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Theory development in Humanitarian Logistics - A Framework and Three Cases

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ABSTRACT

Purpose:

There is a need for theory development within the field of humanitarian logistics to understand logistics needs in different stages of a crisis and how to meet these.

In this paper we discuss three dimensions identified in logistics and organisation theories and how they relate to three different cases of humanitarian logistics operations – the regional concept of the International Federation of Red Cross Red Crescent Societies, the development and working of the United Nations Joint Logistics Centre and coordination challenges of military logistics in UN mandated peacekeeping operations. The purpose is to build a framework to be used in further studies.

Design/methodology/approach:

A framework for the study of humanitarian logistics along three dimensions is developed, followed by a discussion of the chosen cases in relation to these dimensions. The framework will be used as basis for the case studies to be undertaken for the purpose of understanding and identification of new questions and needs for other or revised concepts from theory.

Findings:

The paper shows the relevance of a wide literature to the issues pertinent to humanitarian logistics. There is considerable promise in extant literature on logistics, SCM and coordination, but this needs to be confronted with the particular issues seen in the humanitarian logistics setting to achieve further theory development.

Originality/value:

The major contribution of the paper lies in its breadth of theoretical perspectives presented and combined in a preliminary theoretical framework. This will be applied more specifically in the three case studies described in the paper.

Key Words: Case studies, theoretical development, coordination, centralization/decentralization, permanent and temporary networks

Type of paper: Conceptual paper

INTRODUCTION

The global societal impact of humanitarian aid is undisputed; humanitarian logistics, however, remains a largely underexplored area in research and practice. 'Similar to logistics in the corporate sector in the 1980s, the logistics function in the humanitarian sector is under-recognized, under-utilized and under-resourced. With increasing numbers of natural and man-made disasters, organizations face challenges due to the limited number of available experienced and trained logisticians and a lack of up-to-date technology systems.' (<http://www.fritzinstitute.org>). (Thomas and Kopczak, 2005) conclude that only a handful of aid agencies have prioritized the creation of high-performing logistics and supply chain operations.

Humanitarian logistics concerns aid after natural and man-made disasters as well as in complex emergencies including war and conflict situations. It is undertaken in a context characterized as 'clearly unpredictable, turbulent, and requiring flexibility' (Oloruntoba and Gray, 2006). Especially in sudden-onset disasters relief supply chains are employed in situations with destabilized infrastructure and lack of knowledge about the situation at hand (Beamon, 2004, Long and Wood, 1995). Defined as 'the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from point of origin to point of consumption for the purpose of meeting the end beneficiary's requirements' (Thomas, 2005), humanitarian logistics is characterized by a myriad of different actors. Hence, a major challenge is the need for better coordination of those involved in humanitarian logistics networks (e.g. <http://www.evalueringstutvalget.no>, UN A/61/699-E/2007/8, OECD 2005, (Kovács and Spens, 2007, Oloruntoba, 2005, Thomas, 2003). Furthermore, logistics involved in disaster response can be viewed as temporary supply chains set up for particular operations. Research on such 'event' or 'project' logistics is attracting attention but is still scant. The question of centralized versus de-centralized structures and decision making has been of particular interest in prior research, for example regarding sourcing (Gutiérrez, 2003, Stock and Lambert, 2001). Coordination and linkages within and between temporary solutions and more permanent networks have been discussed in research on logistics in the construction sector in particular (Dubois and Gadde, 2002).

Whereas the general logistics literature traditionally has focused on improving efficiency and reducing costs, i.e. on the leanness of supply chains (Lee, 2004), the current trend is towards more innovative and responsive, i.e. agile, supply chains that operate in highly dynamic environments (Towill and Christopher, 2002). A major question is whether traditional models can or should be applied for the temporary and non-commercial systems that characterize humanitarian logistics. 'From the many challenging problems arising within humanitarian security area, there is an emerging need to develop new methodologies or new variants of old ones, such as emergency logistics, conflict management and resolution, security assessment, strategic management of crises [...]' (www.euro-online.org). It can be concluded that more research is needed in different areas of humanitarian logistics, and that research needs to take the distinctiveness of the operational environment of humanitarian aid into account. Merging the theoretical field of logistics and the empirical field of humanitarian aid operations will contribute to both. This is the focus of the research project¹ on which this paper is based.

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¹ Humanitarian Logistics Networks - HUMLOG-NET - is a two year project funded by the Norwegian Research Council focusing its research on logistical challenges related to coordination and strategy development for humanitarian logistics actors.

THEORETICAL STARTING POINTS

When doing research on humanitarian logistics we strive to create knowledge about how logistics can contribute to making communities more robust and increase their responsiveness to disasters. Areas to be explored include what coordination mechanisms and which organizational structures and processes can be recognised in the different parts of humanitarian aid and how these relate to theories / models applied within the area of logistics. As concluded after the Tsunami disaster 2004

(<http://www.evalueringssutvalget.no>) and in prior logistics research (Van Wassenhove, 2006), responsiveness is connected to preparedness. Hence, the interplay between the permanent structures in the planning -/ preparedness stage, the temporary networks of each operation, and the transition back to permanent logistics solutions in the recovery stage are in focus. This leads us to the three dimensions depicted in Figure 1:

Figure 1: Three dimensions as a basis for theoretical development

- 1) *Permanent and temporary networks* - Links between the permanent structures / networks of humanitarian actors, and the temporary networks created once a crisis occurs.
- 2) *Vertical and horizontal coordination* - Challenges of coordinating vertically when supply chains extends into unknown areas, and horizontally between actors within an area of operations, due to the fact that in major crises many organisations of different kinds will be present.
- 3) *Centralized and de-centralized structures* - Questions about how to decide what resources and activities to be kept at a central geographical location and what activities to perform or resources to keep at de-centralized points in order to enhance the ability to respond to disasters.

