DYNAMIC COMPETENCY THEORY IN POST-DISASTER RECONSTRUCTION

Jason Von Meding, Queen's University Belfast
email: jvonmeding01@qub.ac.uk

Lukumon Oyedele, Queen's University Belfast
email: l.oyedele@qub.ac.uk

David Cleland, Queen's University Belfast
email: d.cleland@qub.ac.uk

Victoria Harris, Article 25 Development & Disaster Relief
email: victoria-harris@article-25.org

Abstract

In a natural disaster scenario, a vital part of the humanitarian mandate relates to the reconstruction of the affected built environment. In the aftermath of recent natural disasters, NGOs have become increasingly involved in the permanent reconstruction of affected communities. These organizations, often operating well outside their expertise, encounter significant barriers as they implement reconstruction programmes. The objectives of this research are: a) To determine the competencies deployed by NGOs involved in reconstruction projects following major disasters, b) To compare best practices among NGOs involved in permanent reconstruction projects, c) To investigate the barriers that NGOs have faced during reconstruction, d) To define how these barriers can be overcome through a dynamic competencies approach and e) To develop a dynamic competencies framework model that can be used by NGOs in post-disaster reconstruction projects. Drawing on established theories of management, a unique perspective is developed from which a theory of dynamic competency within reconstruction emerges. A research study based on this theory among a sample group of UK NGO participants will commence in late 2008. The chosen methodology establishes significant relationships between critical success factors, barriers, and competencies set in the context of strategic action taken during post-disaster reconstruction. The research will eventually culminate in the formation of a dynamic competencies framework model that can be used by NGOs in post-disaster reconstruction projects. This will be an essential tool for NGOs involved in such projects and will help to define the standard of best practice to which future projects might align themselves.

Keywords: Dynamic Competency; NGOs; Post-disaster Reconstruction; Critical Success Factors.

Introduction

This paper sets out the theoretical basis and proposed methodology for a PhD research study set to commence in late 2008. Drawing on established theories of strategic management and existing principles of disaster management and project management, a unique theoretical framework evolves. The central theme of this framework is the dynamic competencies of NGOs in post-disaster reconstruction.

At present, based on scientific evidence, there are escalating concerns over global warming and its effects on weather patterns. Many experts warn that due to climate change, the risk of natural disasters occurring is growing, in parallel to the magnitude and frequency of hazard events (Webster et al. 2005).

Climate change will always be closely tied to disaster risk, by virtue of its inherent relationship to natural hazards. Natural hazards trigger disasters, the scale of which is largely determined by vulnerability, which itself is becoming more and more clearly a development issue (Cannon 1994). Developing countries generally suffer the most due to natural disasters. In fact, the unequal burden of disaster mortality is striking; 11% of people exposed to hazards live in low-development countries yet they account for 53% of those killed (UNDP 2004).

Vulnerability to disasters is increasing due to growing populations, rising poverty, armed conflict and other development issues. Schipper & Pelling remind us, "Blame gets placed on the hazard rather than on the conditions of vulnerability that have resulted from, for example, poor governance and corruption, unchecked neoliberal development policies and marginalisation of the poor." (Schipper, Pelling 2006)

It is within this climate of instability that we consider the subject of post-disaster reconstruction. Reconstruction is only part of the recovery process which devastated communities must undertake in the aftermath of a natural disaster. However, within disaster management practice, no area is more poorly executed (Duyne Barenstein, Pittet 2007, Boen, Jigyasu 2005, Barakat 2003, Lizarralde, Boucher 2004). When we consider the trauma and loss inflicted on communities that must be addressed, it is clear that a multi-faceted recovery process is vital. If implemented correctly, a successful reconstruction project can be the catalyst for sustainable community developmentpsychologically, physically and economically, while significantly reducing vulnerability to future hazards (Paton, Smith & Violanti 2000, Paton 2003).

