

Natural Hazard Research

**PERESTROIKA'S EFFECTS ON
NATURAL DISASTER RESPONSE
IN THE SOVIET UNION, 1985-90**

by

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PREFACE

This paper is one of a series on research in the field of human adjustments to natural hazards. The series is intended to aid the rapid distribution of research findings and information; it was started in 1968 by Gilbert White, Robert Kates, and Ian Burton with National Science Foundation funds, but is now self-supporting.

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SUMMARY

Recent changes under the aegis of perestroika have forced alterations in the traditional Soviet system for dealing with natural disasters. Glasnost and "new thinking" (novoye myshleniye) provided catalysts for public acknowledgement and discussion of natural disasters. Prior to this time, such events were treated as triumphs of the Soviet government's ability to care for its people in times of need. There were no requests to, or donations accepted from, other nations for disaster relief, and reports in the Soviet press provided only limited details of damages and deaths. This new openness raised awareness and facilitated new policies that allow the Soviet government to accept foreign disaster relief and assistance.

The emerging character of perestroika and disaster response became apparent when Pravda ran detailed descriptions of the death and destruction caused by the Armenian earthquake in December 1988. A content analysis of Pravda articles describing earthquakes in the Soviet Union in 1948 and 1966 and the Armenian earthquake showed a marked increase in the amount of information that was disclosed, the desire for foreign disaster assistance, and the willingness to show that the Soviet Union is part of the global community. An additional analysis of responses to a questionnaire sent to international relief organizations provided supporting data.

Unfortunately, there were also many indications that perestroika had a negative impact on disaster response as well.

The Soviet people, formerly accustomed to hearing only good things about their government, were distressed to hear widespread allegations of corruption and incompetence involving both the construction of buildings and the handling of disaster relief.

Despite political changes and the new openness, the government has, as yet, not been able to provide effective disaster mitigation and response within the crumbling Soviet system. Without urgent measures to improve communications, create economic viability, provide freedom from the residential permit system, improve housing stock, and solve other problems, Soviet disaster response will become less and less effective. As a result, there will most likely be an increasing dependence on foreign relief by the Soviet Union.

TABLE OF CONTENTS

Preface	iii
Summary	iv
Introduction	1
Natural Hazards on Soviet Territory	3
Current Research	10
Rationalization	12
Description of Perestroika Reforms	19
Perestroika	20
Khozraschjet	22
Glasnost	23
New Political Thinking	26
Methodology	27
Changes in Awareness and Disaster Response Under Perestroika	29
Relaxation of Information Control Increases Awareness of Natural Hazards	29
Scientific Community	30
Government	31
General Population	33
International Aid	34
An Illustration of Change: Response to the Armenian Earthquake	36
Awareness of Hazards	37
Release of Information	39
Glasnost Reveals Flaws in Soviet Disaster Management	45
Domestic Disaster Relief	48
International Relief	56
Responses to Questionnaire	57
Probable Changes in Disaster Management	68
Modification of Event	68
Ameliorative Measures	70
Conclusion	77
Ideas for Further Study	85

Author's Note 87

References 88

Appendix A: Translation of April 27, 1966, Pravda Article on the
Tashkent Earthquake 99

Appendix B: Translation of December 11, 1988, Pravda Article on
the Earthquake in Armenia 100

Appendix C: List of Questions Sent to Western International
Relief Organizations 104

Appendix D: List of Relief Organizations That Received a
Questionnaire 105

LIST OF FIGURES

1 Areas in the Soviet Union at Risk
From Seismic Activity 4

2 Mountainous Areas of the U.S.S.R Prone to
Avalanche, Landslide, and Mudslide Hazards 5

3 Lack of Railways and Major Trunk Routes
in Siberia and the Far East 7

4 Location of 1988 Armenian Earthquake 38

5 National Governments That Sent
Emergency Aid to Armenia 57

LIST OF TABLES

1 Population Change in the Soviet Republics, 1979-89 9

2 Comparison of Pravda Coverage of the Ashkabad,
Tashkent, and Armenian Earthquakes
by Number of Words 42

3 Top 10 Government Grants of Aid
to Armenia (in U.S. Dollars) 58

INTRODUCTION

The Soviet Union covers one-sixth of the earth's land surface and experiences both a great diversity and quantity of natural disasters. There is a shortage of nonhazardous areas for settlement due to geographic features such as extreme northern location, continental climate, mountainous terrain, and seismicity. Therefore, much of the population has been forced to live with the risk of earthquakes, floods, avalanches, droughts, and other extreme events. As a result, the Soviet government has developed a system for dealing with the occurrence of natural disasters. Effectiveness aside, it is a system that includes elements of hazard awareness, mitigation, and response.

The onslaught of policy and ideological changes under Gorbachev's "perestroika" program has already affected, and will continue to affect, the Soviet system for natural disaster management. So far, "glasnost" has been responsible for the most tangible and measurable changes. Glasnost has promoted public acknowledgement of disasters and resultant damage. This acknowledgement, together with the "new thinking," has paved the way for the acceptability of foreign relief.

This thesis will:

- describe the policies under perestroika that influence the Soviet handling of natural disasters (including glasnost, "khozraschjet," and the "new thinking" principle;

- describe in more detail the change in information control and the new willingness to accept international relief;
- illustrate how these changes affected response to the Armenian earthquake in 1988; and
- speculate on some probable future effects on disaster management as a result of perestroika measures.

The speculations in the final section of the thesis are based on many and varied sources as well as on the author's considerable personal experience living and working in the Soviet Union. It is hoped that they might inspire ideas for future research projects on natural disasters in the Soviet Union. There is much research to be done; all that is needed are innovative methods for finding and interpreting data in a country where such investigations have long been suppressed.

The work should be regarded as a portrait of transition, since changes are occurring daily in political, economic, and social spheres in the Soviet Union. Although much of the information in this report will be up to date for a very short time, the research may still have significant value. Most importantly, it documents the importance of glasnost as an instigator of change within the disaster response system. Furthermore, it gives insight into the pre-perestroika disaster response system. It is important to understand the old system, since many of its elements will retain their significance in the future. Some of the speculations in the last chapter may be especially valuable to

Western relief organizations who, by participating in the Armenian earthquake relief effort, established a new and ongoing relationship with the Soviets. Decisions made by these organizations regarding future relief for the Soviets will need to be based on an accurate and ongoing assessment of their disaster policy and capabilities.

The subject for this thesis is timely for still another reason. The 1990s have been designated as an International Decade for Natural Disaster Reduction by the General Assembly of the United Nations (Resolution 42/169). The objective of this decade is to reduce the loss of life, property damage, and social and economic disruption caused by natural disasters. One of the main goals for the Decade is "to disseminate existing and new information related to measures for the . . . prevention and mitigation of natural hazards" (United Nations Disaster Relief Organization, 1988, p. 3). This work is coincident with that idea.

Natural Hazards on Soviet Territory

The Soviet Union is prone to a wide selection of natural hazards. A region-by-region description will give the reader an idea of the complexity and diversity of the Soviet land area and will also emphasize the necessity for a comprehensive and well-thought-out response to the natural risks that threaten the economy within this environment.

Beginning in the far east, the Kamchatka peninsula and Kurile Islands are subject to a great variety of natural disas-

ters. The area contains an active plate subduction zone, and earthquakes are extremely common here. Furthermore, at least 38 active volcanoes "have acted periodically in the form of lava emissions, expulsion of rock fragments (bombs), sand ashes, and gas." (Gerasimov and Zvonkova, 1974, p. 244). Tsunamis also threaten this area and the island of Sakhalin. Mudflows, avalanches, strong winds, and floods are other hazards threatening the area. Fortunately, there are relatively few human settlements to experience these disasters.

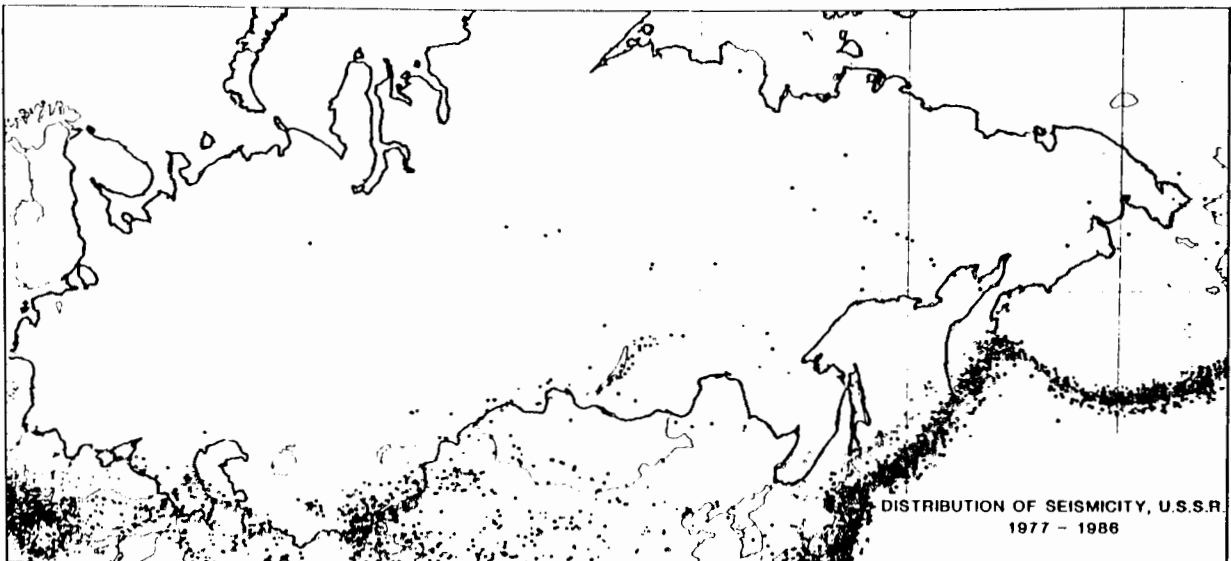


Figure 1. Areas in the Soviet Union
at Risk From Seismic Activity

Data from Goter, 1989.

The northern regions of western and eastern Siberia and the Chukchi Peninsula present more constant, rather than sudden and disastrous, hazards. Extremely cold temperatures are quite

normal, and permafrost restricts human economic activity to natural resource extraction and reindeer herding. Ground transportation and construction is subject to frost heave, an upthrust of ground or pavement caused by the freezing of moist soil. Again human settlement is sparse due to the constant difficulties introduced by nature.



Figure 2. Mountainous Areas of the U.S.S.R Prone to Avalanche, Landslide, and Mudslide Hazards

Data from Kravtsova, 1971.

Southern Siberia is much more accommodating, although temperature extremes are still a factor. Earthquakes are preva-

lent in the Lake Baikal rift zone and in the nearby Vostochnyi Sayan and Yablanovyi ranges.

Western Siberia—a low, flat continental plain—is also plagued by temperature extremes. Tornadoes are frequent in the summer months.

All of the above areas are of increased concern due to the considerable distances between them and major population centers. When disaster does occur, it is difficult and expensive for the centrally planned system to mobilize aid for this area. Only settlements along Baikal Amur Mainline (BAM), the main trans-Siberian railroad, would be readily accessible to emergency relief, assuming that BAM itself is not damaged.

The Urals are not an active mountain-building chain, therefore earthquakes are not common. The main natural hazards here are weather-related phenomena such as low temperatures and heavy snowfall. Because the region is heavily industrialized, technical disasters rather than natural disasters tend to predominate.

To the south of the Urals lies Central Asia, a region of desert and high mountains. Hot, dry winds and an absence of water must be dealt with in the Kara Kum, Kizilkum, and Betpak-Dala. On the southern border, the high mountain ranges of the Tien Shan, Altai-Sayan, and Pamirs threaten populations with numerous earthquakes, mudflows, landslides, heavy snowfalls, flooding, and avalanches.

In spite of the multitude of natural disasters occurring in Central Asia, the region is heavily settled and shows the highest

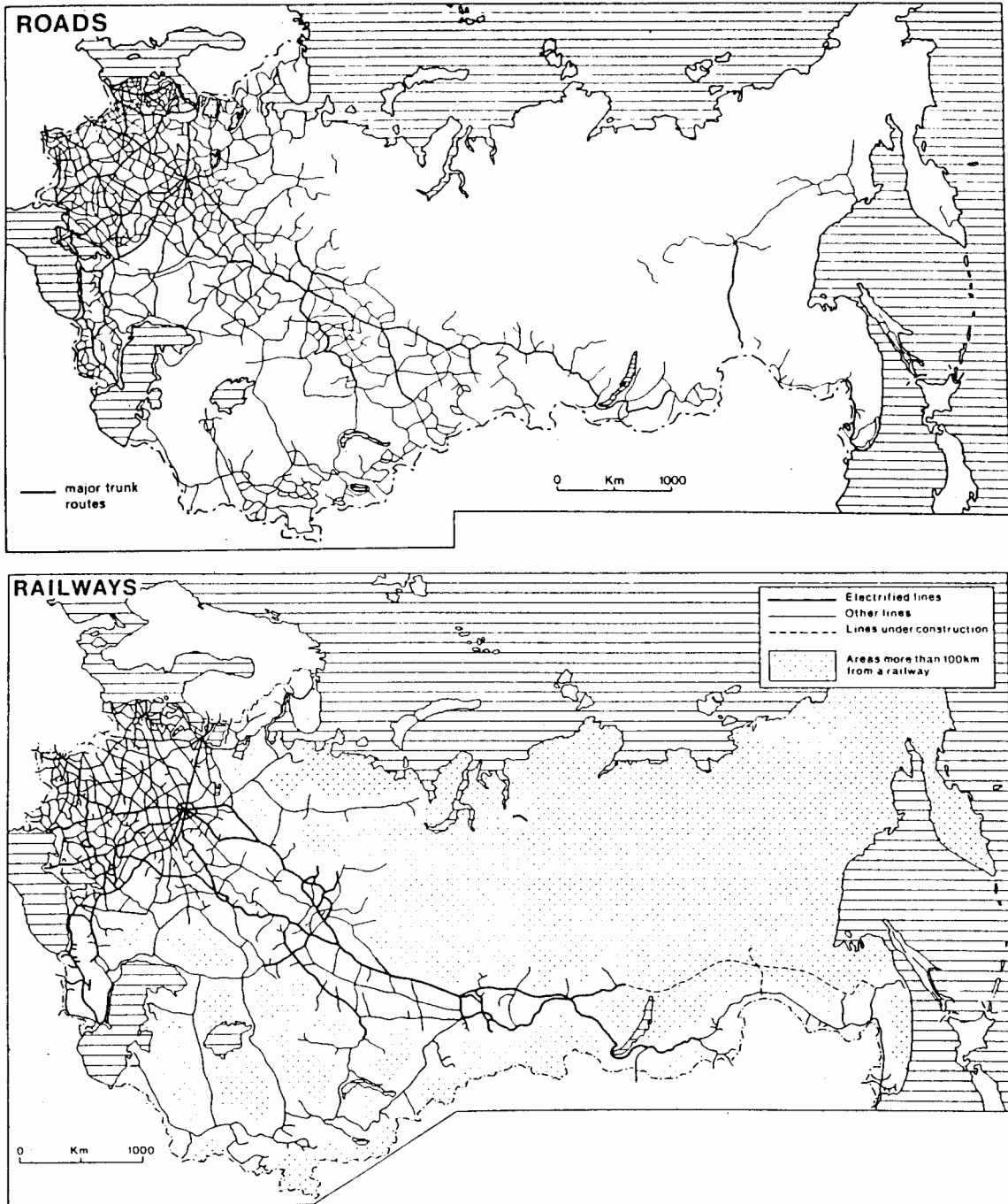


Figure 3. Lack of Railways and Major Trunk Routes in Siberia and the Far East

Redrawn Data from Dewdney, 1982.

birth rate in all of the Soviet Union. The total population of the four central Asian republics of Tadjikistan, Uzbekistan, Turkmenia, and Kirghizia increased by 28% from 1979-89. Other regions come nowhere near this percentage increase; total Soviet population increased by only 9.25% (see Table 1). High contact between human settlements and natural hazards in this area multiplies the risk.