Vertical and Horizontal Coordination

Vertical and horizontal coordination are two very broad and related topics that have been explored at length in several different literatures including organization design, transaction costs and network literature (Galbraith, 1977, Heide, 1994, Håkansson and Snehota, 1995, Mintzberg, 1980, Thompson, 1967b, Williamson, 1981). Problems of coordination will often stem from specialization of tasks or actors. Vertical coordination is here taken to mean the coordination of a supply chain, i.e. point of origin to point of delivery. For practical purposes the point of origin may be variable. Sometimes it is useful to talk about a manufacturer (as in most of the commercially oriented SCM literature). Other times another actor such as a donor may be more usefully seen as the point of origin (Heigh et

al., 2007). Horizontal coordination deals primarily with actors at the same level of a supply chain such as two NGOs delivering similar services in the same area. These may belong to different supply chains and the challenge is to make use of any overlap to achieve economies of scale (Hulthén, 2002).

In terms of humanitarian logistics some additional points should be made before bringing in specific theory. The supply chain in a humanitarian logistics setting may be partially commercial, in that commercial firms undertake production and some of the transport and logistics work. Some organizations in such supply chains, including the ones outlined in the cases below have largely non-commercial goals, which may be specific to the particular organization. This can lead to problems that are not dealt with in the regular business logistics literature (Heigh et al., 2007). Another point seen in several large-scale catastrophes is that the number of actors is very large. This increases the difficulties in coordination depending on the form of coordination chosen. Often the many actors are formally independent in that they have their own funding, own goals and own reasons for being in a particular area. There is also a degree of vertical integration in that the same organization that collects funds often to some extent exerts control over projects carried out in the field

Two literatures seem particularly promising in terms of describing flows related to humanitarian supply chains. The first relates to intermediaries or more specifically mediation. The second deals with third-party logistics service providers. (Stabell and Fjeldstad, 1998) describe the processes of mediation in terms of value creation, but it is possible to adapt this more specifically to this setting. The advantage of this approach is that it gives a template of activities required to build and maintain a network of firms that benefit from contact with each other.

Figure 2: The value network configuration based on mediating technology (Stabell and Fjeldstad 1998, p.430)

Stabell and Fjeldstad's concept is particularly relevant when a focal firm takes on the task of coordinating a number of actors at the same level in a supply chain. In other words it is appropriate to describing horizontal coordination focused on one actor providing a service. This literature is based upon Thompson's (Thompson, 1967a) description of different types of technologies, and posits that there are three main activity structures or value creation models – chain, shop and network. In a humanitarian logistics setting, with a combination of some actors given the task of coordinating, supply chains going from manufacturing sites to crisis areas and finally a great deal of ad hoc problem-solving, an analysis looking at different types of activity structures seems very promising. The different structures may coexist and represent more or less adequate tools for analysis, with the assumption that using the right activity "template" in a situation leads to a better understanding of how value creation is taking place and what coordination mechanisms are required.

This general understanding on coordination can usefully be tied to the literature on third-party logistics (Huemer, 2006) which is the second major stream of relevant literature here. Parts of this literature has a strong empirical focus in following the development of third-party logistics providers, but its major contribution is looking at what tasks are given to third-parties, and how this affects the distribution channel (Hertz and Alfredsson, 2003, van Hoek, 2000, Hoek, 2000). A categorization of different types of logistics service providers is useful in itself, and particularly so if we relate this to the literature on intermediaries. This allows us to immediately employ a framework to structure the empirical field of humanitarian logistics.

Using intermediation and the literature on third-party logistics should be seen as a way to organize the humanitarian logistics sector. More specific concepts related to SCM and coordination, for example sorting and more general concepts such as power and governance should be drawn upon further as required.

Permanent and Temporary Networks

Our second theoretical starting point concerns permanent versus temporary networks and builds on the fact that organisations involved in humanitarian operations also exist between crises. Since each crisis is to some extent unique, i.e. uncertainties about where and when a crisis will occur, what will be the needs, and what infrastructure will be available logistics solutions need to be tailored to each occurrence (Oloruntoba and Gray, 2006). Hence it is important to understand how organisations employ their own and other's resources in the permanent network when setting up the temporary network once a crisis occurs. The permanent network is developed as part of the preparedness strategy which is argued to be one the most important elements for successful response (Van Wassenhove, 2006). Accordingly the permanent network from which resources are mobilized must also be in focus. In particular it is the interplay between the permanent network in the planning/preparedness stage, the temporary network of each operation and the transition to more permanent logistics solutions in the recovery phase we want to understand.