Ribot issues a challenge to NGOs undertaking reconstruction, "Actions taken today to reduce vulnerability- actions which have been justified for a long time- will increase resilience and security by providing a buffer against vulnerability to future consequences of climate change."(Ribot, Magalhaes & Panagides 1996)

Following the Asian tsunami, NGOs flocked to affected countries with large budgets and the best of intentions. Reconstruction projects became a priority both for NGOs and their donors. However, during their rush to be involved in reconstruction, many NGOs operated well outside their expertise due to the fact that action was urgent and essential, and did so without the capacity, capabilities and competencies in place to deliver satisfactory projects. (Duyne Barenstein, Pittet 2007, Adams, Harvey 2006, Kilby 2008, McGirk 2005, King 2007)

In light of these facts, the opportunity is clear for research to be undertaken that will investigate the underlying factors contributing to the inability of NGOs to effectively manage reconstruction projects. This research is urgent and essential. The chance to create, test and validate a new theoretical framework for NGOs in reconstruction which is useful in the field is an exciting prospect.

This study will draw on established theories of organisational strategy from the various fields of management, and in particular the resource-based view of dynamic competencies while for the first time applying such thinking to disaster management theory. A new theoretical approach to post-disaster reconstruction is proposed, focused on developing effective strategies by deploying appropriate organisational capabilities and dynamic operational competencies. This represents a significant theoretical and empirical contribution to knowledge in the field of disaster management.

Research methods

It is vital that this research has a sound theoretical basis upon which to build research questions and develop sound hypotheses. A new theoretical perspective has evolved, drawing on literature from disaster management, strategic management and project management. These elements combine to birth a new theory of dynamic competency within reconstruction.

This study will examine current NGO operations within the scope of organizational management and will draw research questions from a strong theoretical grounding in management literature. These grounded and informed research questions will allow hypotheses to be formed and subsequently tested by the proposed methodology.

Research hypothesis:

By building dynamic organizational capacity, capabilities, and competences, NGOs will be much better equipped to move forward with reconstruction projects that all stakeholders can have confidence in.

Disaster management

Drabek and Hoetmer define disaster recovery and reconstruction as a qualitative improvement of community life; it usually includes rebuilding of infrastructure and damaged structures, evaluation of codes and land use regulations, and adoption and implementation of hazard mitigation measures (Reddy 2000).

Natural disasters are the cause of death, loss and a departure from normalcy for many affected populations every year. In such scenarios, NGOs are quick to respond with humanitarian aid, with large budgets bringing considerable weight in the marketplace (McGirk 2005). It is clear, however, that post-disaster humanitarian assistance can increase long-term vulnerability in certain communities (Schipper, Pelling 2006). Any post-disaster initiative must address cultural, social, economic, technical and political dimensions to ensure sustainable outcomes and successfully reduce vulnerability (Kilby 2008, Broadbent, Broadbent 2004, Doocy 2006, Rubin, Barbee 1985). Naturally, this applies to reconstruction projects.

Unfortunately, NGOs do not possess a good track record when it comes to the implementation of reconstruction projects which address the areas outlined above. In contrast, some of these areas are particularly neglected as part of substandard and expensive projects. As Barakat argues, "The urgent need to do something within a short space of time is not conducive to good, sustainable housing reconstruction nor is the tendency of donors to set short timeframes for the disbursement of emergency funds."(Barakat 2003)

In recent years, we have seen this problem manifested. There are now many examples of substandard post-disaster reconstruction projects, from those implementing badly designed, poorly constructed, inappropriate housing (Lizarralde, Boucher 2004, Adams, Harvey 2006, Garcia, R. et al. 2006) to those ignoring social and cultural markers and developing projects that are eventually abandoned in favour of traditional housing (Boen, Jigyasu 2005). NGOs have not been able to deliver satisfactory reconstruction projects and this is something that must be remedied as a matter of urgency. In fact, the goal should be far greater; to deliver exceptional projects which transform communities.

NGOs will often promote the ideal of community participation but where such programmes are really successful a reconstruction project will display vastly different characteristics and outcomes

(Paton, Smith & Violanti 2000, Reddy 2000). It is clear to see when an NGO goes beyond words and actually commits to involving the community in a project.

NGOs are not run like construction firms. If they were, it is likely that reconstruction projects would be far more efficient and of a higher quality. NGOs do bring a wealth of knowledge to the table within the humanitarian sector, and this study aims to determine how a shift in strategic management could enable such organisations to develop an approach that would yield projects to satisfy all stakeholders. The need for such a study is urgent and the results will be immediately useful as NGOs continue to become involved in reconstruction projects worldwide, for which they are all too often ill-equipped.

