

## MASTER

### Values of cultural heritage

identification of a cultural heritage building rehabilitation methodology applied in the case of the Convent Santa Catalina of Collpaciaco, Bolivia

den Uijl, T.

*Award date:*  
2003

[Link to publication](#)

#### **Disclaimer**

This document contains a student thesis (bachelor's or master's), as authored by a student at Eindhoven University of Technology. Student theses are made available in the TU/e repository upon obtaining the required degree. The grade received is not published on the document as presented in the repository. The required complexity or quality of research of student theses may vary by program, and the required minimum study period may vary in duration.

#### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain

# Values of Cultural Heritage

Identification of a Cultural Heritage Building Rehabilitation  
Methodology applied in the Case of the Convent Santa  
Catalina of Collpaciaco, Bolivia

Technology and Society, Eindhoven University of Technology  
PRAHC, Greater University of San Simón, Bolivia

November 2003

**Student:**

T. den Uijl  
Student Technology and Society  
Eindhoven University of Technology  
The Netherlands  
Identification number: 499150

**Supervisors:**

Dr. ir. Emilia L.C. van Egmond-de Wilde de Ligny  
Senior Lecturer and Msc research Coordinator  
Faculty of Technology Management  
Eindhoven University of Technology  
The Netherlands

Dr. ir. Peter A. Erkelens  
Faculty of Building Engineering  
Eindhoven University of Technology  
The Netherlands

Dr. Henny A. Romijn  
Faculty of Technology Management  
Eindhoven University of Technology  
The Netherlands

**TU/e**



# Preface

This report is the result of my M.Sc. research project executed in Bolivia in the field of rehabilitation of cultural heritage buildings. One year ago, in November 2002, I established contact with the PRAHC-UMSS research institute in Cochabamba. In 2003 it was *time* to leave and I arrived at the end of January in Cochabamba. There, I worked for six months on my M.Sc. research project.

First of all I want to thank the personnel of PRAHC-UMSS, Magaly Rodríguez, Luis Yuricevic, Andrés Loza, Jaquiline Lafuente, Florence van Noorbeeck, Luis Flores and Julieta Jaimes for their cooperation and help, also during difficult *times*.

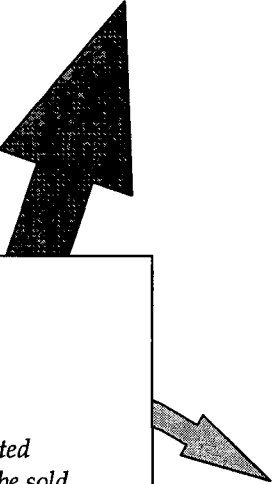
From *time to time* during my stay in Bolivia I had contact with my supervisors in Eindhoven. I want to thank Emilia van Egmond-de Wilde de Ligny, Peter Erkelens and Henny Romijn for the support and professional advice they gave during the process of writing my report.

Furthermore I want to thank Ximena Rodan for the *time* she spent with me, translating English in beautiful Spanish.

Finally I want to thank all respondents of my interviews and questionnaires. A special thanks goes to Felix Rojas Rojas, the sub-burgomaster of Collpaciaco, for his support and the *time* he spent answering my questions.

Tijs den Uijl

December 2003



El tiempo no se detiene  
ni se compra, ni se vende  
no se gira, ni se para  
ni se tiene, ni se atrapa

*Time cannot be halted  
not be bought, not be sold  
not be turned, not be stopped  
not be kept, not be trapped*

From the song 'Tiempo', Jarabe de Palo

It is from the slow passing of *time* that a cultural expression becomes heritage.

The Author

# Table of Contents

<b>PREFACE</b> .....	3
<b>TABLE OF CONTENTS</b> .....	4
<b>EXECUTIVE SUMMARY</b> .....	6
<b>PART I: METHODOLOGICAL ISSUES</b> .....	8
<b>1. THEORETICAL ISSUES</b> .....	9
1.1 RESEARCH BACKGROUND.....	9
1.2 PROBLEM DEFINITION.....	9
1.3 RESEARCH AIMS.....	10
1.4 RESEARCH QUESTIONS.....	10
1.5 RELEVANCE.....	11
1.6 GUIDELINE FOR THE READER.....	11
1.7 DISCUSSION OF CONCEPTS.....	12
1.8 CONCEPTUAL DEFINITIONS.....	13
1.9 THEORETICAL BACKGROUND.....	15
1.10 RESEARCH FRAMEWORK.....	25
<b>2. EMPIRICAL ISSUES</b> .....	28
2.1 INTRODUCTION.....	28
2.2 POPULATION AND RESEARCH UNIT.....	28
2.3 SAMPLING METHOD.....	28
2.4 METHODOLOGIES PER SITUATION.....	29
2.5 OVERVIEW OF METHODS OF DATA COLLECTION.....	30
<b>PART II: RESULTS</b> .....	31
<b>CURRENT SITUATION</b> .....	32
<b>3. CHARACTERISTICS OF ENVIRONMENT</b> .....	32
3.1 INTRODUCTION.....	32
3.2 GEOGRAPHICAL AND PHYSICAL SYSTEM.....	32
3.3 RELEVANT HISTORY/ CULTURAL-HISTORIC EXPRESSIONS.....	33
3.4 RELEVANT SOCIO-ECONOMIC INDICATORS.....	33
3.5 RELEVANT TECHNOLOGICAL INDICATORS.....	34
3.6 CONCLUSION.....	35
<b>4. CURRENT BUILDING CHARACTERISTICS</b> .....	36
4.1 INTRODUCTION.....	36
4.2 TECHNICAL SYSTEM.....	36
4.3 FUNCTIONAL SYSTEM.....	38
4.4 CONCLUSION.....	39
<b>5. CURRENT VALUES OF THE CONVENT</b> .....	42
5.1 INTRODUCTION.....	42
5.2 CURRENT SOCIAL VALUES.....	42
5.3 CURRENT ECONOMIC VALUES.....	42
5.4 CURRENT CULTURAL-HISTORIC VALUES.....	43
5.5 CURRENT TECHNOLOGICAL VALUES.....	44
5.6 CONCLUSION.....	45
<b>DESIRED SITUATION</b> .....	46
<b>6. DESIRED VALUES OF THE CONVENT</b> .....	46
6.1 INTRODUCTION.....	46



6.2	SOCIAL AND ECONOMIC VALUES IN THE FORM OF SCENARIOS .....	46
6.3	DESIRED CULTURAL-HISTORIC VALUES.....	53
6.4	DESIRED TECHNOLOGICAL VALUES .....	56
6.5	CONCLUSION .....	58
<b>7.</b>	<b>DESIRED BUILDING CHARACTERISTICS .....</b>	<b>60</b>
7.1	INTRODUCTION .....	60
7.2	HOSTEL.....	60
7.3	BOARDING SCHOOL.....	63
7.4	COMBINATION OF HOSTEL AND SCHOOL.....	65
7.5	USE OTHER BUILDING.....	65
7.6	CONCLUSION .....	68
<b>PART III:</b>	<b>CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>69</b>
<b>8.</b>	<b>ANALYSES AND CONCLUSIONS .....</b>	<b>70</b>
8.1	INTRODUCTION .....	70
8.2	ANALYSIS AND CONCLUSIONS ON SCENARIOS.....	70
8.3	ANALYSES AND CONCLUSIONS ON METHODOLOGY .....	74
<b>9.</b>	<b>RECOMMENDATIONS.....</b>	<b>77</b>
9.1	INTRODUCTION .....	77
9.2	RECOMMENDATIONS ON TERMS OF REFERENCE.....	77
9.3	RECOMMENDATION ON THE METHODOLOGY AND ITS USE .....	80
<b>LITERATURE .....</b>		<b>82</b>
<b>LIST OF ABBREVIATIONS .....</b>		<b>85</b>
<b>LIST OF TABLES AND FIGURES.....</b>		<b>86</b>
APPENDIX I: EXECUTIVE SUMMARY (SPANISH) .....		87
APPENDIX II: REPORT FIRST MEASUREMENT CONVENT.....		89
APPENDIX III: REPORT SECOND MEASUREMENT CONVENT .....		90
APPENDIX IV: WORKSHOP PROPOSAL (SPANISH VERSION) .....		91
APPENDIX V: METHODOLOGICAL ISSUES QUESTIONNAIRE .....		92
APPENDIX VI: QUESTIONNAIRE (ENGLISH VERSION).....		93
APPENDIX VII: METHODOLOGICAL ISSUES OF INTERVIEWS .....		98
APPENDIX VIII: INTERVIEW WITH HOTELS (ENGLISH VERSION) .....		99
APPENDIX IX: DATA FROM INTERVIEWS.....		102
APPENDIX X: PHOTOS OF CONVENT AND SURROUNDINGS.....		106
APPENDIX XI: FLOOR AND WINDOW AREAS OF SPACES.....		108
APPENDIX XII: CROSS-SECTIONS H-H' AND I-I' .....		109
APPENDIX XIII: TECTONIC ACTIVITY AND BUILDING.....		110
APPENDIX XIV: LIST OF THESES TECHNOLOGY AND SOCIETY .....		112

# Executive Summary

Every society is characterized by its culture and cultural heritage. Cultural heritage is part of social life, cultural identity and community pride. This research concentrates on cultural heritage buildings that form an important group in total cultural heritage. The value society addresses to cultural heritage buildings will change during its lifetime. This can be due to physical interferences (pollution, neglect, wars etc.) or changes in functional demands from society. To preserve its cultural-historic value and improve its socio-economic and technological values it can therefore be necessary to rehabilitate a cultural heritage building.