The Caucasus is another area with a relatively high birth rate and an abundance of natural hazards. The greater and lesser Caucasus mountain ranges cover over one-half of the Azerbaidzhan, Armenian, and Georgian republics. As in Central Asia, earthquakes, landslides, avalanches, flooding, and mudflows are constant threats. In both the Caucasus and in central Asia, the proportion of rural to urban population is unusually high. These populations (especially those in mountain areas) are at special risk due to the potential of the above hazards to isolate them from emergency relief.

The Carpathians, in Moldavian S.S.R. and the western part of the Ukraine, again present the usual array of mountain hazards.

The rest of European U.S.S.R. is subject mainly to weather hazards, including unusually low temperatures, drought, flooding, and cyclones. They tend to cause localized damage to agriculture and few casualties. The extreme northern border, along the arctic coast, is subject to arctic hazards such as extremely low temperatures and permafrost. Heavy snowfall and avalanches have occurred in the Khibin Mountains on the Kola Peninsula.

TABLE 1
POPULATION CHANGE IN THE SOVIET REPUBLICS, 1979-89

Soviet Republic	Population 1979*	Population 1989*	Percent Change
USSR Total	262,436	286,717	9.25
Russia	137,551	147,386	7.15
Ukraine	49,755	51,704	3.92
Byelorussia	9,560	10,200	6.70
Moldavia	3,947	4,341	9.98
Estonia	1,466	1,573	7.30
Latvia	2,521	2,681	6.35
Lithuania	3,398	3,690	8.59
Azerbaijan	6,028	7,029	16.61
Georgia	5,015	5,449	8.65
Armenia	3,031	3,283	8.31
Uzbekistan	15,391	19,906	29.34
Tadjikistan	3,801	5,112	34.39
Kirghizia	3,529	4,291	21.59
Turkmenia	2,759	3,534	28.09

*in 1,000s

Data from Goskomstat, 1989.

The size and diversity of physical features of the Soviet Union present a great challenge to the people living in Soviet territory. Historical and climactic factors require settlement of land in spite of natural hazard threats. Various forms of responses have necessarily developed to answer the challenge presented by the environment.

CURRENT RESEARCH

In part because of the under-development of the social sciences in the Soviet Union, there is very little work—past or present—on natural disasters as they affect human society. Partial blame can be put on the general under-development of Soviet social science due to ideological constraints. Now, however, Sergei M. Myagkov, a geographer at Moscow State University, believes there is interest developing because of glasnost's freedoms and the coverage of the Armenian earthquake. He is presently working to publish a review of natural hazards in the U.S.S.R. Furthermore, he is the director of a Moscow State University program, which, with the cooperation of the production combine Appatit on the Kola Peninsula, strives to understand anthropological interactions with natural hazards of the north. His working group has started to travel to various disaster sites to make estimates of direct and indirect damages within the Soviet context.

Engineering geography is a discipline that is devoted to technical mitigation of the effects of natural hazards. It studies human-environment relationships with the goal of minimizing reciprocal negative impacts (Myagkov et al., 1986, p. 3). Gosstroï, the State Ministry of Construction and Architecture, conducts similar research in order to establish appropriate construction norms for specific localities. Their research is completely of an applied nature.

Any research on social aspects of natural disasters has been severely restrained due to ideological and security purposes. For example, a thoroughly researched book documenting the history of natural hazards in the U.S.S.R. and their societal effects was recently published (Borisnyenkov, 1988). Sadly, but typically, its documentation stops at the beginning of the 20th century. There exists a frustrating void of information about natural hazard events after the Bolshevik revolution. Statistical data have always been either omitted or distorted. It is possible that there may never be a full and accurate account of Soviet natural disasters in the 20th century.

In response to the Armenian earthquake, interest in the U.S. concerning Soviet disaster management has grown. Louise Comfort prepared a paper, "Learning from Risk: Organizational Interaction Following the Armenian Earthquakes," in 1989. She compared Soviet response against various models of disaster management, with much of her information coming from a civil defense briefing in Armenia.

Sponsored by the National Research Council, the United States sent a reconnaissance team to Armenia soon after the earthquake. The results were published in an article entitled "Armenia: Earthquake Reconnaissance Report" in August 1989 (Earthquake Engineering Research Institute). The Armenian earthquake victims' impressions of disaster response are also included (Mileti, 1989b).

Currently, U.S. and Soviet geographers are cooperating on a significant project under the leadership of Vladimir M. Kotlyakov and Gilbert F. White. Within the broader spectrum of global change, various approaches toward natural hazards and risk assessment are also discussed. Cooperative and unilateral studies using a geographic approach investigate such issues as the "intensification of hazards from extreme natural events and . . . resulting damage," response, and risk assessment of natural hazards (Kotlyakov et al., 1988, p. 5988). The project is sponsored by the International Council of Scientific Unions International Geosphere-Biosphere Project.

RATIONALIZATION

The environment is the breeding ground for natural events. The potential a particular event holds for causing human suffering defines it as a natural hazard. Apart from the human experience, these natural events are neutral; it is only their impact on human society that is of concern (White, 1978; Marston, 1983; Palm, 1990; Hewitt, 1983).

To understand the Soviet experience with disasters, it is helpful to use the structural approach prescribed by Hewitt and Palm. They look to social structures as the interpretive link between neutral geophysical phenomena and the occurrence of natural disasters. Palm asserts that it is the "structure of society that permits or even amplifies the effects of normal climatic and geophysical variability, sometimes converting this

normal variability into what becomes a disaster" (1990, p. 16). Hewitt writes in a similar vein: "Effective or ineffective means to avoid or reduce risk are found to depend upon the ongoing organization and values of society and its institutions" (1983, p. 225).

Values and institutions do not remain constant; they are constantly transforming and adapting. Disaster response policies go through similar developments. But recently, changes in the Soviet system have occurred on such a scale that significant changes in disaster response can be observed and many other changes will soon follow. These changes hold both positive and negative implications for the well-being of the Soviet population at risk from natural hazards. Already the application of glasnost has allowed open and critical discussion of natural disasters, probably instigating a jump in levels of awareness of natural disasters and risks. New international thinking has improved the opportunities for global cooperation and response. Other effects of perestroika are not so clear; the disintegration of the traditional operations of the Soviet government could have debilitating effects on natural disaster management. A discussion of these effects on natural disaster management theory follows.

In order to respond to natural disasters in a way that minimizes damage, a society must first be aware of the risks to which it is vulnerable. Awareness depends on the availability of information. "The capacity of individuals, organizations, and jurisdictions to respond appropriately to the complex range of

demands generated by a catastrophic [event] depends directly on access to timely accurate information and modes of processing information relevant to action." (Newell and Simon, quoted in Comfort, 1989, p. 22). "Identifying new risks, deciding what is acceptable and minimizing the impact of 'unacceptable' risks, requires the communication of risk information between those responsible for risk management, the risk bearers and the wider community" (Handmer, 1990, p. 3). Censorship, secrecy, and dis-information tactics can greatly alter awareness and lead to inappropriate responses.

Handmer and contributors to Hazards and the Communication of Risk (1990) believe that obligations exist for individuals, organizations, and society as a whole to communicate available information on the risks that people face. Handmer also asserts that "governments have a moral responsibility to protect the population and to ensure that people are able to make informed choices where this is necessary" (ibid, p. 320). He elaborates:

Our focus reflects a belief that obligations exist for individuals, organizations and society as a whole to communicate the available information on the risks that people face. In a practical sense individuals and policy makers need this information in order to evaluate the risks faced, and to decide what action is necessary. Communities, with a longer time horizon, need to educate their populations about the hazards that they may face both now and at some time in the future.

Governments also have both moral and statutory obligations to communicate information on risks to their populations and electorates. Democratic decision making requires an educated public, and information and decisions on risk-related issues require that the public is well informed. If people are to understand their governments policies and procedures—including

those required during emergencies—they need information and education. Freedom of information legislation, and "open government," require that governments and their agencies communicate the risks on which they have information to those who might suffer the consequences.

The media, either independent or government-controlled, are often the most effective providers of public information on natural disasters. Therefore, "scientists and many of those involved in the field of natural hazards, have insisted that the media have a responsibility to provide warning and mitigation information prior to event onset" (Wilkins and Patterson, 1990, pp. 79-80).

Before the perestroika program, neither the Soviet government nor the Soviet media fulfilled their responsibility to provide information. On the contrary, as little information as possible was given out about disastrous events. Information on the consequences of natural disasters was actually on the censors list of forbidden topics (Oberg, 1988). Undoubtedly, this vacuum of information critically dulled public awareness, creating an artificially high level of vulnerability.

Marks (1990, pp. 20-21) lists four common psychological defences against the threat of natural disaster: 1) denial, 2) rationalization, 3) dissociation, and 4) personal invulnerability. The character of the official reports released by the Soviet government and the media encouraged these harmful psychological responses. For instance, they would refuse to call an extreme natural event a disaster. Instead of focusing on the damage and what social factors might have contributed to the

damage, an earthquake or flood might be represented as a triumph of the Soviet socialist system in overcoming the trials of nature. Dissociation was fostered by running many stories about disasters abroad, without writing anything about risks or damage caused by disasters in Soviet territory. Personal invulnerability is a belief in the survival of self, in a kind of permanence, that transcends all manner of hazards, problems, and difficulties (Marks, 1990, p. 20). Perhaps it would be more accurate to say that the pre-perestroika system generated an aura of societal, rather than personal, invulnerability. The propaganda machine churned out statements that made Soviet society sound invincible.

Even scientific work related to natural disasters was based on different assumptions before perestroika. The shift in the reigning theoretical approaches to natural hazards are indicative of pre- and post-perestroika attitudes. For example, compare the views of Lavrov in the preface to Stikhinie Bedstviya (White, 1976) to more recent publications by S.M. Myagkov.

Lavrov takes the typical Soviet Marxist-Leninist view. He divides the world into capitalist and socialist countries. The problems listed in the book are applicable mainly to capitalist countries, caused by their poor land and water management, settlement of dangerous areas (the results of government monopolist policies of distribution of productive forces, the chase for profits, and uncontrolled urbanization), lack of warning systems, the high cost of insurance, and insufficient knowledge of the physical processes that cause natural disasters. He writes:

One must consider that neglect of these problems in the capitalist world is harder to overcome under the conditions of ecological crisis and the sharp increase in unavoidable outlays for the conservation of nature. (Lavrov, p. 15)

Lavrov also writes that ideal disaster management occurs only in a planned socialist economy, due to its expedient and effective use of scientific data and the ability to organize productive forces (Lavrov, p. 7).

Myagkov's treatment of disaster management is quite different. On the national scale, he levels a fair amount of criticism at his own country for its wasteful economic system, the interests of ministries dictating public welfare, and the inaccurate evaluations of risk and damage that ignore indirect consequences of natural disasters. He laments the lopsided concentration of research on geophysics and physical geography studies at the expense of economic and social-psychological studies, while admitting that most research is not put into practice anyway. He adds, "the government recognizes the existence and threat of hazards but the system of government does not create interested parties to work on problems" (1990, p. 5).

Such criticism of the Soviet system would not have been published five years earlier. Furthermore, his work even gives credit to the U.S., West Germany, and Japan—capitalist countries—for their greater experience in disaster mitigation (1989, p. 7).

The most significant difference in approaches is that Myagkov treats the occurrence of "hazardous natural processes and phenomenon" as a global problem. The Soviet Union is now included

in this global system; it is not separated as being representative of just "the socialist world." This approach reflects the "new thinking" that replaces the Marxist-Leninist separation of socialist and capitalist societies. It has paved the way for more flexible and cooperative solutions to natural disaster response.

Comfort says that "designing policy for preparedness and response to earthquakes [or any other disaster] is necessarily an interdisciplinary and interorganizational task" (1989, p. 2). Although difficult to define neatly, the general collapse of organizational structure under perestroika cannot help but affect natural disaster response. Various organizations on all levels—national, regional (eastern Europe), republican, and local—are in the process of restructuring their responsibilities and capabilities. There has been a transfer of responsibility to people without organizational skills, experience, or general awareness. Chaos has been the result and the effectiveness of interdisciplinary and interorganizational activities has become critically low.

Economic troubles also threaten the ability of organizations involved in disaster response to implement measures. The falling value of the ruble, shortages of almost all goods, and erosion of distribution channels will negatively affect disaster management for a long time to come. A variety of economic, political, social, and personal disasters are all vying with natural disasters for attention. The competing impending disasters are overloading human and organizational coping mechanisms.

There has been some mention in the natural hazards literature of what happens during periods of intense transformation. Burton, Kates, and White (1978, p. 21) say that "high hazard nations would be those favored with natural resources that are undergoing change in use." They also mention that the capacity to prevent losses decreases when new livelihood systems are introduced (p. 22). As systems come into being, the appropriate new skills for coping with hazards are slowly learned; the ability to deal with an extreme event in a new setting or with a new source of livelihood takes a long time to acquire. Hewitt also points out that there is "a good deal of evidence that the settings where recent disasters have occurred are suffering extraordinary socio-cultural change" (Hewitt, 1983, p. 26). These statements are applicable to what is going on in the Soviet Union today.

While the system continues to languish in this state of transition, natural hazards will continue to generate disasters. The disasters will be defined by legacies of the old system and the chaos of the transformation period. Under such conditions, the disasters are likely to be more damaging and response capabilities weakened until a relatively stable system develops.