Strategic management

The theoretical grounding of this work in strategic management will focus on 3 views; the resource-based view, the competence-based view and the dynamic capabilities view.

Mintzberg argues that all strategies lie somewhere between deliberate (intended, planned) and emergent (realized without intention) (Mintzberg, Waters 1985). In theory, a pure deliberate strategy is that which is realized exactly as intended; there must be precise organisational intentions which are accepted among all actors and no external interference (market, technological, political etc.). A pure emergent strategy is that which is realized with the complete absence of intention about it; this is unlikely within organizations but could happen if a particular environment directly imposes a pattern of action on an organization. Thompson urges the importance of the study of learning and involvement in people as part of an emergent strategy (Thompson 2005).

Among the strategies outlined in Mintzberg's 1985 framework for organizations, NGOs can be seen as adopting a strategy having most in common with the ideological strategy. This can profoundly affect their reconstruction operations. Among NGOs, the members of any organization generally share a collective vision and identify with it so strongly that it becomes the driving force behind their actions. The fact that fulfilling the vision is paramount to these organizations is manifested in certain aspects of their operation, as demonstrated, for example, by the imposition of unsuitable housing solutions based on what NGO 'experts' decide is correct (Duyne Barenstein, Pittet 2007, McGirk 2005). In most cases an ideology clearly informs intentions as part of a deliberate strategy. Ideological strategy is highly deliberate and this study hypothesises that a more emergent strategy such as the process strategy could improve performance significantly.

The process strategy is well suited to an environment which is complex, unpredictable and uncontrollable. This is exactly what faces NGOs in post-disaster scenarios. As part of a process strategy, the leadership of an organization can exercise a degree of deliberate behaviour by controlling the process of strategy formation, while leaving the content of strategy to others. The leadership may create the organizational structure and appoint staff of its choice (deliberate) but with a view to allowing those staff to develop their own adaptive and innovative strategies (emergent). The process strategy can therefore be referred to as deliberately emergent (Mintzberg, Waters 1985).

Brews points to a link between unstable environments and improved performance in certain types of planning. Planning increases as environmental instability grows. The planning types encouraging most improved performance in organizations in unstable environments are generative and transactive planning, representing adaptation and innovation within organizations (Brews, Purohit 2007). In generative planning, project/service/process innovation is the key and all organizational plans are assessed through this lens of innovation. Meanwhile, transactive

planning involves plans which are formed on an ongoing basis based on continual adaptation and feedback/learning.

Within this context the research will focus on three main views of strategy:

Resource-based view: it is the dominant school of strategic thought; there is a need for a fit between the external market context in which a company operates and its internal capabilities; competitive advantage is derived from the ability of an organization to assemble and exploit an appropriate combination of resources.

Competence-based view: it is a vehicle for achieving organizational performance; it articulates both the expected outcomes of an individual's efforts and the manner in which the activities are carried out; resources must be fully utilized to develop capabilities which form competencies while driving change; competencies must be valuable, rare, and difficult or costly to imitate, without an easy or direct substitute available if they are to yield sustainable competitive advantage.

Dynamic Capabilities view: a dynamic capabilities approach will deploy and exploit resources, capabilities and competencies that are unique to an organization; to pursue a dynamic capabilities view, an organization must be well equipped to reconfigure its operations to respond to changing environments; an extension of the resource-based view; capabilities that ensure that an organization can adapt and change quickly and therefore perform better and grow.

Although some strategists and managers may use each of these views exclusively, the literature suggests that the underlying theory may be much the same for all three. The resource-based view is the original assumption that organizations must match their internal resources to the external environment. The competence-based view suggests that an organization must create for itself a strategic position within a market and embed distinctive competencies to maintain that position. The dynamic capabilities view links these together. A dynamic capabilities approach will deploy and exploit resources, renewing capabilities and developing competencies. Fig. 1 presents a model for a dynamic competency framework which this research will follow.
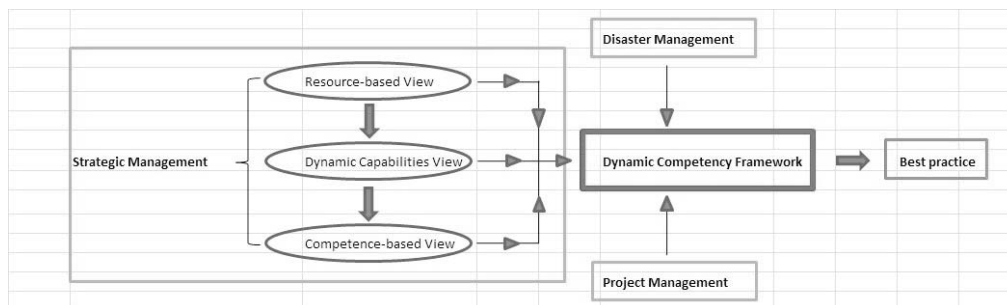