The research institute PRAHC-UMSS is involved in the rehabilitation project of the Convent Santa Catalina of Collpaciaco in Bolivia. In the first phase of this project the most appropriate building characteristics for the Convent are assessed and selected. This thesis gives a contribution to this by answering the following research question:

*Which building characteristics will most appropriately increase the social, economic, cultural-historic and technological values of the Convent Santa Catalina de Collpaciaco?*

To answer this question, and solve the complex problem of rehabilitation of cultural heritage buildings, it is important to identify those aspects that have an impact on the rehabilitation project. Therefore the following research question is answered first:

*Which aspects should be taken into account to appropriately carry out a cultural heritage building rehabilitation project?*

A research in literature was done to answer this question. Three aspects appeared important being the building characteristics, the values and the environment of a cultural heritage building. The function, geometry, materials, costs, physical performance and production complexity of a building can describe the building characteristics. The values of cultural heritage buildings are described in four categories social, economic, cultural-historic and technological values. The environment surrounding a cultural heritage building is described by ways of a geographical and physical system that interacts with society. By assessing these aspects in the current situation and the desired situation (situation after rehabilitation) and valuing them a consideration can be made on which building characteristics will most appropriate increase social, economic, cultural-historic and technological values. The theoretical discussion showed that the main variable to achieve socio-economic change is the functional use of the building. Therefore a decision model is made to identify the most appropriated function of the building. This decision involves social, economic, cultural-historic and technological criteria.

The above-described methodology is used in the case study of the Convent Santa Catalina of Collpaciaco. The current situation has the following main features. First of all the Convent is situated in an economically poor and agriculture directed area. The Church of the Convent is still actively used where the other parts are used during festivities or community meetings. The Convent does not have an economic use value at the moment and some parts of the roof and walls are encountered in a bad shape. The main cultural-historic values of the building are its 231 years of religious history, its 42 years of history as a wealthy hacienda and the furniture, paintings and finishing materials surviving from these periods.

In the desired situation it is clear that there is a difference in opinion, between the social actors, on the future functional use of the building. The first idea is using the building as hostel, supporting tourism activity. The second is using the building as boarding school, providing better access to education in the area. The third one is a combination of a hostel

and boarding school. The fourth one is using another or new building for one of these functions. Concluded is that the boarding school is the most appropriate option, for there is a considerable social need for better access to education in the area of Collpaciaco. Moreover important actors have experience in organizing a school making it more feasible to organize by the Collpaciaco community than the hostel. The main reason for not choosing the hostel function is its current sector environment. An instable economic and political situation in Bolivia has decreased the number of tourist visiting the country. The site itself has however enough tourist qualities, making tourism an opportunity for the future.

It is concluded that the technical system of the Convent needs intervention in its roof system and walls. To do this effectively more thorough investigation is necessary, for instance in the soil and foundation characteristics of the location. Daylight entrance is problematic in the current geometry of the building. Therefore it is recommended to find ways to optimise the daylight entrance in the building. Furthermore historical spaces have to be restored to a moment in time the best way possible including the church and its decorations, Simon Bolivar's room and the different furniture objects. A goal should be to use only traditional materials during rehabilitation and as many materials as possible should be re-used. Finally the intangible aspects of the religious function have to be preserved as good as possible such as the sensory qualities of rest and quietness.

The used rehabilitation methodology is valued on its validity, reliability and feasibility, in the final part of this research. There appears to be a lack of clear cultural-historic aspects in the definition of building characteristics. What lacks is the factor 'time' in the definition of building characteristics that identifies the geometry and function of the building in history. Moreover it is difficult to objectively define cultural-historic desires and with that criteria for rehabilitation. Therefore further research in this field is necessary. Finally it is stated that the methodology can be used when the project shows the following five characteristics:

1. The cultural heritage building rehabilitation project is of a small scale, involving social actors on the local and regional level.
2. The main variable in the project is the future '*functional use*' of the building.
3. Attention is divided between cultural-historic and socio-economic issues.
4. All social actors can be contacted during the research.
5. A multi-disciplinary project team can be formed containing expertise in the cultural-historic, technological and socio-economic field.

# PART I: METHODOLOGICAL ISSUES

# 1. Theoretical Issues

## 1.1 RESEARCH BACKGROUND

This research is conducted in the framework and organization of the PRAHC-UMSS<sup>1</sup> and will result in a M.Sc. research report at the Technical University of Eindhoven. The PRAHC-UMSS is a research institute related to the Greater University of San Simón, located in Cochabamba, Bolivia. Its objective is to develop municipalities using their tangible and intangible cultural heritage value. The program seeks to improve the quality of life of the inhabitants of these municipalities. Municipalities with potential tourist and cultural-historic value are transformed to come to a reactivation of the economy in the area. A way in which this is done is by rehabilitation of important historical structures.

This research will focus on one specific case, the Convent Santa Catalina de Collpaciaco. The Convent brings us back to the 16<sup>th</sup> century, the beginning of the colonial period, when the first groups of Spanish arrived in the current Bolivia. The first religious group to arrive in the "Valle Alto" was Augustine. They founded the Convent Santa Catalina de Collpaciaco on the 25<sup>th</sup> of November 1570. After this a Franciscan community lived in the Convent until the liberation of Bolivia when the Convent was turned into one of the richest haciendas in the area. At this moment, the Convent is almost totally abandoned only its church remains functioning. Most of the Convent is in a relative bad shape despite two recent interventions.

The village of Collpaciaco has requested the Prahc-Umss institute to help to rehabilitate the Convent. The Prahc-Umss recognizes the cultural heritage value of the Convent. It wants to rehabilitate the Convent in Collpaciaco to improve its technological state and preserve its cultural-historic value. Moreover the potential socio-economic value of the Convent can contribute to development of the rural Collpaciaco area.

A rehabilitation project has in itself a dual character, taking into account preservation and refunctionalization, stagnation and change, cultural-historic and socio-economic values. This puts an emphasis on the need for a multidisciplinary approach and well-based considerations on choices made during rehabilitation. In this context the Prahc-Umss is interested in a research after *how to appropriately carry out the rehabilitation of the Convent of Santa Catalina in Collpaciaco*.

## 1.2 PROBLEM DEFINITION

At some moment in time it can be necessary to rehabilitate a cultural heritage building to better reflect the characteristics and desires of the present society. Rehabilitation can improve the social, economic, cultural-historic and or technological values of the cultural heritage building<sup>2</sup>. An inventory and selection has to be made for those building characteristics that contribute most to the needs and desires of social groups involved in the rehabilitation project.

---

<sup>1</sup> PRAHC means "Programa Integral de Rehabilitación de Áreas Históricas de Cochabamba".

UMSS means "Universidad Mayor de San Simón". All abbreviations can be found in the list of abbreviations at the end of the report.

<sup>2</sup> The exact definitions of social, economic, cultural-historic and technological values of cultural heritage buildings can be found in the theoretical discussion.

To solve this complex problem of rehabilitation of cultural heritage buildings it is important to identify those aspects that have an impact on the rehabilitation project. The Prahc-Umss has identified several of these aspects in previous executed cultural heritage rehabilitation projects. Mainly architectural and technical aspects but also socio-economic aspects of the rehabilitation project were taken into account. The first problem of this research is to structure and complement these aspects making use of literature sources. The identified aspects will form a framework to simplify and order the complex reality of a rehabilitation project. It is assumed that only than the rehabilitation problem can be solved appropriately.

This framework can then be used and verified in the case study of the Convent Santa Catalina de Collpaciaco. The investigation of the Convent Santa Catalina has taken place in the first phase of the rehabilitation. During this phase general information about the project is gathered and finance is secured. The objective of this first phase is to come to an appropriate general terms of reference on the characteristics of the building after rehabilitation.

### 1.3 RESEARCH AIMS

The previous introduction indicates that rehabilitation projects often involve a problem that only can be solved by means of a multidisciplinary approach. It is indicated that more insight is needed into those aspects that have an impact on a cultural heritage rehabilitation project. The first aim of this research is therefore to gain more insight in the aspects that should be taken into account to appropriately carry out a cultural heritage building rehabilitation project.

#### **First Research Aim**

Contribution to gain insight in the aspects that should be taken into account to appropriately carry out a cultural heritage building rehabilitation project.

The aspects found in the theoretical study are used and at the same time verified in the case study of the Convent Santa Catalina de Collpaciaco. The aim of this case study is to contribute to the determination of building characteristics that will appropriately increase the social, economic, cultural-historic and technological values of the Convent.

#### **Second Research Aim**

Contribution to the determination of building characteristics that will appropriately increase the social, economic, cultural-historic and technological values of the Convent Santa Catalina de Collpaciaco, in the context of a rehabilitation project, in the village of Collpaciaco, department of Cochabamba, Bolivia.

### 1.4 RESEARCH QUESTIONS

The aims as stated in the previous paragraph can be translated into two research questions:

1. Which aspects should be taken into account to appropriately carry out a cultural heritage building rehabilitation project?
2. Which building characteristics will most appropriately increase the social, economic, cultural-historic and technological values of the Convent Santa Catalina de Collpaciaco?

## 1.5 RELEVANCE

Bolivia is one of the economically poorest countries of South-America. Migration from rural country sites to the urban areas is common. It is for this reason that several institutions in Bolivia stress the need for rural development in for example education and agriculture. Tourism is also seen as an important economic opportunity, an opportunity to develop the country stressing its tourist value. An important part of the tourist value of a country is its culture and cultural heritage. It is for all these reasons that it is important to look at possibilities for development of rural areas by making use of their cultural value.

Moreover, cultural heritage is not only important for economic development: Cultural heritage is part of social life, cultural identity and community pride. Historical places, objects and manifestations of cultural, scientific, symbolic, spiritual and religious value are important expressions of the culture, identity and religious beliefs of societies (UNHABITAT, 1996). Access to culture and the cultural dimension of development is, besides its economic counterpart, of great importance. The need for conservation is even bigger because heritage all over the world is threatened by uncontrolled tourism, pollution, poverty, war, natural disasters and neglect.

