

## Research on the Scenarios and Scenario Evolution of Unconventional Emergency Management

ZHANG Zhiying<sup>[a]</sup>; SHI Hao<sup>[a]</sup>; ZHI Meng<sup>[a]</sup>; LI Shiming<sup>[a]</sup>

<sup>[a]</sup>School of Economics and Management, University of Electronic Science and Technology of China, Chengdu, China.

\*Corresponding author.

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### Abstract

These years, unconventional emergencies are happening frequently, and have affected the country and the normal life of the people. Studies of unconventional emergency have become hot topics in international research. Unconventional emergency has the following features, such as high uncertainty, time pressing and serious result. Especially, high uncertainty certainly leads to the result that the decision-making main body will face various concrete conditions in the decision management of unconventional emergency, which requests us to use the contextual model to make decision and manage it effectively when the emergency occurs. This text has an analysis of scenarios and scenario evolution of unconventional emergency, which lays a theoretic foundation for a further analyzing the type of “context-correspondence” of the decision and management in unconventional emergency.

**Key words:** Unconventional emergency; Decision-making management; The scenarios; Scenario evolution

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### INTRODUCTION

“Scenario - response” has been regarded as unconventional emergency response more effective emergency management. Because of the lack of precursor, time is pressing, serious consequences, etc., often unconventional emergencies to social stability and people’s normal life bring very serious challenge. Therefore, for emergencies emergency management research interdisciplinary research at home and abroad to become a major issue. “Scenario - to deal with” the basic requirement is to unconventional emergencies portray different stages of development into a series of scenarios, according to emergency scenarios on unconventional emergency decision making. At present, the domestic experts and scholars on the scene is also understood to vary. Scenario is the current status of the development of the event, similar events in the past situation and the current situation there is likely to develop in the future position, which both objective historical data and real-time information, but also decision-making body of the subjective judgments (Hou, Yang, Zhang, & Zhang, 2009). Understood as the scenario of events of the “situation”, that the current state of events and trends (Huang & Zhao, 2009). Summarizes the current domestic and foreign experts and scholars on “scene” of different perceptions. In the study scenario, based on the number of experts and scholars on the “situational evolution” has been studied (Han, Year). Scene by the initial scene, the intermediate scenario, end scenarios consisting of, from the initial to the intermediate scenario development scenarios, and then from the middle to the end of the development scenarios Scenario process, is the process of evolution scenario. Based on the literature, based on a study of unconventional emergency evolution scenarios have been studied (Huang & Zhao, 2009). Based on this, only to better understand the situation and its evolution scenarios dynamic law in order to deal more effectively with unconventional emergencies.

## 1. THE SCENARIOS OF UNCONVENTIONAL EMERGENCY MANAGEMENT

### 1.1 Definition of Unconventional Emergencies

A series of unexpected events, including sudden or difficult to deal with new events, unconventional emergencies is a strong destructive power, and can not effectively deal with in a short time emergencies, belonging to a very small probability events, with strong sudden and unpredictable sexual characteristics. Emergencies and unconventional concept corresponds to conventional emergencies, unexpected events generally belong to conventional emergencies, only when the government mishandling or unreasonable, resulting in a series of secondary, derivative and coupling events, so that routine emergencies into unconventional emergencies.

In academic research, often to emergencies and disasters, disaster risk management, crisis management, and however, for emergencies defines more from the perspective of crisis management. Hermann states: "The crisis is more emphasis on the decision-making body is compromised when a time-urgent, difficult to predict and anticipate the harm is considered a scenario-based state. (Hermann, 1972)" Fishman believes that the entire crisis management, disaster bodies as products, services, assets and reputation will have a greater impact, to respond effectively to crises, crisis management, and more to make a deal with the emergency management resources good allocation to maximize response effect or minimize the loss of (Fishman, 1999). Mitroff will be considered as a principal hazard bearing body or organization that would directly or indirectly hazard disaster bodies that threaten the entire organization (Mitroff, 2001). Guo Ji such that "sudden emergencies has strong resistance, and proposed that the Government should take effective contingency plans being threatened the safety of personnel, property damage and social order and safety disposal" (Guo, 2004). Yang Liying More news from unexpected events feature the start, emphasis is characterized by sudden emergencies, the government should be promptly treated can lead to personal injury or death, property damage and other economic and social impact on people's life events (Yang, 2006). In addition, countries around the world to study to emergencies, such as proposed by the European Court of Human Rights "public emergency", refers to the citizens and the normal order of society the urgent need to address the threat to the dangerous situation. The U.S. government perceived emergencies, is endangering public health and property safety, government departments should be involved in a series of dangerous rescue events (Robert, 2000).

