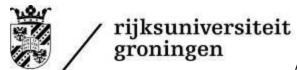*Actor Consulting as an important model to apply to help reconstruction plans succeed after a Natural Disaster: Lessons Learned from Kobe, Japan*

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"The World is too big to think in absolutes"
-- Juan Carlos Santibáñez Francos

Abstract

Reconstruction plan after a natural disaster is a commitment that needs to be done, one way or another, doing the decision making to create the plan, could be on focusing on the means and the facts; but the other way around is also to consider the value of decisions and their objective, that the residents will qualify by living on those decisions. The choice of those decisions need to be taken in a collaborative way and not only by a central governance and single objective. If the reconstruction plan is applied in the correct way, the result will be to make a resilient and adaptable city against natural disasters.

Natural disasters had stricken human settlements since they were founded, after the disaster appearance there's nothing else to do, that reconstruct what was destroyed. That is how it was done in the entire world, but since mid-21st century, solutions were using only the technical rationality creating defences higher, bigger and stronger. Creating fast solutions, thinking that we know all for certain and developing all the possible scenarios to prevent and protect the people for future natural disasters. Through time we had seen, that the technical rationality is not enough to make a safe city, adaptable and resilient against natural disasters. New models and rationalities are needed to improve the resilience and adaptability of the city.

Some nations are beginning to apply the communicative rationality for planning of the city from neighborhoods, some infrastructure issues and in this case to make more adaptable and resilient the city against natural disasters. The planning of the city cannot only depend on one rationality to increase adaptability and resilience of the city against a natural disaster. The use of these rationalities are not enough, by their own, to assure the adaptability and resilience of society, before and after the impact of a natural disaster. There is missing a piece of the puzzle to make safe cities, shall it be the Actor Consulting Model? The reason this model was chosen is that the Actor Consulting model includes other models in its application.

Applying the Actor Consulting Model more issues can be treated together, combining the Technical and Communicative rationality at the same time. Having in mind that it is necessary to apply the Technical rationality for some issues, believing that the system is closed, even when it is not. Other issues can be treated with Communicative rationality.

The purpose of this thesis is to know through the research of the earthquake at Kobe, Japan. How the reconstruction plan was divided in Technical and Communicative planning. Focusing and expecting that they may use the Actor Consulting model for the reconstruction plan of the city. If they used the Actor Consulting model, it will probably can be proved that the model is the missing piece of the puzzle to do a correct planning

of the city, and transform a city to be more resilient and adaptable for the impact of natural disasters.

Key words

Acknowledgement

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Introduction

In the following Master Thesis, the reconstruction plan after a natural disasters will be studied, more specific the earthquake of Kobe, Japan in 1995. The focus of the research will be in how Japan created their reconstruction program using linear and non-linear rationality (technical and communicative). The success of the recovery might not be, only of the used of the two rationalities, also because they used the Actor Consulting model. How the two rationalities were used, and the Actor Consulting model will be described in more detail in the content of the Thesis.

Relevance

Rationality models exist now a day to form part of the World. We used them to solve problems, to plan and create the world where we live. In this case, the focus will be how functional models and nonlinear models affects, the decision making and the taken action before and after a Natural disaster. The planning of the city needs to be focus using both models and not only to `make a plan, that is taking care about the physical environment, what also matter is what people think about it. The two rationalities and the actor consulting model, will give a nation 'The ability to separate facts and values' (Philip Allmendinger 2002). To create and apply a correct strategy, for the reconstruction and prevention of a natural disaster.

Natural disasters have occurred year by year, taking human lives and material values. Cities have been reconstructed from the damage caused to them, but the recovery does not avoid new natural disasters to continue destroying the cities, unfortunately to this day the human casualties and material destruction has increased. We are now in the XXI century, and still not capable to create safe cities in the wisest way.

Natural disasters can be produce by earthquakes, tsunamis, tornados, floods, volcanic eruption, heat waves, for mentioning some of them. When they occur the impact is not only on the nature of the earth, it will also affect financial, environmental and human losses.

These types of events are frequent in the nature of Earth life, and since the beginning they are part of the evolution of it and inevitable. The reason they became a disaster is that the damage is amplified in the human settlements due to the inadequate planning and localization of its settlements; also because of the carelessness in disaster management and the inadequate crisis knowledge.

A disaster was caused by the interaction of two variables: Hazards and Vulnerability. "Hazards meaning the susceptibility to injury or loss; vulnerability meaning the capability to get harmed" (M. Fleischhauer, 2008). When these two factors are maximized, bigger disasters occur for example the Tsunami in the Indian ocean 2004, Hurricane Katrina 2005, Chile Earthquake 2010, Japan Earthquake 1995 and Haiti Earthquake 2011.

Unfortunately nowadays we are not able to stop natural events that will cause a natural disaster as mentioned above. But what we are able to do is to diminish the hazards as also the vulnerability of a human settlement also call the city. In order to reduce the hazards and vulnerabilities an option will be changing the spatial planning of the cities combine with the appropriate technical solutions, transforming the cities to understand that the best planning is not only in a technical and communicative way, the best way of planning is planning with those models and to integrate the Actor Consulting model, as Japan did; not only after the natural disaster, they applied it before the natural disaster, that is what other nations need to learn. Actor Consulting model can be applied in the Spatial planning decisions, so they have to consider all spatial relevant sectors hazards to prevent or minimize the effects of any natural disaster, using the tacit knowledge of the people. Spatial planning needs to take care of all spatial aspects and not of only specific objects (M. Fleischhauer, 2008). The most crucial aspects are one's the society considers, not the physical necessities of the city.

"The goal of spatial planning is to make resilient cities designed to anticipate, whether, and recover from the impacts of natural, resilient cities were based on principles derived from experience with disasters in urban areas. While they may bend from hazard forces, they do not break" (Godschalk, 2002)

Making a city resilient to natural disaster is the challenge because it needs to change the systems of it, so if one fails, the others are able to continue functioning, as also nodes that protect each system from each other in case of failure, they need to be autonomous not dependant from other systems but they can support each other, they need to be able to learn from past experiences (M. Fleischhauer, 2008).

As mentioned before mitigation measures against natural disasters can be done by a correct spatial planning combine with technical solutions, but one way or another, natural disasters occur increasing in the destruction they produce to the cities. The Federal Emergency Management Agency establishes the three phases after a natural disaster that are Emergency Response, Relief and Recovery.

Emergency Response is the act of give the correct aid for the people involved in the disaster, these includes rescue of survivors, delivery of food, water, shelter and health care. While Relief is the phase where the construction for temporal living takes place as the removal of destroy buildings (D. Brown, K. Saito, R. Spence and T. Chenvidyakarn 2008). The Recovery phase is the process of restoring, rebuilding and reshaping the physical, social, economic and natural environment through pre-event planning and post- event actions (G. P. Smith & D. Wenger 2007).
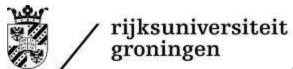
Context Events

It was 5:46 am of 17/01/1995 in the city of Kobe, Japan; when a 7.3 magnitude in the scale of Richter (max. value 10) earthquake took place. The human casualties were of 4,571 dead people, 70% of them died immediately of suffocation or crush. The transportation system collapsed by the destruction of some of their infrastructure (a bridge, rail or road). There were 67,421 collapsed buildings and 55,145 partially collapsed buildings. Public, industrial and business facilities were damaged or destroyed. There were 222,127 people that were evacuated and that used the shelter service. The economical damages caused by the earthquake were of $102.5 billion. (Chuo-ku, Kobe & Hyogo 2010).

Japan as a country that searches always for the continuous development of their country and people no matter the situations they pass through their history. They have show that their only aim is to solve the problem, take the lessons learned and go on.

Japan is not used to forget adverse events in fact they build museums always to remember it, as the War Museum, that has information from all the wars the Empire of Japan fought including the second world war and also from Kobe Earthquake Memorial Museum where visitors do not only found information about the destruction of the earthquake, they are educating visitors about earthquakes and disaster prevention; while in other parts of the world, the disaster is only part of the bad milestone of the history of the country, the lessons learned are only keep by the experts of each area and not spread with the population. In some cases, only technical rationality is apply after the natural disaster, so as in the case of the earthquake at Mexico city in 1985, the reconstruction plan only included technical solutions and prevention for the next earthquakes (María E. Ducci,1987), there was no Communicative rationality and not to mention about Actor Consulting Planning.

Japan technical rationality is helping to build or rebuild with new materials, finding the structural mistakes and at the same time solving them, so that new buildings can be more flexible and not resistant. Resistant structures will always collapse in a fragile way

when the maximum resistance value is reached. This means that the collapse will not take a couple of minutes, the people will not be able to see the beams, columns and walls starting to break; it will only collapse without warning. Meanwhile, flexible structures might fail, when their flexibility resistance is reached, but it will take more time to occur, people will start seeing how the beams, columns and walls start to break. In this way, the gap of time will help to people to get out of the structure, and more people will survive (Stephen Timoshenko, 1972).

Research Perspective

Before mentioning the research question, it is of value to mention which will be the theoretical frame work and perspective that in this thesis will be used.
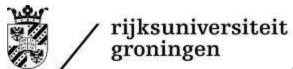
The theoretical framework that will be used to match the actions done for a reconstruction plan will be the strategy theoretical framework to know how to divided each issue that need to be solve in Central or Shared Governance; the strategy is entirely interrelated to the Planning Theory Framework that includes the used of the Technical and Communicative Rationality. The Actor Consulting model as part of the Communicative rationality also will be part of the theoretical framework to see if it had positive results in the reconstruction plan.

If the actions and division of the reconstruction plan are worth, compared to another reconstruction plans or actions from other nations. It might be necessary to give an advice of to do the transition from a technical view of reconstruction plan to a communicative construction plan and the application of the Actor Consulting Model if it is the case. The Transition Management theoretical framework will be used to go through the technical rationality of planning against the natural disasters to the communicative planning. The transition management will show the several steps that are needed to change the mindset of the residents of one city and how it might need several years to accomplish the change.

To apply the theoretical framework already mentioned, the case of study will be the reconstruction plan of the city of Kobe after the earthquake of 1995.

The analysis of how Japan applied their strategy to divided the Central and Shared Governance for the reconstruction of the city, also how the Technical and Communicative rationality will be display of how they applied it, if is the case. The Actor Consulting model might be a high expectation to see how it works, considering that is a Dutch model. Even though the possibility that they apply it in a different way or with another name, could be possible.

The reason why the Actor Consulting model was chosen is because even it is a extremely deep theoretical framework and that involve complex situations. It is a model

quite clear, which only raw material is communication and collaboration. Also, it is a model that uses different models as it is the Deming Cycle and the use of indexes. So far it is a model that is not closed for new tools that will help t improve the outputs of the model.