In this research the specific case that is investigated, the Convent of Collpaciaco, is part of the Bolivian cultural heritage. This convent needs intervention to prevent it to be lost for future generations. Moreover, the Convent can play a role in the development of the rural area of the village of Collpaciaco. From a scientific point of view this research is challenging since it implements integrally theories in the field of development, cultural heritage and rehabilitation into a specific case. It contributes to the identification of aspects that have impact on cultural heritage rehabilitation as well as a research framework to investigate cultural heritage buildings.

## 1.6 GUIDELINE FOR THE READER

The above stated research aims and questions are discussed in three stages. The first stage discusses the methodological issues of the research. The latter paragraphs give an introduction in the problem at hand and the relevance to solve this problem was discussed. Moreover the first part will discuss the concepts used and their definitions. The theoretical background discussion will elaborate on these concepts leading to a research methodology for cultural heritage building projects. The last chapter of this first part will address the empirical issues of the research. This defines the population and research unit, sampling method and methods for data collection.

The second stage will give the results of the research done in Bolivia. This will be organized like this. First of all the current situation of the rehabilitation project is spoken of, addressing its environment, the values of the building and the characteristics of the building. These same concepts are used for discussing the desired situation of the rehabilitation project according to the different social actors. The different opinions of these social actors will be captured in functional use scenarios.

The third part of this research gives analyses, conclusions and recommendations. First an analysis is given on the different functional use scenarios. After this, conclusions are given on appropriate building characteristics for the rehabilitation project of the Convent. Secondly the defined methodology is analysed and valued. The final chapter will give recommendations on the most appropriate building characteristics, possibilities of the defined methodology and further investigation both practical and theoretical.

## 1.7 DISCUSSION OF CONCEPTS

This paragraph will more clearly identify the problem giving delineations and definitions of major concepts used. The first aim is to contribute, with this research, in gaining insight in the aspects that should be taken into account to appropriately carry out a cultural heritage building rehabilitation project. The research focuses on the rehabilitation of a *cultural heritage building*. To exactly define a cultural heritage building first its cultural element is discussed. Culture can be defined as the whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group (World Conference on Cultural Policies, 1998). These features will change over time because all cultures are in a state of constant flux, driven by both internal and external forces (UNESCO, Internet Site, 2003). Cultural heritage refers to those features that society, or a specific social group, wishes to preserve and pass on to next generations (LeBlanc, 1993). It must be said that the notion of cultural heritage has changed considerably over time (UNESCO, Internet Site, 2003). First it referred only to the most monumental<sup>3</sup> remnants of cultures, later on the notion of heritage was gradually extended. This research identifies both tangible (material features) and intangible elements (spiritual, intellectual and emotional features) of cultural heritage.

A cultural heritage building represents characteristics of society at a certain place and a certain time. Society has determined its building characteristics being its specific function, geometry, materials, costs, physical performance and production complexity (v. Egmond, 1999). The values of cultural heritage buildings can change over time because of changes in society or the influence of the geographical or physical system (e.g. natural disasters or pollution). It can therefore be necessary to rehabilitate the cultural heritage building improving its social, economic, cultural-historic and technological values to better reflect the characteristics of the present society or geographical or physical system surrounding the building.

The cultural historic values reflect the heritage value of the building. The PRAHP<sup>4</sup> identifies recuperation of these values as an important aspect of rehabilitation. Besides this evenly attention is given to refunctionalization of the building being the main variable to improve its social and economic values. These actions take place in the framework of the technological possibilities and limitations of the building characteristics. Three important entities can be identified in the rehabilitation problem. First of all there is the environment of the rehabilitation project that will impose for instance its needs, desires, demands, opportunities, limitations etc. Secondly there are the values of the cultural heritage building, present in the current situation and desired in the future. Thirdly a cultural heritage building has its building characteristics that can be changed to improve its values and meet the broader desires of the environment. The aspects that have to be taken into account during rehabilitation will be found in one of these entities. It is therefore that the first research aim is investigated by an elaboration on these entities as can be seen in the theoretical framework given in figure 1.

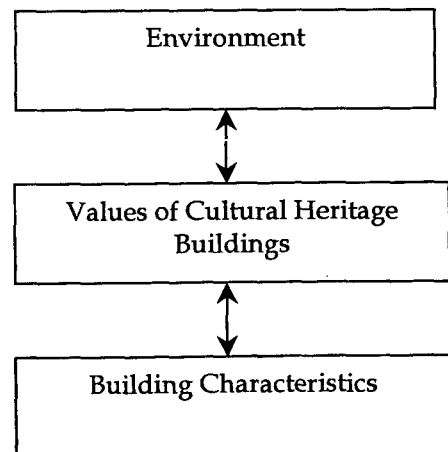


Figure 1: Theoretical Framework

<sup>3</sup> A monument is a considerable urban, architectural or sculptural work, important for its scale or magnificence. (PRAHP, 1999).

<sup>4</sup> PRAHP means "Programa integral de Rehabilitación de Áreas Históricas de Potosí".



The two research aims both emphasize that the rehabilitation, and with that the increase of values of the cultural heritage building, has to be appropriate. Appropriate in this research means: that way of rehabilitation (those building characteristics) that contributes most to economic, social, cultural-historic and technological needs and desires of social groups involved in the rehabilitation project. It will be most certain that there will be different desires in different social groups, it is therefore necessary to objectively make the most appropriate choice. This should be done by criteria that are identified beforehand. A further explanation of this decision model and its criteria is given later on in this chapter.

## 1.8 CONCEPTUAL DEFINITIONS

The previous paragraph gave some conceptual definitions of, for this research, important entities. Underneath a complete list of the in this research used conceptual definitions is given:

### Appropriate

Appropriate in this research means: that way of rehabilitation (those building characteristics) that contributes most to economic, social, cultural-historic and technological needs and desires of social groups involved in the rehabilitation project.

### Building Characteristics

From a generic qualitative point of view the building characteristics can be distinguished in (v. Egmond, 1999)

Costs: Financial aspects of a building.

Function: The functional use of a building.

Geometry: This refers to the spatial and aesthetic aspects of a building.

Materials: The materials used in the construction of a building.

Physical Performance: In this case the physical performance refers to the building engineering state of the construction, building physics and functional state.

Product complexity: This is the technological complexity of the construction of rehabilitation of a building.

### Culture

No culture is a hermetically sealed entity. All cultures are influenced by and in turn influence other cultures. Nor is any culture changeless, invariant or static. All cultures are in a state of constant flux, driven by both internal and external forces. The World Conference on Cultural Policies (Stockholm, 1998) has defined culture being: *The whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group.*

### Cultural Heritage

Cultural heritage is seen as important tangible and intangible expressions in history, which bear their significance until this day and that society, or a specific social group, wishes to preserve and pass on to next generations (LeBlanc, 1993). Cultural heritage embraces tangible and intangible heritage. In this research the following definitions are given:

*Tangible Cultural Heritage* refers to all the historically important material expressions of cultures. The following groups are identified (combination of UNESCO, 1996 and Convenio Andres Bello, 1999):

A) Buildings and Cities

B) Arts and Crafts (e.g. clothes, pottery, literature, paintings, sculptures)

C) Audiovisual products (e.g. radio, television and movies)

D) Natural products (e.g. agricultural products and landscapes)

*Intangible Cultural Heritage* refers to acts of creation and representation that serve to transmit the ways of society, traditional skills and know-how, beliefs and practices relating to nature, languages and oral traditions. The following groups are identified (combination of UNESCO, 1996 and Convenio Andres Bello, 1999):

- A) Traditional ways of society (e.g. festivities, religion, rituals, markets, customs etc.)
- B) Traditional skills and know-how (about for example: nature, music, gastronomy, sports and games, dances, theatre, musical, intellectual life etc.)
- D) Languages
- E) Oral traditions (e.g. stories, mythology)

#### Environment

The environment of a rehabilitation project is divided into a *physical and geographical system* in which society, with its particular social system characteristics, is embedded (v. Egmond, 2000 and Lapperre, 1996). Indicators of the physical and geographical system of a country are climate, natural resources, geologic situation etc. Society in this research is defined as a group of humans broadly distinguished from other groups by mutual interest, participation in characteristic relationships, shared institutions, and a common culture (Princeton University, 1997).

#### Intervention

Is the physical action of changing building characteristics of a cultural heritage building.

#### Monument

A monument is a considerable urban, architectural or sculptural work, important for its scale or magnificence (PRAHP, 1999)

#### Rehabilitation

Rehabilitation is the search for effective preservation of patrimony in consensus and with the participation of the population. The action consists of the recuperation of a historic building that for different reasons has ended to fulfill its function. The attention is evenly divided between the recuperation of the original space as to the refunctionalization of the building (PRAHP, 1999).

#### Sector

A sector is a sociological, economic or political subdivision of society (Merriam-Webster Dictionary).

#### Values of Cultural Heritage Buildings

This research will define values of cultural heritage buildings as: Those characteristics of the cultural heritage building that people perceive as being more or less useful, at a certain moment in time. Values in relation to a cultural heritage building can be divided into social, cultural-historic, economic and technological values (partly from Mason, Getty, 2002).

## 1.9 THEORETICAL BACKGROUND

To define a workable general framework that can be used to solve the rehabilitation problem of the Convent a research in literature was done from which this chapter gives an overview. The theoretical discussion will address the three aspects as defined in the theoretical framework and their interrelationship. It is chosen to start with the cultural heritage building characteristics. After this the different values of a cultural heritage building are discussed. Finally the environment of a cultural heritage project is discussed. The discussion follows a bottom-up approach where also a top-down approach would be very well possible. The reason to apply this bottom-up approach is two folded. First of all, the building characteristics play a central role in a rehabilitation project; they form the starting point for future change. Secondly the discussion of values and the environment is delineated by these building characteristics. Beginning the discussion with the building characteristics will therefore make it possible to discuss better the relevant aspects in both of these entities.