Fig. 1. Dynamic Competency Framework

Key collective capabilities in organizations form competencies. Capability is defined by Hafeez as "the ability to make use of resources to perform some task or activity". In terms of reconstruction, resources may be physical resources (e.g. building materials, tools, financial endowment), human resources (e.g. labour skills, training, field experience) or organizational resources (e.g. NGO status/image, policies/processes) (Barney 1991). Jurie defined organizational capacity as "the inherent endowment possessed by individuals or organizations to achieve their fullest potential." Capability, meanwhile, is the action taken on capacity to realize this potential while competence is attained by developing capability and expanding capacity.(Jurie 2000)

Thompson summarizes that organizations must display strength of resources facilitating distinctive capabilities thus forming strategic competencies, all of which creates superior

competitive position & performance (Thompson 2005). Each of the three views discussed thus far have important elements which feed into the new theoretical framework. However, none of these could in isolation equip an organization to pursue best practice in reconstruction. When the three are seen as complimentary views, it enables us to develop a more complete theoretical framework for NGOs involved in post-disaster reconstruction that will contribute to best practice upon implementation.

Project management

Project Management as a theoretical field has been described as a set of models and techniques for the planning and control of complex undertakings (Packendorff 1995). What is a project? Unique and complex undertakings which are limited in terms of time and scope, such as constructing a building or fighting a battle, are seen as projects, as are many business activities. In most project management literature the project is defined as: a unique, one-time task with a predetermined delivery date, being subject to performance goals and consisting of a number of complex and/or interdependent activities.

Literature touching on project management covers an extremely diverse range of topics such as risk analysis, project leadership, investment planning, group dynamics, human resource management etc. Key concepts from organizational theory such as learning, participation renewal and innovation must feature more prominently in modern project management thinking if it is to move forward and develop. Project management knowledge is applicable to any sort of project in all kinds of industries and environments. While a construction project may differ from a product manufacturing project in terms of outcomes and knowledge requirements, for the purposes of planning, controlling and leading, the projects are run along the same principles.

Project management is an important part of post-disaster reconstruction. It brings a structure to the process and sets clear objectives and deliverables. However, there are drawbacks to using the project management approach. Project management is often applied as a general theory, whether dealing with well defined, easily planned projects or unpredictable and ambiguous ones (Turner, J. R. Cochrane, R. A. 1993). Also, the literature on project management offers an abundance of normative advice but rather little empirical evidence explaining why projects fail (Packendorff 1995).

Projects are generally divided into three stages; development, implementation and termination. Meanwhile, the theoretical field of project management can be described in terms of the planning, controlling and evaluation theories.

A new theoretical framework for reconstruction

A theoretical framework for post-disaster reconstruction will be developed as the primary deliverable of this research study. The framework will draw on existing theory from the fields of disaster management, strategic management and project management to construct the model and integrate the results of the research study.

Applying a combination of the management theories which have been discussed for NGOs in reconstruction, we can see that in the pursuit of best practice, these organizations must become more adaptive and innovative. Central issues to address in any organizational shift will be capacity, capabilities and competences, which, this study argues, must become more dynamic in nature. In this context, a 'dynamic' organization will be flexible, adaptable to unstable environments and will possess competences that will help them address multiple barriers.

The key is to break down the important theories in the arena of management and bring together a new framework that NGOs can understand. By validating such a model, NGOs can feel confident

to implement these concepts of change and support an organizational shift. Various UK NGOs have admitted to failures during tsunami reconstruction, and many of their shortcomings can be explained to some degree by the lack of a dynamic competency framework within their organizations. This research has the potential to facilitate widespread movement towards best practice in reconstruction.