This issue has not been much addressed in previous research. Network taxonomies have been developed based on other factors such as who takes part (Harland, 1996), who controls it (Grandori and Soda, 1995), type of coordination (e.g. (Gadde, 2004), for what purpose they exist (Campbell and Wilson, 1996), what products they handle (Lamming et al., 2000), the degree to which they are dynamic (Håkansson and Snehota, 1995, Snow and Miles, 1992), etc.. Apart from (Dubois and Gadde, 2002) who discuss co-ordination and linkages within and between temporary solutions and more permanent networks in the construction sector, we have not identified prior literature that covers this particular aspect directly². However, there are streams of research that can be used for the purpose of developing a framework:

- The view of *projects as temporary organizations* in relation to a more permanent or stable context (Jensen et al., 2006, Lundin and Steinthórsson, 2003, Packendorff, 1995, Turner and Müller, 2003).

From this perspective the temporary network could be understood as a temporary project organization that has to relate to one or more permanent 'ordinary' organizations. According to (Packendorff, 1995) there are temporary contacts between 'permanent' systems in the form of inter-organisational projects and focus is more on organizing processes than on structure and planning. (Turner and Müller, 2003) view the project as a

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² Maskell et al (2006) discuss temporary and permanent clusters and whether they are substitutes or complements, but focus on knowledge management and not other aspects.

vehicle (or agency) for organizing resources in competition with other projects fighting for the same resources within a permanent organization. Hence, “it is common to define a portfolio of projects as a set of projects which share a common resource pool, and which are managed together for the efficient utilization of the resource pool” (p.5). (Jensen et al., 2006) suggest ‘interactional uncertainty’ as a descriptor of the relationship between the focal project and other actors.

- The view of *networks as overlapping supply chains* because any firm is a member of more than one chain (Bask and Juga, 2001, Gadde and Håkansson, 2001, Hertz, 2006, Jahre and Fabbe-Costes, 2005).

In this stream of research questions such as degree of integration (Bask and Juga, 2001, Romano, 2003) and trade-offs between adaptation and adaptability (Jahre and Fabbe-Costes, 2005) can provide understanding regarding linkages between temporary and permanent networks. From this perspective the temporary network could be understood as an adapted version and/or a part of the permanent network. The permanent network is of great importance for the individual supply chains and must be flexible to the degree that it can be adapted to different contexts, e.g. supply chains for particular relief operations must fit with needs in the specific operation. It must also be able to operate numerous supply chains simultaneously just as an organization must be able to cope with numerous projects as discussed above.

- The view of *networks as resource combinations* where resources are combined and recombined continuously and more or less consciously (Håkansson and Waluszewski, 2002, Jahre et al., 2006, Wedin, 2001).

From this perspective the temporary network can be understood as a new combination of the resources in the permanent network. A distinction is made between organisational resources, i.e. business units and business relationships, and physical resources, i.e. products and facilities. The core of this perspective are the interfaces between resources in a network – interfaces that can be characterized in various ways (Bygballe and Jahre, 2007) – and how they promote, but also hamper, new combinations. Designing, learning, influencing and economising are suggested as sub-processes of resourcing or resource combining (Jahre et al., 2006) – processes that seem relevant in the context of humanitarian logistics. We see an interesting link to the focus on resources in the perspective of projects as temporary organisations.

Table 1 summarises how we could view permanent and temporary networks in the humanitarian setting in relation to the three main approaches.

Theoretical perspective	Humanitarian Permanent Network (preparedness)	Humanitarian Temporary Network (response)
Project Management	Parent organisation: contingency planning for crises	Deployment; setting up an operation, drawing resources from multiple permanent organisations
Networks as supply chains	Supply Network: developing relations to relevant actors in the supply network	Individual Supply Chains: mobilising actors within the supply network, both locally within the area of operations and internationally
Resource networks	Combination of inter- and intra organisational resources. Designing structures, building knowledge and planning for recombination of resources.	Recombining resources

Table 1: Theoretical perspectives in relation to temporary and permanent humanitarian logistics networks

Centralized and de-centralized structures

A major challenge to humanitarian logistics is the balance between the ability to quickly respond to a given crisis versus the need to be cost efficient both when reacting to a crisis and in between crises. As a response to the call for more efficient coordination and integration within a supply chain and between different supply chains the distribution of activities and resources between centralized and de-centralized structures is currently attracting attention amongst multinational NGOs as part of their preparedness strategy, e.g. in terms of regional headquarters or pre-positioned stocks in the vicinity of potential areas of crises.

Intermediaries and de-centralized supply chain elements need to add value to the system by levelling out discrepancies in quantity, assortment, time, and space (Rosenbloom, 1995). As put forward by (Alderson, 1950) one strategy to reduce risk- and uncertainty costs is to postpone the differentiation of goods, that is, to delay value-adding activities. The aim is to ensure flexibility as a response to demand uncertainties. However, as (Bucklin, 1965) pointed out, postponement needs to be balanced with effects of speculation, i.e., adding value in advance of demand, be it by assembling products or shipping products to a de-centralized location. Postponement/Speculation (P/S) involves both manufacturing and logistics activities. *Manufacturing postponement* means that form and identity of the product is held at a disaggregated level for as long as possible, e.g. by changing the sequence of activities. This leads to re-thinking products, processes and/or supply chain structures through standardization, modular design, and process restructuring (Garcia-Dastugue and Lambert, 2007, Lee and Tang, 1997). (Zinn and Bowersox, 1988) identified four manufacturing postponement strategies including labelling, packaging, assembly and manufacturing. *Logistics postponement* means that forward movement through the supply chain is delayed in time with the aim of finding the best locations for decoupling points (Alderson, 1950).