DESCRIPTION OF PERESTROIKA REFORMS

An understanding of the changes taking place requires an understanding of the policies adopted by the Gorbachev administration. Three supporting policies under perestroika—glasnost, khozraschet, and the "new political thinking"—most directly affect the U.S.S.R.'s attitude toward natural hazards. An expla-

nation of these policies, however, is rather complex. Since their inception, the characters, scope, and interrelationships of these policies have constantly changed. The following is a very brief explanation of these three policies.

Perestroika

Perestroika or "restructuring" has been the overriding policy of the Gorbachev administration. The concept was announced at the April 1985 plenary meeting of the Central Committee, when it was agreed that a major overhaul in the economy was necessary. With its stagnation, backward technology, shortages, corruption, low valuation of labor, and erosion of ideological and moral values, the Soviet Union was on the verge of a crisis that could not be averted by further tinkering with the system.

There are many varying opinions and usages of the word perestroika. Yurki Iivonen calls it a "comprehensive policy of social and political rationalization aimed at strengthening the socialist basis of Soviet society" (1989, p. 139). Lars Ohlsson describes it as changing the administration of production, planning, and distribution (Ohlsson, 1989, p.46) Gorbachev, in his book Perestroika, never clearly defines it (indeed the word defines itself in Russian as "restructuring"), but applies it to social, political, and economic institutions, and places a heavy emphasis on foreign policy.

Aganbegyan, one of the chief architects of perestroika, takes a more narrow view of this concept. He writes that its essence lies in the "transition from administrative to economic

methods of management" (1988b, p.23). His efforts are centered on achieving intensive growth by the infusion of technology and incentives to work. He lists the following as the driving forces of perestroika:

- 1) intensification ("uskorenie");
- 2) strengthening social provision;
- 3) radically reforming management;
- 4) encouraging cooperatives and self employment; and
- 5) supporting glasnost, democratization, and self management.

These five directives are integral parts, yet subordinate to the more holistic process of perestroika. Success in any one of the directives means progress in perestroika.

As glasnost revealed the scope of necessary reform, perestroika was forced to evolve further. Thus, the term perestroika became applied more widely and was thought of on a deep and all-encompassing level. For example, in more recent descriptions it has been represented as "a transformation of the system created by Stalin, on the basis of a foundation laid by Lenin" (Hill, 1989, p. 194). It became synonymous with a complete overhaul of the entire system—the economy, the political system, and the administrative system—and efforts to change even the mentality of the Soviet people.

An even more recent development in 1990 is the transition to a regulated market economy, which is now an established goal of perestroika, even though there is great deal of confusion regarding how to bring it about. In the second half of 1990, the

situation has changed yet again. More and more as the Soviet economy slides into deeper trouble, perestroika is perceived as the instigator of economic collapse, rather than as a policy designed to overcome economic failure.

The word perestroika is often used in connection with other sectors of society other than the economy. There are those that will write about the perestroika of foreign policy, of environmental protection, of education, etc. In these instances the word perestroika is used in its generic sense meaning restructuring. But most will agree that the specific policy of perestroika is the process designed to restructure socialist society or the socialist system as it is reflected by the economy.

Khozraschjet

An important element in the radical reform of management is khozraschjet, or self-administration. It portends a shift from central planning to "a new system of planning which starts from the premise that enterprises and associations are to become independent, self-accounting, self-financing, self-managing" (Aganbegyan, 1988b, p. 114). For now, central planning has not totally been abandoned, but enterprises are increasingly expected to cover expenditure with income.

Khozraschjet is being implemented on two levels: in government administration and within enterprises. Local and republican governments are finding themselves with increasing freedom to make decisions regarding their jurisdictions, but they will have to finance these decisions themselves. Likewise, enterprises have

much more independence, which goes hand in hand with a decrease in subsidization. Nonprofitable enterprises will be allowed to fail.

The success of *khozraschjet* is crucial to the success of *perestroika*; yet, in both sectors, much will depend on the administrative and financial abilities of hastily created managers who have had nothing more than crash training in these areas.

Glasnost

As mentioned before, *glasnost* may be described as a political tool developed to enhance the shift to "more progressive forms of social organization" (Gorbachev, 1987, p. 34). *Glasnost* did not appear for the first time in 1985. In the late 1850s, Aleksandr Hertsen wrote, "Where there is no *glasnost* and no legal right but the charity of the czar, public opinion has no influence" (Laqueur, 1988, p. 13). Lenin, Kruschchev, and Brezhnev all reintroduced the term in their political rhetoric. The word even appears in Article 50 of the Soviet Constitution of 1977.

Glasnost is an extremely important supporting policy of *perestroika*. It has often been confused as a synonym for *perestroika*. However, the policy was envisioned as a way of drawing the Soviet people into active support of *perestroika* for the advancement of society. Among its original purposes are:

- 1) to facilitate the flow of information and help shape the consciousness of the masses (Ohlsson, 1989, p. 63; Laptev, 1988, p. 23; Aganbegyan, 1988b, p. 31);

- 2) to be a barometer of public opinion and to give information to policy makers on how fast change can proceed (Ohlsson, 1989, p. 51);
- 3) to inject a sense of responsibility and participation into the public and the government (Ohlsson, 1989, p. 63); and
- 4) to increase support for reform (Gorbachev, 1987, p. 75; Ohlsson, 1989, p. 54).

Although the literal meaning of glasnost is "that which is voiced," the glasnost policy is more practically defined as an openness to criticism for positive and constructive means. An authoritative Soviet dictionary (Ozhegov's) says that something subject to glasnost is something accessible to the public and to public discussion. It is not simply freedom of speech. As a policy it has a very precise goal, which is to ensure correct participation of the masses in political life.

A good indication of what is acceptable or not acceptable to the government is reflected in the media. As late as 1987, Gorbachev warned top Soviet editors that any attempt to move economic and cultural reform 'beyond socialism will be held up to public criticism by the Communist Party' (Washington Post, 1987a). Around the same time, he also told leaders that "nothing is forbidden, there should be no more forbidden subjects" (Gersh, 1987, p. 12). But they were again cautioned to be constructive, so as not to serve to destroy society.

But these instructions were very vague. It has been very difficult for writers to distinguish which material lay "within" and which "beyond" socialism. Up until the fall of 1990, the amount and scope of what appeared in print and on television surprised both Soviets and non-Soviets alike.

Unfortunately, the shock of receiving previously unavailable information has proved to be quite a strain. What began as a trickle turned into a veritable torrent of revelations on Stalin, the revolution, crime, corruption, economic failures, and natural and technological disasters. New newspapers and television programs stretched the meaning of glasnost further and further to bring "truth" to society. This truth, which was supposed to be constructive, more often than not turned out to be nothing less than demoralizing to many Soviets who were used to hearing only the best about their society. Meanwhile, critical propaganda about the West was dropped and information on living standards much higher than in the Soviet Union caught public attention. Such information, without the counterbalancing effect of offering practical solutions, has produced a feeling that the situation in the Soviet Union is intolerable. So far, one of the most noticeable achievements of glasnost is its creation of a national bad mood, the result of strong disenchantment with the past 70 years.

Since improvements in the economy are noticeably absent, the flow of information has been the most dramatic change so far under the perestroika project; therefore, it has received much attention and it may rival perestroika as a priority. Moreover,

it may even be called a political weapon as it is used to fuel the desire for change and strip support from the conservatives. In this regard it has been very effective. It is still, however, subordinate to perestroika and intended to be a political tool to communicate with the people.

New Political Thinking

Finally, there is one more political phenomenon that deserves some elaboration for the purpose of this thesis. Gorbachev's "new political thinking" ("novoye myshleniye") involves a "recognition of every people's freedom of choice of its way and at the same time all state's participation in the solution of common, global problems" (Shaknazarov, 1989, p. 87). Terms such as internationalization, independence, priority of human interests and values, freedom of choice, integration, globalization, and the new international order are characteristic of proponents of "new thinking." Gorbachev's remarks regarding "our common European home" are also indicative.

New thinking stresses the precariousness of the modern world, brought about by developments in the 20th century such as the following:

- 1) nuclear weapons threaten world safety;
- 2) the science and technical revolution has turned economic, food, energy, environmental, and demographic problems into global problems;
- 3) the concept of democratization has become more or less a global ideal; and

- 4) achievements in modern communication and information make the existence of closed societies obsolete.

This "new thinking" (together with a healthy dose of pragmatism in foreign affairs) heavily influences Gorbachev and has brought about a revolution in Soviet foreign relations. There is a marked de-emphasis on ideology, more willingness to seek compromise in both nuclear and conventional weapons, increased integration into the world economy, and support for transnational organizations such as the United Nations.

METHODOLOGY

Interviews with pertinent Soviet individuals, a questionnaire to foreign aid organizations, a literature search both in the U.S. and the U.S.S.R., an examination of media releases, and personal experience and observation were used to investigate the transitional nature of Soviet disaster response as influenced by perestroika.

U.S. literature sources provided much background in the nature of natural disasters and the kind of response systems commonly found in the West. This knowledge was indispensable; from here it was possible to seek out the institutions in the U.S.S.R. providing similar functions.

While in Moscow, a search for information was conducted under the guidance of Sergei Mikhailovich Myagkov, the aforementioned geography professor at Moscow State University who is interested in the social aspects of natural hazards. He gave a

comprehensive view of existing disaster response mechanisms and provided many source materials that were otherwise unobtainable. Other information was gathered through personal communication with the Soviet League of Red Cross and Red Crescent Societies (SLRCRCS); Gosstrakh—the State Insurance Company; an official at Goskompriroda; Tatiana Bochkarova, an economic geographer at the Institute of Geography; and correspondents and producers of CBS News. Numerous attempts to speak to Doguchaev, chairman of the State Commission on Disasters, were not successful.

Information on international assistance was solicited from foreign disaster relief organizations by using a questionnaire. Questions were designed to find out about any contrasts between the present and pre-perestroika attitudes toward foreign aid. Responses also gave insight into the Soviet relief system.

A literature search in the Soviet Union was useful in presenting Soviet perspectives on the current political changes and their possible effects on the economy and state and social institutions. To find material on current changes in natural hazard mitigation, it was necessary to look at media releases. A comparison of Pravda's treatment of three major earthquakes in 1948, 1966, and 1988 was most helpful. Pravda was chosen not only because of its wide circulation, but because of its status as the official news organ of the Communist Party; thus, it has been reflective of prevailing government attitudes over time.

My own experiences provided a background that helped put collected information into perspective. After spending time in

the Soviet Union both before and during perestroika, I have seen the changes taking place and thus feel more confident about drawing conclusions. The ability to speak Russian was invaluable. A temporary job at CBS News Moscow Bureau in the summer of 1990 provided the opportunity to view how glasnost has affected the dissemination of news from the U.S.S.R., an important development with far-reaching implications for disaster management.

CHANGES IN AWARENESS AND DISASTER RESPONSE UNDER PERESTROIKA

The most obvious changes in Soviet disaster policy are reflected in disaster response. One very striking policy change is the new openness of the government (reflected by the media) and society in discussing the occurrence and effects of natural disasters. Another change concerns the Soviet policy toward accepting disaster relief from western countries.

Relaxation of Information Control Increases Awareness of Natural Hazards

There are various levels of awareness of natural hazards among different social groups in the Soviet Union. Due to education, access to information, and personal interests, these groups may or may not develop an accurate assessment of risk, not to mention appropriate responses. In general, the government, the academic community, and the masses have three quite different approaches and degrees of interest.

Scientific Community

In spite of certain information privileges, the scientific community has suffered seriously from problems in information flow in the pre-Gorbachev period. Lack of information naturally had a great effect on scientists' awareness of natural hazards. Absence of coverage masked the seriousness and frequency of natural disasters. Limited freedom to associate with foreign colleagues insulated social scientists from the growing developments in western countries. The difficulties in doing research discussed earlier in this work have discouraged many would-be social researchers. Finally, the extreme degree of secrecy dictating the use of any kind of data that would compromise state interests was particularly stifling. Maps, an important tool of any researcher dealing with natural and human interaction, were either purposefully distorted or under state lock and key. Any information that might have led to negative conclusions about state policy was either censored or doctored. It was possible to state that a natural hazard existed, but to even state that a particular event was a disaster was questionable. Disasters, a negative phenomenon, were not welcome in the Union of Soviet Socialist Republics. Such political games with words and ideas had a debilitating effect on the academic community.

The opening of doors to information during glasnost has been extremely useful to Soviet scientists. Such freedom of information could not have been dreamed of as little as six years ago. Today the nature and scope of inquiry seems to be unlimited.

Currently, most restrictions of international exchange are purely of economic origin.

One by one, politically harmless (yet traditionally marked as secret) maps are becoming declassified. For example, in the beginning of 1990, a map of the natural hazards of the Ukraine became accessible for the first time. The map was still labeled "dlya sluzhebnoi pol'zovaniia"—for official use—a reminder of the all-too-recent paranoia relating to the spread of information.¹

There is still some question about the extent to which the government has given up control over certain kinds of information. Hopefully, a better understanding of the situation will come with time. Unless there is a retraction of glasnost, one may expect that the information base will continue to grow. Furthermore, scientists will become more sophisticated as they become accustomed to the amount and diversity of available knowledge.

Government

As reflected by its rhetoric since 1976, the government is aware of the existence of natural hazards as well as the need to take protective measures. Government decrees issued in 1976, 1978, 1987, and 1989 gave lip service to the need to improve mitigation of natural hazards (Goure, 1976, pp. 187-9). Resolutions are typically created when the U.S.S.R. Council of Ministers examines a problem and charges the union republic ministries

1. Map seen by author at the Geography Department at Moscow State University, June 1990.

with doing something about it. In March of 1987, a resolution was adopted that

ordered the Councils of Ministers of the Union republics whose territories are subject to mudslides, snow avalanches, landslides, and rockfalls to conduct, with the participation of interested U.S.S.R. ministries and departments, special inspections of lands in order to identify the territories that are subject to the formation and development of the aforementioned phenomena and processes. On the basis of (these) findings, immediate measures will be developed and implemented to protect population centers, working peoples' recreation sites, snow avalanches, landslides and rockfalls . . . It makes approval of the plans the responsibility of the Union-Republic Councils of Ministers (Current Digest of the Soviet Press, 1987).

The Union Council of Ministers will then act or not act on this resolution depending upon its own perceptions and needs; but there is no system of reinforcement to motivate ministries to carry out such decrees.

The latest move, in June of 1989, was the creation, under the Soviet of Ministers of the U.S.S.R., of a State Commission on Emergency Situations. This commission, directed by V.Kh. Doguzhiev, will ensure

preparedness for action in emergency situations; coordination and monitoring of the work of ministries and departments in the systematic creation of emergency repair and search-and-rescue services; the prevention or elimination of the consequences of such situations; and the provision of vital services to the population (Current Digest of the Soviet Press, 1989, p. 18).

The commission's creation demonstrates government awareness of natural disasters, even though the effectiveness of this new commission remains to be seen. For now, it seems to be operating in the old pre-perestroika style of centralized decision making with no means of reinforcement.