Research Objectives:

- To determine the competencies deployed by NGOs involved in reconstruction projects following major disasters.

- To investigate the barriers that NGOs have faced during reconstruction and define how these barriers can be overcome through a dynamic competencies approach.

- To define how these barriers can be overcome through a dynamic competencies approach.

- To develop a dynamic competencies framework model that can be used by NGOs in post-disaster reconstruction projects.

Research results

This paper sets out a theory of dynamic competencies within post-disaster reconstruction. This theory is the foundation of a research study that will commence in late 2008, compiling data pertaining to NGO post-disaster reconstruction. The theory and methodology proposed herein will drive the project and inform the field work.

Discussion and conclusions

A grounded theory methodology is proposed for this study. Grounded theory was introduced to address the need for sociological research to generate new theories, rather than verifying existing theories. It is a style of conducting qualitative data analysis. Grounded theory emerges from the data collected, providing a new understanding of social processes emerging from the context in which they occur, without placing the data into the constraints of previous theoretical frameworks (Cassell, Symon 2004).

A grounded theory methodology is especially relevant to NGO research because it will produce descriptions of organizational reality which are easily recognized by members of the NGO sector. These findings will lead to positive discussions within the field around the important issues uncovered, and provide a basis for organizational change. The chosen methodology will promote participation from NGO field workers and such an input will increase the credibility of the framework and streamline the validation procedure.

It is proposed to involve a number of UK NGOs in the study that have implemented reconstruction projects both in Indonesia following the Asian tsunami, and Bangladesh following Cyclone Sidr.. Concentrating on these recent natural disasters, and in particular on the efforts of UK NGOs implementing reconstruction programmes, will enable the theories and hypotheses that have been outlined to be developed and tested.

These disasters are particularly appropriate for this research study for a number of reasons. There was a large UK NGO response to each disaster, meaning that there will not be a lack of available information or interviewees. The reconstruction projects which have been implemented

following these disasters are large in scale and hold the most potential in terms of yielding detailed information about best practice as appropriate to this type of NGO project.

By comparing two disasters in two countries with different external environments and factors affecting reconstruction projects, it will open up possibilities for comparison between the two disasters or between organizations. It will be interesting to discuss how NGOs applied learning from the tsunami to reconstruction practices in Bangladesh.

Stage 1 data collection

Field work will commence with the selection of willing NGO participants. Field work will initially be largely conversational in nature with relation to Bangladesh in particular; that is, the researcher will be UK based, collecting data through email and phone conversations with NGO staff in the field. Interviews with field workers based in the UK with experience of relevant reconstruction projects will take place with regard to both disasters, while those currently abroad will be interviewed upon their return to the UK. Access to field reports will be provided by NGOs.

Mapping is used in the behavioural sciences to study people's relationship to the environment and is generally broken down into behavioural and cognitive maps. Behavioural maps record people's locations and actions while cognitive maps record what people believe to be important in an environment, how they take action and the reasoning behind the decisions they make (Sommer, Sommer 2002). Taking the concept a step further is causal mapping, which refers to the complex causes and consequences of every issue we encounter (Bryson et al. 2004). In the case of this study, what is referred to as an event mapping procedure will be conducted; a reconstruction project from start to finish will be documented with complex linkages between success factors, barriers and the actions taken by NGOs. This will combine behavioural and cognitive mapping techniques to develop an in-depth picture of a particular project.

It is proposed that three NGO partner organizations be secured as participants for each disaster (both Tsunami and Sidr if possible), and within each organization, three individuals with field experience be the subject of cognitive mapping exercises with regards to each disaster. Based on this course of action, three separate interviews will be conducted within each participating NGO in each disaster, facilitating data triangulation. (See Fig. 2)

The total number of interviews in this first stage will be 18 and after compilation of the data there will be 6 organization specific event maps.