### 1.9.1 CULTURAL HERITAGE BUILDING CHARACTERISTICS

Every material product will have its own specific product characteristics. During the design process a body of knowledge, ways and means are applied to come to a first specification of the product characteristics. These *product characteristics* can be divided in characteristics regarding function, geometry, materialization, physique-technical performance, production complexity and costs of the product (ISO-TR/1994, v. Egmond, 1999). This classification can also be used to describe the characteristics of a building leading to its Terms of Reference. Another way to describe the characteristics of a building is given by Henket who defines a *technical and a functional system*. The technical system is the tangible aspects of the building where the functional system describes the intangible aspects of a building. The previous defined product characteristics can be divided in ones related to the technical system of a building, and ones related to the functional system. This is shown in the following table.

Building Characteristics	
Technical system (Tangible) Material Physical Performance Production Complexity Geometry	Functional system (Intangible) Function Costs

Table 1: Building Characteristics, Source: combination of v. Egmond and H.J. Henket

In working with cultural heritage buildings there is however a difference with a 'normal' design process. There is already a building, with its building characteristics, which will define limitations and possibilities for building characteristics after intervention. The following text will elaborate on the different building characteristics, their relation with each other in the context of rehabilitation.

**Materials:** Every building has its own materialization according to for example functional, physic-technical and cost aspects. In history choices were made to use certain materials for construction. These, often traditional, materials are an integral part of the cultural heritage building. Changes in the use of materials during rehabilitation can therefore be restricted.

**Geometry** of a building includes both spatial and aesthetic aspects. The spatial structure of a building depends highly on all other building characteristics, primarily its function. However, the aesthetic aspects of the building are less dependent on other building characteristics. They give the building different sensory qualities for example in the form of architectural design of building elements and decorations (Mason, Getty, 2002).

Aesthetic aspects often clearly reflect the societal circumstances of the building when it was constructed.

**Physique-technical performance** of a building can be divided into three parts: the building engineering condition, building physics and its functional state. The first part reflects the strength and stability of the most important constructive elements in the building. Age, insufficient maintenance, pollution, wars and natural disasters can decrease the strength and stability of these elements. The second part reflects the (day) light, sound and thermal qualities of the building. The third part addresses the constructive elements of influence on its functional use (e.g. entrances, floor area, position of constructive elements). Functional use demands, building regulations and ideas about sustainability can desire changes in this physique-technical performance. Examples are the desire to change comfort aspects within the building (e.g. daylight entrance, temperature) but also environmental aspects (energy saving installations and materials). Moreover reversibility of replaced, removed or added construction elements can be important (Dulski, 2003).

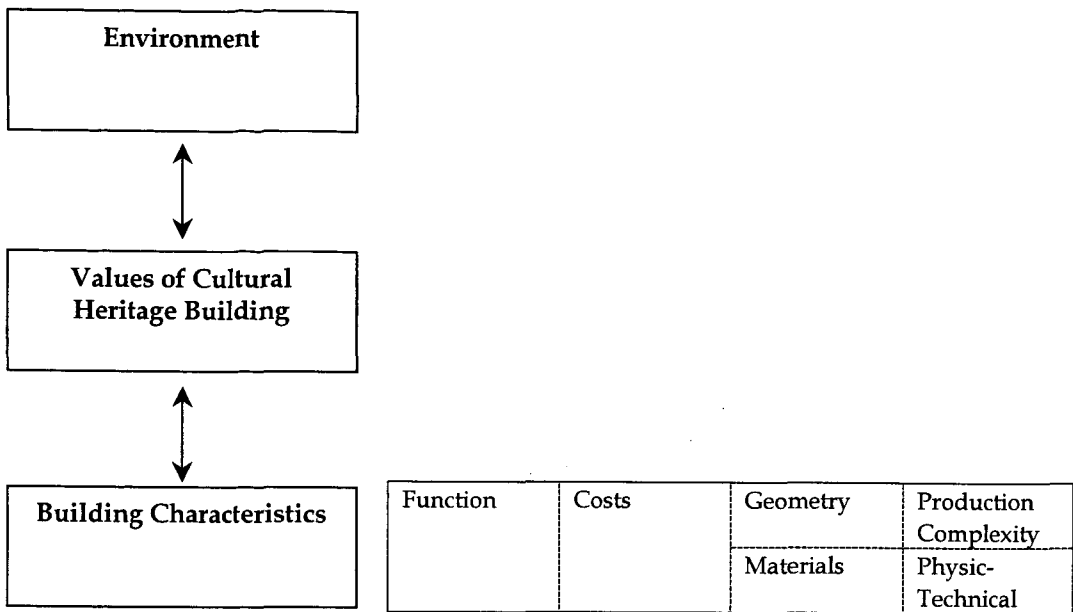
**Production complexity** refers to the rate of difficulty of the process to produce the building. It also refers to the composition of the building of different interrelated parts. This indicates the technological capabilities necessary in the production process. A problem with cultural heritage intervention is that building practice changes with time. Know how and know why about the construction process of cultural heritage buildings is therefore often scarce. In traditional buildings walls are solid, bearing directly on the ground. With the current predominance of steel and reinforced concrete the building system has changed to a frame with a cladding system as enclosure. This transformation in construction technology parallels a similar change in engineering practice. Traditional constructions often do not follow methods of present calculation, leaving only room to design by guesswork (Langenbach, 1997).

**Costs:** The costs of the intervention can be a limiting factor for every other building characteristic. There are many gaps in cost coverage, particularly in the conservation of monuments and public buildings (Rojas, 1999). Part of the problem is that many cultural heritage assets are not traded in markets: they have a "zero price" and can be enjoyed by many without charge (Mourato, Getty, 2002). Moreover costs of rehabilitation can be very high because of the specialist knowledge necessary. So it can be seen that cost coverage is difficult in rehabilitation projects because of high intervention costs and little possibilities for returns.

**Function:** For interventions in cultural heritage to be effective and successful they must not only rehabilitate the physical building, but also revitalize the social and economic processes that can make efficient use of the building and maintain them properly (Rojas, 1999). The function of the building is in this light the most important variable to achieve socio-economic development. The rehabilitation intervention method sees this possibility and therefore in rehabilitation the attention is evenly divided between the conservation of the cultural heritage building and refunctionalization of the current functional use of the building. Important is the organization and maintenance of the function. This research identifies the knowledge of the actors about organization of a function as important for appropriate rehabilitation.

**Conclusion**

The discussion above describes the different characteristics of a cultural heritage building. These are integrated in the theoretical framework, as can be seen in the following figure.



**Figure 2: Elaboration on Theoretical Framework: Building Characteristics**

## 1.9.2 VALUES OF CULTURAL HERITAGE BUILDING

This research will define *values of cultural heritage buildings* as: Those characteristics of the cultural heritage building that people perceive as being more or less useful, at a certain moment in time. People value cultural buildings in numerous ways stemming from their interest, background or beliefs. Depending on the importance of the cultural heritage this valuation will take place on different scales, involving more or less people. The valuation of this group of people will depend on the context of the project in its environment. Social forces, economic opportunities and cultural trends will influence the values given to a certain heritage building (Mason, Getty, 2002). It is critical to understand the various values of culturally significant or historic structures, because it will be necessary to come to an appropriate and sustainable intervention (Getty, 2002, p.14).

In history many scholars have thought about measurement of values people address to cultural heritage buildings. Aesthetic, Scientific, Historic and Social elements were highlighted by the Burra Charter (1998). Cultural, Educational and Academic, Economic, Resource, Recreational and Aesthetic elements were identified in English heritage (1997). Randall Mason (Getty, 2002) gives in his publication a typology with two main values, Socio-Cultural and Economic values. In this report this typology will be chosen for it can be very well used in the rehabilitation project with also has two faces: Conservation of social and cultural elements and refunctionalization as an element of change and economic development. This research will however make a slight change in this typology by splitting up the social-cultural values in a social part and a cultural-historic part, to better identify the different building characteristics involved. Furthermore in the theory of Mason the technological state of a building are not integrated. A reason for this can be that a good technical system is not sufficient for a building to be useful. In other words, a good technical system does not indicate usefulness of a building. The technical system, as can be seen in the previous chapter, influences however greatly the possibilities for change in the social, cultural-historic and economic values of a cultural heritage building. Therefore technological values of a cultural heritage building are integrated in the following discussion, adding on to the theory of Mason. This can be done because the technological values of a building can be measured totally independent from its other values. The following paragraphs elaborate on, and explain the above-described typology.

### *Social Values*

The social values of cultural heritage buildings enable and facilitate social connections, networks, and other relations in a broad sense, one not necessarily related to central historical values of the heritage but rather on the public-space and shared-space qualities (Mason, Getty, 2002). This can express itself in the use of the building for different functions (e.g. education, health), serving the needs of society. A function often related with important historic structures is that of religion.

Spiritual values can encompass experiences of wonder or awe related to the heritage site. Being proud of the achievements of your culture, and country, can give people more strength and courage (MinBuZa, Internet Site, 2003, translated from Dutch). Culture heritage can be important for identity, generation of motivation, pride and stimulation of a feeling of 'empowerment'. In general it can improve human well-being and well-fare.

### *Economic Values*

The economic values stemming from conservation of heritage can be both private and public. The private sector invests more often in conservation. Firms occasionally choose cultural heritage buildings as their headquarters for prestige or public relations reasons. Moreover historic centers become more and more fashionable locations for high-income residents, who are willing to invest in heritage. However in many cases cultural heritage conservation is not market driven. Not all economic values of the cultural heritage site can be measured in terms of individual choices and market prices. Economic values stemming from the

conservation of heritage are often, by definition, understood to be a public good reflecting collective decisions rather than individual, market decisions (Mason, Getty, 2002). Therefore Mourato and Mazzanti make a distinction (Getty, 2002) related to use versus non-use values, corresponding to the types of economic values measured through markets and outside of markets. This distinction is also made in the typology of Mason.