There are some models that could be applied for the case of the reconstruction programs after natural disasters, and that could be analyzed for this research that are:
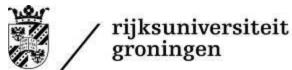
Deming Cycle (Edwards Deming, 1982): the reason why Deming cycle is not going to be used because it is included itself indirectly in the actor consulting model (Plan, Do, Check and Act). The Deming cycle theoretical framework is based specifically to quality products, of course the Deming cycle is used for other theoretical framework as it is for Project Management.

Programme Management (Project Management Institute, 2008): even this theoretical framework is just perfect to analyzed in this case it will not be used. The reason is that the theoretical framework made by the Project Management Institute, is focus more in the management of the programme, in this case the reconstruction of the city of Kobe. The theoretical framework, is not so deep in theory as it is The Actor Consulting, Technical and Communicative rationality. It only mentions the aspects of the strategy that needs to be done (Governance, Alignment, Management, Integration, Finances, Infrastructure, Planning) making the model with a lot of restrictions. So far the decision of not including it in this research does not mean that the model is not worth to be applied in a reconstruction plan of a city.

Sustainability planning model (K. Johnson, C. Hays, H. Center, C. Daley, 2004): in this case the sustainability of the plan will be define as the process of ensuring an adaptive prevention system and a sustainable innovation that can
be integrated into ongoing operations to benefit diverse stakeholders. Its theoretical framework clearly defines the process that need to be made (Assessment, Planning, Implementation, Evaluation, Reassessment and Modification), it is a wide and strong theoretical framework. The fact of making a sustainable plan means to make sustainable goal, difficult to be measure and to be aware when the goal is achieve. The reason why is not used is because the Actor Consulting model is in itself a sustainable planning model and part of the innovation of the planning theoretical framework.

Actor Consulting above all the models mentioned was chosen because is the model that can be easily related with both rationalities the Technical and Communicative; in the same context of the planning theory is.
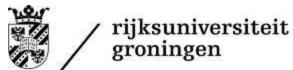
Objective

The objective to achieved in this research will be to prove that Actor Consulting model is the missing piece of the puzzle to create a Safe City, that will be resilient and adaptable against natural disasters. The actor consulting backbone is the communicative rationality without it the Actor Consulting model is not possible to apply. Actor consulting raw material is the communication that will be explain in the theoretical framework. The reconstruction plan not only includes the results of the Actor Consulting model it also includes the results of the decision making model and that includes also the technical planning done by the functional rationality.

It exist the possibility that the Actor Consulting model was not applied, in this case the objective will be flexible, so the focus and analysis will be only considering the Technical and/or Communicative rationality, but there is also the probability that besides the findings in the Technical and Communicative rationality we might find a similar model applied that is not exactly the Actor Consulting Model. In this case, the analysis will be for both the rationalities applied and the model.

Overall the objective will be to get the lessons learned from the reconstruction plan of the city of Kobe. Principally highlighting the technical and communicative solutions, complemented with the Actor Consulting model, produce by the Shared Governance apply by the government of Japan. It might be soon to highlight that the decision making and the way the reconstruction plan was made, might be outstanding of the division of the Technical and Communicative rationality. If this is the case, the application and general advice will be made to adopt this rationalities and model to be implemented in other nations. By using the Transition Management theoretical framework, to make the correct adoption of the lessons learned of Japan.

Research Question

The research question will be:
How Actor Consulting Approach improves Creating a Safe City before and after a natural disaster?

The research approach to answer this question will be through the analysis of the document "Comprehensive Strategy for Recovery from the Great Hanshin-Awaji Earthquake" published by the Kobe Institute of Urban Research in 2010. This document express how they plan the reconstruction of the city since the disaster occurred explaining in detail the strategy they used in a long term plan of 10 years until 2005. This strategy is explained in plans and actions, how was evolved through the time, depending on the new necessities of the city, and why they did it. Using the theoretical framework this plans are actions are going to be analyzed so it can be divided in the Technical and Communicative rationality as well in search of the Actor Consulting model or a similar model used for the reconstruction plan and implementation.

Natural disasters need to be seen as an opportunity to change the things that were wrong and to capitalize the smartest things for the improvement of the city in all their aspects (K. Topping, 2004). The research question should be answered in a clear or fuzzy way. What is certain is that the lessons learned, might be of significant value and worth apply them in the Transition Management Framework.
At the end of the research and analysis, we might see that the most salient issue for a successful recovery, adaptability and resilience of a safe city, is how a nation is capable to apply the rationalities. Somehow we will see that Technical and Communicative rationalities are common but still under development, in the interaction between each other and Actor Consulting is beginning to work, but more than starting to work, we hope the results are outstanding.

Thesis Layout

The outline will be formed by Decision Making throught different rationalities and models: It will include a brief explanation of: Technical rationality, Communicative rationality, Actor Consulting model and Transition Management framework.

Methodology and Research question: It will show how the information will be shown and how the analysis will be made. The methods that will be used are going to be explained because is critical to choose the correct methods, so the outputs are worth and to get an interesting research perspective.

Case study of Kobe, Japan: The presentation of the actions done for each rationality will be shown and how they worked for the reconstruction plan and strategy chosen for Japan.

Analysis: once the theoretical background for the actions made for each country are known, the analysis of each one will be made due to Technical Planning, Communicative Planning and Actor Consulting Model. If there is another model used the analysis will be made of the model showing the pros and cons of it.

Conclusions: A summary of the findings will be made. How the Technical and Communicative rationalities were applied in the reconstruction plan, as well of the Actor Consulting Model or the model that is possible to find.

The way Japan encourage their reconstruction planning, might be adopted for other countries, it will be explain a brief way how to make the transition from a technical planning to a communicative and to apply the actor consulting model.

The following chapter will be about the theoretical framework of planning. This chapter will give the foundations to understand the reconstruction plan of Kobe.

Decision Making Through Different Rationalities and Actor Consulting model

The reconstruction plan needs to be made by taking choices. These choices need to be taken knowing the theoretical framework of planning. That is formed by knowing the two rationalities, Technical and Communicative. The issues that will be included in the plan need to be separated from single and broad objective, also to know who is going to take those decisions, by central or share governance. The use of Actor Consulting model and how it is formed will be seen in this chapter as the theoretical framework of planning. Transition management will be explain also, because if the actor consulting and the way of Japan of making decisions worked, the advice of how to apply it will be mention in the following chapters.

Decision Making

The decision making is the raw material to form the plan, because it sets the different options that will be include in it, and that will lead the city to a successful resilience and adaptability; also it needs to be in accordance with the economical and development plans of the city and country. While creating the decision making, it is necessary to define the issues and projects have more priority than others. To create a wise decision making it is necessary to make the correct choices, to accomplish it, is necessary to use the model to be used, this model needs to be simple and that looks straight forward to the circumstances of the natural disaster.

The model will be based in rationality, so the decision needs to have a background of exhaustive analysis and comprehensiveness. Whenthe government makes the decision making by this model. They need to consider the next points that are in Figure 1

Figure 1 Decision maker considerations, supported by the rationality model. (Meyerson & Banfield 1955)

The decision maker consideration even is considered as part of the technical rationality, it is a model quite open, that is not only seeking and base on facts and certainty. It is open because it considers several alternatives, each one with a different way to accomplish the goal, or where the goal might be different; considering the value of the result and not only to accomplish a goal.

Applying the rationality model to the decision making of the choices needs to be complemented by the next points, so it can be fit to the plan Figure 2. (Lorange P. & Vancil R. 1977).

- Systematic Environmental Analysis
- Assessment of internal strengths and weaknesses
- Explicit goal setting
- Evaluation of alternative courses of action
- Development of a comprehensive plan to achieve the goals

Figure 2 Rational model apply to the decision making. (Lorange P. & Vancil R. 1977)

The two models mention by Meyerson & Banfield, and the model of Lorange, are quite similar. Lorange is more implicit in being aware of the environment to take the decision and also in having a careful review of the actions that are going to occur. They are similar in taking in consideration several alternatives to achieve the goals.

Due to the decision making needs to fulfill the Safe city necessities, it shall consider the technical rationality but also a shift and complement it with the communicative rationality, not letting behind the actor consulting (Gert de Roo & Geoff Porter 2007).

It is vital to consider the three points consider above (technical rationality and communicative rationality and actor consulting) in the rational model, because they will lead to a robust choice and due to that to a better resilience and adaptability of the city.
A robust decision making needs to answer three questions (Gert de Roo 2003)Figure 3:
- What must be achieved? Which are the goal orientation of the decisions.
- How can it be achieved? What is going to orient the decisions.
- Who will be involved? Which institutions will help to apply the strategies.

Figure 3 Decision Making Model. (Gert de Roo 2003)

The decision making by de Roo could be consider clear but at the same time much wider, because he consider the evolution of rationalities from top-left we can see the Technical rationality to down-right the Communicative rationality. Singles objectives at the top to broad objectives down and from the Central governance left to Shared governance right. In each line the opposite of each one of them can be find on the other side the model works just as a mirror, where all the issues need to be located in the area of planning more suitable for it.

The issues and elements established in the decision making need to Provide the correct direction in accordance to the goals of development of the country, also inspire and motivate the people that are part of the decision making and involved the actors. Each issue and element needs to be measured so it can be evaluate and control, in accordance to know the exact way in which the decision making is going through, if it is working or it is delay. From the evaluation and control the information will be of value to learn from the results, and try always to improve it, even if the results are satisfactory. The decision making will be full of uncertainties, even though never stop trying to do new experiments and innovations, it is necessary to take risks with the uncertainties, this is the only way to maximize the results in benefit of the actors impacted by a situation, but most significant of taking the risks, is to have the lessons learned of the evaluations made to each issue and element (Stuart L. Hart 1992).

The problems that are involved in the decision making of the plan might be tamed and wicked. Tamed problems are the problems that are relatively defined, and solutions are known when they are reach while wicked problems are the ones where the problem is not well defined, solutions are not well defined because they are not yes or no, better or worse. (Rittel 1972) That is why the problems that each rationality might be approached in a different way, for tamed problems the rationality might be technical and for wicked problems the communicative rationality.

Technical Rationality

The technical rationality is making decisions through certainty, thinking that we know everything and that uncertainties do not exist, while the decisions are made; giving the power of decision and control to the experts of scientific reasoning, trying to shape a desire physical environment (Gert de Roo & Elisabete A. Silva 2010) . The process for technical planning processes can be seen in the Figure 4:

Figure 4 Technical Planning Processes. .(Voogd (1995) quoted in Gert de Roo & Geoff Porter 2007,p. 110)

The process of the technical rationality is a process that is applied in a linear way this means that the problem analysis of the decision excludes all the context, believing that the facts are surrounded only by certainties. The technical rationality might be consider inside the reductionism, because we consider taking the context away and only make the analysis by parts (Philip Allmendinger 2002).