		Asian Tsunami		Cyclone Sidr	
NGO 1	Interview 1			Interview 1	
	Interview 2	Map 1A		Interview 2	Map 1B
	Interview 3			Interview 3	
NGO 2	Interview 1			Interview 1	
	Interview 2	Map 2A		Interview 2	Map 2B
	Interview 3			Interview 3	
NGO 3	Interview 1			Interview 1	
	Interview 2	Map 3A		Interview 2	Map 3B
	Interview 3			Interview 3	

Fig. 2. Event Mapping Proposed Data Collection

Stage 1 data analysis

Once the 6 event maps are constructed, careful analysis will proceed, allowing the extraction of critical success factors and barriers in reconstruction. Organizational capabilities and competencies will also be more fully understood through this mapping exercise. Using this

method, interviewer and interviewee may not know the relevance of each piece of data until the map is fully constructed. This technique will allow the root cause of specific barriers or difficulties to be discovered and will link causes and effects that may not otherwise seem connected.

As well as analysing each map individually, there are some particularly compelling discussions that will develop by comparing the maps to each other. Initially we will compare 1A & 1B, 2A & 2B and 3A & 3B. This will allow us to discuss the differences in NGO response from one disaster to another. We will be able to see whether NGOs applied lessons learned from their tsunami reconstruction projects to their current undertakings in Bangladesh. A comparison of 1A & 2A & 3A or 1B & 2B & 3B will allow us to discuss the difference in NGO reconstruction projects within a similar environment.

Stage 2 data aollection and analysis

The comprehensive event maps, having been constructed for each event within each NGO, will subsequently be brought back to the organization for a second stage of data collection. Further interviews/workshops will be conducted in the UK base of each organization with appropriate staff members. The focus of this second stage of research would be to consolidate and enhance the findings of the study thus far (eg. Central issues as analysed) and develop the dynamic competency model through the input of each NGO. It is intended to expand and further develop the models through this process. Following this second stage of interviews it will be possible to merge the three Asian Tsunami maps and the three Cyclone Sidr maps and again analyse and discuss.

A final model will then emerge, combining the two event maps into an overall dynamic competencies framework model where NGOs organizational and operational competencies will interact with time/cost/quality as well as critical success factors and barriers. The model will enable NGOs to assess past practice and plan for future events, as well as provide a working model for disasters in-motion.

A comprehensive validation process will then be undertaken across the sector in order to test the dynamic competency model in NGOs other than those taking part in the research, and also among beneficiaries of humanitarian reconstruction projects.

Conclusion

In recent years, NGOs have played an increasing role in reconstruction projects in disaster affected areas. It is clear that such projects have usually not been managed efficiently and that many NGOs do not possess the operational and organizational competencies that are vital to best practice, however much knowledge they might bring in terms of the humanitarian sector.

Teece defines dynamic capabilities as, "the ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece, Pisano & Shuen 1997). Based on the theoretical framework outlined in this paper, it is clear that NGOs can and should apply the theories of strategic management and the practices of construction management to their own organizations and their programmes for reconstruction. This research has the potential to be very useful to NGOs involved in reconstruction projects as they strive towards best practice and mould their operational and organizational structures.

The following hypothesis is the cornerstone of the study: by building organizational capacity, capabilities and competences to be dynamic in nature, while focusing on a more emergent strategic approach, as compared to traditional strategic planning, with emphasis on adaptive capability and innovation, NGOs will be much better equipped to move forward with reconstruction projects that all stakeholders can have confidence in.

Key Lessons Learned:

• Current NGO practices display serious flaws in strategic thinking, leading to substandard reconstruction projects.

• Management theory has not been applied in the development of NGO to a degree which would allow them to function satisfactorily in reconstruction.

• To effectively match an unstable environment, the internal capacity, capabilities and competencies of an NGO must be flexible, adaptive and diverse.

• A dynamic competency theory which NGOs can apply to their organizational strategy and structure will help develop best practice in reconstruction.

References

Adams, L. & Harvey, P. (2006) *Learning from cash responses to the tsunami*, Humanitarian Policy Group, London.

Barakat, S. (2003) *Housing Reconstruction after Conflict and Disaster*, Humanitarian Practice Network, London.

Barney, J. (1991) "Firm Resources and Sustained Competitive Advantage", *Journal of Management,* vol. 17, no. 1, pp. 99.

Boen, T. & Jigyasu, R. (2005) *Cultural Considerations for Post Disaster Reconstruction: Post-Tsunami Challenges*, UNDP Conference, www.adpc.net.

Brews, P. & Purohit, D. (2007) "Strategic Planning in Unstable Environments", *Long Range Planning,* vol. 40, no. 1, pp. 64-83.