General Population

Traditionally, the Soviet people have been insulated from information concerning the seriousness of problems that might affect them. Therefore, unless afflicted by some personal experience with a natural disaster, their level of awareness used to be dangerously low.

The effect of glasnost on the media has been extremely influential on the general population's consciousness of natural hazards. The media's handling of the Armenian earthquake provides a great contrast to past reports on serious disasters. The two articles (see appendices A and B) reporting on the Tashkent earthquake of 1966 and the 1988 Armenian earthquake evoke two very different responses in the reader.

The Armenian article strikes a personal, emotional chord. Not only is the reader impressed with the seriousness of the event, he or she is also cognizant that the event was out of the control of the Soviet government. A natural hazard is more likely to be recognized as a threat under the current glasnost style of reporting, rather than an inconvenience that the government will handle.

Another possible influence on awareness is the new freedom to associate in non-government-sponsored organizations. Under the new political atmosphere, at least two independent organizations have been formed that have mentioned the heightened awareness and response to natural hazards as a major goal. Fund of National and International Security (Fond natsional'noi i mezhdunarodnoi

bezopastnostei), created in April 1990, is one of these organizations that actively recruits members. While their effectiveness in actual policy matters is questionable, the nongovernment organizations can certainly be an aid in promoting general awareness of natural hazards.

Contemporary political social processes have led to an overall increase in terms of information and consequent awareness of natural hazards. However, accessibility of information and freedom to respond to other problems are likely to create competition for priorities. Most likely, attention to natural hazards will wane in response to mounting political, economic, and social problems; then as each disaster strikes, it will necessarily draw renewed attention. Scientists and researchers need to continue to take advantage of the increased access to information and should develop effective ways to disseminate their research for government and public consumption.

INTERNATIONAL AID

International relief agencies usually enter a country only at the invitation of the government. This presupposes that the government recognizes and acknowledges that a problem exists. In many instances, delays in bringing relief have occurred because, for varying reasons, a government has not publicly acknowledged the existence of a disaster. (A. Ifekwunigwe, quoted in Green, 1977, p. 60)

The traditional Soviet system of disaster relief is a closed system encompassing only the Eastern Bloc. Except for famine relief in the 1920s, Western international aid to the Soviet Union in response to natural disasters has not occurred for a

variety of reasons. Among the reasons are that the Soviet government did not admit that a disaster had occurred, did not wish to appear in need of help, and was unwilling to relinquish any degree of control (Kent, 1987, p. 74).

The international community cannot legally respond to a disaster without the specific request of the recipient government (ibid.). Therefore, the acknowledgement of natural disasters under glasnost was one of the main catalysts for a change in attitude toward international disaster relief.

Since 1985, the Soviet Union has requested or stated publicly that it would accept western aid for a number of disasters, both natural and technological. Some of the disasters that received aid from the international community are the January 1989 earthquake in Tadjikistan (United Nations Disaster Relief Organization, 1989b), a Trans-Siberian Railroad accident near Chelyabinsk (United States Office of Foreign Disaster Assistance, 1989b) in June 1989, and the Chernobyl nuclear accident in 1986. The republics of Byelorussia and the Ukraine independently approached the United Nations Disaster Relief Organization (UNDRO) in March 1990 to help launch an international relief effort to cope with the effects of this nuclear disaster (UNDRO, 1990, p. 7).

If current trends set off by perestroika continue (i.e., inflation, worsening shortages of goods, and strong nationalism), the Soviet system of relief will be further strained. One may expect that disaster assistance will become more and more common

in response to natural, technological, and economic disasters in the Soviet Union.

AN ILLUSTRATION OF CHANGE:
RESPONSE TO THE ARMENIAN EARTHQUAKE

The Caucasus Mountains area is part of the Krasnyi Poyas ("Red Belt"), a series of seismologically active zones stretching from the Carpathians to Kamchatka. The movements of several tectonic plates—including the Eurasian, Indian, African, Anatolian, and Arabian plates—result in numerous earthquakes. At 11:41 a.m. on December 7, 1988, a destructive earthquake occurred on a fault of the east-west Sevan-Akera deep thrust zone (Cisternas et al., 1989, p. 675) in Armenia. The quake had a magnitude of 6.9 on the Richter scale, which is over 8 points on the Soviet 12-point scale. Four minutes after the mainshock occurred, there was an aftershock of magnitude 5.8 that toppled many more buildings already weakened by the first shock. The epicenter was located about 25 miles north of Leninakan in the mountains of the Lesser Caucasus (see Figure 4); the focus of the quake was 10 kilometers deep.

The town of Spitak (population 25,000) was completely destroyed, along with many rural villages between Spitak and Leninakan (population 290,000). Leninakan and Kirovakan were severely damaged. The number of dead, at first reported to be as high as 50-60,000, was later reduced to 25-35,000; the total number varies according to source. It is likely that many refugees from Nagorno-Karabakh had swelled the normal population,

increasing the death and casualty numbers. Roads, bridges, railroads, and communications were all disrupted, and several industrial facilities were destroyed.

Nikolai Ryzhkov, chairman of the U.S.S.R. Council of Ministers, described further damage:

The natural disaster not only caused numerous building collapses, and in a number of instances almost total destruction, it also destroyed the entire system of social and economic management in the vast disaster zone. Many managers and specialists were killed—people who had been responsible for various sectors of work and for ensuring the population's vital activity (Current Digest of the Soviet Press, 1989a, p. 18)

Soviet sources have estimated total damage at 10 billion rubles (UNDRO, 1989c) or U.S. \$16 billion at the official exchange rate in 1988.

AWARENESS OF HAZARDS

After 70 years of suppression of information on natural disasters, levels of awareness of the earthquake hazard in Armenia were critically low. Earth scientists were well aware of the area's seismicity, but the bulk of the inhabitants did not perceive risk from earthquakes (Mileti, 1989b).

The government of Armenia was undoubtedly aware of the risk, but not of the scale of the potential hazard. An earthquake of magnitude 5.7 (Richter) that devastated Leninakan in 1926 probably influenced government decisions at that time. Other sizable earthquakes included one of magnitude 5.0 in 1967 in Spitak, and

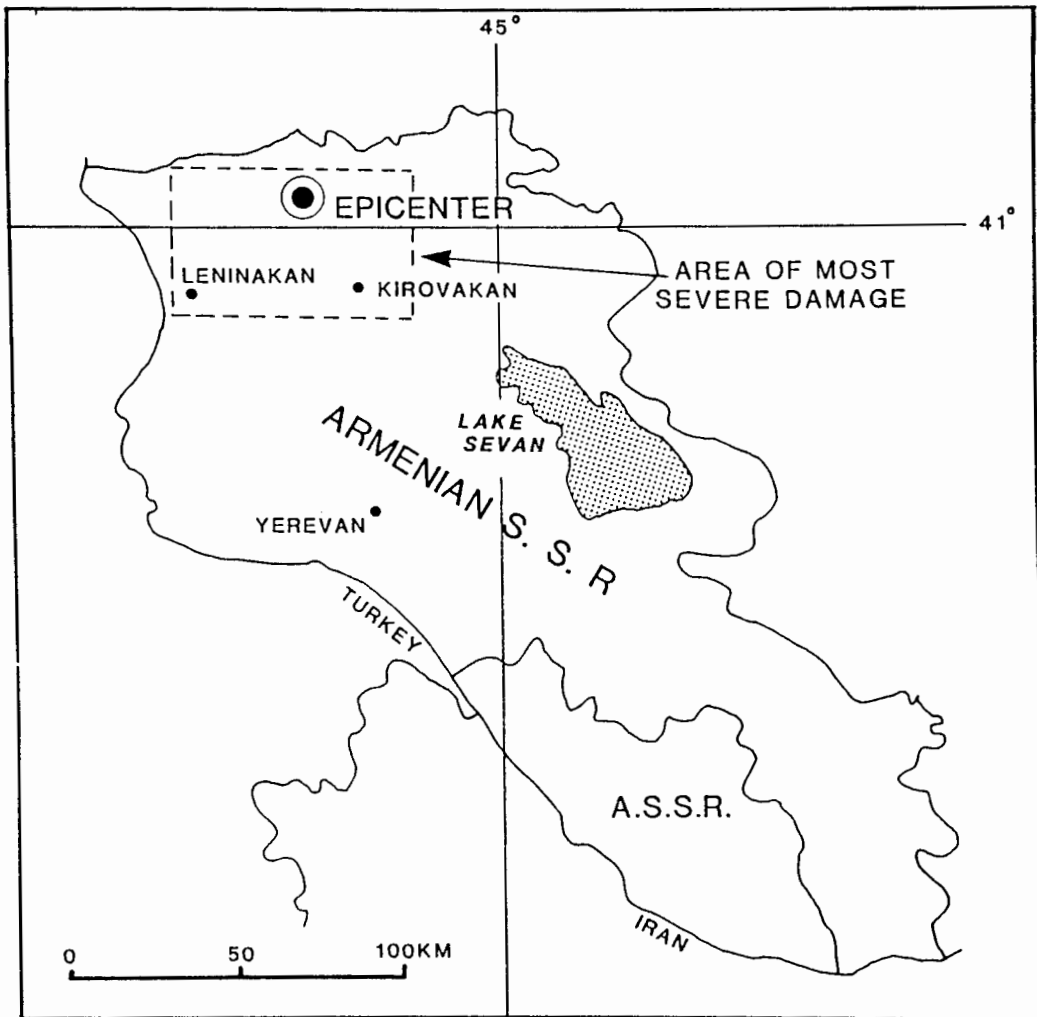


Figure 4. Location of 1988 Armenian Earthquake
Data from The Christian Science Monitor, 1988a, p. 15.

one of 5.3 in 1911 in Kirovakan (Cisternas, 1989, p. 678). Comfort asserts that "institutional memory of modern public organizations" tends to be very brief in such situations (1989, p. 1). Judging by the local and federal government's preparedness for the Armenian earthquake, one is inclined to agree.

Awareness among the scientific community was undoubtedly high, although few seismologists believed that an earthquake as severe as that of December 1988 was possible in this region (Cisternas et al., 1989, p. 679). Traditionally, Soviet physical geographers and geophysicists have received much state support. Their most serious problem is a lack of the newest technical instruments and equipment; nevertheless, they are still respected for the quality of their research. But due to ideological causes (suppression of information) and organizational/structural problems (research is not effectively used to develop policy), seismological knowledge of the area was ignored. In spite of cumulative knowledge and a prediction for a severe earthquake in northern Armenia, shaking intensities used for building codes in Leninakan were reduced in 1981 (Mileti, 1989a, p. 2).

Release of Information

One of the most striking differences between the Armenian earthquake and any previous disaster in the U.S.S.R. was the volume and nature of treatment in the Soviet media. A direct result of glasnost, the event was allowed to be covered in detail, and more importantly, as a disaster. Formerly, the public

was informed that an earthquake occurred, party and state officials competently "eliminated the consequences," and the matter disappeared from print.

Pravda, as the official information organ of the Communist Party, may be assumed to accurately reflect the government point of view. Therefore, an examination of its reports for the seven days following three different earthquakes, which occurred before and after Gorbachev's glasnost, reveals changes in the government's treatment of natural disasters. Reports regarding the Ashkhabad earthquake of 1948, the Tashkent earthquake of 1966, and the Armenian earthquake of 1988 were surveyed. The reports were examined for: 1) amount reported, 2) front page priority, 3) style of writing, 4) content of writing, and 5) number of photos.

The Ashkhabad earthquake occurred on October 6, 1948. It was 9.0 on the Soviet scale, which is similar in magnitude to the Armenian earthquake. Coverage started October 7 and ended on October 12; it skipped October 8, resulting in five days of coverage. There were 3,475 words in nine articles for the seven days following the disaster. No article about the earthquake ever appeared on the first page.

The Tashkent earthquake occurred on April 26, 1966. It was not as strong as the other two earthquakes and was a magnitude 7.5 on the Soviet scale. However, it was serious enough to damage most of the old buildings; the center of Tashkent today consists almost entirely of post-1966 construction. Pravda coverage on this earthquake started on April 27 and continued through May 3,

a total of seven days. There were 3,238 words in 13 articles about the quake. The story does make the front page on April 27, but not as a headline. The headline that day was "The Trust of the People is the Highest Honor"—an article on candidates for the Supreme Soviet of the U.S.S.R.

Information on the Armenian earthquake appeared in the press on December 8, 1988, on the back page. But on December 9, the story moved to the front page as a headline and was accompanied by a photo. (There were never any photos for the other two earthquakes, although Pravda was using photos for news coverage on those dates.) The earthquake continued to be a front-page story through December 21; the first day not to feature a photo was December 28. Coverage continued into January. An extraordinary 47,847 words appeared in 70 articles reporting on the disaster during the first seven days.

Certain kinds of information were absent in the articles on earlier earthquakes. For instance, there was no mention of the number of victims in Ashkhabad. Domestic relief was briefly described, but there was no mention of international aid—there probably was none. Many questions remain unanswered on the damage caused by this earthquake, which may have been the most damaging earthquake in Soviet history, perhaps claiming up to 120,000 lives.

Pravda reported that the Tashkent quake caused four registered deaths and 150 people to be hospitalized (April 27), 2,722

TABLE 2
 COMPARISON OF PRAVDA COVERAGE OF THE
 ASHKABAD, TASHKENT, AND ARMENIAN EARTHQUAKES BY NUMBER OF WORDS

EARTHQUAKE	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	TOTAL WORDS	# OF PHOTOS
Ashkhabad 1948	115	--	1,300	150	1,460	650	--	3,675	--
Tashkent 1966	604	429	339	108	644	574	540	3,238	--
Armenia 1988	325	6,570	7,489	6,266	6,349	8,415	12,433	47,847	21

families to lose their homes, and 1,000 more to move (April 30). Again, no international aid was mentioned, although telegrams of sympathy came from abroad. There was no mention of any problems or complications during rescue and rehabilitation efforts.

The Pravda reports on Armenia included a wealth of information on rescue efforts—number of victims; heart-breaking personal accounts; structural, economic, and psychological damage; international as well as domestic relief efforts; problems encountered by rescue and relief operations; and constructive criticisms and suggestions as well as intimations that the situation was not taken care of as quickly and efficiently as possible.

The style of the coverage differed from earthquake to earthquake. The reports from Ashkhabad were brief, giving a few skeletal facts, and devoid of emotion. Because there was some destruction mentioned and the statement was made that "many people died" (Pravda, October 7, 1948), these can be seen as implications of the enormity of the disaster.

The Tashkent reports were positive, even boastful, and disguised the disaster as a Soviet achievement over nature. Generous praise went to government representatives, the militia, and the "united Soviet people." There was hardly any mention of damage (just old pre-revolutionary buildings). The bulk of information was designed to give the impression that "everything is under control" (April 27), that "life in Tashkent has already returned to normal" (April 28), "the streets are already decorated for May

1" (April 29), and "Tashkent will be more beautiful than before" (April 30).

