

**International Conference: *Humanitarian Logistics:
Networks for Africa***

<http://hlogistics.som.umass.edu/>

**Rockefeller Foundation's Bellagio Center
Lake Como, Italy, May 5-9, 2008**

**Convener: Anna Nagurney
University of Massachusetts at Amherst, USA**

Monday, May 5, 2008

Conferees arrive in Milan and are transported to the Bellagio Center via two shuttles provided by the Center. The conference takes place at the Frati Building where the conferees reside and also have their meals.

Dinner takes place at 7:30PM with an informal get-together afterwards.

Tuesday, May 6, 2008

Theme: Experiences from the Field

8:00-9:00 AM Breakfast

9:30-10:00 AM *Opening Remarks and Welcome* - Anna Nagurney, University of Massachusetts at Amherst, USA

**10:00-10:40 AM Agnes Nyaguthie, Oxfam-GB, Pretoria, South Africa
*The Important Role of Humanitarian Logistics***

**10:40-11:20 AM Cosmas Zavazava, International Telecommunications Union, Geneva, Switzerland
*Bridging the Last Mile Gap through Telecommunications/ICT in Disaster Management***

11:20-11:40 AM Break

**11:40-12:20 PM Charles Mbohwa, University of Johannesburg, South Africa
*Identifying Challenges and Collaboration Areas in Humanitarian Logistics: A Southern African Perspective***

12:20-12:40 PM Discussion

1:00-2:30 PM Lunch

2:30-3:10 PM Anna Nagurney, University of Massachusetts at Amherst, USA
Supply Chain Network Models for Humanitarian Logistics: Identifying Synergies and Vulnerabilities

3:10-3:50 PM Panel: *What is Needed to Improve the Delivery of Humanitarian Logistics?*

7:00-8:30 PM Cocktails and Dinner; Dinner at the Bellagio Center's Villa Serbelloni with Bellagio Center Residents and Introductory Remarks by Ms. Pilar Palacia, the Managing Director of the Bellagio Center. After dinner, conferees mingle at the Villa for further discussions and conversations.

Wednesday, May 7, 2008

Theme: Research on Humanitarian Logistics

8:00-9:00 AM Breakfast

9:30-10:10 AM Rolando Tomasini, INSEAD, Fontainebleau, France
Private Sector Engagement in the Humanitarian Sector

10:10-10:50 AM Anton Kleywegt, Georgia Institute of Technology, Atlanta, USA
Dynamics and Longer Term Consequences of Humanitarian Relief

10:50-11:10 AM Break

11:10-11:50 AM Gyongyi Kovacs, Swedish School of Economics and Business Administration, Helsinki, Finland
The HUMLOG Group -- A Research Network on Humanitarian Logistics

11:50-12:30 PM Discussion

1:00-2:30 PM Lunch

2:30-3:10 PM Emmett J. Lodree, Jr., Auburn University, Alabama, USA
Inventory Planning for Hurricane Events

3:10-3:50 PM Paul Thompson, Northrup Grumman IT, McLean, Virginia, USA
Supply Chain Analytics for Humanitarian Logistics Transformation

3:50-4:10 PM Break

4:10-4:50 PM Panel: *What Research into Humanitarian Logistics is Needed?*

7:00-8:30 PM Cocktails and Dinner

Thursday, May 8, 2008

**Theme: Building Networks for Africa:
Education, Research, and Partnerships**

8:00-9:00 AM Breakfast

9:30-10:10 AM George Fenton*, World Vision International, Nairobi, Kenya
Partnering for Relief - Optimizing Logistics: An Inter-Agency Approach: Why and How?