Mason divides economic values in that of use values and that of non-use value. Goods and services that flow from the use of the cultural heritage site that are tradable and priceable in existing markets are the use values. These can be for instance, admission fees, costs of land and wages of workers. Economic theory sees non-use values as those qualities of the object that are "non-rival" and "non-excludable". In other words consumption by one person does not preclude consumption by someone else and moreover by providing the good or service to anyone, others are not excluded from consuming it. There is a great overlap between the previous stated social and cultural-historic values and the non-use values. It is difficult to give economic figures for non-use values and therefore in this research is decided to measure economic values only from their use value. The central aim in handling this use value is to organize another function for the cultural heritage building to obtain a higher economic value.

#### *Cultural-Historic Values*

Historic values of cultural heritage can be defined by the capacity of a site to convey, embody, or stimulate a relation or reaction to the past. Two different historical values can be defined, one referring to the academic value of the site (knowledge of the past) the second referring to the artistic value of the building. Cultural/ symbolic values are used to build cultural relationships in the present and can be political, ethnic or related to other means of living together (for instance work or craft related). The political and ethnic element can be seen as the use of heritage to build or sustain civil relations, governmental legitimacy, protest, or ideological causes. These values stem from the connection between civic/social life and the physical environment of the cultural heritage site. Moreover a building embodies the methods used to design and make it, the values related to making the building are also seen as cultural/ symbolic values. Aesthetic value refers to different sensory qualities of the building both smell, sound, feeling and sight. In history thought is given to the question how and to what extend these cultural-historic values have to be preserved ending up in certain conservation principles. These conservation principles differ in degree and ways of intervention stemming from different objectives and viewpoints. There are for example the restoration/integration ideals of Viollet-le-Duc in France and the stabilization/preservation ideals of Ruskin and his followers in England (Getty, 2002, p.7). International recommendations were made in various international meetings like those of the Venice Charter in 1964. In this research, two main sources of information on this subject are used. The first is found in the work of the Getty Conservation Institute: *Planning and Engineering Guidelines* (Tolles, 2002, p.119 - 121). The second is the *Reglamento de Preservación de las Áreas Históricas de Potosí* (PRAHP, 1999, p.21 - 22, translated from Spanish) produced by the PRAHP. These two institutes define the different important views on intervention as can be seen in table 2.

The table defines four different methods of, and ideas about intervention. The choice for one of these views will depend on characteristics of the building (e.g. significance, physical condition, the extent of documentation available and interpretive goals) but also on economic and technical feasibility. However subjective ideas can also play a role, like for example the value John Ruskin attaches to age: "The greatest glory of a building is not in its stones, or in its gold. Its glory is in its Age, and in that deep sense of voicefulness, of stern watching, of mysterious sympathy, nay, even of approval or condemnation, which we feel in walls that have long been washed by the passing waves of humanity..." (Ruskin, no date, from Langenbach, 1997). Age-value may or may not relate to significance and it may or may not be advisable to preserve it, depending on

circumstances. For instance when erosion threatens the stability of a structure it can be irresponsible and hazardous to preserve its age value

Preservation:	
Getty:	The act or process of applying measures necessary to sustain the existing form, integrity and materials of an historic property. Focus upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement.
PRAHP:	Contains all the actions to protect the historical and cultural patrimony. The definition of conservation comes closer to the definition of the Getty Institute regarding preservation: to realize the minimum of interventions possible to guaranty in the end a longer lifetime of the structure without invalidation of its originality, like a document which can be handed over to the future.
Reconstruction:	
Getty:	The act or process of depicting, by means of new construction, the form, features and detailing of a non surviving site, landscape, building, structure or object for the purpose of replication its appearance at a specific period of time and in its historic location
PRAHP:	Is the intervention which has the goal to put back a certain period. This can be done in special, documented cases of the moment of its actualization.
Rehabilitation:	
Getty:	The act or process of making possible an efficient compatible use for a property through repair, alterations and additions while preserving those portions or features that convey its historical, cultural or architectural values
PRAHP:	Is the real and effective search after the preservation of the patrimony consistent with and with the participation of the population who is guardian of the patrimony. Moreover it is the action of recuperation of constructive elements with historic values, which have ceased to carry out their function. The intervention is evenly a question of recuperation of historical spaces as of refunctionalization.
Restoration:	
Getty:	The act or process of accurately depicting the form, features and character of another period in its history and reconstruction of missing features from the restoration period.
PRAHP:	Maximal intervention to bring back a historic image not only formal but also ideological and cultural which involves society, it should be executed only in defensible cases.

**Table 2: Different Forms of Intervention, Sources: Getty Conservation Institute and PRAHP**

It can be seen that there are differences in definition between the two chosen sources. However in the case of reconstruction, rehabilitation and restoration these differences are not changing the meaning of the type of intervention. However there is a difference in the terms preservation and conservation. In this research the definition of the PRAHP will be used for this will come closed to the ideas of the Prahc-Umss. This research defines the rehabilitation principle as the most appropriate for this building for it addresses great importance to refunctionalization without loosing sight of the important cultural-historic elements of a building.

The cultural-historic elements of a building can be described by ways of a Historic Structure Report (HSR) that provides information and guidance to those formulating interventions (Tolles, 2002). The HSR provides a comprehensive overview of the significance of the building and its components, as well as details about specific features and construction history. The HSR contains of two parts being the 'historical significance statement' and the 'inventory and evaluation of architectural features'. The *historical significance statement* articulates clearly the historic significance of the building, giving dates of construction, historical values of spaces and rooms and the relevance of the building and its inhabitants. The following questions should be answered:

Who designed and built the building and in response to what needs?
What role, if any, did its builders, occupants or visitors play in historical events?
How were these individuals representative of, or connected with, historical movements?
What historical events took place within or around the historic structure?
How was life in and around the structure characteristic of the era?
Why and how has the structure survived or been preserved as a witness to past events?
What changes were made to the structure and in response to what historical events or human needs?

**Questions for Historical Significance Statement, Source: Tolles, 2002**



In the inventory and evaluation of architectural features the important features, elements, materials and spaces are physically inventoried, documented and evaluated as to historical and architectural significance and integrity. It ends up in identifying that historic fabric worthy or not worthy of preservation.

*Technological Values*

Technological values are seen as the valuation of the current technical system of the building involving its materialization, geometry and physique-technical performance. The current state of the technical system depends on how the building has suffered from age, pollution, insufficient maintenance, human intervention, wars and other forms of destruction. An instrument to test the technological value of a cultural heritage building is by ways of building regulations and guidelines.

**Conclusion**

The people value building characteristics of cultural heritage stemming from their interests, background or beliefs. Measurement of this valuation gives valuable information to appropriately rehabilitate the cultural heritage building. This chapter has provided a typology to describe these values involving social, economical, cultural-historic and technological values. This is integrated in the theoretical framework, as can be seen in the following figure.

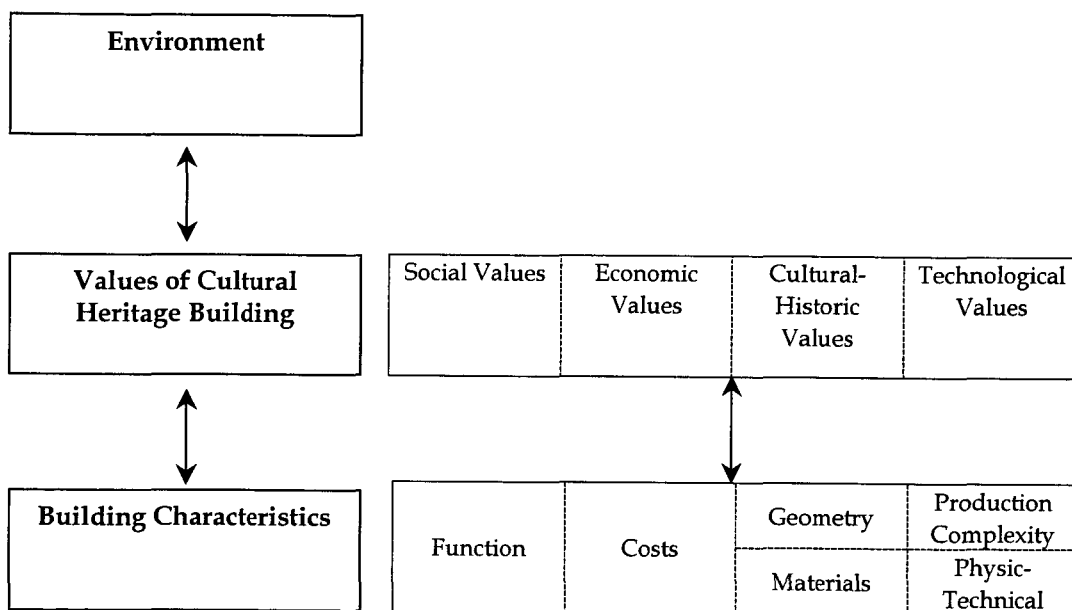


Figure 3: Elaboration on Theoretical Framework: Values of Cultural Heritage Building

### 1.9.3 ENVIRONMENT OF CULTURAL HERITAGE BUILDING

As is said in the previous chapter the valuation of a cultural heritage building will depend on the context of the cultural heritage building in its environment. This environment is defined as a *physical and geographical system* in which *society* is embedded. Indicators of the physical and geographical system of a country are its climate, natural resources, geological situation etc. Society in this research is defined as a group of humans broadly distinguished from other groups by mutual interest, participation in characteristic relationships, shared institutions, and a common culture (Princeton University, 1997).

A way to describe the relation between society and cultural heritage can be found in the thoughts of the social system thinking (Lapperre, v. Egmond, and others). This line of thought describes characteristics of society as a product of a social system in which people are interacting. The social system consists of a structure of institutions in which every institution has specific social structural and social cultural features. These institutions are according to Lapperre (1996): kinship, economy, politics, religion, technology and education.

