PREVENTING CATASTROPHES:  
FROM DISASTER TO CONFLICT EARLY WARNING/RESPONSE

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FALL 2006  
Sept. 18 – Dec. 11
Duration: 8 Weeks
Time: 2.5 hours/week

COURSE DESCRIPTION

Why do catastrophes happen? Why do tsunamis and pandemics occur? What about famine and the outbreak of major armed conflict? Can we anticipate natural disasters before they strike? What about violent conflict? The occurrence of natural disasters amid complex political crises is increasingly widespread: over 140 natural disasters have occurred in complex political emergencies in the past five years alone. Are disasters and conflicts related in some complex way? Is climate change likely to produce more complex emergencies? Should the disaster and conflict management communities therefore collaborate more closely in early warning, preparedness and response?

To answer these questions we first explore the concepts of risk, hazard, vulnerability, and resilience in ecological and social systems. Taken together, these indicators provide a coherent and holistic theoretical framework to analyze catastrophes and the early warning systems designed to prevent them. We then take a cross-disciplinary case study approach to study individual disaster and conflict early warning systems. Each case study combines a critical analysis of theory, methodology and practice. The cases analyzed in this seminar include operational early warning systems for earthquakes, tsunamis, wildfires, hurricanes, pandemics, famine, human rights violations, pastoral conflict, internal conflict and inter-state conflict. In addition, we consider the impact of climate change on the frequency and magnitude of atmospheric hazards and outline the implications for early warning systems and humanitarian intervention. In so doing, we identify the most important lessons learned and best practices in early detection and early response across disciplines. We also analyze the most recent developments in the field of early warning. The seminar concludes with a critical discussion on the gap between early warning and early response. We consider innovative measures that can better link warning to timely and effective response.

Guest speakers from various organizations will be invited to join the discussions. In addition, on-line documentaries and computer simulations will be used to complement the power point presentations and discussions. Please feel free to contact me should you have any questions or want more information. I look forward to a fruitful and engaging seminar.
STATEMENT OF GOALS

The purpose of this seminar is to introduce participants to early warning systems for natural disasters and armed conflict. Participants will learn how disaster and conflict early warning systems work both in theory and practice. To develop the theoretical foundations of early warning we first identify appropriate metrics to monitor the “causes” of disasters and conflicts. To understand how early warning systems work in practice, we study individual early warning systems and identify both their strengths and limitations. Studying multiple methodologies and taking a cross-disciplinary approach to early warning encourages participants to seek insights and solutions in fields outside their own. In sum, participants develop a sound conceptual and practical understanding of early warning with an emphasis on timely and effective response.

OUTLINE

This seminar includes the following 12 sessions:

1. The State of the Planet
2. Introduction to Disaster Early Warning
3. Earthquake and Tsunami Early Warning
4. Disease and Famine Early Warning
5. Wildfire and Hurricane Early Warning
6. Climate Change, Disasters and Early Warning
7. Introduction to Conflict Early Warning
8. Field-based Conflict Early Warning
9. News-based Conflict Early Warning
10. Recent Developments in Early Warning/Response
11. Linking Warning to Response
12. Student Presentation and Feedback (I)
13. Student Presentations and Feedback (II)

REQUIREMENTS

Seminar requirements include, a) active class participation on a weekly basis (20%), b) a 10-minute powerpoint class presentation of a selected research paper (30%), and c) a 25-page original research paper of publishable quality (50%).
**My Bio**

As a PhD candidate at The Fletcher School of Law and Diplomacy, my research interests include the study of natural disasters, armed conflict, civilian protection, climate change, early warning, complex systems and humanitarian intervention. Prior to Fletcher, I worked as a consultant on several conflict early warning projects for the United Nations (UN), the Organization for Security and Cooperation in Europe (OSCE), the United States Agency for International Development (USAID), the Swiss Peace Foundation (SPF) as well as regional intergovernmental organizations in East and West Africa, IGAD and ECOWAS respectively. More recently, I have co-founded the consulting group Partners for Conflict Reduction (PCR), which develops field-reporting tools for conflict early warning, early response and impact evaluation. I am a Fellow at Columbia University’s Center for International Conflict Resolution (CICR), a Research Fellow with the Program on Environmental Factors in Civil Wars at the Peace Research Institute, Oslo (PRIO), and a researcher at the Conflict Analysis Resource Center (CERAC) in Bogotá, Colombia where I have been working on the development and analysis of conflict data.