The December 8 report on Armenia was factual, unemotional, and was located on the back page; but starting on December 9, the nature of coverage changed sharply. For the first time in natural disaster reporting, negative facts that would bring shock, despair, pain, and grief to the reader were included. Statements like, "People are still in shock," and, "They are afraid to return to their houses," (December 9) were printed. One reporter wrote, "The closer to Leninakan, the more alarm we feel in our souls. We prepare for the worst. But even our imagination could not prepare us for such a sight." (December 9). The chaos, destruction, and hopelessness were described in heartbreaking detail.

Another emphasis found in the Armenian reports was the aid from domestic and foreign sources. Everyday there were accounts on either aid or expressions of sympathy. Two reasons are likely for this: 1) to encourage further donations (channels for donations were often described), and 2) to downplay the nationalist crisis, especially strong in the Caucasus region, by evoking a sense of solidarity:

"We are not leaving our brothers in their hour of need"
(December 9, 10).

"We are of the same blood" (December 9).

"Misfortune of Armenia is a cause for general grief"
(December 11).

"Brotherly solidarity," (December 11)

"Our Pain and Tragedy" - daily picture caption.

"(Earthquake) Waves affected each of us" (December 11).

"According to the laws of brotherhood" (December 12).

"The pain and anguish of the Armenian people is the pain and anguish of the whole country." (December 13)
"Hands of Brotherhood" (December 14)

Pravda remained the official publication of the Communist Party until September 1, 1991. The Communist Party dictated the contents of reports with the party's interests in mind. For instance, a significant amount of the Armenian earthquake coverage was intended to create sympathy for the victims and weaken nationalistic tendencies. Nevertheless, the amount of information released by Pravda and other press organs was unprecedented. By examining this information, along with reports by foreign relief workers, a picture of the present condition of state natural hazards mitigation, under the influence of perestroika, begins to emerge.

Glasnost Reveals Flaws in Soviet Disaster Management

Because it was now possible to delve into negative aspects of the Soviet system, journalists wanted to discover why there was such an unusually heavy death toll. While "the usual ratio of injured to dead calculated from records of previous seismic events is 3:1," in the Armenian earthquake, this ratio was reversed (Comfort, 1989, p. 12). Approximately three persons were found dead for every live victim extricated. Additionally, the gravity of injuries reported to hospitals in this disaster was exceptionally high (ibid).

Investigations uncovered efforts to prevent injuries in the event of an earthquake in this region of the Caucasus. However,

these efforts, in the form of earthquake-resistant structural designs, seemed to exist on paper rather than in reality.

This area of the Caucasus was a well-known earthquake zone, part of the "Red Belt" of seismic activity. After sustaining serious damage in an earthquake in 1926, Leninakan was to be rebuilt with better constructed earthquake-proof buildings. Elaborate building norms and standards were put in place to reduce potential damage. Nevertheless, the buildings of Leninakan and Spitak, and particularly the newer ones, collapsed like houses of cards.

Although the Armenian earthquake exceeded expected intensity, much of the damage was due to "inadmissible departure from building plans, scandalous deficiencies in the plans themselves and an unusually low quality of construction," reports Izvestiya correspondent Pavel Gutinov (1990). He reported the following observations discussed during the May 1989 meeting of the Politburo Commission for eliminating the consequences of the Armenian Earthquake:

The quality of design and construction of the buildings in the disaster zone was checked extremely carefully by three independent organizations. Specialists reported that 73% of the examined projects do not meet minimum standards which were in effect in the disaster region.

In the masonry of many stone buildings, cement comprised only 20% of the suggested norms. Buildings were made literally out of sand . . . Percentage of dust was found to be 60-70%, whereas norms dictate no more than 10%. The amount of cement in panels were up to 40% below required norms. The earthquake turned these panels into powder . . .

In pre-fabricated panel buildings only unwelded reinforcements remained; the sections of which were arbitrarily reduced, at first in planning stages and then again at the building location. Floor and ceiling

slabs were not connected by anti-seismic girding. In half of the frame-paneled buildings, the stairwells collapsed due to building violations. A system for quality control was practically non-existent.

Dennis S. Mileti, member of a post-disaster study team sponsored in part by the National Academy of Science, claims that there were no measures at all in place to deal with the earthquake (September 1990, personal communication). More correctly, measures did exist for protection from a strong earthquake, but these measures were not enforced due to the inadequacies of Soviet management and limitations in supplies. As a result, the Politburo Commission ordered the state procurator of the U.S.S.R. to bring about criminal prosecution of those responsible for the situation (Psalomshchikov, 1990).

Under the influence of glasnost, such shortcomings are finally being brought to public attention. This is extremely important in bringing about any sort of change.

Other aspects of perestroika may help rebuild Spitak and Leninakan. First of all, local officials have more say in their own areas. Hopefully they will be more active in producing earthquake-proof buildings, creating projects with safe designs, and enforcing their proper construction. Much depends on the local awareness of hazards and of the existence of possible actions to mitigate them. Second, as a market economy replaces some elements of centralized planning, the goal to "fulfill and overfill the plan" will become less of a concern. Under the old system, in order to produce a surplus of cement, the cement itself was thinned with sand. The result was something that

possessed little of the building reinforcement properties of cement.

In June, the Soviet program Vremya reported on Finnish construction teams assisting with the reconstruction process. A product of Gorbachev's "new thinking," this kind of international cooperation will expose more developed mitigation systems to Soviet decision makers.

Unfortunately, one may expect similar construction problems throughout the Soviet Union, many areas of which are susceptible to damaging earthquakes. It is highly unlikely that much action will be taken soon while the country is in such turmoil. Furthermore, faulty construction will continue until measures are developed to enforce reliable distribution within the system, which will eliminate shortages and prevent the disappearance of construction materials.

DOMESTIC DISASTER RELIEF

Another gift of glasnost is a detailed description of the character, scale, and effectiveness of Soviet disaster response. Although the international relief effort was the largest in history for any one natural disaster, it is estimated that 90% of all relief assistance came from within the U.S.S.R. Of the 1,400 registered flights transporting relief items, more than 1,050 were domestic flights. However, most Soviet relief arrived by rail. By December 19, 1988, 27,000 rail cars carrying supplies had reached the area. One Soviet official valued U.S.S.R. domes-

tic aid at 900,000,000 rubles or U.S. \$3.2 billion (United Nations Disaster Relief Organization, 1990, p. 2). With more access to the disaster area and open and self-critical information given out by the Soviet media, we are a 1,000 times more enlightened on the Soviet system's reaction to a major natural disaster.

Perhaps what deserves to be highlighted is that a fairly extensive system was in place to deal with the disaster, regardless of how effective it was. Those involved include the Communist Party of the Soviet Union (CPSU), local and national governments, the civil defense system, and volunteers and donors from the stricken region, as well as the rest of the Soviet Union.

N.Ye. Kruchina, head of the Central Committee CPSU Management Office, lists some of the CPSU's contributions (Nova Science Publication, 1990):

- transfer of 50 million rubles to the Armenian relief fund;
- transport of building materials via 14 buses, 10 trucks, and 15 cars, as well as eight railway carloads;
- housing of evacuated families in vacation homes of the Management Office of the Central Committee CPSU. Others were accommodated in sanatoriums and boarding houses about the country. Health services, meals, winter clothing, footwear, and linen were provided

at the expense of the party budget. Schools were set up at these facilities.

- equipping a mechanized convoy from Moscow with building and transport machinery to begin reconstruction.

A commission of the politburo of the CPSU Central Committee was formed to coordinate relief and rehabilitation efforts on a union-wide scale. The commission was chaired by Nikolai Ryzhkov, chairman of the U.S.S.R. Council of Ministers and a close associate of Gorbachev's, and included Yazov, the U.S.S.R. minister of defense; Slyunkov, secretary of the Central Committee; and Batalin and Voronin, vice chairs of the Council of Ministers. By December 8, the commission was meeting with Armenian republic officials, touring the area, and ordering in additional military units, engineers, and equipment (Current Digest of the Soviet Press, 1988b, p. 9).

Much of the relief was channeled through the country's civil defense system. This included participation of the army, which, together with the stricken population, pulled the majority of the victims out of the rubble. The first soldiers from the Ministry of Internal Affairs' troops and the Soviet Army arrived in Spitak between 2 and 3 p.m. (Current Digest of the Soviet Press, 1988b, p. 10). They began removing debris by hand. The first international rescue team did not arrive until 4:30 p.m., December 9 (Izvestiya, December 11, 1990), when little rescue work remained. Yazov, the minister of defense, stated that a total of 18,990

soldiers were working in the disaster zone, unloading planes, setting up water lines, repairing communications, and working on the damaged rail line (Current Digest of the Soviet Press, 1988d, p. 6).

Ye.I. Chazov, minister of public health, reported that 200 medical brigades were operating, 500 physicians from leading medical institutions were brought in, and several field hospitals were set up. Many of the injured were flown to Moscow. Two sanitation and hygiene laboratories and 30 brigades checked food and water to prevent the outbreak of epidemics (Current Digest of the Soviet Press, 1988c, p. 7).

As mentioned above, relocation of victims was not a product of the civil defense system but was coordinated by the CPSU Central Committee's Administrative Office. School-aged children, women, and older people were evacuated, while men stayed behind to clean up and reconstruct the area. By January 3, nearly 110,000 people were evacuated: 70,310 of these went beyond the Armenian border (Current Digest of the Soviet Press, 1989, p. 21). Some were given accommodations in the countries' best health resorts.

Nongovernment organizations were active in the relief effort. On the day of the earthquake, the League of Red Cross and Red Crescent Societies (LRCRCS) headquarters in Moscow sent a plane loaded with over 14 tons of medical supplies, tents, and blankets. Together with other Red Cross and Red Crescent representatives from around the country, an operational headquarters

was set up in Yerevan (Abramov, 1989). On the second day, rescue work continued, the wounded were evacuated to Yerevan and other cities, and a blood drive was organized in Moscow. The LRCRCS also played a large role in the coordination of incoming domestic and foreign aid.

Other nongovernment Soviet agencies contributed substantial amounts of money. The Soviet Peace Fund donated 20 million rubles, the Soviet Children's Fund gave 1 million rubles to buy necessary articles for Armenian children, the Union of Soviet Friendship Societies provided 3 million rubles for the construction of a hospital, and the Russian Orthodox Church donated 2 million rubles (Sputnik, 1989, p. 89).

Private citizens of the Soviet Union played a large part in the relief effort. At night on December 8, a blood drive was organized in Moscow. In spite of the late hour, "more than 3,000 Muscovites gave more than a ton of blood to send to Armenia" (ibid). Two special bank accounts, No. 7000412 at Zhilsotsbank and No. 70000006 at Vneshekonombank, were set up to receive monetary donations. Blankets, warm clothes, and food arrived to comfort the victims. The Soviet press published many letters from citizens offering to share their homes with the victims.

Psychological assistance was also provided. Specialists were sent to supply psychological first aid for victims' experiencing bereavements and trying to re-establish social ties. A. Asmolv of the U.S.S.R. State Committee on Public Education targeted the children as needing special consideration. "Attention and kind-

ness . . . are not all they need to avoid neuroses and to attain full-fledged psychological development. Even now, groups of specialists are training for work with those children who will have to spend a certain amount of time away from home" (Current Digest of the Soviet Press, 1988d, p. 6).

The Politburo approved compensation measures proposed by the U.S.S.R. Council of Ministers. There was a lump-sum grant of 200 rubles per person, as well as an additional 2,000 rubles to families who lost their main wage earner (Current Digest of the Soviet Press, 1989a). Five hundred rubles were allotted to cover funeral expenses for every family member. Additional aid was provided by trade unions, public organizations, or private individuals. Ovik Davtyan, chief legal adviser for the Armenian Ministry of Finance, stated that the reimbursements were made regardless of the victims' relationship to Gosstrakh, the state insurance agency (ibid.).

The value of residential buildings, dachas, garages and private farming structures will be determined in accordance with a procedure established by the government. Reimbursement for losses will be determined in accordance with the same procedure. The loss of cars and other means of transportation, taking wear and tear into account, will be fully reimbursed on the basis of current state retail prices. The same procedure applies to farm animals that were insured by citizens (ibid., p. 9).

Bank loans for the reconstruction of damaged property were written off at the expense of the republic's budget.

Women with underage children who lost their jobs after the earthquake retained their average wages and uninterrupted employment records for six months or until they found a new job.

Evacuated women with children were paid 50% of their average wages for a period of six months (ibid.).

Although the Soviet media documented what seems to be a comprehensive relief and rehabilitation effort, they were full of criticism for the way in which it was carried out. Disorganization, lack of coordination, shortages of equipment and supplies, the government's lack of credibility, and nationality problems all cast a shadow on attempts to deal with the aftermath of the earthquake. A shortage of rescue equipment, notably cranes to save victims by lifting fallen debris, was often mentioned. By the time this equipment reached the stricken area, it was too late to save many victims. The lack of medical supplies was also decried. Even simple medicines are deficient in the Soviet Union; furthermore, emergency equipment such as dialysis machines needed to be obtained from abroad.

The Nagorno-Karabakh situation further complicated the domestic relief effort. Nagorno-Karabakh is an area populated by ethnic Armenians, but located entirely within the Azerbaidzhan Republic. Violent dispute erupted over Armenian demands for independence from this territory in 1988. The ensuing violence led to a substantial number of refugees from both Armenia and Azerbaidzhan, which complicated the resettling of earthquake victims. Blockages in Azerbaidzhan obstructed the flow of reconstruction materials to Armenia. There was an undercurrent of suspicion over any kind of aid from Azerbaidzhan. Since demonstrations and general tension did not abate in the wake of the

earthquake, curfews were imposed in mixed districts of both Armenia and Azerbaidzhan. Lieutenant General V.S. Dubinyak, chief of staff of the Internal Troops, reported diversions of military units from the earthquake to control tensions in the Nagorno-Karabakh region (Current Digest of the Soviet Press, 1988d, e).

The national press tried to calm other fears based on nationality concerns. There were several articles disclaiming that Armenian children were being evacuated from the republic in order to "Russify" them. Ethnic Russians were saying that Armenian's were throwing away donations from the Soviet republics, implying that "Soviet clothes aren't good enough. We will accept only goods from the West." The government was also a target—letters to Pravda accused the Soviet of Ministers of Armenia of pocketing hard currency donated from abroad (Pravda, 1990).

Before glasnost, none of these charges would have been found in print. Analyzing and discussing relief problems can help the Soviets to improve their rescue efforts. Unfortunately, the reports also produced feelings of confusion and anger that the state was not controlling the situation as perfectly as was reported in the pre-glasnost era. In this way, glasnost is also extremely destabilizing.