The social structure of a country is defined as the to some extent established relations between people. These relations will evolve in more or less permanent and collectively accepted structures and social positions. The social culture consists of the collectively accepted structure of values, aims, norms, expectances, knowledge, science, crafts and technology. There are however many definitions of culture. The World Conference on Cultural Policies (1998) for instance has defined culture being: The whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group. These two definitions stress the importance of culture being specific for a society (or social group). In other words every society has cultural aspects that characterize it and differentiate it from other societies.

The above-described social system interacts with its unique physical and geographical system. The interactions lead to tangible and intangible expressions. Cultural heritage is an important tangible or intangible expression in history, which bears its significance until this day and that society, or a specific social group, wishes to preserve and pass on to next generations. Society will value cultural heritage constantly, which can bring forth desires to preserve but also to change its characteristics to better reflect the current situation in society.

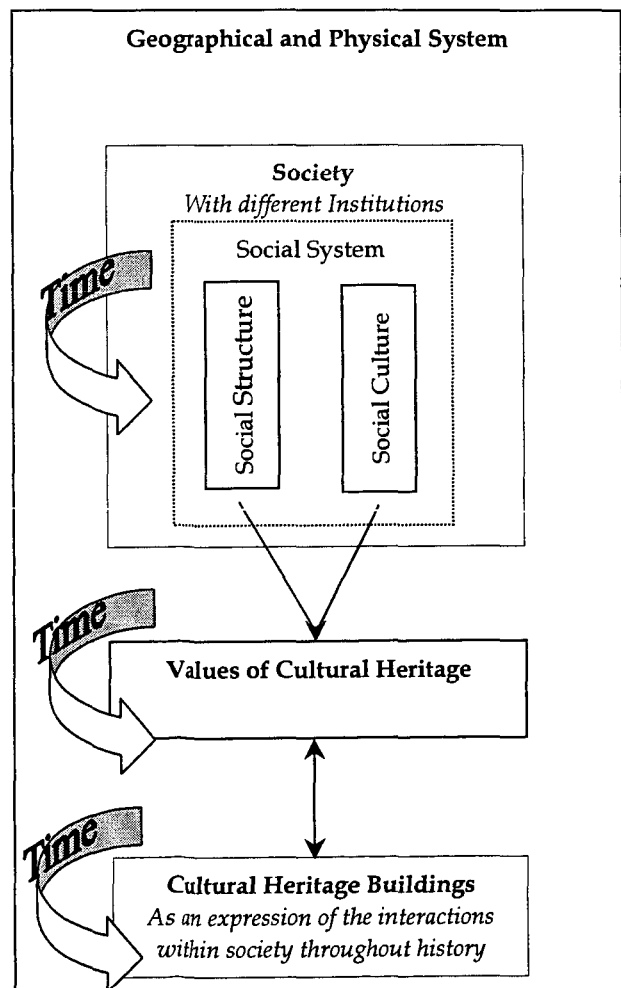


Figure 4: Relation Society and Cultural Heritage

The relation between the societies, values of cultural heritage and cultural heritage are shown in the figure four. Important in this relation is the factor time. Cultural heritage is a cultural expression from history that is conserved until this day and that society wishes to preserve for the future. Cultural heritage is in this light static through time, however society surrounding the cultural heritage object will change. Expressing for instance the need for change in building characteristics to adapt the building at the present-day demands and desires. An example of this is the rehabilitation project of the Convent Santa Catalina de Collpaciaco in which one goal is to preserve the building and another goal is to refunctionalize the building to better serve the desires of society.

#### **Sector Environment**

Society will set the Terms of Reference (T.O.R.) of a rehabilitation project, leaving from generally accepted norms, values and expectations. The future function of a cultural heritage building can serve desires and demands of society and its institutions. The function of the building will be part of a sector. This sector can be assessed by ways of its strengths, weaknesses, opportunities and threats and will contain elements of the previous described institutions in society. This way insight can be obtained whether or not the future function is income producing or serves a clear social need. When this is the case it enhances the likelihood the cultural heritage building will be preserved on the long term (IADB, 1998).

#### **Social Actors**

It is important to involve all social actors in investigating the values of cultural heritage for this will supply broad social support for intervention (IADB, 1998). The scale of the group of social actors will differ according to the cultural importance of the building under investigation. Constructions named World Cultural Heritage by the UNESCO need in fact the participation of the world's population where a cultural less important construction may be important only at a regional scale. The cultural importance of heritage building will define the social actors that have to be involved. This can be roughly at an international, national, regional or local level. The assessment of society needs to concentrate on that level that best describes its cultural importance.

#### **Elaboration on the Tourist and Cultural Industry Sector**

From literature it is seen that there are many ideas of using the cultural heritage for economic activities. Leading to improvements in the socio-economic part of the social system. Using the cultural heritage in tourist and cultural industry activities is the most important possibility for economic development. The following paragraphs will discuss the opportunities and threats of using cultural heritage in these activities according to literature.

##### *Opportunities of the Tourist and Cultural Industry Sector*

The WorldBank and Getty Institute state in their joint publication that cultural heritage, when carefully preserved and protected, can contribute to economic growth in developing countries, meeting the needs and interest of poor communities and the broader society. Cultural heritage can be a development "asset", a form of cultural capital that can provide employment, generate income, and mobilize communities to alleviate poverty. The UNESCO addresses in their Universal Declaration on Cultural Diversity the increasing economic impact of creative activities. Arts and culture serve as a main source of contents for the cultural industries, they create jobs and contribute significantly to GDP. They have become an even more important source of income generation and skills development in countries where work opportunities are limited or have been disrupted. Unlike many industries, those focusing on individual and small business creativity can provide important components in development strategies, which are also environmentally acceptable. (UNESCO Universal Declaration on Cultural Diversity)

A major force of making economically use of cultural heritage can be tourism. Several publications stress that in recent years the demand for cultural destinations has become a major force in the global economy (Grefe 1990, 1999; Pearce and Mourato 1998, Getty, 2002). Tourists are visiting cultural heritage elements like historical town centers, museums and gardens. They benefit from experiences and memories offered by cultural heritage assets. But also non-visitors may benefit indirectly through magazines, films or Internet. So architectural heritage of a country, seen as a part of cultural heritage of a country, has a potential for economic development (Rojas, 1999).

The UNESCO states that heritage is a key stake in and medium for intercultural communication. Heritage education can strengthen the concept of common heritage of humanity that is the fruit of manifold exchanges between cultures and civilizations (UNESCO Universal Declaration on Cultural Diversity, 2001). Understanding each other's cultures and heritage improves intercultural communication. Tourism, when organized well, can be seen as a form of understanding other cultures by exploring them in a tourist way. The UNESCO writes that besides this in the cultural fields themselves there has been an important shift towards international networking like co-productions, joint exhibitions, conferences and festivals. This facilitates cost sharing, economies of scale and international marketability. There is however not only the opportunity for intercultural dialogue there is in some cases also a pure need. This need is understood by the vice ministry of culture being responsible for motivating the debate between different nationalities and cultural groups which compose Bolivia.

Using culture, cultural heritage and cultural activities for economic processes this will most certainly demand a good maintenance, preservation and conservation of these cultural expressions. This way it can be said that by using cultural heritage in economic activities there is a greater opportunity to conserve, preserve and maintain this cultural heritage.

#### *Threats of the Tourist and Cultural Industry Sector*

As is said before tourism has great potential for development. However a threat is that the local people will not profit from tourism activities because of private interest. The UNESCO round table meeting has therefore stated that there have to be mechanisms to allow the local population to obtain economic advantages and a certain sense of satisfaction from any tourist development, in terms of jobs, income and self-pride.

It can be seen in industrialized, developed countries that cultural heritage has become a major component of mass culture, in which tradition and the past have become too much of 'a commercialized plaything of the future' (UNESCO, Universal Declaration on Cultural Diversity, 2001). In other words our cultural heritage is valued more in terms of commercial success, a product to sale, than for its historic significance and as a result people can lose the connection with their own historic cultural roots.

The processes of globalization, modernization and rapid change in such fields as economy, communications or tourism, may create pressures on cultural diversity and tangible and intangible heritage (Japanese Law for the Protection of Cultural Properties, Internet Site, 2003). So it can be seen that the opportunities of the fast growing tourist industry can also bring its negative counterparts. Literature names some possible threats for cultural activities because of tourism. First of all there are ecological threats: congestion and air pollution in historic city centers, but also pollution of rural and ecological zones. Moreover the craftsmen have to be protected assuring and promoting sustainable trade with these original producers of cultural artifacts. Furthermore illicit trafficking; which is growing with the growing demand in developed countries, in cultural property has to be stopped. Above all respect, sense of cultural custodianship and care are important. Involving communities, cultural groups and younger generation in decisions affecting heritage can strengthen these.

**Conclusion**

According to the previous discussion the environment can be divided in a geographical and physical system in which society is embedded.