To design a P/S strategy both the product itself, demands from intermediaries and final customers, and the structures of the manufacturing and logistics system must be considered. By combining postponement and speculation both within manufacturing and logistics, (Pagh and Cooper, 1998) identified four main types of P/S strategies. *Full speculation strategy* means that both manufacturing and logistics is based on forecasts. Manufacturing tasks are performed prior to the product being differentiated by location and inventories are kept at de-centralized points. This strategy could enhance scale economies both in manufacturing and logistics. On the negative side, it could lead to higher inventory costs, obsolete products, and more frequent transshipments. Within humanitarian logistics this could mean putting up a de-centralized unit stocked with labelled and pre-packed products. When pursuing a *manufacturing postponement strategy* products are kept at a disaggregated level at de-centralized points. Manufacturing activities, like labelling, packaging, and final assembly are not performed until demand is known; e.g. not labelling aid materials before it is decided which organization is to distribute the goods. This strategy is viable when it is vital to have inventories close to end users and there is no need for specialized manufacturing capabilities. This means fewer product variants to ship, reduced value of inventory, and simplified inventory planning. But it could also lead to increased cost and complexity of customer order processing (Pagh and Cooper, 1998). The *logistics postponement strategy* is associated with direct distribution of finalized products from manufacturer or a centralized warehouse to end users. This could reduce inventory handling and warehousing costs, increase scale economies in manufacturing, but also increase shipment costs. When considering this strategy in humanitarian logistics one should keep in mind that infrastructure such as rail, roads and airports is often

damaged, and that transport capacity into an area is often restricted. *Finally, a full postponement strategy* means that both manufacturing and logistics is made to order. This results in low manufacturing inventory costs and reduced inventories in the distribution system. Logistics economies of scale will most likely be reduced (Pagh and Cooper, 1998). This might not be a strategy appropriate for the early phases of a humanitarian operation, with its uncertainties about demand and need for short lead times.

Thus, humanitarian logistics strategies need to cope with the effects of postponement and speculation of both manufacturing and logistics activities, as indicated in Table 2.

	Logistics speculation	Logistics postponement
Manufacturing speculation	<i>Full speculation strategy:</i> Preparedness through pre-positioning stocks of finished goods at de-centralized points	<i>Logistics postponement strategy:</i> Preparedness through centralized stocks of finished goods and investments in transport and goods handling capacity
Manufacturing postponement	<i>Manufacturing postponement strategy:</i> Preparedness through pre-positioning semi-finished goods at de-centralized points. Assembling, bundling, packing and labelling goods locally.	<i>Full postponement strategy:</i> Preparedness through investing in relations with suppliers of semi-finished goods and investments in logistics (transport and goods handling) capacity

Table 2. Alternative Postponement / Speculation strategies in humanitarian logistics

When deciding on production and distribution activities one should also consider the administrative elements of the supply chain such as roles, responsibilities and coordination mechanisms between centralized and de-centralized elements. The interplay between logistics and other key areas within humanitarian organizations, such as needs assessments, cultural knowledge, public relations and the like also needs to be addressed.

RESEARCH APPROACH

The explorative nature of this project and the complexity of the research problems as well as our research objects demand a holistic perspective and suggest empirical case studies, which are especially well suited for obtaining necessary depth when exploring and developing understanding in under-researched areas (Ellram, 1996, Yin, 2003). Based on systematic combining (Dubois and Gadde, 2002), our case studies develop through interplay between the real world and a model world. Our preliminary theoretical framework is confronted with reality in order to identify new questions and needs for other or revised concepts from the model world. The work in the model world then gives another set of questions to reality, leading to new theoretical questions. Providing a starting point both for research problems and a common knowledge base for all project participants, our cases have been chosen in a systematic way in order to cover variability of the dimensions of interest. Described below are the three single case studies we will undertake. Focusing on temporary versus permanent networks, they vary with regards to degree of centralization, postponement and speculation, type of disasters and coordination.

Concerning data collection, each case study will be based on a multitude of sources, including technical artefacts (e.g. physical structures, product catalogues and ICT systems), systematic interviews, documents and archival material, possibly cross sectional data and time series data. In order to ensure reliability, a case study protocol including semi-structured interview guides will be developed. A case study database for inclusion of

notes from each interview, detailed write-up of each case and other documentation, will be developed. Multiple data sources will be used to ensure construct validity, as will a pre-structured case outline for data analysis (Ellram, 1996, Yin, 2003).

United Nations Joint Logistics Centre (UNJLC)

The UNJLC was first employed during the East Zaire crisis in 1996, and had a significant impact in the Mozambique floods in 2000. It was established by and receives its mandate from the Inter-agency Standing Committee (IASC). Organizationally UNJLC is hosted by the World Food Programme, but significantly it does not have a separate set of resources for use in a crisis, and instead relies on contributions from the UN agencies and donors dealing with the crisis in order to operate. This is important with regards to its coordination role, since it is entirely reliant on the perceptions of other actors in order to obtain resources in any particular setting. UNJLC is intended to be an intermediary, with a focus on functioning as an information-central. This role is clearly dependent on other actors finding the UNJLC useful, and releasing enough information to it to make it useful to others in turn. In this sense the UNJLC must create its role in each particular crisis, but it is also the case that it must create an expected role in order to function better in future crises.