The state responded to the disaster according to its pre-perestroika pattern; but it was already apparent that the old methods were not compatible with the new reforms and expectations brought about by perestroika.

International Relief

As a result of the new political atmosphere in the Soviet Union, international relief response to the Armenian earthquake in 1988 "was by far the biggest, in terms of quantity and geographical origin, ever made available for a single disaster." (United Nations Disaster Relief Organization, 1989c). The U.S. Office of Foreign Disaster Assistance (USOFDA) estimated total foreign aid at U.S. \$158,857,580 (1989a); U.S. \$173,000,000 in emergency contributions were reported to the United Nations Disaster Relief Organization (UNDRO) as of June 30, 1989 (1989a). In-kind and monetary donations were made by national governments, intergovernmental agencies, and nongovernment domestic and international organizations. Relief came in varying forms, including tea from Sri Lanka, tents from Mongolia, search dogs from Switzerland, blankets from Iceland, and raisins from Afghanistan. According to UNDRO figures, 74 different national governments sent emergency relief (see Figure 5).

Forty-two countries sent medical and relief supplies; 24 donated airplane flights; 18 sent specialists to assist in rescue, medical, and evaluation procedures; and 12 countries sent cash donations. Other forms of aid included rescue dogs, mobile hospitals, communications equipment, temporary housing, cranes, water tanks, and generators.

Governments donated a total of U.S. \$65,000,000. Intergovernmental organizations (mainly UNDRO and the European Economic Community) gave over U.S. \$12,000,000. The Red Cross and

Red Crescent Societies collected around U.S. \$35,000,000. Other nongovernmental agencies and individuals produced a total of U.S. \$61,000,000.



Figure 5. National Governments That Sent Emergency Aid to Armenia

Source: United Nations Disaster Relief Organization, 1989a.

Responses to Questionnaire

To investigate the nature of the international relief provided, a questionnaire was sent to 23 various relief agencies, including the U.S. government, intergovernmental agencies, and nongovernmental agencies. Seventeen agencies responded. UNDRO, the League of Red Cross and Red Crescent Societies, and the U.S. Office of Foreign Disaster Assistance sent detailed reports, which included not only information on their own work but also on that of other organizations and societies around the world.

TABLE 3
TOP 10 GOVERNMENT GRANTS OF AID
TO ARMENIA (IN U.S. DOLLARS)

1.	Federal Republic of Germany	\$10,477,902
2.	Japan	10,026,767
3.	United Kingdom	9,519,336
4.	France	6,090,026
5.	Canada	4,663,864
6.	U.S.A.	4,488,207
7.	Poland	2,600,000
8.	Italy	2,334,630
9.	Republic of Korea	2,000,000
10.	The Netherlands	1,538,461

Source: United Nations Disaster Relief Organization, 1989a.

The following lists several of the questions asked and provides a short discussion of the answers received:

How did you find out about the earthquake?

Most agencies gave credit to the media. Answers include: "the international media," the League of Red Cross and Red Crescent Societies, "by a 2 a.m. December 9, 1988, call from the media to the Disaster Duty Officer," the American Red Cross, "from news sources and from contacts at the White House," and Americares.

The U.S. government seems to have found out more quickly than nongovernmental relief agencies. They write that "On December 8, Charge d'Affaires . . . determined that a disaster existed in Soviet Armenia."

Since most agencies rely heavily on the media, it is certain that the lifting of some restrictions on information flow under glasnost has facilitated relief agency reaction.

What (or who) was (or were) your main source(s) of information about the need for assistance?

Again the media were mentioned, as well as religious organizations, the Soviet and Armenian Red Cross and Red Crescent Societies, UNDRO, and USOFDA.

How did you become aware that your help would be accepted?

The Soviet Embassy in Washington gave encouragement to all those wishing to send aid. On December 9, the embassy "authorized a relief flight organized by USOFDA and released a list of needed supplies" (United States Office of Foreign Disaster Assistance, 1989). Also on December 9, the Soviet Mission in Geneva informed the U.N. of the government's decision to accept international assistance for the earthquake victims (United Nations Disaster Relief Organization, 1989a). The Soviet Red Cross and various church organizations confirmed the Soviet's willingness to accept aid.

Before the Soviet position was widely known, Minister of Foreign Affairs Shevardnadze made the following statement at a press conference: "I don't think we will ask. Any country can

take an initiative. I think this is people's moral duty. We, for example, always provide assistance when peoples are stricken by disaster, as a rule. I must say that our country has the necessary resources to help the Armenian people rebuild everything that has been destroyed" (Pravda, 1988). In other words, he conveyed to possible foreign donors that "we can manage by ourselves, but we won't refuse any help."

Briefly describe the bureaucratic procedures involved (visas, permits, etc.)

Anyone familiar with the bureaucratic nature of the Soviet government would be amazed at the steps taken to ease the arrival of relief. Visas were either immediately issued by the Soviet embassy or simply granted within 24 hours of arrival in Yerevan. Unlimited access was allowed to disaster areas. "Practically all restrictions were waived," wrote K. Watanabe from the League of Red Cross and Red Crescent Societies.

Customs, transportation of relief materials, entry requirements for relief personnel, and landing permits for foreign planes might have prevented a great deal of aid from arriving had the usual procedures been enforced. Instead, the Ministry of Civil Aviation streamlined air clearance procedures for relief flights, and Aeroflot offered free transport of international relief donations. Handling fees were waived for foreign relief flights and international assistance was exempt from customs and other duties. Foreign planes returning home received free fuel

from the Soviets. INF (Intermediate-range Nuclear Forces) carried relief supplies from the United States (USOFDA, 1989).

These actions demonstrate a striking change of attitude from the past and a flexibility not usually associated with Soviet authorities. It is an indication of a new commitment to become a part of the international community with all its benefits, responsibilities, and requirements for flexibility. In this case, the Soviets compromised their bureaucratic criteria to receive valuable benefits.

Were you aware of any relaxation in bureaucratic procedures from previous attempts (if any) to send aid?

The organizations with the necessary experience to make a comparison noticed a relaxation in bureaucratic procedures. K. Schroeder of Church World Service writes that "Before glasnost, it would have been impossible," because of bureaucratic obstacles.

What kinds of logistical information were you given before going/sending aid?

Information was available through the Soviet Red Cross and the Soviet Embassy. Some respondents were unaware of the availability of information.

What was your impression of the official Soviet attitude toward foreign relief workers?

All but one respondent found the Soviets' attitude extremely positive and appreciative. Many Red Cross relief workers were even decorated with government awards. However, one respondent

wrote that the Soviets were "open and welcome at first, less so after the first three to four weeks."

Describe what kind of aid you sent, along with the quantity and monetary value.

Detailed summaries of aid were prepared by Red Cross, USOFDA, and UNDRO. Donations were mostly comprised of rescue equipment, medical supplies and services, temporary shelters, food and clothing, transportation equipment and services, and monetary donations.

Have you ever been on a relief mission to the U.S.S.R. before this? Please describe the event(s).

This is where the changes in current policy toward receiving aid are most apparent. The last time USOFDA, Americares, and the International Red Cross sent relief was during the second World War. Before that, the only aid seems to be by the Red Cross during the famine in the 1920s.

How might the situation for international response to the Soviet Union be improved in the wake of another such disaster?

It is to be expected that the first relief effort to the Soviet Union would leave room for improvement. However, most respondents did not answer this question. Those who sent money or donated through UNDRO or Red Cross and were not physically present did not feel qualified to answer such a question.

The UNDRO report includes a detailed discussion of mistakes made during the relief operation compiled by three of its representatives who visited Armenia from January 11-19. Some of the

problems encountered were: 1) the arrival of non-self-sufficient rescue teams who expected to receive local support; 2) the absence of interpreters; 3) donations of food and medical items, unsorted and labeled in foreign languages; 4) donations of clothes and temporary shelters inappropriate to climactic conditions; and 5) the inability to distribute donated items due to excess volume.

The fact that this mission took place openly with the cooperation of local authorities, relief workers, and survivors is another example of the incredible changes in the political atmosphere. Three years prior to the earthquake, even domestic evaluations of a critical nature were strictly controlled. But in January 1989, foreigners were allowed to freely observe and uncover possible mistakes in the Soviets' ability to take care of their own citizens.

Have you had any sort of communications with the Soviet government or Soviet organizations since the disaster? Please describe.

Most organizations wrote that they maintain contact and interest in the rehabilitation phase. Americares has "been in constant contact . . . through the Soviet Embassy and also with health authorities in the Armenian republic." The Church World Service receives progress reports on reconstruction, and two representatives visited Armenia in February 1989. The League of Red Cross and Red Crescent Societies supports a delegation in Armenia consisting of 25 staff members. American Red Cross staff

are still present and working on ongoing medical and reconstruction projects.

The USOFDA report lists several other plans by international organizations for the reconstruction phase of disaster relief:

- 1) A children's rehabilitation center in Yerevan and seven polyclinics in Spitak and Leninakan are planned by the Mennonite Central Committee.
- 2) Project Hope will provide treatment and training to Armenians over a five-year period.
- 3) Americares, together with the World Rehabilitation Fund, established a prosthetic manufacturing facility in Armenia.

Are you taking or considering any active steps to change the nature of your agreements/relationships regarding disaster response to the Soviet Union?

Most respondents stated that they do not intend to make changes in their relationship with the Soviet Union. Possibly for the first time since the birth of the Soviet Union, relief organizations appear to be satisfied with their relationship and degree of access.

LRCRCS is helping the Soviet Red Cross to strengthen its disaster response capacity. Last October, UNDRO and the U.S.S.R. Academy of Sciences sponsored a training seminar in Moscow to study disaster management and mitigation. Increased cooperation

and access to ideas from abroad have already changed agreements and relationships from passive to active.

There are several factors that set the scene for such an unprecedented international show of support for the Armenian earthquake victims. Most of these factors are the results of glasnost and social, political, and economic restructuring policies—perestroika.

First of all, part of the Soviet Union's political perestroika involves a transformation of relations with both socialist and nonsocialist countries. The Soviet Union has emerged as a member of the global community. More open exchange of ideas between people and an abandonment of the propaganda mechanism aimed at capitalist countries characterize this transformation. Within this new political atmosphere it became possible to accept aid, since it was not coming from "the enemy" but from another member of the global community. The strict anticapitalist orientation of the pre-perestroika government was a formidable obstacle against receiving any kind of aid in times of disaster.

When the earthquake occurred, Gorbachev was the center of world attention while visiting the U.N. in New York. It is highly doubtful this visit would have taken place had the transformation in policy described above not occurred. He was to have stayed longer at the U.N. and then traveled on to Cuba and Great Britain, but news of the earthquake cut his tour short. His sudden departure helped focus international attention, and consequently sympathy, on the serious disaster in Armenia.

The Soviet media played an important part in the tremendous outpouring of relief. As stated in the previous chapter, the amount and nature of coverage of natural disasters was formerly strictly controlled. Before glasnost, when reading the short newspaper reports on disaster stricken areas, one received the impression that the government, together with the CPSU, had everything under control. No one would receive the impression that help or concern was needed. With restricted access to Soviet disaster areas, the foreign media was heavily dependent on official Soviet information. Consequently, potential foreign donors were ignorant of possible needs.

In contrast to the previous period, Soviet and foreign newspapers were full of information: descriptions of the seriousness of the disaster, needed articles and where to send them, and heartrending personal accounts of tragedy that kindled a desire to send relief. Even foreign correspondents were allowed into the area; it was not secretively roped off as in past disasters (Oberg, 1988; Bassow, 1988).

It is possible that the nuclear accident in Chernobyl acted as an ice-breaker for international relief to the Soviet Union. The government was secretive about the seriousness, even the existence, of the accident at first. The West found out about it only after Sweden detected high levels of radiation, days after the accident occurred. Slowly, however, the terrible truth unfolded. The accident was so overwhelming that the Soviets accepted medical help from abroad. Chernobyl taught the Soviets

that it was not painful to accept help and the West realized it was possible to provide it.

Their late arrival to the Armenian disaster area prevented international rescue teams from saving many lives. Most of the victims were saved in the first few hours after the earthquake by local people and military personnel. In some cases, the visiting volunteers and aid actually created more problems. There were donations of inedible food and clothing unfit for use. Unlabeled and mixed containers cost rescue workers time and energy to sort them out. Local transport vehicles and routes were continually clogged with unnecessary items. Some rescue groups arrived without any plans for accommodation and supplies for themselves, creating an added burden to the tragic situation. What they did accomplish, however, was to help relieve the exhausted Soviet relief workers, provide exposure to western emergency techniques, and undoubtedly contribute much hope and moral support to the devastated communities. There is nothing in the Soviet media but praise and appreciation for the help received. Furthermore, experiences gained from the Armenian effort may be applied to future disastrous events.

Glasnost and perestroika have changed the official Soviet attitude toward accepting disaster relief from abroad. Furthermore, these policies helped to erode the western illusion of separateness and invincibility of the Soviet Bloc. The West was ready to render aid as a sign of support and solidarity for changes taking place. This was probably as much of a motivation

to provide relief as was their desire to help the victims. The influx of international relief was highly illustrative of the change in Soviet international policy and the West's enthusiastic response.

PROBABLE CHANGES IN DISASTER MANAGEMENT

It is quite difficult to understand the Soviet Union's current natural disaster management system during these times of change. There is no longer a set policy; there is only a rather confused mix of the past system, old and new institutions, and new attitudes and expectations. A short description of traditional measures and probable effects of perestroika are given below.

Modification of Event

Modification measures are those designed to affect in some way the natural event itself. It may prevent an event from happening, divert it, or lessen its strength. Usually, the measures involved are of a technological nature.

Modification measures are an important part of the Soviet Union's national policy in dealing with natural hazards. Dams, river diversions, snow retention structures and galleries, and irrigation systems are some of the control measures used to modify floods, avalanches, landslides, and drought (Gerasimov and Zvonkova, 1974). Such measures are often introduced after a particular natural disaster has already occurred. For example, after the 1987 snowfall/avalanche/flood disaster in Svanetiya,

Georgia, it was decided to build a protective gallery and possibly a tunnel for a section of the Trans-Caucasion Railroad (see appendix for CPSU response). For the time being at least, modification measures for earthquakes do not exist due to the intensity and unpredictability of such events.

Transformation of nature was a previously popular concept. Implicit in this concept is the notion that humans can redirect natural processes for the good of the human environment. Projects such as the diversion of Siberian rivers were indicative of this policy. Reliance on modification measures fits with the belief that manipulating the environment is a viable approach to dealing with natural problems.