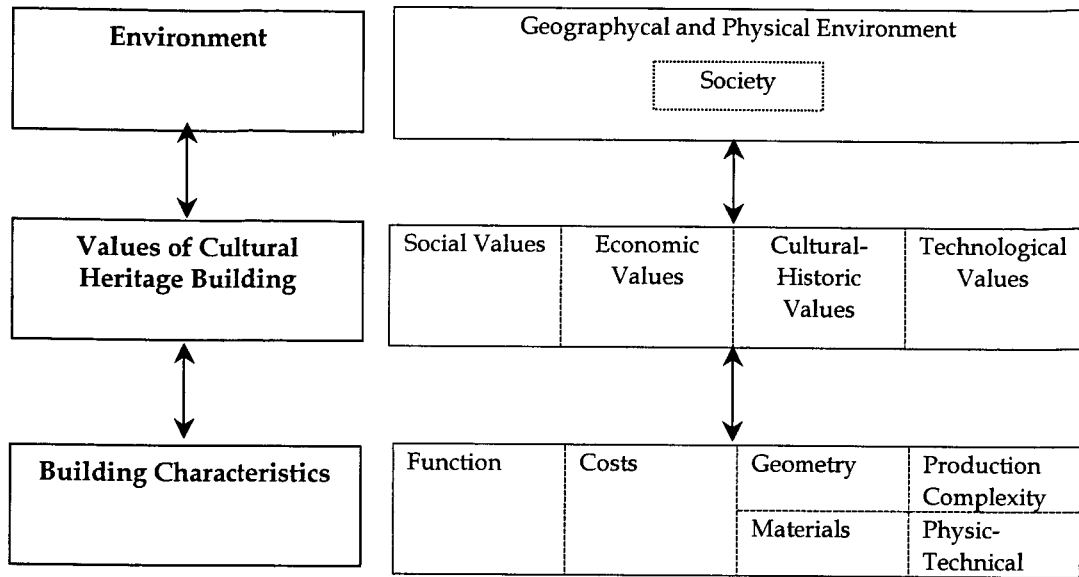


Figure 5: Elaboration on Theoretical Framework: Environment

**1.10 RESEARCH FRAMEWORK**

The previous literature defines three important aspects in rehabilitation: building characteristics, values of the building and the relevant environment. These aspects will be used to first describe the current situation in the rehabilitation project. Being the moment in the lifespan of a cultural heritage building that society identifies a need for rehabilitation. Secondly the desired situation after rehabilitation can be described by ways of these three aspects. By comparing the current and desired situation a choice can be made for the most appropriate way of rehabilitation, ending up in recommendations for the building characteristics (Terms of Reference).

*Current Situation*

First of all a general introduction in the environment of the rehabilitation project will be given. Describing the physical and geographical system and society. The assessment of society is split up in describing relevant historic facts, relevant socio-economic indicators and technology institutes. This will be done at both the national, regional and local level. After this general introduction the building, and its characteristics are described. Followed by a description of the cultural-historic, social, economic and technological values of these building characteristics.

- 1: General Characteristics of Environment
- 2: Current Building Characteristics
- 3: Current Values of the Convent

*Desired Situation*

The desired situation is first described by way of the desired values of the building. Different actors will have different opinions about the desired situation. The desired social and economic values depend highly on the future use of the building. The different desires of the actors on these social and economic values are named in this research 'use scenarios'. The first part of this chapter will describe these 'use scenarios'. Secondly the desired cultural-historic and technological values are researched. These two sets of values will create conditions for the future function that can be given to the building. The

different social actors have to obtain consensus about the desired cultural-historic and technological values. The Historic Structure Report and technological measurements tested on building regulations are ways to obtain objective information to specify these values. After this the desired scenarios are translated into building characteristics.

4: Desired Values of Convent  
5: Desired Building Characteristics

*Conclusions and Recommendations*

The conclusions and recommendations of this research will emphasize both the terms of reference of the Convent and an evaluation of the identified and used methodology.

In the conclusions on the terms of reference of the Convent a central question will be which 'use scenario' is most appropriate. A use scenario contains desires about a future function of the building. To make a choice the use scenario should be compared with objectively found criteria. This is done in two phases.

The first phase compares the different 'use scenarios' with the desired cultural-historic and technological values (and their translation in building characteristics). The assessment of the desired situation has objectively defined cultural-historic and technological criteria that would be desirable for the building. These criteria are condition creating, giving possibilities and limitations for further rehabilitation and are therefore the first criteria to take into account in making a decision for one of the use scenarios. The 'use scenario' can now be valued on cultural-historic and technological appropriateness by giving a grade. The technological and cultural-historic criteria can be extracted from the previous theoretical discussion (see pages 14,15, 17-19).

Technological Criteria	Cultural-Historic Criteria
<u>Geometrical Criteria</u> Spatial organization	<u>Tangible Criteria</u> Historical spaces to preserve (Finishing) Materials to use Architectural features and elements to preserve
<u>Material Criteria</u> Strength and durability of materials	
<u>Physical-Technical Criteria</u> Strength of constructive elements Building physics	<u>Intangible Criteria</u> Function, inhabitants and users in the past
<u>Production Complexity Criteria</u> Possibility for execution	

**Table 3: Technological and Cultural-Historic Criteria**

The second phase will be to assess whether the 'use scenarios' are appropriate in their environment. This means that the scenarios should be valued on whether they fulfil a clear social need, and moreover whether they are socio-economically sustainable on the long term. This can be researched by looking at the strengths, weaknesses, opportunities and threats of the sectors surrounding the scenarios. And moreover whether the function can socially and economically be organized by the actors (feasibility). A grade shall be given on the situation in the sector of the scenario, the social appropriateness of the scenario and its economic appropriateness. The following table identifies the criteria that are used by this valuation:

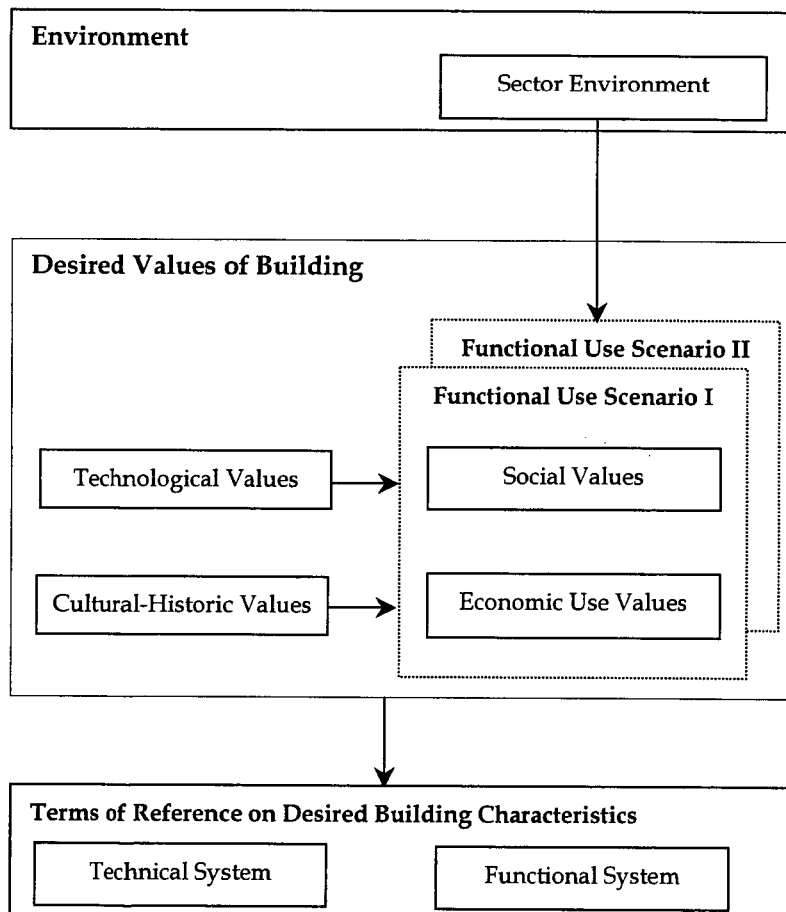
Situation in Sector Criteria	Social Criteria	Economic Criteria
Strengths, weaknesses, opportunities and threats of the sector surrounding the scenarios	<u>Social need of society for function</u>	<u>Economic Feasibility of function</u> Way and possibility to finance the scenario
	<u>Social Feasibility</u> Possibilities to organize the function	

**Table 4: Situation in Sector, Social and Economic Criteria**

After the discussion on appropriateness each 'use scenario' will have five grades. It is decided to attach the same weight (importance) to these grades, this because the cultural-historic, technological, social and economic values of a cultural heritage building are seen as equally important. However it must be admitted that in special cases these weights can shift because of strong demands on one of the four values. Figure six shows the decision model.

The second part of the conclusions will evaluate the defined and used methodology on its validity, reliability and feasibility. Finally recommendations will be given for the most appropriate building characteristics after rehabilitation in the form of terms of reference. A second part of the recommendations will address the evaluation of the developed rehabilitation methodology.

- 6: Conclusions and Recommendations on Terms of Reference
- 7: Conclusions and Recommendations on the Defined and Used Methodology



**Figure 6: Decision Model to choose the most Appropriate 'Use Scenario'**

# 2. Empirical Issues

## 2.1 INTRODUCTION

This chapter will address the methodological choices made in this research. The chapter will describe and motivate the methodologies used. This will be done separately for the different steps identified in the research framework. A motivation will be given for the choice of methodology; furthermore in the different appendices operationalizations are given.

## 2.2 POPULATION AND RESEARCH UNIT

The population of this research is defined as all actors directly involved in the rehabilitation process of the Convent Santa Catalina de Collpaciaco. It was however more appropriate to concentrate on other populations in some circumstances. Why, where and when will be told while explaining the research methodologies of the different variables.

## 2.3 SAMPLING METHOD

The research uses general theories in the field of development; cultural heritage and rehabilitation to solve the problem at hand in a case study. In terms of coverage a case study is more limited than a survey, however proponents argue that the method gains in greater richness of data, depth and penetration of analysis (Gaillard, 2002, p.28-29). However the main problem with case study data is that of generalizing the findings of the study. The first level of generalization, within the study, often does not give problems because the research group is often relative homogeneous. The second level of generalization refers to how far can be generalized to regions, countries or wider frames of reference. This is often problematic with a case study, for it is not clear whether the case is really typical. The choice for a case study is however logical when the problem at hand is further investigated. First of all the building industry sector in which the research is taking place has certain characteristics (among others) that argue for the use of a specific investigation (v. Egmond, 1999, p.39):

- Every product has its own characteristics
- Nearly none of the end products is composed out exactly the same components
- Buildings can rarely be moved and thus are bound to the location where the production process has taken place
- The building process is organized around projects
- There is not necessarily a follow up of one project after another.
- The process may be organized in several ways and the sequence of activities may also differ from one project to another.