In order to study the role of the UNJLC it is imperative to first look at it in an ongoing crisis since the non-crisis organization is small and does not reflect its actual activities and resources to a great extent. Since resources are allocated depending on what agencies are able to spare and their intended use of the UNJLC in any particular setting they are likely to be highly context-dependent. A challenge for the UNJLC is clearly to establish itself in such a way that it does not have to start from nothing in each crisis.

The approach in this study will start with field studies of the UNJLC operation in Sudan, with particular focus on obtaining an understanding of the context. This first stage of data collection will be time-constrained and should lead to a much better specification of questions for the next stage. This is also likely to uncover specific coordination issues, which can be explored in follow-up interviews after the initial more intensive study. The second stage of data collection will consist of semi-structured interviews with personnel identified as important in accordance with the first round of data collection.

The regional logistics concept of IFRC

The International Red Cross Red Crescent Movement incorporates the Geneva-based International Committee of the Red Cross (ICRC) and the International Federation of Red Cross and Red Crescent Societies (IFRC), as well as National Societies (NS) in 186 countries. The ICRC's mandate covers assistance to conflict areas whereas IFRC's mandate covers natural disasters. The IFRC is the world's largest humanitarian organization and in 2005 its programs reached over 30 million vulnerable people and assisted NS in the response to 329 major emergencies.

Traditionally, the IFRC supply structure was made up of a number of loosely coordinated stocks of the different NS and framework contracts with suppliers coordinated through the IFRC headquarters in Geneva. The regional logistics concept constitutes a restructuring to increase logistics regional and local support and services and resulted in a headquarter-based office in Geneva (LRMD) and three Regional Logistics Units (RLUs) located in Dubai, Kuala Lumpur and Panama. Each RLU provides a set of logistics services within a geographically specified zone and has preparedness capacity to deliver a range of relief

items for 20000 households with an ability to deploy disaster relief items for 5000 families in 48 hours in the immediate aftermath of any emergency. The idea of the regional concept is to reduce negative consequences of lack of local knowledge and long distances to affected areas and constitutes: (1) Pre-positioned stocks close to possible beneficiaries in the form of permanent stocks at the regional warehouse in case of disaster; (2) Local sourcing through regional supplier networks by the regional unit, (3) Local competence through availability of trained personal in the regional unit and; (4) Transfer of operations management responsibility to the regional unit.

The case study will use a combination of secondary and primary information where primary data consists of interviews undertaken in Geneva with the logistics functions in LRMD and Geneva-based functions that relate closely to logistics such as operations support, disaster management and the international disaster response tools ERU (Emergency Relief Units) and FACT (Field Assessment Coordination Teams). Field studies of the Kuala Lumpur Regional Unit with according interviews will be undertaken as will an observation study of the deployment of a Norwegian healthcare unit (ERU) with the set-up of a field hospital. This case gives opportunities for studying how decentralization of physical structures affect horizontal and vertical coordination in an operation and how the efficiency of the temporary network is linked to the set-up of the permanent structure.

Military UN Peacekeeping operations (PKO)

As stated in § 42 in the UN charter the Security Council 'may take such action by air, sea, or land forces as may be necessary to maintain or restore international peace and security'. Peacekeeping operations (PKOs) are operations in which military activities are meant to create a secure environment and to facilitate the efforts of the civilian elements of the mission. Multi-dimensional operations within a limited geographical area put strains on resources available, both infrastructure and local supplies. These are resources valuable for the local community as well as for NGOs, IOs and GOs being present in the same area. Thus military, governmental, and non-governmental bodies need to integrate their efforts. Two different structures; a joint-Nordic Engineering battalion planned to be part of the UN operations in Darfur, Sudan, and the Nordic Battle Group, being a part of the EU rapid response force, constitute the study elements of this case study.

In resolution 1769 (2007), the UN Security Council authorized an AU/UN Hybrid operation in Darfur; the UNAMID. The governments of Norway and Sweden offered a joint engineering battalion ("Engbat"), with the main task of building infrastructure. Due to the authorities of Sudan not recognising the Nordic contribution the unit was not deployed. However, this case gives us valuable information about the preparedness phase for a temporary unit designed for a specific task, having ample time for planning.

The second study element is the Nordic Battle Group (NBG) and its preparations. Similar to the Engbat this is a temporary unit consisting of resources from different parent organisations, but this unit is not designated to a given crisis or area. Being a high-readiness force this unit can be deployed into UN peacekeeping operations. Hence the logistics system must be flexible enough to be able to support a wide array of operations in all kinds of climate.

Hence, two study elements describe the preparations of two very different units that potentially could end up performing the same tasks in the same geographical area. The case study will start with collecting primary and secondary information regarding the mandate, composition, training and supply arrangements for the two constellations. Primary data will be collected through interviews within the relevant Ministries of Defence,

as well as interviews within the permanent military structures and at the joint training camp. This case gives opportunities to study logistics coordination between permanent and temporary structures in the preparedness phase, the planning of vertical coordination between the permanent structures and the temporary deployed structure, as well as how horizontal coordination between the deployed unit and other temporary structures in the area of operation is planned.