Broadbent, S.G. & Broadbent, D.M. (2004) *Traditional vs Modern Construction Practices*, International Conference and Student Competition on post-disaster reconstruction "Planning for reconstruction" April 22-23, 2004, Coventry, UK.

Bryson, J.M., Ackermann, F., Eden, C. & Finn, C.B. (2004) *Visible Thinking: Unlocking causal mapping for practical business results,* John Wiley & Sons, Ltd, Chichester.

Cannon, T. (1994) "Vulnerability Analysis and the Explanation of 'Natural' Disasters" in *Disaster, Development and Environment*, ed. A. Varley, John Wiley & Sons, Chichester, pp. 13-30.

Cassell, C. & Symon, G. (2004) *Essential guide to qualitative methods in organizational research,* SAGE Publications, London; Thousand Oaks.

Doocy, S.e.a. (2006) "Implementing cash for work programmes in post-tsunami Aceh: experiences and lessons learned", *Disasters,* vol. 30, no. 3, pp. 277-296.

Duyne Barenstein, J. & Pittet, D. (2007) *Post-disaster housing reconstruction: Current trends and sustainable alternatives for tsunami-affected communities in coastal Tamil Nadu*, ISAAC, Lugano.

Garcia, R. et al. (2006) "Sustainable resorts: learning from the 2004 tsunami", *Disaster Prevention and Management,* vol. 15, no. 3, pp. 429-447.

Jurie (2000) "Building capacity", *Journal of Organizational Change Management,* vol. 13, no. 3, pp. 264.

Kilby, P. (2008) "The strength of networks: the local NGO response to the tsunami in India", *Disasters,* vol. 32, no. 1, pp. 120-130.

King, D. (2007) "Organisations in disaster", *Natural Hazards,* vol. 40, no. 3, pp. 657-665.

Lizarralde, G. & Boucher, M.F. (2004) *Learning from Post-Disaster Reconstruction for Pre-Disaster Planning*, International Conference and Student Competition on post-disaster reconstruction "Planning for reconstruction" April 22-23, 2004, Coventry, UK.

McGirk, J. (2005) *Western NGOs and the tsunami test*, openDemocracy, http://www.opendemocracy.net

Mintzberg, H. & Waters, J.A. (1985) "Of Strategies, Deliberate and Emergent", *Strategic Management Journal,* vol. 6, no. 3, pp. 257-272.

Packendorff, J. (1995) "Inquiring into the temporary organization: New directions for project management research", *Scandinavian Journal of Management,* vol. 11, no. 4, pp. 319-333.

Paton, D. (2003) "Disaster preparedness: a social-cognitive perspective", *Disaster Prevention and Management,* vol. 12, no. 3, pp. 210-216.

Paton, D., Smith, L. & Violanti, J. (2000) "Disaster response: risk, vulnerability and resilience", *Disaster Prevention and Management,* vol. 9, no. 3, pp. 173-179.

Reddy, S.D. (2000) "Factors Influencing the Incorporation of Hazard Mitigation During Recovery from Disaster", *Natural Hazards,* vol. 22, no. September, pp. 185-201.

Ribot, J.C., Magalhaes, A.R. & Panagides, S.S. eds. (1996) *Climate Variability: Climate Change and Social Vulnerability in the Semi-Arid Tropics*, Cambridge University Press, Cambridge.

Rubin, C.B. & Barbee, D.G. (1985) "Disaster Recovery and Hazard Mitigation: Bridging the Intergovernmental Gap", *Public administration review,* vol. 45, pp. 57-63.

Schipper, L. & Pelling, M. (2006) "Disaster risk, climate change and international development: scope for, and challenges to, integration", *Disasters,* vol. 30, no. 1, pp. 19-38.

Sommer, R. & Sommer, B. (eds) (2002) *Practical Guide to Behavioral Research: Tools and Techniques*, 5th edn, Oxford University Press, Oxford.

Sphere Project (2004) *Sphere project: Humanitarian Charter and Minimum Standards in Disaster Response*, Oxfam, Oxford.

Teece, D.J., Pisano, G. & Shuen, A. (1997) "Dynamic Capabilities and Strategic Management", *Strategic Management Journal,* vol. 18, no. 7, pp. 509-533.