There are serious problems involved with relying heavily on transformational and technological fixes. They can create false confidence among a population that the hazard has been "removed." Then, when an extreme event overpowers the capacity of the modification measure, even more damage and death may occur than would have without the measure. Furthermore, alteration of the natural environment often brings about unforeseen consequences. For example, to divert the Ob River to relieve drought conditions in central Asia could affect the amount of ice cover in the Arctic Ocean, creating global repercussions (Singleton, 1987, p. 49).

Finally, modification structures are subject to the same risks as all other structures built in the Soviet Union. Neglected upkeep, improper construction, and absence of materials limit

their usefulness. Further discussion of these construction problems will follow.

One of the benefits of glasnost is that environmental voices are now heard and may influence policy. Siberian river diversion has been at least temporarily shelved. There now seems to be unrestricted discussion on the pros and cons of serious environmental decisions.

Other influences of perestroika are difficult to predict. Much depends on the health of the economy and the personal education and experience of those in a position to make decisions regarding control measures.

Ameliorative Measures

Within the traditional system there are a number of organizations involved in studying, preventing, or lessening the injurious effects of natural hazards. These include local executive committees, state enterprises, various ministries, Gosstroim (the State Committee of Construction and Architecture), Mingeo (the Ministry of Geology), and Goskomgidromet (the State Committee on Hydrometeorology and Control of the Environment).

The new State Commission on Emergency Situations has produced a few statements of general intent, but so far no actual goals, rights, or plans of this commission have been published. Its professional capability is still questionable.

Executive committees ("ispolnitel'niye komiteti") are located in population centers, administrative regions, and oblasts (political subdivisions of republics within the U.S.S.R.)

They may decide to finance defensive projects or structures or create a forecasting system for their region. However, they receive their operating funds only from small taxes gathered from centralized industries and from profits of small local industries. There is usually a shortage of money to realize ameliorative measures.

The State Committee on Hydrometeorology and Control of the Environment, or Goskomgidromet, forecasts natural hazards all over the U.S.S.R. and gives out prognoses to all interested institutions and the mass media. Goskomgidromet has a great many oblast and republican branches, a large network of observation stations, scientific research institutes, educational institutes, and even factories for the production of instruments. Its scientific institutes study a wide variety of problems related to climatology, hydrology, prognosis of natural disasters, and human influences on weather processes.

The Ministry of Geology (Mingeo) has a similar network of branches throughout the country. There are large subdivisions that work on various aspects of engineering geology, including multiyear permafrost, soil loss, karst formation, and seismology. Mingeo provides evaluations of dangerous geological phenomena as well as hydrogeological conditions to all interested institutions.

Gosstroi, the State Committee of Construction and Architecture, heads a great number of planning and building organizations and has its own research and educational subdivisions.

Gosstroi is responsible for the setting of all norms and regulations in planning and construction in the U.S.S.R. This includes the planning and construction of all structures protecting against natural hazards. Presently, all scientific achievements and innovations in protection from natural hazards must be approved and adopted by Gosstroi before they can be put into practice.

Goskomgidromet, Mingeo, and Gosstroi have the research facilities and financial backing to take useful action concerning natural hazards protection. They suffer, however, from lack of coordination and information flow. They further suffer from bureaucratic "hazards"—government functionaries with no obvious purpose, yet commanding considerable influence. These functionaries look at things through their own system of opinions and goals and take into account only those possibilities that help their own position and interests.

The new political atmosphere suggests some changes to the operations of Goskomgidromet, Mingeo, and Gosstroi. First of all, glasnost is lifting restrictions on information flow. Even a private citizen may now enter his or her local office and demand information about the area in which he or she resides. One would hope the above agencies will start communicating and disseminating their knowledge more freely, but this is unlikely to occur until they are somehow motivated to do so.

If several different enterprises within a certain territory become interested in protection against a natural hazard, they

may organize and form an association under the auspices of the appropriate union republic's Soviet of Ministers. Gruzmorberegozashchita (Georgian Sea Coastal Defense) is an association that formed in this manner to protect against further degradation and natural hazards of the Georgian Black Sea coastline. Soon after its inception, Gruzmorberegozashchita rehabilitated several degraded beaches and have apparently done a conscientious job of developing actions that would benefit local industry, populations, and the environment (Myagkov, 1990, and Zenkovish, 1990).

It has been suggested that Goskomgidromet and Mingeo receive payment from "clients." It is unclear what sort of effect this would have, given the precarious state of the economy. It might drastically reduce their operations if it means a reduction in previously accessible government money, or the agency may be able to contract for hard currency, which would allow it to purchase more sophisticated equipment. The effects remain to be seen.

So far there have been no clear signs that foretell the end of Gosstroi's monopoly on decision making. However, it is likely that republican governments will refuse to participate in all-union organizations. For the time being, this could prove harmful, as there are no other organizations with experience in structural norms and safety decision making.

Enterprises belonging to ministries of the U.S.S.R. or of the Soviet republics receive all their money for production from their respective ministries. If the enterprise needs money for protection from a natural hazard, this also comes from a minis-

try. Due to the Soviet Union's central allocation system, ministries compete for funding by using as much money as possible. If they can find a self-development project, they are usually all too happy to spend money on it. Therefore an enterprise manager is more likely to be more successful at developing a protection project than the local government. In fact, enterprises will often "help" their local Ispolnitel'nii Komitet since they are so much better financed. An enterprise may create its own system for prognosis of natural hazards and the construction of defense safeguards, as well as involve itself in research projects.

If several different enterprises within a certain territory become interested in protection against a natural hazard, they may organize themselves and become attached to the Soviet of Ministers of a union republic. In this manner, Gruzmorberegozashchita, under the Georgian Soviet of Ministers, protects the Black Sea shores from erosion. This type of cooperative organization can benefit the local population as well.

In the planning of new projects, various possibilities for protection are examined and the optimal variant is chosen by economic criteria. Projects undergo inspections by experts. Expensive projects (costing a billion rubles or more) require an inspection by a government-created commission of specialists from various organizations, including the Academy of Sciences and Soviet universities. If the project costs less than one billion rubles, no such inspection is required.

In developing a protection project in the Soviet Union, problems arise that might seem all too familiar to the reader. Problems such as lack of funding, mistakes in evaluating the severity of a natural hazard, poor maintenance of a completed project, and the recognition of a hazard only after it has caused damage or death plague the Soviet system as well.

One phenomenon, "bezkhoyaistvennost," is a pervasive Soviet problem and is at the root of untold amounts of damage. Literally meaning "mismanagement" or "negligence," bezkhoyaistvennost is a common problem in societies without private property. In the West, it is an economic advantage to protect property from a natural disaster. But in the Soviet Union, practically everything belongs to the state, along with the ability to make decisions about property. Attitudes of helplessness and indifference result.

Because of bezkhoyaistvennost, neither the management nor workers have been motivated to produce quality items nor to maintain items of production. They do not care if construction materials are correctly and safely produced. It does not make an economic difference to them if their enterprise sustains damage from natural hazards. Likewise, a private individual is not as concerned about defending his/her housing from damage due to natural hazards. Until ownership laws are changed, the Soviet Union is a country with a "renter's mentality."

It is the hope of many that the policies of perestroika will reduce the phenomenon of bezkhoyaistvennost. Laws on private

property are being developed, and the principle of self-administration can result in more money as well as decision-making responsibilities to those actually involved. This could be an extremely positive step if people are informed of and concerned about the natural hazards around them.

A further danger lies in the inability of institutions and organizations to adapt to the new atmosphere. Because the Soviet Union is a nation in transition, it is understandable that the old institutions are hanging onto their old patterns of behavior. New operating conditions have not yet materialized. When they do, the above organizations will require much internal restructuring. Unfortunately, flexibility is not a quality that was nurtured during the past 70 years of Soviet power.

The extreme underdevelopment of research on the social and economic significance of natural disasters means that methods of evaluation and damage assessment are poorly structured. Furthermore, methodology differs from enterprise to enterprise, event to event. This prevents all parties from knowing the true costs of past or potential disasters. Information regarding the number of victims used to be regarded as a state secret, and material damage estimates may be padded or deflated to promote local interests. For example, it is believed that the city of Tashkent grossly overestimated damage from the 1966 earthquake in order to receive increased funds for reconstruction. There is suspicion that even unaffected areas were bulldozed on pretenses that they

were damaged in order to receive more aid (Myagkov, June 28, 1990, personal interview).

Obviously, the policy of glasnost allows the publication of much more information, but it is not yet clear what the state still regards as "sensitive." Furthermore, all data figures should still be treated with a healthy dose of skepticism in view of the underdeveloped accounting abilities. Published figures usually occur without any reference to source materials. Comparative studies using past natural disasters are difficult since local data records are either incomplete or have mysteriously disappeared.

CONCLUSION

Perestroika has already affected to varying degrees the various structures and operations of the Soviet system. Glasnost and Gorbachev's "new thinking" have brought about tangible and positive results to the system of disaster response. Open and critical discussion of disasters and acceptance of foreign disaster relief were unthinkable before Gorbachev came to power.

The influence of glasnost on the treatment of natural disasters in the Soviet media has been striking. The Armenian earthquake and subsequent disasters have been presented critically in depth and represented as tragedies. The reporting of a major natural disaster is no longer a two-paragraph mystery on the last page of Pravda. But it is also important to realize that Soviet reporting did not develop the same way as in the West.

Soviet journalists were trained to write articles containing socially relevant messages aimed at the further development of socialist society. It was never a competitive, commercial industry catering to public curiosity, although this may be changing as independent papers such as Glasnost, Kommersant, and Moscow News make tremendous gains in readership. But at the time of this writing, the newspaper Pravda remains a voice of the Communist Party that takes a controlled and didactic approach to news.

Glasnost has also brought about accessibility of data and maps to researchers, public organizations, and individuals. Documents after documents marked "dlya sluzhebnoi pol'zovanii," or "for official use," are undergoing declassification. Soviet and foreign scholars alike are excited, although overwhelmed, at the new possibilities. Social scientists will be able to do serious work because it is now possible to publish information without infusing it with Marxist-Leninist doctrine. The study of the social and economic aspects of natural hazards is gaining strength.

The realization of the new political thinking was exemplified in the aftermath of the Armenian earthquake. With "cooperation" and "new international order" as guiding principles, Gorbachev opened up the country to the most intensive infusion of international aid to ever occur in the wake of a Soviet natural disaster. Since then, aid has been sent to victims of the earthquake in Tadjikistan. In August 1990, the Soviets sent aid to victims of a tornado in Illinois as a reciprocal gesture.

As a result of the "new thinking" and the Armenian earthquake experience, a more coordinated system of relief and rehabilitation organizations is being established. The League of Red Cross and Red Crescent Societies and the U.N. Disaster Relief Organization are providing training to Soviet cadres. Experience from providing aid to the Armenian earthquake victims will facilitate relief efforts for future disasters.

Restructuring or perestroika of political and social systems in the Soviet Union is promoting the growth of nongovernment organizations, at least two of which are promoting the cause of natural disaster awareness and response. Within the government, a new commission on disastrous situations was created in 1989 to reduce damage from natural and technological disasters.

However, the chaotic circumstances directing the introduction of new policies under perestroika are hindering the operations of both old and new institutions. As the old social, economic, and political structures crumble, nothing seems to be taking their place. Under the current circumstances, it is unlikely the Soviet government would be able to respond to a disastrous earthquake even as well as it did in 1988.

Improvements in natural disaster policy are currently taking a back seat to more pressing social, economic, and political problems. Economic failures brought on by the transition to a regulated market economy are causing severe shortages, so much so that the government has lost much legitimacy in the eyes of its

people. The lessons of the earthquake in Armenia are fading quickly.

The ability to commit national resources to aid disaster victims may also suffer. Domestic private donations are likely to decrease due to the increasing poverty of the average citizen. Inter-republic aid is strained by inter-republic and inter-ethnic disagreements.

There has been a rapid deterioration in the Soviet government's ability to mobilize and coordinate its resources. Consequently, rescue and rehabilitation operations are severely affected. For example, factories and enterprises flatly refused to release their workers to gather the 1990 bumper harvest, even though their help would stave off the threatening famine. The military, traditionally playing a large part in rescue and rehabilitation efforts, is losing strength due to financial cut-backs and decreased representation in the non-Russian republics. Furthermore, strains between the military and government, evident at recent Party gatherings, presage a decrease in military cooperation in civilian operations. Any kind of all-union mobilization for responding to natural disasters is likely to become more and more difficult to achieve.

The splintering of the Soviet state will also leave disaster response policy up in the air. Six of the 15 republics have refused to sign the new inter-republic treaty drafted in 1991. It is highly unlikely that the authorities in these republics will be aggressively pursuing new and improved forms of natural

disaster management. Possibly some of the old Soviet institutions will be revamped and tailored more closely to local needs, or perhaps these institutions will disappear altogether.

In certain republics, such as Armenia, the outlook for a reasonable approach to disaster response is especially grim. On August 29, 1990, the Armenian parliament announced a state of emergency throughout the republic. At this writing, over 200 people have been killed in armed nationality conflicts with Azerbaidzhanis and Russian nationals. Furthermore, civil war threatens the republic due to internal political disagreements. It will be more than a few years before some measure of stability will allow long-range planning in this disaster-prone republic.

There are certain problems in particular that seriously hinder progress in disaster response. Ideally, a restructuring of the Soviet political economy would create an atmosphere to solve them; but so far it cannot be said that progress has been made. These problems are:

- 1) The propiska system, whereby Soviet citizens are registered to a certain town and cannot leave without housing registration in another city. This registration is often difficult to obtain. A person might actually be forced to live in a hazard area because of their inability to legally move. Falsified marriages, bribery, or taking on undesirable employment are the usual methods of getting a change of residence. Free choice of residence might allow a migration to safer locales.

This system has been currently recognized as unconstitutional, but its existence is preserved due to another Soviet problem—a shortage of housing.

- 2) The housing shortage creates a situation where people have very little choice in where they live. Space is at such a premium, it is a rare individual who will turn down a larger apartment because it is in an area of natural hazard risk.
- 3) At present, the cupboards are bare in Soviet drug-stores. There is no medicine, not even aspirin, in the hospitals. Everything from syringes to dialysis machines are needed. The situation is worsening every year, and hoarding is part of the problem. Symptomatic of overall economic complications, the medicine and medical equipment shortage means heavy reliance on foreign disaster aid.
- 4) Similarly, what rescue equipment exists is in short supply and bad repair. For example, there were not enough cranes to lift the rubble covering live victims in Spitak and Leninakan.
- 5) The communication infrastructure needs to be improved. The Soviet telephone system is extremely frustrating to use even when there has been no disaster. Rural areas desperately need a communications system they can count on.