THEORETICAL SYNTHESIS AND PRELIMINARY CATEGORISATION

No matter what perspective is taken it is important to understand the way network entities are coupled in permanent as well as temporary networks. A common denominator for organisations dealing with humanitarian logistics is that appropriate response to a given crisis depends on the level of preparedness contingent upon measures undertaken in the permanent structures. When responding to a crisis the output from the temporary structure depends on this preparedness.

In preparedness relations between actors from which resources will be drawn in the response and recovery phases, are developed and maintained. Resources and activities within these relations, and potential means of coordinating them are linked with levels of postponement and speculation, both of manufacturing and logistics activities. From the perspective of *projects as temporary organisations* relating to a stable parent organisation, it could be stated that preparedness deals with contingency planning both at centralized and de-centralized levels. This includes division of tasks and responsibilities between central and de-central units, de-centralized units working as information intermediaries between actors in order to establish business relations to be activated in the response phases, and deciding on appropriate levels of pre-positioned stocks. From the perspective of *networks as partly overlapping supply chains*, preparedness deals with questions regarding the vertical structure of supply chains. This encompasses coordination mechanisms between centralized and de-centralized units, finding an appropriate level of postponement and speculation of manufacturing and logistics activities, and distribution of tasks between actors within the supply network. Finally, from the perspective of *networks as resource combinations* preparedness would be a result of inter- and intra-organisational combining of organisational resources and physical resources both horizontally and vertically.

In the response and recovery phases the preparedness strategy is put into action, that is, temporary structures are formed and activated. From the perspective of *projects as temporary organisations*, this would include drawing upon resources from various permanent structures such as suppliers, centralized and de-centralized units, logistics providers and the like, according to the contingency plans developed for preparedness. From the perspective of *networks as partly overlapping supply chains*, effective response depends upon the permanent structures' ability to mobilise appropriate supply chains, coordinate the activities and actors within the supply chain and also the flexibility to adapt to situations. The chosen balance of postponement and speculation in a strategy would influence the availability of resources for a particular temporary supply chain. Finally, from the perspective of *networks as resource combinations* response it is a matter of combining and recombining organisational and physical resources, both horizontally and vertically.

Table 3 presents our initial thoughts about how the three cases could be categorised in relation to the dimensions, indicating what will be emphasized. Some of the more important questions in each case are briefly commented on below.

Permanent			Temporary		
	Vertical	Horizontal		Vertical	Horizontal
Centralized	IFRC	UNJLC PKO	Centralized	IFRC	
De-centralized	IFRC		De-centralized	IFRC PKO	UNJLC PKO

Table 3. The framework based on three dimensions – an initial categorization of the cases

UNJLC: Horizontal coordination in the permanent and temporary networks

The UNJLC is primarily responsible for horizontal coordination - that is coordination between various UN agencies and other interested parties. Since the UNJLC does not have a resource-heavy organization or direct authority, its success is measured by how it allows other organizations to use their resources more effectively. The main remit of the UNJLC is situational since it is mobilized for specific crises, putting it in the temporary and horizontal coordination square. This is where most of its activities are carried out, in widely changing environments, making adaptability an essential ingredient of its makeup, especially since many of the personnel involved in its activities are also mobilized for a specific situation. However, there is a small permanent staff situated in Rome, and there is a permanent role for the UNJLC as well. The permanent staff carries out tasks related to readiness to respond to new crises, but also deal with the accumulation of experience from one operation to the next. This is especially relevant with the high turnover of logistics personnel in relief work. Finally, building trust with UN and other agencies because of success in previous engagements is partially a job for the permanent network because achievements must be reiterated to maintain visibility. In short, this is a question of establishing a clear role for the UNJLC over time.

IFRC: Combined postponement/speculation in permanent and temporary networks

The IFRC case may be seen as finding a balance between the centralized and de-centralized elements of the new regionalised structure. In terms of the permanent network this means decentralising a number of activities through frame agreements with suppliers, regional pre-positioning of stocks and training of permanent logistics staff in the RLUs. Hence, IFRC seems to be using a full speculation strategy with more pre-positioning of basic relief items (manufacturing speculation) on locations closer to the customer (logistics speculation). However, because the items are not marked with the name of the donor or a specific operation, it can be used in a number of contexts. Hence, speculation is combined with manufacturing postponement. Preliminary results show that response time, costs and accuracy improve with the regional concept (Kuckow, 2006). Hence, a proposition developing from this case is that the efficiency and effectiveness of the temporary network increases with a more regional (de-centralized) operational permanent network combined with a stronger centralized unit focusing on strategy development and the global overview.

PKOs: Temporary structures between permanent organisations

The Nordic military contributions to UN Peacekeeping operations are temporary setups at two levels. Firstly these earmarked units are temporary organisations in themselves,

drawing resources from multiple permanent networks. In preparedness issues such as designing, learning and economising are important elements and activities and resources need to be coordinated and combined between the temporary and the permanent structures. Secondly, if a unit is deployed it will become an element in a UN PKO, which in itself is a temporary organization. Once deployed, there are two main aspects worth studying. The first is vertical logistics arrangements, spanning the deployed unit itself, its parent organizations, and suppliers both to the parent structures, to and within the UN system, and within the local area. Hence the question of postponement and speculation between actors in the supply chain will be relevant. This leads to the second interesting aspect, namely that of horizontal coordination between the deployed unit, other UN entities, NGOs, and local authorities either controlling or competing for local logistics resources.