10:10-10:50 AM Antony K. Cooper, CSIR, Pretoria, South Africa
Some Thoughts on Humanitarian Logistics and Quantitative Methods

10:50-11:10 AM Break

11:10-11:50 AM Jose M. Cruz, University of Connecticut, Storrs, USA**
Corporate Social Responsibility for Sustainable Development in Africa

11:50-12:30 PM Discussion

1:00-2:30 PM Lunch

2:30-3:10 PM Panos M. Pardalos, University of Florida, Gainesville, USA
Detecting Critical Nodes in Sparse Graphs

3:10-3:50 PM Berc Rustem, Imperial College, London, UK
Decision Making Under Uncertainty Worst-case Analysis & Expected Value Optimization

3:50-4:10 PM Break

4:10-4:50 PM Panel: *What Partnerships Can be Created and What Resources are Needed?*

7:00-8:30 PM Cocktails and Dinner

*** George Fenton's presentation was delivered by Rolando Tomasini with support provided by Agnes Nyaguthie. Mr. Fenton was called to assist in emergency disaster relief in Burma/Myanmar due to Cyclone Nargis.**

**** Jose M. Cruz's presentation is available online with the other conference presentations at: <http://hlogistics.som.umass.edu/>**

Jose M. Cruz could not attend the conference due to visa problems. The schedule was shifted accordingly to allow for more discussions.

Friday, May 9, 2008

Informal Breakfast

Conferees are required to vacate the Center by 10 AM. The Bellagio Center provides two shuttles back to Milan.

Funding for this conference was provided by:

The Rockefeller Foundation through its Bellagio Center Conference Program; <http://www.rockfound.org>,

The John F. Smith Memorial Fund of the University of Massachusetts at Amherst; <http://www.umass.edu>,

The Virtual Center for Supernetworks; <http://supernet.som.umass.edu> ***at the Isenberg School of Management;*** <http://www.isenberg.umass.edu>, ***Anna Nagurney - Director,*** <http://people.umass.edu/nagurney/>

The Institute of International Education (IIE); <http://www.iie.org/> .

This support is gratefully acknowledged.

Special thanks go to Ms. Pilar Palacia, the Managing Director of the Bellagio Center, for her graciousness, warmth, and assistance, both before and throughout the conference, and to Ms. Laura Podio, the Frati Meetings Coordinator of the Bellagio Center, for her expert and tremendous help with the logistics of the conference itself. Generous thanks are also extended to all the staff members of the Bellagio Center for their hospitality.

Last update: May 10, 2008

Invited Presentation Titles and Abstracts

<http://hlogistics.som.umass.edu/>

Antony K. Cooper, CSIR, Pretoria, South Africa

Some Thoughts on Humanitarian Logistics and Quantitative Methods

This presentation will discuss a few issues concerning humanitarian logistics and quantitative methods, including:

- (1) Identifying people in a disaster to give accurate figures of casualties and to determine how many people still be missing, to target search and rescue operations properly. This need for information on people needs to be balanced with issues concerning invasion of privacy and governments using the information against their citizens that they consider to be hostile.**
- (2) Facilitating the movement of humanitarian workers* and aid, while not at the same time facilitating the movement of criminals and contraband.**
- (3) Producing 'before' and 'after' pictures of disaster areas (eg: using remote sensing), to determine what has happened and the extent of the damage.**
- (4) Predicting or preventing disasters – could we develop models for predicting 'social' disasters (war, civil unrest, famine, epidemics, building fires, hostage taking, etc) so that interventions can be made?**
- (5) Geographical information systems (GIS) to support humanitarian logistics and for planning and managing programmes such as de-mining.**
- (6) Inappropriate donations – preventing them, redirecting them to where they could be used or the reverse logistics problem, to return the donation to its sender.**
- (7) Preventing looting and pilfering.**
- (8) Deployable logistics systems – portable generic logistics systems that can be deployed into disaster areas and set up quickly, using platforms such as One Laptop Per Child (OLPC).**
- (9) Panic seems to be the norm with disasters, even slow moving ones. Panic is probably driven by the lack of accurate and credible information – the logistics of information flow.**
- (10) Developing a scale or index (or a set of them) for the severity of a disaster, to tailor responses appropriately, determine the level of the authority responsible for managing the disaster, or to allocate resources between 'competing' disasters.**
- (11) Indicators for refugee situations, to assess how well it is being managed – health, access to water and food, schooling disruption, etc.**

Jose M. Cruz, University of Connecticut, Storrs, USA

Corporate Social Responsibility for Sustainable Development in Africa

A number of core development issues in Africa are already central to the corporate social responsibility (CSR) agenda. They include labor standards, human rights, education, health, child labor, poverty reduction, conflict and environmental impacts.