Previous academic studies include an MA in International Affairs and Conflict Prevention from Columbia University’s School of International and Public Affairs (SIPA) and a BA (Hons) in Political Science, Economics and Philosophy from the University of York, England and California at Berkeley. I am a recent graduate of the Santa Fe Institute (SFI) and the New England Complex Systems Institute (NECSI). I have taught this course as both an e-learning seminar for UN professionals and as a classroom-based seminar for graduate and undergraduate students alike. I also teach a graduate seminar on “Managing Complex Systems” which focuses on the application of complexity science and modeling to conflict analysis, climate change and business management. I enjoy learning from other fields of knowledge to gain conceptual insights into my own line of research. A detailed CV and list of publications is available at: [http://fletcher.tufts.edu/phd/students/Meier.html](http://fletcher.tufts.edu/phd/students/Meier.html)

In terms of my personal background, I was born in Cote d’Ivoire, raised in Kenya and hold dual nationality from Switzerland and France. Recent consulting work has taken me to Ethiopia, Uganda, Sudan, The Gambia, Morocco, Tunisia and Thailand. I look forward to fruitful discussions on Preventing Catastrophes: From Disaster to Conflict Early Warning.
SYLLABUS OUTLINE

Please note that readings denoted by a “∗” are required. Those denoted by “•” are suggested. Please feel free to contact me should you wish to have copies of the suggested readings.

SESSION 1: INTRODUCTION AND STATE OF THE PLANET

In this session we first present the course and syllabus. Students are invited to introduce themselves and discuss their interests in the subject of disasters and conflicts. We then discuss the concepts of past, present and future. Can we anticipate the future based on present or past events? Are there patterns in human history? If so, is it possible to forecast future human actions? We consider a variety of examples across several disciplines to address these questions. We then assess the state of the planet. Is the frequency and magnitude of natural disasters and conflicts increasing? Are we living in a more dangerous world? What catastrophes might we expect in the next 100 years and what might we do to prevent these from becoming reality? This seminar will include a video presentation by Professor Jeffrey Sachs, the director of the Earth Institute based at Columbia University.

∗ Buchanan, Marc. *Ubiquity: The Science of History or Why the World is Simpler than We Think.* Crown Publishers, 2001 [Chapter 1].


In this session we first introduce the field of disaster studies using a systems perspective. What is a disaster? What is a hazard? The notions of risk and vulnerability are important concepts and metrics in early warning analysis but how are they different? Is resilience a useful parameter in this equation? Why does the scale or level of analysis matter? We address these questions in turn and thereby develop a sound theoretical framework to anticipate hazards and disasters. We then introduce the four components that constitute a disaster early warning system: risk assessment, technical monitoring, communication and dissemination, and response capacity. This seminar will include a video presentation by Professor Art-Lerner Lam, director of the Center for Hazards and Risk Research at the Earth Institute.


In this session we assess two operational early warning systems: the first for earthquakes, the second for tsunamis. In the past five years, earthquakes have claimed an average of 7,000 lives every month, which is equivalent to one 9/11 terrorist attack every two weeks for five consecutive years. The 2004 Indian Ocean tsunami led to a death toll of 275,000. In terms of 9/11 attacks that is about one hundred 9/11 attacks in one day. How do early warning systems for these hazards work theory and practice? In this section we analyze Mexico’s Seismic Alert System and the Indian Ocean Tsunami Early Warning System. This presentation will include a video presentation by Professor John Mudder, assistant director of the Earth Institute.

- “How does the Tsunami early warning system work?” National Oceanic and Atmospheric Administration; available on-line.
- The Tsunami Warning System: An International Effort to Save Lives and Protect Property; Available on-line.
In this session we present early warning systems for wildfire and hurricanes. Wildfires worldwide burn some 15,000 square miles of land (about three United States) every year. Meanwhile, the record-setting hurricane season in 2005 devastated the lives of thousands. In addition, Hurricane Katrina cost the US some $200 billion—almost as much that was spent in four years to fight in the Global War on Terror. Both case studies describe new efforts to establish a global warning system. This section will include a video presentation on monitoring wildfires worldwide.


- Wisner, Ben, Victor Ruiz, Allan Lavell and Lourdes Meyreles. “Run, tell your neighbor! Hurricane warning in the Caribbean,” International Federation of Red Cross and Red Crescent Societies, World Disasters Report, 2005

- “Can we predict forest fires?” Available on-line.


- “Predicting forest fires in the USA” Available on-line.

- “How to detect thunderstorms before they happen,” The Economist, 10 August 2006

- “Can We Detect Trends in Extreme Tropical Cyclones?” Available on-line.


- “MIT team hopes to listen for hurricanes from the sea floor.” Available on-line.