Depending of the strategy that is chosen, some issues will be in the part of the technical rationality, which will be solved by the government in a linear way. The solutions might be the result of the technical process done by the technicians and experts in each field. The actions taken from the government to solve the issues by this rationality will mean that they will be the ones that are responsible from the results that these solutions will deliver.

Making the decision through this process will mean that the experts and technicians, are supposing that the problems do not have uncertainties and due to that that the problems are tamed and not wicked; through these supposition the way to find the solutions might be easier than applying the Communicative Rationality.

Communicative Rationality

The communicative rationality is making the decisions through a ideal speech. The ideal speech needs to be comprehensive, sincere, legitimate and accurate (Habermas 1984); involving all the actors in a free interaction, these actors need to be capable of making and questioning arguments. The ideal speech might only be successful in an environment where power, corruption and interest are not present, so it can work correctly. The truth is that in the real world with this restrictions it cannot be possible between institutions and governments but between people it is a reality, and after a natural disaster due to the emergency it might be possible, because is the condition where urgency to recover might move the power, corruption and interests apart, creating a public sphere, ideal to apply the Communicative rationality (Philip Allmendinger 2002).

Dealing with the uncertainties, and knowing that these will always exist, but not let them stop the decision making. The communicative planning processes can be seen in the Figure 5:

Figure 5 Communicative Planning Processes. (Innes quoted in Gert de Roo & Geoff Porter 2007, p.112)

The Communicative process is including the word participation, which means that the plan might be discuss, reaching a consensus at the end, so the action plan can take place. The goal will be reached, not in a linear way, and being aware that they do not know all the facts, the plan will be full of uncertainties. These uncertainties will be
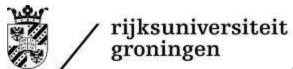
present from the initiative to the implementation; they are part of the Communicative rationality.

The Communicative rationality will be applied when there are issues that were decided in the strategy to be part of the shared governance, this will mean that the problems to solve are wicked problems as mentioned above. When the Communicative rationality is apply the problem need to be treated in a holistic way and been aware that new social movement and groups might rise as in favor to solve the problem, but also against it. That is why this rationality will not be fast and will never be sure when the solution is achieved.

Actor Consulting

"The aim of the actor-consulting decision-making model is to address the subjective nature of fuzzy notions and concepts in planning, to create a common understanding among actors, and to unravel underlying mechanisms that determine the actors behavior" (Gert de Roo & Geoff Porter 2007)

What de Roo means with fuzzy notions, is about the doubt, if the problems are tamed or wicked, of how much certainty or uncertainty the situation has, to be more precise is when the situations are in the middle of complicated and complex. Let's remark the common understanding, as to be empathic with the actors, to learn to project yourself in the shoes of the others, so you can understand their point of view, experiences, problems, lessons learned and personal situations. To unlock the chains that make differences between politics, social classes, education and cultural backgrounds. As the main goal of the actor consulting model will be to anticipate the uncertainties, by gathering all the information that the actors will give, so that better decision can be made; not only to anticipate to uncertainties also to reduce these. But how to reduce the uncertainties, when technical and communicative rationality cannot, in fact with this two rationalities or they do not believe in the uncertainties or they make them more present in decision making, because the Actor Consulting model goes above this two rationalities. (Gert de Roo & Geoff Porter 2007). But even it goes above them it does not mean that it does not need of them, it is crucial to highlight that without the Communicative Rationality, the Actor Consulting model cannot be possible to apply because the Communicative Rationality is the spinal column of it.
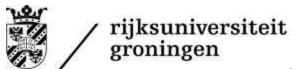
De Roo established six steps before starting to apply the Actor Consulting Model, these steps will benefit to improve the performance of the planning process. (Gert de Roo & Geoff Porter 2007).These points are:

1.- Identify the contextual structure in relation to the planning issue that needs to be unclear and fuzzy. The structure needs to focus in an institution, cultural and physical context.

2.- Select the institutional structure that will involve the individual parties and organisations. Also, select the representative actors of the population that will contribute the better understanding of the issues.

3.- The opinion of individual parties and organisations needs to be explored so it can be identify each condition of definitions and interpretations of the issue that will be analyze.

4.- Understand all the positions and interactions of each one of the actors, including the face to face and the organisational level.

5.- The tasks and responsibilities need to be agreed by all the actors, the scope, way of doing them, how the work is split and when is considered a task done, are of extreme importance, so that all the actors speaks the same language. If the agreement is not transparent, it will mean that is more complex than expected, and that a communicative approach will be needed instead the actor consulting.

6.- Repeat this process at each stage of or at every stage considered relevant to the planning process

The basis of Actor Consulting is the Present, Desired and Potential contributions. The present contribution will be enlightened by the actual situation that each actor is doing, against the problem, how they feel it, how they are reacting to it and what they are expecting from others.. It is the baseline condition that needs to be map carefully. Desired contribution is what they are willing to contribute to be part of the solution of the problem and not part of the problem, also what they expect from the other to become part of the solution. Potential contribution is divided in two steps, the first one is to find out which solutions exists, the second step to determined which are the advantages and disadvantages for the different actors.

As we can see when it was said that the Actor Consulting Model is above the technical and communicative rationality, it does not mean that it will not need of both of them, in fact somehow the actor consulting is always attached to both of them, because the actor consulting involves too many actors, and each actor, is involve in part to a technical process or communicative one.

This process of the model needs to spin around three terms that are: direct regulation, indirect regulation and self-regulation. Direct regulation is imposed by the institutions through their policies where a local authority shall be needed in the process. Indirect

regulation, it is fiscal, grants or subsidies that are working as incentives and that need to change to apply this model. Self Regulation is the internal agreements between actors that need to be homologue to everyone so the ideal speech between them can flow correctly. In the Figure 6 it can be seen how the actors, organisations and plans interact with the regulations and the contributions, as it is explained above for the Actor Consulting Model.

Figure 6 Actor Consulting Model. (Gert de Roo & Geoff Porter 2007)

The contributions need as we can see in the Actor Consulting model, to be made by all the actors, organization and plans so the output of the model can be full of critic and argument; with lessons learned and issues to improve.

The Actor Consulting Model is a robust tool that will help planning, let's keep in mind that as a tool, it needs to be used and be part of the planning process, it need to cyclical and be repeated several times in the process of planning, sometimes the result will be an agreement, others a disagreement in goals and scopes. It does not mean that the result of the model is a disappointment, because it is not, in fact if that happen it will shows that the model is working because the actors are involved in it.

If the Actor Consulting model is included as support of the planning process, it will be necessary indicators, these indicators do not need to work only to know the status of the planning process, these indicators need to work for the actors so they know what is working and what is not, what need to be improve or change. The indicators need to be agreed by all the actors, and evaluation of each process is necessary for technical, communicative and actor consulting as an input and output. It is recommended as De

Roo comments, that these indicators need to be: valid, measurable, understandable, focus on principal concerns, use carefully selected sources, use standardized measures, seek output or outcome measures, determine spatial and time dimensions, facilitate public interaction and clear assignment of responsibility. (Gert de Roo & Geoff Porter 2007).

The interaction between the planning process, the Actor Consulting model and the indicators can be seen in the Figure 7.

Figure 7 The planning circle, the Actor Consulting Model and the informative role indicators. (Gert de Roo & Geoff Porter 2007)

The diagram shows the interaction that needs to be cyclical between them, gathering feedback from the preliminary results and making the corrections if it is necessary. The attention that needs to be on the indicators is crucial because they show how everything is behaving; it must the control board of the planning. Also, the communicative planning needs to be present to continue listening the arguments of the actors because the indicators sometimes might not show a complete transparence of the planning and situations that are taking place.

Transition Management

The complexity perspective on transition management is based on complex systems theory. Notions such as self-organization of systems, emergent behavior and co-evolution play a large role in this perspective. For more in-depth information on complexity and complex systems theory, itself is refer to 'A Planner's Encounter with Complexity', written by Professor G. de Roo (Gert de Roo & Elisabete A. Silva 2010).
The main premise of complexity theory is that problems, are not caused by single identifiable factors but by systems of factors and actors that are extremely hard, if not impossible, to change all at once with direct policy change. Policy change is necessary, but these changes on their own will only solve parts of the problem without changing the system itself. For example, implementing emission-fees alone will not be enough to make people use alternative forms of transport. Transition management based on complexity theory attempts to change the system itself, not just the end-results of the system. This is a long-term process of several decades. Transitions do not happen in a linear fashion. They are shifts in a system from one stable state to another, where the apparent shift itself can happen in quite a short time-frame as visualized in Figure 8. The current situation where technical solutions to buildings and infrastructure can be seen as the current equilibrium-state and a future situation where people are organized and prepared for the next earthquake can be seen as the desired equilibrium-state.
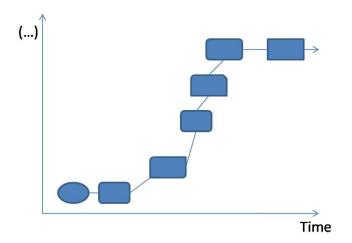

Figure 8 Visualizing a Transition. (Gert de Roo & Elisabete A. Silva 2010)

Transition occurs in four identifiable phases: the pre-development phase-first circle, the take-off phase-third square, the acceleration phase-middle square and the stabilization phase-last square (Loorbach, 2010). In the pre-development phase, for example, of a

technological nature, build momentum for the transition while the overall system remains in its current equilibrium state. An example of use to the transition transforming cities to become resilient and adaptable against natural disasters is improving the Share Governance of planning, so citizens will participate in the project of making a safe city. In the take-off stage, these innovations start reinforcing each other, influenced by other also in the preparedness against the impact of the natural disaster. The development of new programs for the risk-prevention education combine with the Share Governance, correct spatial planning and technical solutions, can lead to such a take-off. During the acceleration phase, there is a high degree of instability as the whole system is indeed shifting towards a new equilibrium state. In this phase the new forms of Share Governance would be implemented, while the citizens has yet to get familiar with the new way of sharing the governance of the city.

Four types of governance activities are relevant to such a transition. The three directly influential ones are presented in the Table 1. They can be related directly to the phases in the transition process, with operational management, tactical management and strategic management.

Transition Management Types and Their Focus

Transition Management Types	Focus	Problem Scope	Time Scale	Level of Activities
Strategic	Culture	Abstract/ Society	Long term (30 years)	System
Tactical	Structures	Institutions/regime	Mid-term (5-15 years)	Subsystem
Operational	Practices	Concrete/project	`Short term (0-5 years)	Concrete

Table 1 The three types of governance activities in transition management. (Loorbach, 2010)

It is necessary to know which transition is going to be. Each type involves entirely different issues as the focus, time and level of activities. For example, the focus of practices can be the adoption of new knowledge for a work, using different hardware and software. An example of culture will be to adopt bike as a transport method, even it can be quite easy, the use of bike is not only a way of transportation, behind it is a whole culture of biking, from everyone that is involved in the system.