In this presentation, I analyze how corporate social responsibility can help deliver sustainable development in Africa.

George Fenton, World Vision International, Nairobi, Kenya

Partnering for Relief - Optimizing Logistics: An Inter-Agency Approach: Why and How?

Anton Kleywegt, Georgia Institute of Technology, Atlanta, USA

Dynamics and Longer Term Consequences of Humanitarian Relief

Humanitarian relief can have consequences for the economy of the region receiving the relief. For example, donations of goods can affect the prices of related goods and services in the local market, and thereby affect the economic activity of local suppliers of the related goods and services. Also, humanitarian relief can affect the expectations of economic agents, and thereby affect their decisions. These concerns have been raised in the past, and recently it led to some NGOs taking action to reduce some adverse economic consequences. We study some dynamic models that illustrate some of the economic consequences of humanitarian relief.

**Gyongyi Kovacs, Swedish School of Economics and
Business Administration, Helsinki, Finland**

***The HUMLOG Group -- A Research Network on
Humanitarian Logistics***

HUMLOG is an international research network on humanitarian logistics. The aim of the HUMLOG Group is to research the area of humanitarian logistics in disaster preparedness, response and recovery with the intention of influencing future activities in a way that will provide measurable benefits to persons requiring assistance.

The group consists of several universities and research institutes in the Nordic countries and beyond. Apart from researchers, UNJLC as a founding member of the group has a seat in its co-ordination meetings.

Since its establishment in Dec 2006, the HUMLOG Group has conducted a number of different research projects together with different humanitarian organisations. The current research focus of the group is on the areas of funding, co-ordination, assessment, and measurement, i.e. on (a) the logistical implications of funding schemes, (b) the co-ordination of humanitarian activities across humanitarian organisations and in humanitarian supply chains, (c) needs assessment, and (d) performance measurement in humanitarian logistics.

A recent study of the HUMLOG Group is on the challenges of humanitarian logistics in Africa, particularly focusing on Ghana.

Emmett J. Lodree, Jr., Auburn University, Alabama, USA

Inventory Planning for Hurricane Events

Many government agencies, not-for-profit organizations, and private corporations assume leading roles in positioning supplies, equipment, and personnel to support initial response operations after a major hurricane. These organizations are faced with challenging supply chain and logistics decisions to ensure that supplies, equipment, and personnel are readily available at the right places, at the right times, and in the right quantities. This presentation introduces stochastic models that will assist emergency-, logistics-, and production-managers; military leaders; and government officials in managing the uncertainties associated with developing quick response and cost effective disaster relief plans for responding to major hurricanes.

Charles Mbohwa, University of Johannesburg, South Africa

Identifying Challenges and Collaboration Areas in Humanitarian Logistics: A Southern African Perspective

This paper discusses the challenges, difficulties and problems faced by humanitarian organisations in running logistics systems in Southern Africa, with a focus on issues in Zimbabwe in particular. Mini-case studies of the operations of the World Food Programme, the International Red Cross Society and the Zimbabwe Red Cross Society, the World Health Organisation, the United Nations Children's Fund and the Zimbabwean Civil Protection Organisation are discussed. These clarify the challenges faced as the lack of trained logistics personnel, lack of access to specialised humanitarian logistics courses and research information, the difficulty in using and adapting existing logistics systems in attending to humanitarian logistics and the lack of collaborative efforts that address the area specifically. Though the focus is on operations in Zimbabwe and operations that include Zimbabwe and neighbouring countries, the work can benefit other regions in Africa and beyond. The finding aim to inform decision making and activities on collaborative networks that are beneficial to humanitarian logistics.

Anna Nagurney, University of Massachusetts at Amherst, USA

Supply Chain Network Models for Humanitarian Logistics: Identifying Synergies and Vulnerabilities

This paper describes how supply chain network models can be utilized to assist in humanitarian logistics. We discuss issues such as congestion, multicriteria decision-making, as well as the optimization of the delivery of

multiple products subject to capacities in the storage and distribution facilities and on the transportation links. We describe relevant performance metrics and how to identify possible synergies through supply chain integration. We also discuss appropriate measures for vulnerability analysis.

This is joint work with Trisha Woolley and Qiang "Patrick" Qiang.