CONCLUDING REMARKS

This paper outlines theoretical and empirical starting points of a research project on humanitarian logistics, with the purpose of exploring some main dimensions on which theoretical development within this field of research could build. Our premise is that the concepts of temporary versus permanent networks, decentralisation and centralisation and vertical and horizontal coordination in this setting would be a fruitful avenue to pursue. Additionally, we argue that the postponement/speculation principle is very interesting on two accounts. One is for the purpose of understanding links between permanent and temporary networks. The other relates to the implications centralization / de-centralization of logistics structures has for efficiency and effectiveness in the response and recovery phases. Theoretical arguments as well as possible research streams for each of the dimensions have been presented and discussed. The three cases that will provide the empirical data in our research have been introduced. The major contribution of the paper lies in its breadth of theoretical perspectives presented and combined in a preliminary theoretical framework. Further work will be to undertake the case studies, providing in-depth analysis and discussions in relation to each of the dimensions and in particular how they may be combined.

REFERENCES

- ALDERSON, W. (1950) "Marketing Efficiency and the Principle of Postponement". *Cost and Profit Outlook*, 3.
- BASK, A. H. & JUGA, J. (2001) "Semi-integrated Supply Chains: Towards the new era of Supply Chain Management". *International Journal of Logistics: Research and Applications*, 3, 5-23.
- BEAMON, B. M. (2004) "Humanitarian Relief Chains: Issues and Challenges". *Proceedings of the 34th International Conference on Computers and Industrial Engineering*. San Francisco, CA.
- BUCKLIN, L. P. (1965) "Postponement, Speculation and the Structure of Distribution Channels". *Journal of Marketing Research*, 2, 26-31.
- BYGBALLE, L. & JAHRE, M. (2007) "A Framework for Analysis of Logistics Resource Networks". *19th NOFOMA Conference*. Reykjavik.
- CAMPBELL, A. J. & WILSON, D. (1996) "Managed Networks: Creating Strategic Advantage". IN IACOBUCCI, D. (Ed.) *Networks in Marketing*. London, Sage.
- DUBOIS, A. & GADDE, L.-E. (2002) "The Construction Industry as a Loosely Coupled System: Implications for Productivity and Innovation". *Construction Management and Economics*, 20, 621-631.
- ELLRAM, L. M. (1996) "The use of the case study method in logistics research". *Journal of Business Logistics*, 17, 93-137.
- GADDE, L.-E. (2004) "Activity Coordination and Resource Combining in Distribution Networks". *Journal of Marketing Management*, 20, 157-184.
- GADDE, L.-E. & HÅKANSSON, H. (2001) *Supply Network Strategies*, Chichester, John Wiley & Sons.
- GALBRAITH, J. (1977) *Organization Design*, Reading, Massachusetts, Addison-Wesley.
- GARCIA-DASTUGUE, S. J. & LAMBERT, D. M. (2007) "Interorganizational time-based postponement in the supply chain". *Journal of Business Logistics*, 28, 57-81.
- GRANDORI, A. & SODA, G. (1995) "Inter-firm networks: Antecedents, mechanisms and forms". *Organization Studies*, 16, 183-214.
- GUTIÉRREZ, J. (2003) "Policies for inventory/distribution systems: The effect of centralization vs. decentralization". *International Journal of Production Economics*, 81/82, 281.
- HARLAND, C. M. (1996) "Supply Chain Management: Relationships, Chains and Networks". *British Journal of Management*, 7, 63-80.
- HEIDE, J. B. (1994) "Interorganizational Governance in Marketing Channels". *Journal of Marketing*, 58, 71-85.
- HEIGH, I., JAHRE, M., KOVÁCS, G., LISTOU, T., SPENS, K. & TATHAM, P. (2007) "Humanitarian Logistics: The Intermediating Role of Linking Donors and Beneficiaries". *NOFOMA 2007*. Reykjavik.
- HERTZ, S. (2006) "Supply chain myopia and overlapping supply chains". *Journal of Business & Industrial Marketing*, 21, 208-217.
- HERTZ, S. & ALFREDSSON, M. (2003) "Strategic development of third party logistics providers". *Industrial Marketing Management*, 32, 139-149.
- HUEMER, L. (2006) "Supply Management. Value Creation, Coordination and Positioning in Supply Relationships". *Long Range Planning*, 39, 133-153.
- HULTHÉN, K. (2002) "Variety in Distribution Networks: A Transvection Analysis". *Department of Industrial Marketing*. Göteborg, Chalmers University of Technology.
- HÅKANSSON, H. & SNEHOTA, I. (1995) *Developing Relationships in Business Networks*, London, Thompson Business Press.