- 6) Bezkhoyaistvennost—the indifferent management of businesses and real estate—has brought about a nationwide, devil-may-care attitude toward property. A sense of responsibility and a stake in the future of projects is necessary so that business owners and individuals will have a stronger desire to protect their belongings from natural hazards.
- 7) Production quotas need to be re-evaluated. The quality of goods and services has suffered immensely as enterprises are rewarded only for fulfillment and overfulfillment of their “plan.” Quality control takes a back seat in practically all areas of production. The reliance on production quotas stands in the way of solid construction of buildings and reliable defensive works against natural hazards.
- 8) Compensation to victims of natural hazards needs to be backed by goods in the stores. Currently, compensation is little more than a gesture, since the replacement of goods is not possible.

As stated in the beginning, this piece of research will not remain current for very long. Events in the Soviet Union are changing the country daily. At present, perestroika and its corollary policies of glasnost, khoyraschjet, and “new thinking” seem to be tearing apart old institutions and systems without replacing them. The resulting destabilization threatens to overwhelm any positive measures designed to improve conditions.

Therefore, foreign relief is likely to become a larger part of Soviet natural disaster policy. Western countries should be ready to react by working through the Soviet government and/or through individual republican governments, depending on the current political situation. Diplomacy and up-to-date political knowledge will be needed to figure out who should be approached with an offer of disaster relief.

Perestroika of Soviet society has been likened to a gradual changing of the side of the road on which people drive. So far, this seems to be an accurate description. Despite the many positive changes and possibilities brought about by perestroika, significant improvement will not occur until the entire country reaches consensus on the rules of the road.

In December of 1988, the earth shook and damaged the northern section of the Armenian S.S.R. At that time, political economic institutions characteristic of the pre-Gorbachev system had not yet eroded to the present degree. At present, rapid erosion is continuing, creating an increasingly fertile breeding ground for disasters.

Eventually, there will be a gradual installment of new institutions, mechanisms, and channels that will operate with varying degrees of effectiveness. In the meantime, however, natural disasters will impartially and inevitably continue to strike the vast and varied areas of the Soviet Union.

Ideas for Further Study

The possibilities for further research in this area are innumerable, since glasnost has created a situation where freedom of research is finally a reality. The following are suggestions of a few of the ideas remaining unexplored.

One of the main premises of this work is that since the Soviet Union is in a critical period of transition from one sort of political economic system to another, the confusion caused by the transition will increase disaster vulnerability for the time being. Using recently declassified material, it would be interesting to record, as accurately as possible, disasters of this century to see if their occurrence has actually increased in the past few years. Such an investigation would be fairly difficult since many false data exist and information released to the public is unreliable. Can a difference in trends be noted among the various Soviet republics?

Forest and natural gas fires are disastrous events often mentioned in Soviet sources. The large boreal and mixed forests and Siberian natural gas fields are prone to very large and damaging fires. The locations susceptible to these fires, the defensive measures available, and whether these measures are working could be studied. A comparison to U.S. mitigation measures might be useful.

The Soviet Union has excellent scientists working on the physical geography of northern and arctic regions. A thorough investigation into Soviet geographers' perspectives and work on

natural hazards there is needed. Questions to start with might be:

- 1) What hazards exist and which of these are unique to the Soviet Union?
- 2) How is perestroika affecting the development of these lands?
- 3) Is this development increasing the population's vulnerability to natural disasters?

The Moscow State Geography Department's program at the production combine Appatit in Khibinsk would be worth a visit to see an applied approach of the fundamental principles of development in these regions.

It would be useful to look more closely at the microlevel of hazard response. What are the Soviet individual perceptions and responses to natural hazards? How do they differ from place to place, from ethnic group to ethnic group? Is perestroika providing any additional responses that can be made at the individual level?

As decentralization promotes differentiation in the Soviet republics, how does this affect their mitigation policies? Are they retaining old institutions, perhaps under different names? Will some institutions or measures continue to span all Soviet territory? Within the Russian republic, are local governments becoming aware of hazards and adopting appropriate measures?

The list of questions could go on. These are just a few of the themes that came to mind during the present investigation.

The present openness, together with the myriad of changes in the U.S.S.R., has opened up enormous possibilities for western geographers to broaden their perspectives on natural hazards, disaster response, and other areas of geographic interest.

Author's note: Only a year has passed since this paper was written, yet much of the information may already be regarded as historical. In the course of one year, the U.S.S.R has lost the three Baltic republics and retains questionable influence over Moldavia, the Ukraine, Armenia, Georgia, and Azerbaidjan. A comprehensive and coordinated natural disaster policy no longer exists. Furthermore, power struggles within each republic further hamper effective government action on more local scales. New administrators lack the necessary political and economic expertise to develop a new system of disaster response.

Meanwhile, disasters of all kinds—natural, technological, economic, political—continue to take place. Requests for foreign aid are now standard practice. Gorbachev and the many republic leaders have warned of general chaos, civil war, famine, and/or political takeover by hostile conservative forces, should the West fail to take on significant financial responsibility.

Positive changes chronicled in this paper due to glasnost and "new thinking" remain in effect. Disasters are discussed openly and mitigation is practiced with the assistance of the international community. Nevertheless, developing an effective natural disaster policy will command very low priority until political-economic boundaries and systems are satisfactorily settled. At this point, the future for adequate domestic disaster response looks dimmer than ever.

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APPENDIX A

Translation of April 27, 1966 Pravda Article on the
Tashkent Earthquake

After the earthquake

TASHKENT, 26. (Pravda Correspondent). The inhabitants of the town were awakened at dawn by violent elements. It seemed as if everything was moving from its place. Such was the first impression people had from the powerful jolts of the earthquake.

By evening, at the time of writing, several more shocks of lesser magnitude had occurred.

The earthquake destroyed a significant number of houses, mainly older ones. Capital repairs are needed in several hospitals, schools, government and public buildings. Two factories sustained damage. More recently built housing fared better. Those which were built after the revolution, with the seismic conditions of Tashkent in mind, survived the challenge to their durability.

The citizens of Tashkent faced the challenge with courage.

The members of the Tashkent militia displayed a high level of organization. Immediately after the earthquake shocks, Even before any announcement of alarm, officers and their underlings arrived promptly at their stations. The student of the militia training school also responded selflessly, as they cordoned off buildings left in dangerous condition by the earthquake. Risking their life, they sorted out the rubble, carried out the victims and gave first aid.

The mornings brief alarm quickly gave way to tranquility and assurance. Trams, trolleybuses and buses started to work on time. Airplanes flew in and out of the airport without interruption. Telephone connections, electricity, plumbing and all services are working normally. Factories and mills started their working day at the usual time.

Medical institutions are doing an exemplary job. All of the wounded are in good care. Repair work is starting on the damaged buildings. Many of the homeless have already received new apartments.

This evening, the formal closing of the ten day Literature and Art Festival of Belorussia took place in the Alisher Navoi Academy Theater of Opera and Ballet.

For the million citizens in this town, life is following its normal course.

Yu. Mukimov

APPENDIX B

Translation of December 11, 1988 Pravda article on the earthquake in Armenia

The Land Weeps

Special Pravda correspondent reports
from the disaster area

...Night. We have just returned to the hotel after two whole days on the road. Our minds refuse to comprehend the full scale of the catastrophe, to assess the depth of the tragedy.

Before our very eyes are fragments of the tragedy: the streams of cars on ravaged streets, an entire army of volunteer traffic controllers, trying to bring order to the roads. On the rooftops of cars and in their open trunks lie the remains of household belongings and...coffins. To the right and to the left are damaged buildings, falling apart. And there are campfires around which are huddled those that were spared. It is the fourth day after the catastrophe.

Strict marshall control had still not been declared on the the roads; the entrance into town is still open to everyone. Thus tens of thousands of people from neighboring regions and even

other republics were streaming in to look for relatives, and friends. Others were bringing bread, water, clothes.

It took four hours to get from Leninakan's entrance to the center of town, Lenin Square, not far from where the old government headquarters still stands. What amazed us is that in this chaos of automobiles, people were exceptionally restrained.

I would especially like to point out that the first three days passed without the declaration of a state of alert. It was not necessary since order prevailed. There were no complaints of marauders or of hooliganism. The first such instances happened only on the fourth night: a group of four tried to rob a jewelry store, apartment robberies began, and there was one murder. That is when armed soldiers in helmets and armored jackets appeared. I mention this because several

people, probably from other towns, began to express discontent: "Curfew."

It is impossible to describe the town as it plunged into the night hours. Impenetrable darkness, dead ruins, on which every once in a while appeared black figures estranged from all other humanity. Everything is just as a certain famous film depicted it to be after a nuclear war.

How did it all happen, what is going on now? Why not allow let those involved tell us themselves.

Lt. Colonel V. Ivanov:

There were complications in that the atmosphere was very tense on the eve of the earthquake: only two days before, there had been a strike. No, there weren't any excesses. But when the buildings started to fall, it was possible to imagine anything. Suddenly--war? Our soldiers and officers raced to the staff school. It was a terrible scene: one wall had collapsed, little children in classrooms as if in a shop window. The officers gathered together, evaluated the situation according to witness accounts, and immediately sent out rescue detachments... For five days all the soldiers and officers have been working without sleep or rest.

I don't know where their strength comes from...

Private G. Orozobekov:

Our commander's wife and daughter were buried by the debris, yet he has stayed with us the whole time. Their hands are bleeding, but the guys keep on working.

Private B. Pilipenko:

After what has happened and what we have just seen, we all need to draw together. Soldiers who have suffered personally from the earthquake are working right along with us. And you know? They are working even harder.

Women with children that were saved have been settled in battalion headquarters offices. It's hard to look at them; their eyes, hardened by despair and bewilderment, reflect what they have been through.

"I don't know, now it seems to me that I had heard jolts for two whole days beforehand," says Antonina Gulaeva, wife of the chief of battalion headquarters. "Weak shocks and low rumblings. That is why, as soon as everything started shaking, I grabbed my little daughter and ran out. Furniture was falling and it was hard to stay on your feet. We ran out onto the street and before our very eyes our building turned into a heap of ruins. I am a teacher. Mothers saw me and started to

shout. "Where are the children? Give us back our children!"

We met the captain of medical services V. Marchenko outside. The tension of the last few days, when it became necessary to taken on thousands of victims, had abated somewhat. Medical reinforcements had been sent. But in the beginning in the first hours, they had to deal with all the victims by themselves since almost all civilian hospitals and polyclinics had been destroyed. Moreover, there were very few of them. Captain Valerii Moskalenko, Ivan Kachur, Valentin Malyutin, doctor Victor Syichennikov and the nurses.

"No one knew what had happened to their families," said V. Marchenko. "Larisa Tishchenko ran home, since she lived nearby, and found her house destroyed, with her daughter and the daughter of another nurse, Svetlana Vlasova, buried underneath. At that moment the wounded started coming in. There was nothing to do, they had to be saved. From that time they keep on working, without rest, without sleep. They clench their teeth and keep on working. So far nothing has been heard about their daughters..."

A little to the side, the senior lieutenant gently cleared the dirt from the clothes of a young lifeless woman. The officer lifted his head and we caught sight of tears rolling down his stone like face. Only these silent tears told us of his terrible grief.

"In the first few hours we took in more than 500 victims," continued the captain, V. Marchenko. "We performed more than thirty complicated operations."

The next day (the fifth day after the catastrophe) we left for Spitak. Military reinforcements were regulating traffic. There were noticeably less cars in town, but to leave was as difficult as before. Rescue work is going on everywhere.

We leave the radio receiver on. France, Cuba, India, USA and the whole world responded to the grief of the Armenian people. From the opposite direction, a continuous column of cars is passing us. There are both civilian and military excavators, bulldozers, field kitchens and cranes, buses... You can recognize their origin from their licence plates: Georgia, Azerbaidzhan, Saratov, Krasnodar... It seems that the entire country is hurrying to help the much suffering republic of Armenia.

Unfortunately, in both Armenia and Azerbaidzhan certain parasitic elements would not quiet down. They inflame nationalistic differences, and toss up slogans about Karabakh. These are unclean people, political demagogues, adventurists, and other corrupt elements--about whom M. S. Gorbachev angrily spoke in an interview on December 11. These people have no conscience; we must fight these people with the force of public opinion and with the force of the law.

Help is coming to Armenia. Soldiers, wearing helmets and armored jackets, are directing the flow at crossroads and at inter-sections.

Leaving town, one will see the cemetery and scores of funeral processions. The Armenian land is weeping, moaning with sorrow.

APPENDIX C**List of Questions Sent to Western International Relief Organizations**

1. Through what channels did you find out about the earth quake?
2. Exactly when did you find out about the earthquake?
Date: _____ Hour: _____
3. What (or who) was/were your main source(s) of information about the need for assistance?
4. How did you become aware your help would be accepted?
5. Briefly describe the bureaucratic procedures involved (visas, permits, etc.)
6. Were you aware of any relaxation in bureaucratic procedures from previous attempts (if any) to send aid?
7. What kinds of logistical information were you given before going/sending aid?
8. What was your impression of the official Soviet attitude toward foreign relief workers?
9. Describe what kind of aid you sent, along with the quantity and monetary value.
10. Have you ever been on a relief mission to the U.S.S.R. before? Please describe the event(s).
11. How might the situation for international response to the Soviet Union be improved in the wake of another such disaster?
12. Have you had any sort of communications with the Soviet government or Soviet organizations since the disaster? Please describe.
13. Are you taking or considering any active steps to change the nature of your agreements/relationships regarding disaster response to the Soviet Union?
14. Other comments:

Name and position of person filling out questionnaire (optional):

Address and telephone:

Other contacts that might be helpful:

APPENDIX D

List of Relief Organizations that Received a Questionnaire

Adventist Development and Relief Agency, International (U.S.)	Mennonite Disaster Service (U.S.)
American Overseas Association (U.S.)	National Catholic Disaster Relief Committee (U.S.)
American Red Cross	National Voluntary Organizations Active in Disaster (U.S.)
Americares Foundation	Oxfam (Great Britain)
Baptist World Aid (U.S.)	Parachute Medical Rescue Service (U.S.)
CARE (U.S.)	Presiding Bishop's Fund for World Relief (U.S.)
Division of Church World Services (U.S.)	Relief and Development Institute (Great Britain)
Doctors Without Borders (France)	United States Office of Foreign Disaster Assistance (U.S.)
Feed the Children (U.S.)	United Nations Disaster Relief Organization (Switzerland)
Friends Disaster Services (U.S.)	UNICEF (U.S.)
Henry Dunant Institute (Switzerland)	Wings of Hope (Great Britain)
International Emergency Action (France)	World Assistance Corps (France)
International Red Cross (Switzerland)	
League of Red Cross and Red Crescent Societies (Switzerland)	

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- 1 The Human Ecology of Extreme Geophysical Events, Ian Burton, Robert W. Kates, and Gilbert F. White, 1968, 37 pp.
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- 3 Water Quality and the Hazard to Health: Placarding Public Beaches, J.M. Hewings, 1968, 74 pp.
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- 6 Avoidance-Response to the Risk Environment, Stephen Golant and Ian Burton, 1969, 33 pp.
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