Agnes Nyaguthie, Oxfam-GB, Pretoria, South Africa

The Important Role of Humanitarian Logistics

As Africa continues to struggle to achieve the MDG, complex emergencies continue to emerge. Interventions continue to grow on a large scale as are the budgets and the donors and public are demanding increased operational and fiscal efficiency. This state of affairs places Logistics and Supply Chain Management, which is a core function in the successful delivery of Humanitarian Relief, at a very strategic level; hence, demanding a more sophisticated level of supply chain management practice and competence. Humanitarian organizations now more than ever must deliberately focus on developing logistics to be able to fully support the implementation of these goals.

Panos M. Pardalos, University of Florida, Gainesville, USA

Detecting Critical Nodes in Sparse Graphs

Identifying critical nodes in a graph is important to understand the structural characteristics and the connectivity properties of the network. In this talk, we focus on detecting critical nodes, or nodes whose deletion results in the minimum pair-wise connectivity among the remaining nodes. This problem, known as the Critical Node Problem, has applications in several fields including supply chains, telecommunications, and military strategic planning. We show that the recognition version of the problem is NP-complete and derive a mathematical formulation based on integer linear programming. In addition, we propose a heuristic for the problem which exploits the combinatorial structure of the graph. The heuristic is then enhanced by the application of a local improvement method. A computational study is presented in which we apply the integer programming formulation and the heuristic to real and randomly generated data sets. For all instances tested, the heuristic is able to efficiently provide optimal solutions in a fraction of the time required by a commercial software package.

This is joint work with Ashwin Arulsevan, Clayton W. Commander, and Lily Elefteriadou.

Berc Rustem, Imperial College, London, UK

***Decision Making under Uncertainty Worst-case Analysis
& Expected Value Optimization***

Uncertainty is a central concern in optimal decision making. There are different model-based approaches to address the problem involving stochastic or worst-case robust characterizations. These can be seen as complementary and can be used to gain deeper insight, assist analysis and provide decision support. We discuss generic computational models of optimization, decision policy and design under uncertainty and applications to macroeconomic policy, finance, defense, engineering and project scheduling.

Paul Thompson, Northrup Grumman IT, McLean, Virginia, USA

Supply Chain Analytics for Humanitarian Logistics Transformation

Supply Chain Analytics plays a critical role in Humanitarian Logistics Transformation. It generates the information that decision makers need to reduce costs, improve performance and responsiveness, and increase flexibility. Supply Chain Analytics methods range from simulation of proposed logistics processes to building algorithms that optimize procurement, storage, distribution and coordination. In this talk, we present examples where Supply Chain Analytics has led to improvements in logistics performance, and discuss transformational opportunities for humanitarian logistics networks for Africa.

Rolando Tomasini, INSEAD, Fontainebleau, France

Private Sector Engagement in the Humanitarian Sector

In this talk I will give a review of best practices for collaboration during and between disasters. I will emphasize how to create social and economic value through the transfer of best practice.

**Cosmas L. Zavazava, International Telecommunications Union,
Geneva, Switzerland**

***Title: Bridging the Last Mile Gap through Telecommunications/ICT in
Disaster Management***

This presentation looks at the critical role of telecommunications / information and communication technologies in disaster management for both disaster victims in distress and people involved in humanitarian work

especially those defined as 'first responders' (including humanitarian logisticians). It covers three main phases of disaster management i.e. disaster preparedness, disaster relief, and telecommunications network rehabilitation. Technology, Regulation and Policy are the three key elements that run through the presentation. The over 140 years work of the International Telecommunication Union in setting telecommunication standards, spectrum management, and development as well as deployment of telecommunications/ICT applications/services will be highlighted in this presentation with a special emphasis given to those aspects that directly relate to disaster management to include humanitarian logistics. The presentation will seek to demonstrate how the work of logisticians' work could be facilitated by telecommunications as they collect, analyze and disseminate logistics information relevant to threatening disasters, and ongoing humanitarian operations. Reliable telecommunication networks facilitate the scheduling and movement of humanitarian cargo and relief workers to, and within the crisis area.

Special Acknowledgments:

Anna Nagurney thanks all the invited speakers for their outstanding contributions in terms of the presentations and discussions.