- HÅKANSSON, H. & WALUSZEWSKI, A. (2002) *Managing Technological Development. IKEA, the environment and technology*, London and New York, Routledge.
- JAHRE, M. & FABBE-COSTES, N. (2005) "Adaptation and Adaptability in Logistics Networks". *International Journal of Logistics: Research and Applications*, 8, 143-157.
- JAHRE, M., GADDE, L.-E., HÅKANSSON, H., HARRISON, D. & PERSSON, G. (Eds.) (2006) *Resourcing in Business Logistics - The Art of Systematic Combining*, Copenhagen, Liber AB and Copenhagen Business School Press.
- JENSEN, C., JOHANSSON, S. & LÖTRÖM, M. (2006) "Project relationships - A model for analyzing interactional uncertainty". *International Journal of Project Management*, 24, 4-12.
- KOVÁCS, G. & SPENS, K. (2007) "Humanitarian Logistics in Disaster Relief Operations". *International Journal of Physical Distribution and Logistics Management*, 37, 99-114.
- KUCKOW, J. (2006) "Case study report: The effect of the IFRC regional logistics concept on the efficiency of relief item delivery for the population affected by the Yogyakarta earthquake". Geneva, Switzerland, International Federation of the Red Cross and Red Crescent Societies Logistics Department (IFRC Logistics).
- LAMMING, R., JOHNSEN, T., ZHENG, J. & HARLAND, C. M. (2000) "An initial classification of supply networks". *International Journal of Operations & Production Management*, 20, 675-691.
- LEE, H. I. & TANG, C. S. (1997) "Modelling the Costs and Benefits of Delayed Product Differentiation". *Management Science*, 43, 40-53.
- LEE, H. L. (2004) "The triple-A Supply Chain". *Harvard Business Review*, 82, 102-112.
- LONG, D. C. & WOOD, D. F. (1995) "The Logistics of Famine Relief". *Journal of Business Logistics*, 15, 213-229.
- LUNDIN, R. A. & STEINTHÓRSSON, R. S. (2003) "Studying organizations as temporary". *Scandinavian Journal of Management*, 19, 233-250.
- MINTZBERG, H. (1980) "Structure in 5's: A Synthesis of the Research on Organization Design". *Management Science*, 26, 322-341.
- OLORUNTOBA, R. (2005) "A wave of destruction and the waves of relief: issues, challenges and strategies". *Disaster Prevention and Management*, 14, 506-521.
- OLORUNTOBA, R. & GRAY, R. (2006) "Humanitarian aid: an agile supply chain?" *Supply Chain Management: An International Journal*, 11, 115-120.
- PACKENDORFF, J. (1995) "Inquiring into the temporary organization: New directions for project management research". *Scandinavian Journal of Management*, 11, 319-333.
- PAGH, J. D. & COOPER, M. C. (1998) "Supply Chain Postponement and Speculation Strategies: How to Choose the Right Strategy". *Journal of Business Logistics*, 19, 13-33.
- ROMANO, P. (2003) "Co-ordination and integration mechanisms to manage logistics processes across supply networks". *Journal of Purchasing & Supply Management*, 9.
- ROSENBLOOM, D. (1995) "Channels of Distribution". IN BAKER, M. (Ed.) *Companion Encyclopaedia of Marketing*. London, Routledge.
- SNOW, C. C. & MILES, R. E. (1992) *Managing 21st Century Network Organisations, Organisational Dynamics*, Winter.
- STABELL, C. B. & FJELDSTAD, Ø. D. (1998) "Configuring value for competitive advantage: on chains, shops, and networks". *Strategic Management Journal*, 19, 413-437.
- STOCK, J. R. & LAMBERT, D. M. (2001) *Strategic Logistics Management*, New York, McGra-Hill Companies Inc.

- THOMAS, A. (2003) "Why logistics?" *Forced Migration Review*, 18, 4.
- THOMAS, A. (2005) "Logistics training: necessity or luxury?" *Forced Migration Review*, 22.
- THOMAS, A. & KOPCZAK, L. (2005) "From logistics to supply chain management. The path forward in the humanitarian sector." Fritz Institute.
- THOMPSON, J. D. (1967) *Organisations in Action: Social Science Bases of Administrative Theory*, New York, McGraw-Hill.
- TOWILL, D. & CHRISTOPHER, M. (2002) "The Supply Chain Strategy Conundrum: To be Lean or Agile or to be Lean and Agile". *International Journal of Logistics: Research and Applications*, 5, 299-309.
- TURNER, J. R. & MÜLLER, R. (2003) "On the nature of the project as a temporary organisation". *International Journal of Project Management*, 21, 1-8.
- VAN HOEK, R. (2000) "Role of Third Party Logistics Services in Customization through Postponement". *International Journal of Service Industry Management*, 11, 374-387.
- VAN WASSENHOVE, L. N. (2006) "Blackett Memorial Lecture: Humanitarian aid logistics: supply chain management in high gear". *Journal of the Operational Research Society*, 57, 475-489.
- WEDIN, T. (2001) "Networks and Demand: The use of electricity in an industrial process". *Department of Business Studies*. Uppsala University.
- WILLIAMSON, O. (1981) "The Economics of Organization: The Transaction Cost Approach". *American Journal of Sociology*, 87, 548-577.
- YIN, R. K. (2003) *Case Study Research, Design and Methods*, Thousand Oak, CA, Sage Publications.
- ZINN, W. & BOWERSOX, D. J. (1988) "Planning physical distribution with the principle of postponement". *Journal of Business Logistics*, 9, 117-136.