Relation of Theories

In the theoretical framework, we had seen several theories and models. The relation of both are not obvious because each one is about opposite ideas and it seems to be no relationship between them. The truth is that all spins in the same theoretical framework which is the decision making rationality, as we can see in the Figure 9.

Figure 9 Relation Theories

The relation of theories is concluded in the bulk of issues where there are problems that need to be solved taking the context apart, or include the context, so a decision can be made. Choosing the rationality is the dilemma, were in one you have the linear way of solving, single objectives and central governance; in the other one you have the opposite non linear way of solving, broad objectives and shared governance. This is the main idea of using the Actor Consulting model, so it will help to make a decision about these dilemmas.

Technical rationality is a straight forward way to see things and solve them while the Communicative rationality, is a different way to see things and solve them it is not in a straight forward way, it is the complete opposite way to solve a problem. What they have in common is what they both belong to the spectrum of rationality and due to this they are part of the decision making of a strategy. Now a day it might be fuzzy to choose only one rationality, because all the issues to solve in a problem of the decision making line are inside the Bulk of issues, what this means is that the problems might be solve in different ways, that might include some in Communicative or Technical

rationality or maybe both. How to take the correct decision, for this cases, the use of the Actor Consulting model might be useful. Even the Actor Consulting model is based in the Communicative rationality, it does not mean that its output and procedure needs to be done in a Communicative way. Actor Consulting might help to resolve the bulk of issues even this means that the solution needs to be in a Technical way.

Technical and Communicative rationality are similar in the way they are aiming for a goal. The difference is that Technical rationality excludes the context to achieve the goal, while Communicative rationality includes the context to solve it. Both rationalities are included in every decision making a human makes. It is like a menu of two options, were you think you know all the variables-certainties (Technical rationality) and were you are aware that there are a lot of variables-uncertainties and that you might not know all of them (Communicative rationality). That is why both rationalities are useful and might be used wisely depending of the criteria and governance of a nation. When one rationality is chosen, to solve a problem, this does not mean that is better than the other rationality. This means that is more suitable for the problem according to their governance.

Thinking in the bulk issues is not only to choose a rationality or a model in the decision making. It is also about being aware that the problems that are located in this planning arena are very complex problems, which means that they might be consider as wicked problems. Even the wicked problems might not be consider in the Technical rationality before is decided with which rationality the problem might be treated is a wicked problem in conjunction with all the bulk of issues, but once the problem is taken apart it might be considered as a tamed problem, for its best suitable solution.

The part of Transition Management is apart from the theory already mentioned, because this theory is based on the steps that a nation needs to do to apply certain different model, policy or idea, to their governance. In this case, the theory to apply is the Actor Consulting model if it is worth to apply it or not, to the reconstruction plan of a city.

After this chapter, now we know what to include in a decision making, to create the reconstruction plan. The next chapter will be of which methodology will be use for the analysis of the research.

Methodology

In a research study, the main aim is to find the answer the question defined within a theoretical discussion and research approach, which will be answered through the use of different research methods and techniques. The research question is:

How Actor Consulting Approach improves Creating a Safe City before and after a natural disaster?

The research question can be divided in two sub questions that will be:
- Did Japan apply the Actor Consulting Model for the reconstruction plan?
- Did the Actor Consulting Model help to make a safer city, resilient and adaptable?

The research that will be presented in this thesis will be a Qualitative research. The information that will be gather from the research is not numerical data, that is why it will be Qualitative and not Quantitative as other researches can be, in the field of natural disasters. The different methods that are identified in the qualitative research are in Figure 10.
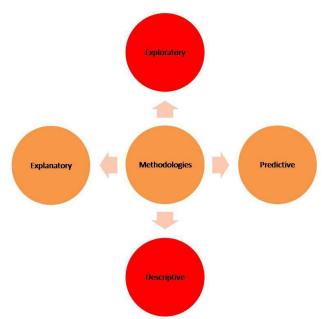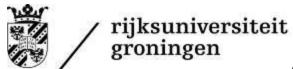

Figure 10 Qualitative Research Methods. (Marshall & Rossman, 1995)

Exploratory method, the purpose of this method is to be capable of generating hypothesis, discover and identify variables and to investigate about the phenomena,

gathering information from the field or a case study. Explanatory method, its purpose is to identify plausible causal networks shaping the phenomenon and to explain the forces causing the phenomenon: the information will come from the multi-case study, history, field and ethnography. Descriptive method, its purpose is to document events, behaviors and processes, through the analysis.

According to the different methods explained, the methods that were chosen for this thesis are the Descriptive and Explanatory. Taking in consideration, the description for each one of the methods, the suitable for this thesis are those two methods. Descriptive because the rationalities seen at the theoretical framework that are the Technical and Communicative will be identified from the recovery plan. What is going to be identified is which issues are part from which rationality and how the Japanese treat the problems to solve them in each rationality.

The Actor Consulting Model as mentioned in the theoretical framework will be identified as De Roo mentions it. It might be barely entirely done as it is mentioned, because is a model design in Netherlands recently. Some similarities done by the recovery plan might have in common with the Actor Consulting Model. If, these similarities are found they will be mention.

It will not be match each part of the process mentioned in each one of the rationalities, only if the information is delivered in the same way. The information that will be analyzed will be only from the reconstruction plan of the city of Kobe of 1995, information from another natural disaster of Japan will not be analyzed. The recovery plan from private industry will not be analyzed only from the government and the residents.

Explanatory because we will look to explain the reasons and causal networks which determined the used of the Actor Consulting Model. If it is, we will look for the good results of using it, and learn of the actions done, so other nations can about this model.

The used of interviews might be of importance with the research questions, the reason they were not done, were the lack of time and most influential the lack of networking contact with the people in charge of the planning of the city of Kobe. My only contact is with Victor Orellana, which work position, is as Project Coordinator at Japan International Cooperation Agency, his help was enough to sent me the document "Comprehensive Strategy for Recovery from the Great Hanshin-Awaji Earthquake", document that cannot be found in the internet, only as a reference from other articles or journals. Even the interview could be done to him the experience he had is not from Kobe is from the earthquake of 2011 at Japan. That is the reason the interviews were not seen as part of the research.

For the research there are different types of data collection, as seen in the Figure 11:

Figure 11 Data Collection. (Marshall & Rossman, 1995)

The data collection alternatives are quite wide, where the information can be found from the tacit knowledge, theoretical and storytelling. Each one is not necessarily better than the other; they are simply different between each other. If they can be combine the output information and analysis will be more enriching.

Data collection alternatives are quite wide, but for the case of Descriptive and Explanatory methods that are going to be use for this Thesis, the techniques of data collection that will be used are the document analysis and content analysis. The data gather will be in accordance of the theoretical framework and the study case of the city of Kobe.

The documents that will be consulted are: Government publication, journal articles and books. For the case of study, most of the information comes from governmental publications and journals and for describing the case study based on the theoretical framework the information comes from books and journals.

In the Figure 12, can be seen the scheme of the source of information match with the topics of the Thesis.

Figure 12 Scheme of data collection.

Scheme of data collection shows the relation between the main sources for this thesis, from one side we have the theoretical framework that has been seen in 'Decision Making Through Different Rationalities and Actor Consulting model' combine with the principal data collection that is from the case study the 'Reconstruction plan of Kobe'. The combination of both is what will show the actions done by Japan in the reconstruction plan.

The Exploratory method was not chosen because the data collection that it needs is the observation of participants and interviewing, which were not a possibility for this case of research. Also, the Predictive method was not chosen because is a method to forecast or predict the result, great part of the reconstruction was done by Kobe, so there is nothing to forecast or predict. Even we are on time, the method to analyze would be the Actor Consulting model, as part of the communicative rationality and the many actors involved, is hard to make a forecast due to the complexity of the problems.

It is clear which methodology will be use for the analysis knowing the planning theory, Actor Consulting and the decision making. Analysis will be done by mapping the actions done in the reconstruction plan with the planning theory and decision making framework, of course looking forward to see the Actor Consulting model in action. The next chapter will be about the case study of the reconstruction plan, did by Japan.

Case study of Kobe, Japan

After the emergency phase, Kobe needs to recover from all the physical and social damage produce by the earthquake. Their reconstruction plan will be review, not as only what they did. It will be review base on the second chapter 'Decision Making through Different Rationalities and Actor Consulting model'. So every action and issue done will be identify with the theory explained in the second chapter.

Kobe: Output of Decision Making

After the earthquake the government establishes a committee of 100 people from technicians, planners, politician, citizens, economist, academics, psychologist, representants of organizations etc. Before establishing the plan they establish their three purposes of the plan which were (Chuo-ku, Kobe & Hyogo 2010):

1.Providing citizens with hope and direction to rebuild their own communities or return to their communities by presenting them with a recovery vision as soon as possible is essential.

2. If reconstruction proceeds without decreasing the vulnerability of the community structure, communities prone to disasters will be reconstructed again. In order to avoid that, a vision for recovery should be presented as soon as possible and construction work in the affected area should be restricted until then.

3. For recovery, it is necessary to acquire financial support from the Japanese government. In order to do so, recovery projects by the local government should be clarified.

From this points the most prominent and urgent is the second one, because, they were aware that the city is located in a seismic zone, so they know, that they will be hit by another earthquake. That is why they need the technical, spatial, political and tacit knowledge, to improve their resilience and adaptability for the next disaster.

Before enlisting the recovery plan, it is indispensable to say that before the Kobe earthquake all the recovery plans only include the physical recovery issues as infrastructure, housing and urban reconstruction. For this plan besides including this issues it is also included a vast number of activities that will help the community to have

a successful life recovery. Five months after the earthquake the guidelines and the plan were finished and were following the basic principles (nature, human and city), the goals of community development (security, vitality, appeal and working together) and develop a safe and secure city vision as they were mention by (K. Tamura, 2011). The plan can be seen in Figure 13:

Figure 13 Kobe city Recovery Plan. (Chuo-ku, Kobe & Hyogo 2010)
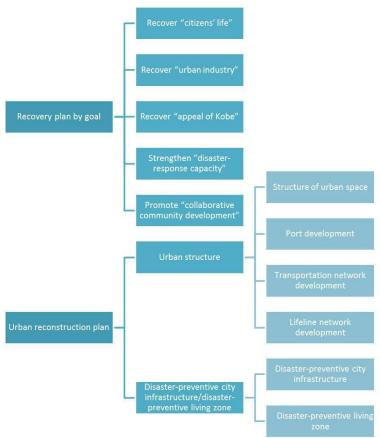
It is quite intriguing how they divided the plan, in goals and urban reconstruction. On the side of the goals, the recovery is the main scope to accomplished and on the side of urban reconstruction the recovery is important but more crucial to improve, and development of the deficiencies of the city, to improve their resilience and adaptability for the next earthquake.

