum. This movement can be towards de-escalation of towards escalation. For each phase in the continuum we tried to make a list of observable behaviors (for example chanting, throwing objects, spitting, cursing). Also interventions can be placed in a certain range in the crowd behavior continuum. At

certain points the use of a certain intervention can be helpful while in other circumstances the same intervention can be devastating for the crowd managing process. A list of 40 interventions was made and according to knowledge from literature and experience these interventions were placed in the continuum. In this way a framework was created in which the interaction between crowd behavior, observable behaviors and possible interventions can be visualized (see figure 1).

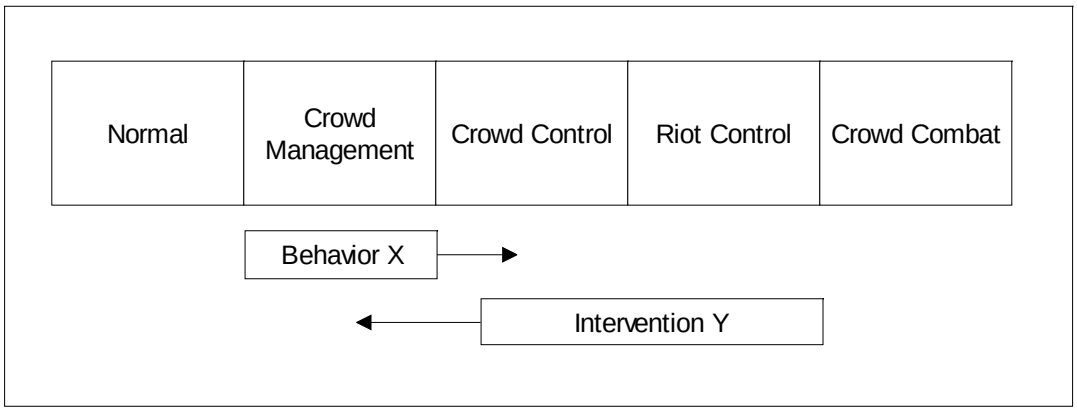

Figure 1. The Crowd Behavior Continuum

Different individuals or subgroups can be located in different regions of the continuum. The borders between the different phases are not black and white, but are a grayscale, that becomes visible because certain individuals cross the line between two phases. When certain behaviors are recognized in an early stage, a timely intervention can prevent that a larger part of the group also exceeds that border.

3. Conclusion and Discussion

Although the content in our framework is far from complete, this way of presenting the interaction between observable crowd behavior, possible interventions and the state of the crowd is a promising one. Further research needs to be done to further specify these interactions. The ideal outcome of this research would be a practical tool for control force members that shows them on what kind of behaviors in the group they should focus, and what type of intervention would be appropriate at a certain stage. Also, the outcome of this research will be used for the building of a crowd and riot simulation environment.

References

Gaskins III, R. C., Boone, C.M, Petty, M.D. & Useem, B. (2004). Psychological Research for Crowd Modeling. In *Proceedings of the 14th Conference on Behavior Representation in Modeling and Simulation.* (04-BRIMS-069).

Van de Sande, J.P. (2001). Crowd Control & Massapsychologie. Retrieved from the web December 2003. http://www.ppsw.rug.nl/~vdsande/crowdcontrol.ppt

Author Biography

GERARD J.H. VAN DEN DOBBELSTEEN received his M.S. in Cognitive Science from the University of Nijmegen and his B.S. in Computer Science from the Hogeschool Gelderland. Currently, he is working on various subjects at the Human Factors department of The Netherlands Institute for Applied Scientific Research (TNO). His research interests include Modeling and Simulation, Crowd Behavior, Team Design and Team Performance.