Thompson, J. (2005) *Strategic Management: Awareness and Change,* 5th edn, Thomson Learning, London.

Turner, J. R. Cochrane, R. A. (1993) "Goals-and-methods matrix: coping with projects with ill defined goals and/or methods of achieving them", *International Journal of Project Management,* vol. 11, no. 2.

UNDP (2004) *Reducing Disaster Risk: A Challenge for Development*, UNDP, Geneva.

Webster, P.J., Holland, G.J., Curry, J.A. & Chang, H.R. (2005) "Changes in tropical cyclone number, duration, and intensity in a warming environment", *Science,* vol. 309, no. 5742, pp. 1844-1846.

Young, H. & Harvey, P. (2004) "The Sphere Project: The Humanitarian Charter and Minimum Standards in Disaster Response: Introduction", *Disasters,* vol. 28, no. 2, pp. 99.

Author's Biography

Jason Von Meding is currently a postgraduate researcher at Queen's University Belfast, working towards a PhD in the field of Disaster Management. He is 26 years old and is married with two young children.

He is a graduate of the BSc Architecture (2004) and the BArch (2007) degrees at Queen's University Belfast and brings his architectural background to new application in an area he has a great passion for.

Jason has also spent the past 4 years in practice (full and part-time) with a leading Belfast architectural firm, gaining valuable experience of the construction industry in while simultaneously furthering his academic experience at Queen's University.

A highlight of Jason's first year of postgraduate research was having a paper entitled 'Flooding in New Orleans, USA and Hull City, UK: Comparing Disaster Management Strategies' published at the CIB sponsored BEAR 2008 Conference in Sri Lanka this past February, which he attended, presenting his work to academics and practitioners in the field of Disaster Management.

Jason will be conducting his PhD field work in late 2008 and early 2009 and looks forward to publishing the results in subsequent papers.

Lukumon Oyedele BSc (Arch.) MArch., MSc (Proj. Mgt.), MSc (Struct. Eng.), LLM (Constr. Law), MCIOB. Lukumon is a lecturer at the School of Planning, Architecture and Civil Engineering at Queen's University Belfast. He is the Founder and Programme Director of the MSc in Construction and Project Management.

He teaches in the areas of research methodology, construction engineering and project management. His research interests include strategic management and organisational behaviour in construction, procurement and contract law, design management and disaster management. His research continues to be published widely in these field both in international journals and conferences. He is a reviewer and editorial board member of journals in these fields and has served as a member of the scientific committee on several international conferences. He is a founding member for the CIB committee for disaster management in construction (TG63) and a member of the Committee for Disaster Reduction in Africa (DRA).

Professor David Cleland BSc, PhD, CEng, FICE, FIStructE is Head of the School of Planning, Architecture, and Civil Engineering at Queen's University Belfast, a multidisciplinary school with about 1000 students and over 50 academic staff. He is also a member of the Academic Council at QUB.

His teaching interests are in Structural Engineering and Construction while his research is also mainly within these fields. In both subjects he is widely published and many of his projects have been supported by EPSRC.

He has been involved in a number of research task groups within RILEM, CIB and fib. He serves on the management committee of COST534 and is co-ordinator of Working-Group 5. He is a member of the Northern Ireland Construction Industry Training Board, Vice Chairman of the NI Region, a member of Council of the Institution of Civil Engineers, and a member of the Engineering Council (UK) Board.

Dr Victoria Harris set up article[25] with the founder Trustees in June 2005 (then known as Architects for Aid). She has a BSc in astrophysics and PhD in nuclear physics from Imperial College London which she then followed with five years in investment banking and two further years in banking consultancy, working in the areas of derivatives and securitisation. Victoria lead on projects as diverse as football gate-receipt receivables financing to headhunting teams for investment banks. While seeking a career change into the not for profit sector, Victoria began (though did not finish this time) a second PhD (in experimental psychology) at Cambridge University working on research with the charity the Autism Research Centre. At the same time she also undertook professional experience in psychology working in some hostile environments including conflict zones. This influenced her interest in and move across into full time development work and post disaster projects, and ultimately to setting up article[25]. Victoria is currently a visiting academic supervising a PhD at Queens University Belfast. Victoria is the full-time chief executive of the charity.