The rational model in the decision making of their plan can be mapped with the rational model presented in the theoretical framework (Lorange P. & Vancil R. 1977).

•Systematic Environmental Analysis.
Just before the earthquake occurred the 4th Master Plan of the city of Kobe was about to be released, so substantial part of the analysis was done already.
•Assessment of internal strengths and weaknesses.
They are aware of their lessons learned from the earthquake, so they can make a better model of the city for the recovery and regeneration of it. Citizens, organisations and principal actors were already aware about the 4th Master Plan of the City, because they already participate on it.
•Explicit goal setting.
The goals that were established are: security, vitality, appeal and working together. So projects and measures could be taken to achieve these goals. The limit of time established to achieve these goals was 10 years ahead, 2005.
•Evaluation of alternative courses of action.
The government in charge of the city analyzed the structure of Kobe and proposed a distinct recovery plan for each area.

•Development of a comprehensive plan to achieve the goals.

The plan showed above where it can be valuable to say that the plan was divided in Goals and Urban Reconstruction. In this way they can build a safe and secure city that will be prepare and become enough resilient for the next earthquake.

Kobe: Technical Planning

The Technical Planning of the city was based on the main services and infrastructure that were damaged by the earthquake. For the case of main services that were damaged are electricity, communication, water, sewage and gas. For infrastructure are roads, expressways, railways. It existed a plan or recommendations for each one of them that are (Chuo-ku, Kobe & Hyogo 2010) :

Power supply
- Reconsider the initial response system, secure information exchange with national and local governments.
- Establish a system for accepting outside aid from other companies.

- Raised public awareness of policy on safety measures in regions with damaged housing and other buildings.
- Implement training sessions taking into account other lifelines and suspension of road traffic.

Communications
- Change conventional access networks to fiber optics access networks.
- Promotion of underground disaster-resistant communication networks.
- Decentralization of communication centers.

Anti-Earthquake Measures:
- Measure to prevent network congestion.
- Multiphase utilization for communication satellite systems.
- Free access to pay phone.
- Support for information distribution in disaster hit areas.

Gas
- Disaster resistant systems.
- Ability to respond to a broad range of disasters.
- Harmonization of routine work and non routine work.
- Considerations for environmental improvement.
- Promotion of energy conservation.
- Considerations for the elderly and the physically handicapped.

Anti-Earthquake Measures:
- Decision making criteria for supply interruption.
- Tentative Measures (drawing up plans, establishing operating manuals, obliged installation of microcomputer-controlled meters).
- Mid-term Measures (conversion to medium pressure, promotion of emergency action blocks)
- Long-term Measures (replacement of low pressure taps, prevent joint leakage, improvement of instantaneous interruption of gas supply)

Water

Just after the disaster, water failures occurred all over the city. However, a 58.8% recovery rate was achieved by the end of January, 93.6% by the end of February, and 99.9% by the end of March as (Chuo-ku, Kobe & Hyogo 2010) mentioned.

- Recover the supply of drinking water.
- Recover the supply of domestic water use.

Anti-Earthquake Measures

- Emergency water retention system to secure fresh water in emergencies.
- Seismic Retrofitting of Distribution Pipes to reduce water failures due to pipe breakage.
- Secure a new source of water and route of water.

Sewage

- Treatment plant networking.
- Seismic Retrofitting of facilities.
- Temporary toilets for use in disasters.
- Retention of rainwater.
- Seseragi Project, suzurandai sewage treatment plant is treated to higher degrees of purity.
- Use as helicopter ports and relay bases for transportation of emergency materials, the cover lids can be used.

Roads

The reconstruction was based on removing what was destroyed, and build a new road but improving them, making them friendly roads. Building roads including barrier free features, like sidewalks and eliminating road level differences; also it was adopted new paving work methods with noise prevention and water permeability.

Expressways and Railways

After the revision of the designs of the bridges it was decided to dismantle all of them and apply new anti-earthquake measures, which were:

- Reinforce of bridge piers by steel plates and epoxy resin injection.
- Replacement of the seismic isolation bearings.
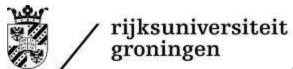- Countermeasures against liquefaction.

Kobe: Communicative Planning

Communicative Planning took place for the reconstruction of the neighborhoods in the city, which main idea, was to design them for better disaster management, when this will occur again. The initiative started from both the government and the neighborhoods, the government main idea was to built a neighborhood that will help for the future disaster management, while the people want more livability neighborhoods.
The residents of the neighborhoods got organized and create the Machizukuri organisations, the role of these organisations was to build the consensus among residents and to create a proposal for development and present it (Chuo-ku, Kobe & Hyogo 2010).

The District of Rokkomichi was a clear example of Communicative Planning, where four Machizukuri organisations were formed in average for each one with 120 residents as members of it. As mentioned before the initiative was from the government, so they present a plan to the Machizukuri, this plan was rejected by them, so they modified and made a new proposal. It is vital to highlight the help to the both sides from academics and experts in the field of planning and urban architecture. Their experience as tacit knowledge from experts and Machizukuri was fundamental to modified the plan presented by the government for a new plan, where it was included both necessities from the government and the residents (Geldof et al. 2011).
The first plan offer more spaces for disaster management and building residences with a quiet old fashioned architecture and not visual innovation, while the new plan presented wider road, bigger parks and new regulations for housing, like max height, max apartments per building these will help for a better disaster management and for a more livability spaces, the streets names were changed, streams were made parallel to the roads, wells pump by hand were built, pocket parks, sport facilities and parking lots.

The important part of the proposal by the Machizukuri is not how many demands are in it, to the government, what is important to highlight is the duties that the residents will have, clean and give maintenance to the streams and parks, take care of the elderly people and that the residents will be the principal mainstays for the neighborhood development.

Another organisation was born after the disaster, promote by the government and the community, its name is BOKOMI (Bosai-Fukushi Komuniti) with role is to establish volunteer disaster reduction by giving information about the disaster reaction and having teams to react against fire, rescue and aid team, evacuation, food and water supply team. This organisation was focused also in education for a disaster, this education is given to children since elementary school, not only as a theory also with workshops, carrying sand bucket, giving first aids, etc (Chuo-ku, Kobe & Hyogo 2010).

Kobe: Actor Consulting

Technical and Communicative planning seems to be enough for the recovery of the city. The new infrastructure was built, new urban spaces, the reconstruction of the port and disaster education will be given; so far it seems to be enough to recover the complete functionality of the city.

Planning is not only to apply technical and communicative models, or to build pretty and functional things. What is the most prominent is what people think about it and how most people feel, of what they have recover.

Let's mentioned what happened in Motozintla, Chiapas, where people were relocated, new housing and infrastructure was built, but the people never recover their lifestyle after the disaster (Fernando B. 2010). The housing and infrastructure was never finished, besides these the government never asked the community necessities for their new housing and infrastructure; due to these the community occupy both the destroy housing and part of the new housing, due to the necessities that each family had to subsist.

Even the Actor Consulting model is not mentioned in the Governmental documents and journals about how it was used and apply. The actions done in the plan of reconstruction, more specifically in the recovery of the city lifestyles of the people are similar to the ones in the Actor Consulting model. Their actions can be identify to the theoretical framework of the Actor Consulting model as follow: desired contributions, actual contributions and potential contributions.

The actors

Government: their role is to warrantied the reconstruction of the neighborhoods and infrastructures, bringing the economic support and leadership to accomplish their recovery and to build a safe city that will be resilient and adaptable for the next earthquake.

Academics and Experts: their main role is to support and help the residents (Machizukuri) also support to generate residents consensus in the early stage of each project, drawing up basic plans, project design, etc.
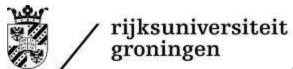
KOKOMI: is the organization, which role is, to establish volunteer disaster reduction by giving information about the disaster reaction and having teams to react against fire, rescue and aid team, evacuation, food and water supply team.

Machizukuri: organisations formed as representation of the residents of the neighborhoods, the role of these organisations was to build the consensus among residents and to expose the necessities and critique the solutions of the government.

Present Contributions

Government: they wanted to recover as fast as possible the infrastructure, housing the life status of the people and working capacity of the port. They were totally aware, that they can take advantage of the disaster by upgrading the infrastructures, not only by rebuilding them, also by upgrading the technology and capacity of them. They knew that what they rebuild needs to be resilient and adaptable when a new earthquake occurs; also that the social capital needs to have an increase. That is why they used the help of spatial planning, technical solution and the creation of organizations. They realised that one way to saved time and money, was to implement their 4th Master Plan.

Academics and Experts: their background of knowledge, made them fully aware of the reasons of the collapse of the city, decisions made wrong in the past, not necessarily need to be made for the future. Their support of academic and tacit knowledge was indispensable to create a resilient and adaptable plan for the new future of the city. Their knowledge as academics and experts, mean that they are not only aware of the innovations in Japan, somehow being an academic means to be aware of the innovations around the world, so this knowledge should be applied to the reconstruction

plan. Also, experts which knowledge is based not only in the academic field, most important in the application of this knowledge, so they can generate their own tacit knowledge. Both academics and experts are willing to share to the residents and government their knowledge to help them rebuild Kobe into a safe city.

Machizukuri: the organisation was created to be the representation of the residents, to generate the agreements of the plan, the initiative was brought by the government. Somehow the expectations of the government was that the Machizukuri will be agreed and gave support to the plan, due to the main idea was taken for the 4th Master Plan. Let's remember that the residents due to the communicative planning, they helped to create the 4th Master Plan. That is the reason why they thought the Machizukuri will be agreed with all the points of the reconstruction plan.

Desired Contributions

Government: the technical reconstruction of infrastructure started as they planned, upgrading the infrastructures with new technologies and new materials. The plan presented to the residents was rejected by them. The formation of the Machizukuri was supported by the government so they can have a free dialogue with the Machizukuri of the residents. They also support more involvement of academics and experts to generate a new plan, due to the rejection of the residents. The rejection was done due to the lack of urban architecture for the new neighborhoods. Even the plan was created to be more resilient and adaptable to natural disasters; the residents were not agreed with the design. The rejection of the residents somehow slow the reconstruction of the neighborhoods, but the government was agree to create a plan together with the residents, even this made the plan more complex to do and more time. The government also started to support the subsidies to private rental housing and to provide lends and support for the reconstruction of private housing.

Academics and Experts: Academics aware that it is necessary the involvement of the residents to create the plan of the neighborhood, somehow where happy of the rejection of it. So they can take advantage of this situation by influencing, advising and supporting the Machizukuri. In this way, the new plan only will not be included a neighborhood resilient and adaptable it will also be a livable neighborhood for the residents. Their help not only was for advice, and support in the planning area, it was also in the policy area, because it was necessary some policies, so they can help to achieve the goals of Quick reconstruction of the fundamentals of citizens' daily life

through housing/community development and Housing/community development with both recovery and restoration in mind.

