

# COALITION ANALYSIS OF MOUNTAINOUS COMMUNITY DISASTER MANAGEMENT CONFLICT: A CASE STUDY OF ICHINOSE COMMUNITY, CHIZU, JAPAN\*

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## 1. Back ground of the conflict

Ichinose, a mountainous community is located in Chizu (Tottori prefecture) in Japan. It is a very small community having 32 households. In this area one local company (Hisamoto Company) was engaged to collect the rocks from the mountainous site. In January 2001, the area was badly devastated due to landslides. After this event it is discovered that the landslides happened due to excessive rock quarry from the mountainous site. Immediately after this disaster it was needed to clean up the rocks and debris from the site. In order to the clean up order of the rocks and debris by the local government the local company refused to do probably because their quarry work had been officially registered by the tottori prefecture government and also their work continuously monitored by them. The local people were not ready to move from their site. So they asked the local government to clear the rocks and debris from the site and also to operate an early warning system (EWS). Still, the local company is not ready to do, so the local government took legal steps.

## 2. Conflict analysis

### 2.1 Modeling the conflict

GMCR (Graph Model for Conflict Resolution) model is used to understand and to structure the conflict in our proposed case study area. It is based on game theory which is further extended by Fraser and Hipel (Figure.1) This model gives some insights to understand the problems within which the possible strategic interaction among the decision makers (DMs) can be extremely analyzed in order to ascertain the possible compromise resolutions, or equilibria. In order to understand the historical evolution of this conflict, the dispute is modeled in two phases that is the year of 1995 and January 2001. The year 1995 has taken the point in time for which the modeling and analysis has started. The two decision makers have identified in this conflict, i.e., the local company and the local government. The local government consists of the prefecture government and the town office. Just after the last landslide in January, 2001 the local community became more actively involved in this conflict and they also started to take part in this game.

### 2.2 Coalition modeling

A coalition is a subset of two or more decision makers who coordinate their actions in a same way. There are various approaches of coalition analysis. Arrow's famous impossibility theorem showed that it is difficult in general to define the preferences of a coalition. Bram's coalition theory argues that coalition form for the sole purpose of wining. Meister and

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Khun's coalition theory based on state based metric, measuring the similarity of preferences among the members (1983). Hipel (1992) proposed an option-based metric related to the preference tree which depends on the "similarity of the preference for individual options" and the average importance of individual options for coalition members. But the threat of forming a coalition can be strategic importance, even if the coalition itself never forms (Kilgour, 1996)

Within the framework of Graph Model for Conflict Resolution (GMCR), coalition analysis has been carried out to understand what kind of coalition formation is possible in coordination with different actors. This study intends to show the process of coalition formation between actors over the periods and how the mutual agreement is possible under different scenarios. For this conflict case, the coalition analysis suggested that local community and local government has more common preferences and therefore could possibly form a coalition.

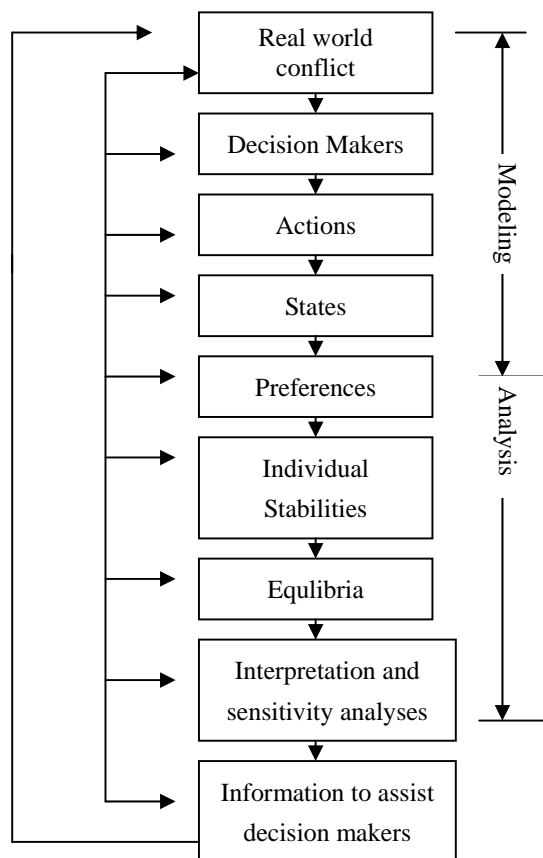


Fig. 1 Applying Graph Model for Conflict Resolution (After Fang et al, 1993)

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