In this session we assess operational early warning systems for diseases and famine. A disease pandemic could have more impact than a tsunami and might even be comparable in scope to a war. The Spanish Flu claimed approximately 500,000 lives in the US, and between 20-80 million worldwide between 1918-1919. In a current worse-case scenario for Bird Flu, the Center for Disease Control projects 2 million fatalities, 50 million more infected and 40 percent of workers out of commission; and this for the US alone. With transportation systems more closely connected than ever before, the potential for a pandemic explosion is increasing. Faminers have also cost, and continue to cost millions of lives. Why? Are famine early systems not operational in famine prone regions? In this section, we analyze the Global Public Health Information Network and the Food Security Assessment Unit. This seminar will include a video presentation by Larry Brilliant.


Global Information and Early Warning System on Food and Agriculture; on-line.


In this session we consider the impact of climate change on complex crises and the implications for early warning/response. The occurrence of natural disasters amid complex political emergencies is increasingly widespread: over 140 natural disasters have occurred in complex political emergencies in the past five years alone. Political crises or armed conflicts will often indirectly exacerbate the impact of climate change by exhausting coping mechanisms and response capacities. As a result, humanitarian organizations are called upon to intervene in complex crises that include both violent conflicts and natural disasters. How should early warning systems be adapted to inform humanitarian intervention as a consequence of climate change? This session will include a video presentation by Al Gore.


In this session we introduce the field of conflict early warning. Is conflict a process or an event? What are the causes of armed conflict? Can these be monitored and anticipated? We introduce an operational conflict analysis framework for early warning. In so doing we distinguish between qualitative and quantitative approaches as well as levels of analyses. We explain why behavioral indicators are more relevant than structural indicators for the purposes of early warning and emphasize the importance of monitoring both conflict and cooperation indicators. Taken together, we present a coherent methodology for conflict early warning based on best practices and applied social science research.


SESSION 8: FIELD-BASED CONFLICT EARLY WARNING/RESPONSE

In this section we introduce two field-based early warning systems. The first is the FAST Early Warning System developed by an international non-governmental organization called Swisspeace. FAST operates in some 20 countries across three continents. The Inter-Governmental Authority on Development (IGAD), a regional organization in the Horn of Africa, manages the second field-based early warning system called the Conflict Early Warning and Response Network (CEWARN). We present the methodology behind these systems and assess how they work in practice. We draw on the experience of both systems to identify best practices and lessons to be learned.


• Siegfried, Matthias. “Patterns in Escalation of Armed Conflicts: A Comparison of Conflict - Tension Barometers” (MA thesis, University of Freiburg, 2001)
In contrast to field-based early warning systems, this section introduces two automated news-based early warning systems. The first is the Textual Analysis By Augmented Replacement Instructions (TABARI) system developed by professors at Kansas University to forecast conflict escalation. TABARI is the most widely used news-based system in the public domain. The second system is called FORECITE (Forecasting of Crises and Instability Using Text-Based Events) which was developed by the US Center for Army Analysis (CAA) for operational purposes. We consider the strengths and shortcomings of automated news-based early warning systems in comparison to field-based systems.

- Schrodt, Phil *et al.* “Monitoring Conflict Using Automated Coding of Newswire Reports: A Comparison of Five Geographical Regions,” Department of Political Science, University of Kansas, 2001. See also other papers on Automated Coding for Early Warning.
The United Nation’s Humanitarian Early Warning System (HEWSweb) is a relatively new early warning system. So is the Global WARN project developed by the Early Warning Working Group of the International Consortium for Conflict Prevention, which comprises the International Crisis Group (ICG), International Alert (IA) and Swisspeace. The International Center for Tolerance in Central Asia has developed people-centered early warning systems. A Canadian institute for applied negotiation recently presented an early warning “success story” to the UN based on a novel conflict prevention framework applied in West Africa. In addition, an early warning system for human rights violations is being developed in Colombia. In this section, we select two case studies for in-depth analysis. This section does not include required readings so that students may start preparing their research papers and their oral presentations.
SESSION 11: LINKING EARLY WARNING TO RESPONSE

Early warning is a necessary but not sufficient condition for disaster/conflict prevention. Without effective response, warnings are unlikely to translate into preventive action. How do we link warning to time and effective response? Is this inherently a question of good governance? To address these questions we first compare lessons learned from both the disaster management and conflict management communities. In this section we present new and innovative approaches that link warning to response.


- Mica Rosenberg, “Economist Pushes Insurance as Answer to Disasters,” Reuters, 04/06.

SESSION 12: CLASS PRESENTATIONS I

Student presentations of individual research papers and class feedback.

SESSION 13: CLASS PRESENTATIONS II

Student presentation of individual research papers and class feedback.