The policies are:

- Housing and Community development by cooperative housing projects.
- Early provision of a large number of housing units.
- Housing improvement in harmony with community development programs.
- Measures for those having great difficulty in finding housing: the elderly, handicapped and others.
- Development of safe housing community.

Machizukuri: with the help of academics and experts and integration with the government it was able to being agreed with the new plan of reconstruction of the neighborhoods, this plan was both resilient, adaptable and with livable environment. Also, the Machizukuri get involved in the generations of the new policies, because they were part of the districts that were involved in the policies, to help the spatial modification of the mix lands use areas and to push the dispatch of an expert to help with the plan.

Potential Contributions

Government: the reconstruction activities started in 1995 with the plan created with the academics, residents and experts, even though they did in 2002 the 'Kobe 2010 Comprehensive Civic Welfare Plan' its main projects were:

− Citizen based community development, promoting of regional welfare.
− Boost support for child care services implementation.
− Support to create a safe, stable living environment for the elderly.
− Support for the disabled to maintain a lifestyle within the community.
− Create a society which respect the rights of residents.
− Creation of a healthy society implementation.

The reason they did this is that in some cases, they check the plan made before, so new project might be needed; also they realise that the most valuable part of making a city resilient and adaptable is not due to the technical solution of the city. The variable that need to get stronger is the social capital, that is why most of the projects are the focus in the communities and society.

They also created the Earthquake Reconstruction Fund to provide funds for various activities for rapid recovery from the earthquake, to provide financial assistance to earthquake victims and help them rebuild their lives, to facilitate the implementation of a

long term stable overall recovery plan for the region hit by the earthquake, and to recapture the damaged areas.

They supported the creation of the Bokomi, organisation that was in charge to provide the knowledge to the communities about disaster reaction.

They also applied the Seven Critical model that are indicators to know how was the recovery of the people after the earthquake, these indicators were applied in four surveys in 1999, 2001,2003 and 2004 (Chuo-ku, Kobe & Hyogo 2010).

Indicators

In 1999, the Japan government made a questionnaire with the purpose to standardize the measures of life recovery, physical and mental stress, civic-mindedness and family relations. Life Recovery, it evaluates the life fulfillment compared with pre-earthquake days, life satisfaction and futures prospects, the items were: daily living, work, the meaning of life, social life, enjoyment, hope, and liveliness of everyday life (health, human relationships, household finance, family life and work. Physical and mental stress evaluate the reaction from the earthquake to these two factors, and their evolution through time. Civic-mindedness that measure community solidarity and self-governance. Family relations that measure family relations, family adaptability and cohesion.

So far with the implementation of the surveys with these indicators, worked to know the status of the society after the earthquake and more indicators about the status of the people. These new indicators were applied for the next years surveys, so the results can be compared and know the status of the community and also to know when they recover their lifestyle. The indicators are in the Figure 14:

Figure 14 Seven Critical elements for life recovery. (Chuo-ku, Kobe & Hyogo 2010)

The goal of each element helped to know the deficiencies of the recovery. Each element has different variables that were evaluated in the survey, to show the deficiencies, what it gave is a tangible information of how people feels during the recovery, considering as a line base, their lifestyle before the earthquake. The information that can be find for each element is as follows (S. Tatsuki & H. Hayashi 2001):

- Housing: most residents need to relocate or to fix the damage of their house. It is indispensable to know if their relocation or house repairing were a success or if they need help.

- Social Ties: this element is to know the self governance that was ruling people during that time, the social solidarity, community participation, social trust, family cohesion and adaptability.

- Community Rebuilding: this element shows the sense of feeling and ownership about the neighborhood, streets, parks and flowers.

- Physical and Psychological health: as the element to know their health of those two variables but also to know their habits, if they do sports, smoke, diet, drinking, work hour length and sleep length.

- Preparedness: this element shows how people perceived the risks of damage caused by the earthquake and how prepared they feel for the next earthquake that will occur in the next fifty years.

- Economic and Financial situation: with this element they will track the micro, local and macro economics of the city until they are recovered entirely.

- Government Relation: this element search for new opinions about how to vitalize the community, how to save life when the new disaster occurs and how to promote the community development.

Through the application, of the surveys with the Seven critical element was possible to track the life recovery of the city, through the variables mentioned above. It is intriguing to mention, how the recovery was felt from person to person. For example, young people (less than thirty years old) feel more recover since the second survey, middle age people (40's and 50's years old) feel not that much recover) and old people (more than 60 years old) feel a little bit more recover; other variables influence their status of recovery as profession, money earn, etc (Chuo-ku, Kobe & Hyogo 2010).

Academics and Experts: they continue advising both the government and residents for the new projects to rebuild the city. They had influenced in the construction of the Kobe Earthquake Memorial-Disaster Reduction and Human Renovation Institution. In this place, it can be find courses to reduce the impact of the earthquake, through training programs also they invest time and money in the research and study of the earthquakes. In this place, it can be found all the lessons learned from the natural disaster, somehow the disaster occur due to the lack of spatial planning, technical innovation and most important of social capital.

Machizukuri: they were dissolved after the generation of the last program, even though they are still present in the planning of the neighborhoods but not as much presence as it was at the beginning. The residents cooperation is still active to make a stronger social capital, they participate in the Bokomis. The courses of disaster prevention and reaction are mandatory in the schools, so all the children are aware of what to do for the next earthquake.

As far as we just read, the reconstruction plan was identified with the theory explained in this thesis; the next chapter will be about the analysis of each Rationality and the Actor Consulting model.

Analysis

The analysis of the case study will be in this chapter, taking in consideration the theory seen in 'Decision Making Through Different Rationalities and Actor Consulting model', applied to the findings of the case study. The analysis will be done by taking in consideration the What's, How's and Why's of the Technical and Communicative Rationality and from the Actor Consulting model. Also new way of viewing the reconstruction plan might be seen, because thinking in an absolute way of planning a reconstruction will be foolish to think.

Decision Making

The reconstruction plan can be mapped in the Decision Making Model of Figure 8 will look like Figure 15. The Figure shows that infrastructure and industry are considered technical plans due to their emergency to recover, and the linear way to solve the problem; meanwhile neighborhoods, housing, life recovery and disaster response capacity can be located as communicative planning due to the fuzziness and complexity for some of the problems.
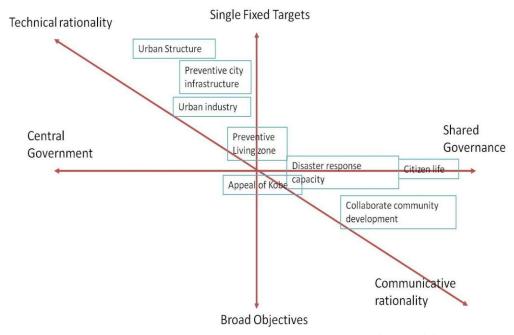

Figure 15 Reconstruction plan, map in the Decision Making Model.

The issues of the reconstruction plan are put in the planning arena, where we can find several actors, two rationalities to apply, from single to broad objective and from a
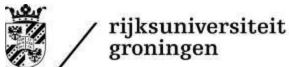
central to share governance. Locating them in the planning arena will help to know how each one will be the treatment to achieve it scope and objective.

It is crucial to mentioned that the line of decision making is the line of Technical and Communicative rationality, where the issues need to be located. The way to define which issues belong to technical or communicative rationality is when some are vital to the city to keep working and that their objective is more single than broad it might be in control of the government and due to that it will be treated with Technical rationality; meanwhile. The issues that have multi objectives or broad objectives, according to these they might involve more actors to solve it, so they will be treated with Communicative rationality.

The way the government of Japan decided to solve the issues is not only according to the urgency to solve the problems. It is also due to the situation of each of the problems. On the side of the Technical rationality we can found the issues that can be divided in parts, and maximize the result, they also can be resolve as tamed problems in an objective way. The environment of this issues is more placid according to the limited number of stakeholders and actors. That is why Urban structure, Preventive city infrastructure and Urban industry; are located in this part of the map.

On the other side in the Communicative rationality, we have issues that are going to be solve depending in their context and an inter subjective way. The result in this case will be quite uncertain due to the many stakeholders and actors that will be involved, the problems can be consider wicked, due to the uncertainty of the result of the actions done by the several stakeholders and actors. That is why the issues of Citizen life and Collaborative community development, consider in this part of the decision making line. In the case of the issues Appeal of Kobe, Preventive living zone and Disaster response capacity, they are located more in the middle than in each one of the sides, which means that both Technical and Communicative rationality needs to be present to solve the problems, considering the whole parts and context to get a solution.

In summary, all the issues proposed in a plan of reconstruction must be match conscious or unconscious in the decision making line. Beside matching the issues with the Technical and Communicative rationality, singles fixed target and broad objective and central and share governance. It is also crucial to know that what also counts to match the issues are how the focus of the solution might be. In parts is one way to solve it taking apart the environment and the context. The whole taking into consideration each detail known and unknown. The context depending on each situation, environment and actors, the solutions might be different even when the problem is the same. In the Figure 16, it can be seen the Parts, Whole and Context map in the decision making graph.
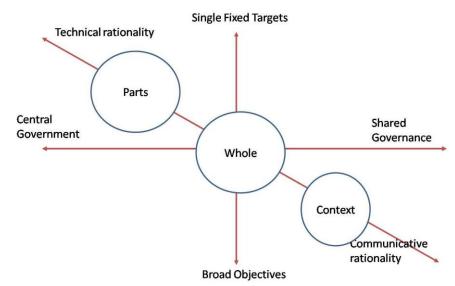
Figure 16 . Focus of decision making model. (Gert de Roo 2003)

Making the decision of each issue, when it is located in the planning arena, it not only involves the governance, rationality and objectives. It is also how complicated or complex the problem needs to be treated. The planning arena will be divided then in Complicated solving the problem by parts and Complex considering the whole and the context.

It is essential to mentioned that the way they do this approach is not coincidence. It is the integration of their lessons learned of the past disasters and how they are evolving their planning way of doing things. Letting some issues being of share governance, even the results are not fast or what they want.

In other cases of natural disasters, the reconstruction plan should be with all the issues located in the technical rationality focusing only in the parts, as an example we have the reconstruction of New Orleans after the Hurricane Katrina, Chile and Haiti after they were hit by an earthquake.