### 1.2 Definitions of Unconventional Emergency Management

Emergency management refers to incidents early warning, control and handling overall activities and

institutional arrangements (Lei, Chi, & Chen, etc, 2006) And interference management, crisis management, consequence management different (Chen, Liming Lu, 2006), emergency management is fully integrated emergency system management (Patel, 2005), specifically related to information science, psychology, and management science and other disciplines theory and content (Hoetmer, 1991). Sixties of last century, the relevant scholars unconventional emergency management to define the connotation, many countries have set up corresponding organizations (Newton, 1997), and more research is focused on the contents of the emergency management department establishment, etc. (Yu, & Qi, 2004; Kleindorder & Saad, 2005). In the United States the "9.11" incident, more and more decision-making body that the light has emergency management department or organization is not enough to deal with emergency response program development and dynamics of adjustment more important and effective (Kleindorder & Saad, 2005; Xing & Zhao, 2008). Based on this, making the main challenge is to expand on how to form and establish contingency plans for libraries and other basic science issues research (Deng & Zheng, 2006; Yang column Xun, & Deng, 2007), and to achieve effective and timely expeditious disposal unconventional emergencies whole process goals (Xing & Zhao, 2008).

According to emergency life cycle and evolution, different scholars and institutions of the emergency management process has a different division. Several typical stage model are: • Steven Fink (Ma, 2009) in the F model, the Federal Emergency Management Agency (Fink, 1986) of MRRR model, Robert • Heath (Friedmanj, 1974) of the 4R model, Miro Turf (Hollingsworth & Kovacs, 1981) of the M model and so on. On the whole, a complete emergency management process includes advance warning and avoidance, a matter of a quick response and control and the subsequent recovery and optimization (Mitroff I, 2001).

Our overall emergency management started late, late 1980s, Shanghai Academy Professor Pan Guang Guoneishoubu published writings on international crises (State Council, 2006). Followed by other scholars are also beginning from a different perspective on the crisis management a study (Pan, 1989; *Hooping International Conflict Analysis and Crisis Management Research*, 1993). 2003 SARS crisis, the importance of emergency management step reflected. Tsinghua University Professor Xue Lan commitment to the "social change public emergency management" research to study the construction of emergency management system (Xu & Zhang, 1998). National Academy of Safety Science Professor Liu Tiemin commitment to the "urban planning and public safety emergency response plan and its key technology research" project, and published a monograph "emergency response system and emergency response

plan” (Xue Lan, Zhang Qiang, Zhongkai Bin, 2003). Domestic experts also through “Federal Emergency Plan” study, from an institutional setting, resource management, and law making three aspects of our emergency management system to establish some suggestions (Liu, 2004). With further research, the domestic well-known scholars of information resources for emergency management, forecasting early warning mechanism design and other scientific key (Zhao Hong, & Wang Liang, 2004), on emergency preparedness system, the preparation of contingency plans and put forward suggestions (Fan & Yuan, 2006), to effectively promote the development of domestic emergency management.

### 1.3 Scenario

In fact scenario also includes a forecast, but the focus is different, forecasting is more reality-based data or case, the future judge and identification, and the diversity of situations and uncertainty, more of a vision build, there are different visions, from a realistic vision of the process to have a different path, it will lead to the final scene very different. “Scene” is a general description of the vision for the future is a process, from beginning to the end of the actual situation or descriptions (Lee & Liu, 2009), scenario is not equivalent to projections, more emphasis scene itself is a series of may be expected to appear in the set condition (Gershuny, 1976). Scenario is expressed through a series of assumptions that time picture of the future (Porter, 1982), the judgment of the entire process, and judging by the probability to define a range of possible future conditions, scenarios with strong uncertainty is more likely to occur in the future refinement of each situation, is a possible hypothesis or judgment (Georgoff & Murdick, 1986). Scenario is also highly predictable, emphasizing its presence in the whole process has a strong causal relationship, layers of interlocking, grasp the true details of the future state (Schnaars, 1987), is about the future possible states internally consistent narrative.

In emergency management, the scenario is a complex collection, which includes past, present, and future state, is available through the decision-making body to influence the decisions and activities. Past situation described is an unexpected event occurs, the decision-making body of the past had a similar incident occurred is reviewed and summarized, a draw and a concise summary of the past. Current status is unexpected events occur objectively existing conditions, future conditions is the development trend of the current situation and possible decision-making body of the subjective will and desire a combination of decision-making activities. Emergency scenario is the main decision-making and emergency management is committed to reaching a goal, vision, it is a plan for the future, design, requirements, and guide decision-making body of the decision-making behavior. Scenario is constituted by a series of scene elements, scene elements include the past situation, the current situation and future

situation, combined with the previous situation, from the current situation to the evolution of future conditions constitute a new scenario, scenario development and evolution constitutes a development of events. Specific to the emergency scene management decisions, this article summed it unexpected event occurs, the decision-making body in the past situation and concise summary, based on the current status of the development of possible analysis and judgment to elect a reasonable future situation. Past conditions, current status, future status is a “King” of the expression, is a dominant result. And “love” is emphasized that the status of decision-making body of the past and current status concise development into the future status process, including both the current situation itself may be the trend, including decision-making body on the subjective judgment of the current situation is a recessive process. Emergency scene management decision-making is in the past - present - future evolution of a dynamic process.