Technical Rationality

All the issues of the reconstruction plan can be solve by Technical rationality, for the only reason that the objective that is wanted to be reached is certain and with a specific goal that is the recovery of the city, but the Japanese Government did not choose to do that, they let some issues be solved using the Communicative rationality. It appeared that they are sharing almost all issues the governance, but if we take another perspective we may see that this is not true. The government didn't completely share the governance of the reconstruction plan. They still have the power of the issues that will help the development of the city. If we consider the environmental layers of a city (G. Linden & H. Voogd, 2004), we can have identified each issue in a layer, as it can be seen in Figure 17.
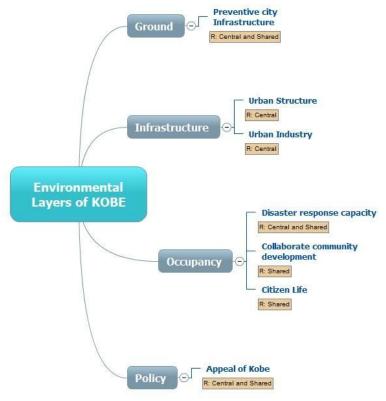

Figure 17 Environmental Layers of Kobe.

The environmental layers, are present in all the cities, it shows how are made of if we divided it in parts. There might be other ways to analyze a city. The layers are a way optimal to view it as a planner, so from one side it is divided in parts, but the context and the relation between them are present at all moment.
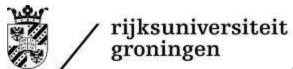
As we can see the layers Ground, Infrastructure and Policy are ruled by the Central Government and so on in the Technical rationality decision making line. Each of the issues can be solved in parts directly in a linear way without necessary to involve another institutions and actors. In the ground layer will be located the Preventive city infrastructure, because the factors that determine how the preventive defenses of infrastructure, are the coastal area where Kobe is located and the geological failures that produce the earthquakes. This will be the factors that determine what will need to be build and how, regarding their technical implementations. In the layer of Infrastructure, it can be seen that Urban Structure and Urban Industry are located as Central Government not only because are only involved by the government of Japan, also because here are involve private companies. In the case of private companies they will decide by their own, how they are going to recover and reconstruct, that is why they are located in this part of the decision making line. For the case of Urban Structure without counting the part of the housing, other infrastructure is rebuilt according the necessities of the city and their correct upgrade.

Policies consider the Appeal of Kobe, and it can be seen as located in the whole, where Communicative and Technical rationality are involved, even though most of the policies and regulations might be a rule by the Technical rationality, but part of policies of housing are shared with the residents, academics and experts. On the other side, the policies that involved the technical regulations of structural buildings and defences are ruled by experts in each topic.

Lets highlight why the government of Japan decided to used more the Technical Rationality, but also sharing and using the governance and Communicative rationality. Using the Technical rationality they were separating the whole context of each situation for the rebuilding and recovery, doing this they assure the fast decision making, therefore, the fast physical recovery, and functionality of the city.

Japan government needed to show their political power by taking control of the situation, by making fast decisions with concrete objectives. People over the world not only from Japan, expect the fast reaction, with wise decision from their government. To provide a safe environment, working infrastructure and proper situation for economics activities. If this three concepts are applied correctly the power will remain from the side of the government, because people will become dependant to them if the solutions are according to the necessities of the city and the residents of it.

Another important reason why most issues are related to the central government and solve by Technical rationality, is because all the solutions need economic finance. This finance for the reconstruction and recovery was of a huge amount, due to this the only
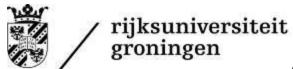
one that is able to afford it and to ask finance to the World Bank is the Government of Japan.

Japan government did not only recover the infrastructure they lost, they took advantage of the situation and by the analysis they made after the earthquake, they renovate their infrastructure with new capabilities and resilience against earthquake, with new constructions designs, new methods and new materials. They not only upgrade their infrastructure against earthquakes, they also introduce vanguard materials, techniques and made wider the infrastructure. They did that to create infrastructure available for the new necessities of the city, in other cases to renovate old materials.

Let's remember that they were almost to release their new plan of the city, so they had the advantage of the necessities of the city to transform it and to renovate it, for the case of the infrastructure (Chuo-ku, Kobe & Hyogo 2010). When the earthquake took place, for the case of infrastructure, the task that need to be made by the civil engineer knowledge is to know what went wrong, by the analysis they made (Stuart L. Hart 1992). They found the problems and made improvements to the designs, using new structural methods or new materials. The only way to know if this structural improvement will work is when the new earthquake will occur.

So far the used of technical rationality for the case of infrastructure is easy to use, because it is all related to the facts, solutions and implementation. The way to solve the destruction of the infrastructure was thinking through, as a tame problem (H. Rittel 1972). The system approach to solve the tame problems was similar as Rittel mentioned (understand the problem, gather information, analyze the information, generated solutions, assess the solution, implement, test and modify). This process for the case of civil engineering is easy to implement, but let's make it clear that is not the complete solution, the communicative rationality will show how it works, and how it complements the reconstruction plan.

Making the decision use the Technical rationality might be a hard or easy decision to make. If it is an easy decision the results might not be best, or only a few actors will observe the benefit of that decision. If the decision is hard, is because the goal is a must to achieve because the benefits will be in general for all the actors. It is also essential to consider that, from a hard technical decision making, some communicative decision might depend of it. Some communicative decisions need the support and guidelines of a technical decision.

Communicative Rationality

Considering the Figure 16, mentioned in the analysis of the Technical Rationality, we can see that is correct, most of the issues can be found in the Technical rationality area and under the command of the central government. The issues that can be found under the shared governance and in the Communicative decision making line are according to the layer of Occupancy. It is not coincidence that all this issues need to be solved by that rationality, due to the care and strong involvement of the residents for the reconstruction of the spaces where they lived, and they saw their collapse when the earthquake occur. Lets mentioned that in the phase of Emergency Response, just after the earthquake, the response was quite slow from the government. First the military was not release to help, because the municipality did not ask for them. Second the government took three days to realize the magnitude of the disaster. In the meanwhile, there were people buried alive under the destroy buildings; the main problem of the slow reaction was the bureaucracy that involves the decision making of the government (Bishwapriya Sanyal, 2005).

This mistake was not mentioned before, because the main objective of the thesis is the reconstruction plan not the emergency response, even though, thanks to the mistake made in the emergency response, influence the decision making to be solved using the communicative rationality.

In the first analysis as we saw, five issues are more influenced by the central government and due to this they are affected by the technical rationality. Each issue includes several projects and goals to be accomplished. Let's be honest now a days there are no projects that can be accomplished on time, under budget and full filling all the scope; without having a communicative rationality. Any type of project and mainly construction project, are full of actors and stakeholders, to accomplish the project is forceful in a communicative way, if it is the case to do it by command and order, the project suffer of delays, bad quality and will not accomplished all the objectives according to the requirements.

Even the goals and scopes are not subject to discuss in a communicative way. The way they are going to accomplished it, needs to be in a communicative way.

This statement is without proved of it because there is no evidence in the data collected, that each project was treated with Communicative rationality. It is just a supposition based on my experienced in construction projects.
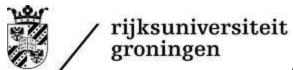
Where there is no doubt that the Communicative rationality was applied is in the layer of Occupancy, where all the housing issues are.

The way the residents organize to form the Machizukuri and the Bokomi is of quite help to gather the voice of the residents and explained their necessities, agreements and duties to the government. The Planning Process displayed in the theoretical framework is not defined step by step, but in general due to the actions done, and how they organize, it can be assumed that the process was followed. Probably because the residents were guided by academics and experts. It is highly probable that it occurs, influenced by them. It is crucial to highlight that the organisation role was not only to make demands to the government, they also accept part of the responsibility to achieve the goals.

The lessons learned from the organizations are of so much value because, in an organisation, the free speech, storytelling and the mutual respect needs to occur, so the decisions and consensus can be made. The organisations where the variables were mentioned are not in development the organisation might fall in corruption and will put the power on its leader. Power does not necessarily needs to mean knowledge and wisdom; because those comes from the members of the organization and not from one person. The effect of giving the power to its leader will only occur, when the members of the organization are without interest in the decisions taken by the organization, when this happens, the power will be automatically given to the leader.

The achievement of the organisations in KOBE is an unprecedented event, to all cultures and nations around the world because:
- They were able to unite the mission, effort and teamwork from the government to the community in a Communicative Rationality and not in a Technical way.
- The hard work of academics and experts to support the leaders.
- The flexibility and attitude of the national government, the prefectural government, and the municipal government.
- The most noteworthy is that it was not the first time Communicative Planning takes place in the city, before the earthquake it took place for some projects.
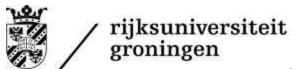
Actor Consulting

In the case study it was reviewed the parts of the Actor Consulting model, that were similar as De Roo mentioned. It is clear that the Actor Consulting model was not applied to all the issues proposed in the reconstruction plan. The Actor Consulting model might be only applied to issues where many actors are involved, and mainly when the goal of the solution is achieve is not due to the technical indexes, is more about the people that is in the middle of the problem and the solution.

If we take the same idea of the layers, seen in the technical and communicative analysis, we will see that the only layer that the Actor Consulting was applied is in the layer of Occupancy. The reason why is only applied in this layer might be uncertain, but we can suppose some aspects. It is the layer with more shared governance and due to this where the Communicative Rationality is applied. This means that is where more actors are involved and where the goal that is wanted to be reached is kind of uncertain; how to do it, and how to know when they reach it. Let's remember the main goal of the occupancy/housing is to recover the life style. This goal cannot be achieve only by the government decisions and activities, the one's that need to participate in the decision making and activities and to tell when they had achieved the recovery are the residents.

Due to the lack of information of each project embedded in the issues of the plan, it is not possible to confirm or reject the use of the Actor Consulting model for each of the projects. It is possible that the model was used inside the team of each project, depending of the objective of the project, but it is also not possible, because the use of the Actor Consulting model might take a longer period of time compare with applying only the Technical or Communicative rationality.

The work did by the Japanese to recover the city applying the communicative planning and having the life recovery indicators as the constant interaction from the government and the community; it is fascinating to mention, that the communicative planning had been applied before the earthquake and not only for their reconstruction, fact that helped to be well accepted by the residents, and not as a new method for the residents. All in conjunction might be a type of actor consulting, in a fuzzy way to understand and map as De Roo mentions. They are totally aware of their vulnerability against earthquakes; part of their reconstruction plan is to make the city more resilient against them. They apply several strategies that will prevent 'bad things happening on beautiful days' (French quoted in Gert de Roo & Geoff Porter 2007,p. 148).

The use of the indexes for the Life Recovery Status are extremely helpful to know which is the status of all residents in the recovery of the city. Imagine without the indexes, all the technical planning should be finish, but the recovery of the people might not. The only way to know this, is with the indexes that were applied.

Answering the question of this thesis: How Actor Consulting Approach improves Creating a Safe City before and after a natural disaster?

It is not possible to say that it improves creating a safe city, because it was not applied exactly as De Roo mentioned; but as we have seen the advance way they apply the Communicative Planning for sure will help create safe cities before and after. When the Communicative Planning is applied before and after the natural disaster, the city is becoming more resilient and adaptable with these two variables the city will become safer.

Due to the continuous flow of information about the problems, the hazards and vulnerability, it will start becoming an emergency for everyone. Everyone is getting aware of the entire environment and not only the experts and planners. When everyone start to be aware and helpful to solve problems, using their tacit knowledge as raw material. These means that when the Actor Consulting model is applied the causality, entity and stability of the problem, might be taken apart. The problem might started to be seeing as new mechanisms, such as valuing, argumentation, agreeing, discourse and storytelling. These mechanisms are raw material of the Communication rationality.

We have seen the case study of the city of Kobe, and in the analysis we had seen the how's, what's and why's; they did their actions to generate the reconstruction plan. They used the Communicative and Technical rationality to take the choices in the decision making framework. Also, they applied the Seven Critical model, which we can say that is predecessor model of the Actor Consulting model, with the difference that the Seven Critical model is focused in the Life Recovery after a natural disaster and the Actor Consulting model can be applied to all type of planning issues. The next chapter will be about the conclusion of this thesis.

Conclusions

The main goal of this thesis was to know if the Actor Consulting model was applied for the reconstruction of Japan and if it was applied, see if the results help to create a safer city against natural disasters. The analysis shows that the Actors Consulting model as de Roo defines it, was not applied exactly. The Seven critical model is previous antecessor of the Actor Consulting model focus only to recover the Life Style after a natural disaster. It cannot be said if it works to make a safe city or not because the answer will be when the next earthquake occurs, so far their model gives them the status of the life recovery, more than the resilience and adaptability of the people.
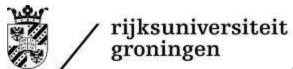
Summary of the Thesis

Past events had shown the world that having only technical prevention and protection against natural disasters are not enough to be a resilient and adaptable city. Katrina hurricane hit New Orleans in 2005, revealing that their dykes, earthen embankment and floodwalls are not enough to protect a city and to be resilient and adaptable after the natural disaster had occurred (W. Kanning, S. van Baars, P.H.A.J.M. van Gelder & J.K. Vrijling,2007). It might be obvious, but the obvious rationality does not exist, what is missing to make a city resilient and adaptable besides the Technical solutions are the other two tools apply by the Japanese. The Communicative Rationality and the Actor Consulting model.

The Communicative rationality as the Japanese had used it, is not as easy as it seems. It is the result of years of transition from Technical rationality ideals to a Communicative ideals to plans of action. Their way of transition was not as other western countries did because they are not the result of a hierarchical historical development; the way they are growing is in the consensus of the main goals of urban and regional planning (Bishwapriya Sanyal 2005).
The Machizuri and BOKOMI are the result of the organisation of the residents, and the result of their goals are the smartest communication between them and the government, it is essential to highlight that for the Japanese are more relevant goals of the nation before their personal goals, but in this case, the goals of the city of Kobe where the voice of their residents express by the Machizuri and BOKOMI.
Communicative rationality is necessary after a natural disaster so it can be apply all the necessities and expectations from the residents, academics, experts and government, so at the end, a successful recovery can be reach. It is not only necessary to apply after

the natural disaster it must need to be applied before the natural disaster, so the residents can be used to it and it will not be a new planning tool, as mentioned before in the analysis. Applying correctly the Communicative rationality will not only help the city to recover what was lost, and their normal lives, it will also help to make the city more resilient and adaptable, when new natural disasters will occur. The Japanese goals were not only to recover what was lost, also to take advantage of their social capital and to improve it through their workshops and through pushing them to help each other.

Actor Consulting model as it was highlighted before, it was not entirely implemented as De Roo mentions, but it is quite near, or maybe it would be another type of Actor Consulting. Even they made the surveys to know the status of the recovery; the present, desired and potential contributions are not presented clearly, maybe it is part of the fuzziness of the model to apply it correctly depending in different variables of the country like politics, culture, history and governance. It might not be pertinent to apply exactly the model, but starting to applying it is quite a challenge, and what the Japanese did is a fantastic start that must be spread around the world, with all their lessons learned and the tacit knowledge gain of it.

Communicative and Actor Consulting help and spread entirely the decision making model of a nation after a natural disaster, from having everything into the central government to share it with residents. These means that decisions are not anymore in a linear way, but it does not mean either that decision will be easier. It means that decisions that are in the part of Shared Governance will be difficult to make, passing from complicated to complex.

Answering the research question might be difficult because the Actor Consulting model was not entirely applied, but is almost sure is that planning in a collaborative and communicative way, will make a safer city due to the resilience and adaptability of the residents.

Implication to adopt a new way of planning against natural disasters

To adopt a new way of planning implicates a transition in culture, policies and institutions. The Transition from the Technical rationality to a Communicative rationality and the Actor Consulting model. It is a process that needs to be done before the natural disaster occurs. The reason is that the transition needs to be a Strategic and Tactical management type, so the time that will take this process is around thirty years for both.

The best alternative to start applying the Communicative and Actor consulting model is: Create social equal circumstances and priorities for all the social levels of the city with the purpose to make shorter the gap between poor and rich. If this gap gets shorter enough, the result will be more social capital, to confront a natural disaster as a city and not as individuals. Also, the capacity of decision making of the residents will be in the same environment and circumstances, their capacity to perceive the facts, will be common to the value of these facts will have for the social levels. The priorities will be common, due to this equality. The equal circumstances need to be in salary, medical services, education, basic services and housing.

The main reason to get social equality is because the argumentation, agreeing, discourse and storytelling, will be in the same context so it can be apply the Communicative rationality and the Actor Consulting model. Even the social equality is not reached; the Communicative rationality and the Actor Consulting model can be applied. The difference will be in time and common agreements. It will take more time to generate a plan due to the different way to perceive the facts.

In the meanwhile for social and urban planning projects, it is necessary that, resident social groups need to be gather, so they will participate in the decision making of these projects. In this way, the residents will get use to the Communicative rationality and due to this feel owners and responsible of the city. So far when things goes wrong, their attitude will not be to point for guilty, their attitude will be of finding solutions as a city.

To achieve the goal of creating a resilient and adaptable city against natural disasters using the Communicative rationality and the Actor Consulting model will be with the implementation of he transitions phases that are:

- Predevelopment: The government need to decide which part of the decision making model wants to share with the society. Access to bachelor education needs to be improved it will depend of the economical context of the country, so different support can be done, for example, scholarships and economic support for their families. All the

residents might have medical services. The public services need to be of the same quality for everyone, not thinking in giving the fair enough services. It needs to cover all the necessities of the city with the same quality. The housing needs to be in safe areas, not in the risky areas for poor people.

To apply these changes, it is needed two variables, the coordination of institutions and organizations, and finance to make them real. The coordination might be done by the command order of the hierarchical tree of the government.

- Take off: Residents groups need to be formed so they can start discussing common problems. There might be fiscal support for companies that minimize the gap between the salaries of their employees. The finance might be gathered by the increase of taxes for rich people and austerity law for the government staff.

- Acceleration: Residents groups might start to be part of the decision making of small social and urban projects. Increase of taxes for articles of high class. Access to bachelor education for all citizens. There will be no housing in dangerous areas.

- Stabilization: most prominent social and urban projects need to be done by Communicative rationality. Some projects need to be done by the Actor Consulting Model. Do the measure of the gap between rich and poor.

It is essential to highlight, due to the complexity of the Actor Consulting model it is not possible to apply it without applying the Communicative Planning. The Actor Consulting model needs to be raised in a communicative environment and follow the model mentioned by De Roo. It some cases as mentioned before, the same model might be apply in a fuzzy way, and it depends of the development of the country to apply exactly or with certain flexibility.

Suggestion for New Research

After 1995 other natural disasters occurred the New Orleans hurricane (2005), Chile (2010) and Haiti (2011) earthquake, among others. If we consider that they took place at least ten years later than the earthquake of Kobe, it might be logical that they used the lessons learned and tacit knowledge from the Japanese, using Technical and Communicative rationality and Actor Consulting model.

If the analysis and comparison is done as a hypothesis, we might see that they did not apply what was learned from Kobe. Chile checked their technical regulations did in the past if they worked or not, and reinforced their spatial planning and preventive regulations (Marcelo Lagos 2010) and Haiti reconstruction plan was a focus in recover what was lost and change technical regulations (J. Salas, G. Gómez y B. Gesto, 2010). New Orleans started using their technical rationality, but they realised that the vision and society need to be together to establish the reconstruction plan, by applying the Communicative rationality (R. W. Kates, C. E. Colten, S. Laska, and S. P. Leatherman, 2006).

The analysis of why these differences of how to engage the planning after a natural disaster might be a matter of study and research, if we take out of the hypotheses Chile and Haiti that are countries under development. There are supposedly not significant differences between United States of America and Japan, if we consider that they are developed countries their indexes are similar as the GDP per capita for United States of America is $48,442 Us and for Japan $45,903 Us, grow of GDP annual for United States was of 1.7% and for Japan -0.7%, life expectancy 76 years old for United States of America and 80 years old in Japan (World Bank, 2011).

Doing a fast eagle flight it can be seen that both countries had been influenced by each other since the 20's in such, many factors; so why is so different the rationality to engage a natural disaster? It might be because equal countries are more healthful, less social problems, less violence, less drug and alcohol abuse, less income gap between the poor and the rich. Can we consider that the societies in United States of America and Japan are equal? Among the developed countries, we have that Japan has an equal society while United States of America is the most unequal (R. G. Wilkinson & K. E. Pickett 2009).

An equal society can be translated to a happier society, and this means more social capital to confront and get organize against a natural disaster. For this reason, the transition is focus in this part, and not in other subjects. If this problem is solve the other might get solved in the path. My suggestion for the research question will be 'Is the social gap, the guilty that a natural disaster occurs?

Right now had passed the hurricane Sandy over the east cost of the United States of America, creating a huge disaster in all the big cities. It is difficult to measure the amount of damage that they cause, but for certain they will need a recovery. Are they going to achieve the recovery completely or it will happen the same as in New Orleans? Did they learned enough from New Orleans? So far I do not think so, the neighborhoods that suffer most part of the impact, are poor neighborhoods, exactly as New Orleans. Anyway they still have time to generate the Reconstruction plan. Let's hope that now they will divide the issues wisely in the decision making spectrum.

As far as we had seen in this Thesis, the success of the recovery depends in two factors, which rationality they are going to used to create the reconstruction plan and the social capital the cities had. Applying the Actor Consulting model in this disaster is essential, because they will involve the people, and make them responsible from the neighborhoods and they might be able to know when the people will recover their life style again.

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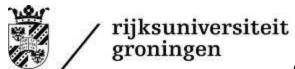
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