Decision-making with the general management of similar events in the unexpected events will produce a current situation a decision-making body will first present situation an objective trend may make subjective judgments, elect one he considered most likely to occur in the future condition. Decision Management and general event is different in emergency response management, the decision-making body in the decision when the reference to the past situation (where the last condition is determined by a series of conditions to build up its decision-making model, and its emphasis is A summary of past events and concise). Our situation in the past, the current situation and development trend assumptions combine to form the future state is managed in emergency situations a decision (the scene here is also a highly abstracted out a scenario).

When an event to a new event condition (ie, the current situation 2), when the new decision-making body of the current situation will have some feedback. The current status of two newly generated, the decision-making body will analyze and judge, resulting in unexpected incidents in Scenario 2, Scenario 2 on the basis of analysis, decision-making body of the event once again managed to make decisions, and so on, until the development of the situation is that we can accept a smooth condition, complete emergency decision management. Decision-making in emergency management process, decision-making body in the scenarios analyzed and summarized on the basis of making rational decisions, making decision-making more effective.

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## 2. SCENARIO EVOLUTION

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Scenario is a complex collection, which includes past, present, and future state, can be achieved through decision-making body to influence the decisions and activities . Jiang Hui, who believe that evolution is a

scene from the original state in accordance with the scenario events, as well as through the development of the natural law of human disturbance outside world through a different state points and generate a new scenario process. This paper argues that scenario it covers two layers of time and space concepts. In space, the appearance of a scene that he must place induced interference scenarios, it can not be missed by the automatically, this is a causal relationship. In time, a point in time on the scene suggests both that point in time before the prospective scenario scene, but also indicates that the scenario after that point in time subsequent scene. This is a relationship between successively. Therefore, by the influence of his office interference scenarios, a scenario from the prospective of the scene to the profile and then subsequent scene scenario, this process constitutes the evolution of the scene shown in Figure 1. Studied in this paper analyzes a specific situation assessment in addition to the scene outside the state, but also the scene of the scene and subsequent prospective scenarios for analysis. One of the following scenarios is particularly important prediction, emergency managers can build or alter the interference caused by subsequent scene, so as to achieve the purpose of controlling the situation.

In the unconventional emergencies after the outbreak of the current situation will produce a 1, making the current status of a body will first objective trends may make subjective judgments, choose a they think is most likely to occur in the future situation, decision-making body at the same time will make reference to the past situation (where the last condition is determined by a series of conditions to build up its decision-making model, emphasizing the events of the past as a summary and concise), on unconventional make a deal with emergencies decision. Our state of the past, current conditions and assumptions trends form a future state combine is unconventional emergency decision-making management Scenario 1 (a similar scene here is highly abstracted from a scenario). When unexpected events continue to develop unconventional to the next stage, resulting in a current situation 2, decision-making body in reference to the past situation, and analyzing future conditions, based on the build-out scenario 2. By the Scenario 1 Scenario 2 the process of evolution, we call it a process of evolution scenario. Similarly, we can construct a scenario 3, scene 4, ....., scenario n, until unconventional emergencies stabilized. These scenarios evolving process of evolution is the evolution of unconventional emergency situations in the process.

Unconventional emergencies with high uncertainty, time constraints, the consequences are serious, etc., which in its emergency management, they also inevitably encounter a series of difficulties, such as information incomplete, contradictory information and information redundancy. How in this case for unconventional

emergencies effectively handle, a reasonable contingency plan is focused on the contents of this section.

Real-time information after the outbreak of unconventional emergency basic sources of information, but this may be difficult to obtain real-time information, or is incomplete, contradictory, can not fully meet the requirements of decision-making body. Therefore, we need data mining and modeling predictions to collect reference information. Data mining can be unconventional past similar information when unexpected events occur, condition and even the scene to show the performance of decision-making body in front of the emergency decision-making body to be able to provide effective decision-making historical experience and information support. By using simulation software simulation and prediction or simulation systems, unconventional emergency occurs, the current status of some simulations to predict the next stage, unconventional emergency trends, decision-making body selected among the most likely to occur a situation, the preparatory work in advance, so that disaster losses to a minimum.

In conclusion, real-time information, data mining, simulation and prediction, based on the decision-making body build emergency scenarios unconventional performance, comprehensive information obtained three, its integration, aggregation of labor, integrated, future performance compared with the scenario with the flow of information. In the more complete information, based on the decision-making body to choose the most reasonable and effective contingency plans for the disposal of unconventional emergency response, coupled social-ecological systems to provide disaster relief support. Here, real-time information, data mining, simulation and prediction of the performance is to build the foundation and basis scenario, scenario performance is real-time information, data mining, information fusion simulations predict the final outcome of the three.

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## CONCLUSIONS

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In this paper, unconventional emergency management scenarios and scenario Evolution of the title, from unconventional emergency, emergency management, evolution scenarios and scenario unfold several angles synthesis and study, found that: "scenario - response" has been be disposed of unconventional emergencies theme. Unconventional emergency situations on its qualitative evolution of mastery and understanding, is effectively unconventional emergencies emergency management theory is an effective use of means and methods to predict the warning important way, then for unconventional emergency response management to provide some basis for decision making.

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