It can be seen that characteristics of a building project, and maybe even more of a rehabilitation project, differ from case to case. In the opinion of the author, the generalization of this research can be found in the method of research rather than the project itself. The research gives a general framework in which a rehabilitation project can be solved. It is understood that from project to project, environments, actors, demands etc. differ, through which the weight in the framework of variables can shift. However, in the used framework a summation of factors is given in which the rehabilitation project can be divided. Sampling in sub-studies is explained in the concerned variable.



## 2.4 METHODOLOGIES PER SITUATION

### **Current Situation**

#### *Environment*

The goal of describing the national, regional and local environment is to describe the conditions in which the process of rehabilitation is executed. This can be done as profound as somebody wants because of the broad notion of this variable. Therefore choices are made to describe several elements, which are the most important in this research. This research stresses the importance of the local environment for this is found important in literature. It is a rehabilitation project for and with the people of Collpaciaco forming part of the local environment. It is therefore that for the national and regional environment a method of researching existing general data and literature was used. Using government, Non-governmental and private sources. However, more supporting data was gained by interviews with key-persons in the rehabilitation process and by researching the already executed projects of the Prahc-Umss.

#### *Current Building Characteristics*

By ways of historic literature, technological investigation and interviews the current building characteristics of the Convent are investigated. The technological investigation included measurement of the technical system of the Convent. The methods used during this measurement are shown in appendix III and II.

#### *Current Values of the Convent*

The social and economic values at the moment are investigated by ways of interviews with key-persons and own experience of the author. The cultural-historic values of the Convent are investigated by way of a literature study and investigation on the site.

### **Desired Situation**

#### *Desired Values and Building Characteristics of the Convent*

The desires of the research population on rehabilitation are a very important factor in this research. However this very important variable is also most sensitive for economic, political and social problems during investigation. Therefore two methodologies for research were made. First these methodologies are discussed and afterwards a choice is made for the most appropriate methodology to use in this research.

The first methodology is to organize a workshop in the town of Collpaciaco. From literature it was clear that this methodology proved to give, when executed well, a lot of information. Moreover colleagues of the Prahc-Umms had experience in organizing workshops, they organized one for the village of Totora addressing possibilities to improve tourism in the town after a devastating earthquake in 1998.

The second methodology is to organize interviews with key-persons from the research population. Selecting the key-persons well can give good and clear information about the views, needs and demands on rehabilitation of the research population.

From the perspective of range and amount of participants, together with the available experience, it was planned to execute the first methodology. However this was not possible during my stay because of political problems. These problems were that architects and the village of Arani sued the Prahc-Umss for mistakes made in a project in Arani. Because Collpaciaco is part of the Province of Arani it was not possible to have any contact with the people at that time. Moreover the financial resources were not yet available to do such a research. However a proposal for the organization of the workshop was made and is included in this research in appendix IV (in Spanish). The idea of the Prahc-Umss is to execute this workshop in a later stadium when the relations have been

restored<sup>5</sup>. It was therefore chosen to do the research to this variable using the second methodology. The interviews were operationalized and prepared. During this time the relation between Prahc-Umss and the village was worsened leaving only room to interview its Burgomaster, but with that the most important key-person. This interview gave also insight in the opinion of the church, also an important player in the process of rehabilitation of the Convent. Moreover my working experience with the ideas of the Prahc-Umss and the Church were used together with existing data and literature written by the Prahc-Umss.

A questionnaire was used to gain more insight in the desires and the sector environment of one of the scenarios. The aim of the questionnaire was to gain more general data about the ideas of the population on the role of cultural heritage in socio-cultural and economic development. The choice was made to use another research population for this questionnaire because of the broad nature of the aim. It can be said that three important groups can be identified when researching cultural heritage. First of all there are the experts who identify and preserve cultural heritage. Secondly there are the people who form part of the intangible heritage, bearers of traditions. Thirdly there is the youth, who in about a few years form a great part of the world community, for which the cultural heritage is preserved. A group in the youth, who has expressed in history many ideas are students. In this research, a choice is made to identify students of the UMSS as the research population for this questionnaire. This is the biggest public University in Cochabamba city. 58 students from different educational directions gave their opinion on questions and propositions. In appendix V more explanation, methodological issues and operationalization of the questionnaire are given. Appendix VI gives the English version of the questionnaire. The Spanish version, as it was distribute in the research population, can be asked for with the author.

Moreover interviews were held with hotels addressing for instance the possibilities for a hotel in the Convent of Collpaciaco. In this research a practical approach is taken which involves the managers of hotels. This group will have practical experience in running a hotel and there is a great change that they know the Convent in Collpaciaco. In this research, a list of hotels in Cochabamba and villages around Cochabamba is used to make a good sample of the population (this list can be asked for with the author). The population is defined as all hotels in Cochabamba city and hotels in villages in the area of Collpaciaco. Appendix VII elaborates on the methodological issues concerning the interviews. Appendix VIII shows the sheets that were used during the interviews. Appendix IX gives a summary of the data that was collected in the interviews.

## 2.5 OVERVIEW OF METHODS OF DATA COLLECTION

In the following table is shown which method was used to measure the different variables indicated in the theoretical framework.

Variable	Method of Investigation
Current Situation	Existing data and Literature Technological Measurement Interviews with Key-persons
Desired Situation	Interviews with Key-persons Existing data and Literature Authors Experience and Observation Questionnaire in Student Population Interviews with Hotel Managers

Table 5: Overview of Methods Used per Situation

<sup>5</sup> The Prahc-Umss institute has promised to send the results of the workshop prepared during my stay when the workshop is executed.

## PART II: RESULTS

## Current Situation

# 3. Characteristics of Environment

### 3.1 INTRODUCTION

The country of Bolivia together with its 8,2 million inhabitants is in all its facets varied, diverse and versatile. The exceptional geographical structure of Bolivia, together with its drastic historic events, has made the population and their way of live extremely varied, representing different cultures and cultural heritage both tangible and intangible. This paragraph will describe different cultural expressions and heritage in Bolivia to get an idea of the place of the heritage item under investigation. First of all the geographical structure and important historic events will be described being the main reasons for Bolivia's cultural structure. Moreover relevant indicators are given to sketch the socio-economic situation in Bolivia and especially the department of Cochabamba. Finally, institutions working in rehabilitation are addressed.

### 3.2 GEOGRAPHICAL AND PHYSICAL SYSTEM

Bolivia's territory stretches from the high Andes plateaus, by ways of different valleys into the deep rain forests regions. Between these regions are great differences in temperature, rainfall, vegetation and possibilities for agriculture. To live in such diverse climates demand different ways of living including architecture, agriculture but it also influences the ways of society. The department of Cochabamba lies in one of the valleys, this valley is called 'Valle Alto'. Collpaciaco is located at approximately 5 km from the town of Arani that is located 55 km from Cochabamba city. The road from Cochabamba to Arani is asphalted and there runs regular public transportation. The road leading from Arani to Collpaciaco partly paved but the river crossing, just outside the town of Arani, may give some problems. There is no regular public transportation on this trajectory but taxis can be found in Arani who bring you to the Convent for 15 Bolivianos (2 persons, equivalent of 2 dollars). The climate in area of Collpaciaco is dry and its height varies between the 2800 and 4110 meters above sea level. Furthermore there is a medium risk for earthquakes to take place in this region.

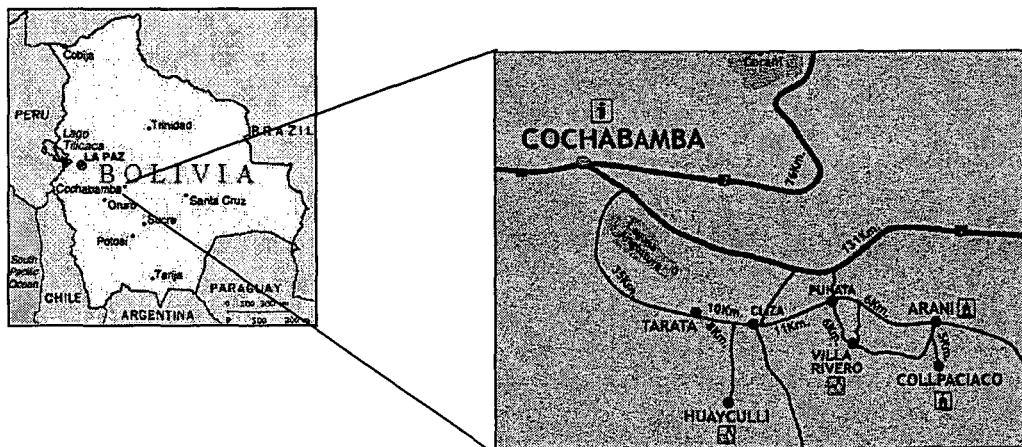


Figure 7: Location of Collpaciaco in Bolivia

The population of Bolivia has seen a significant growth during the last nine years, however this population growth mainly took place in the cities. It can be said that Bolivia still has relatively little inhabitants in comparison with its size. After 1976 the population of the province of Arani (province of the department of Cochabamba) is more or less steady around the 23.000 to 24.000 habitants (INE, 1992). Moreover according to the census of 2001 approximately 98% of the people are born where he or she lives at present (INE, 2001). Collpaciaco is a municipality within the province of Arani. According to the sub-burgomaster of Collpaciaco the municipality consists of ten different villages, Papehapata, Ciaco, Collpa, Chullpa Orkho, Catachilla, Puca Huase, Convento Pampa, San Chillalli, Balcon Pampa and Collpaciaco. In total approximately 1200 people live in these villages (INE, 2001).

### 3.3 RELEVANT HISTORY/ CULTURAL-HISTORIC EXPRESSIONS

The history of Bolivia is one of change, not only in the political sense of the word but also change in normal daily live influencing religion, customs and traditions. The history of Bolivia can be roughly divided into four periods. From the pre-Inca period, Inca period, colonial period upon the post-colonial period of today. During the 16<sup>th</sup> century the situation in the present day Bolivia changed rapidly and strongly. During these times the first Spanish conquistadors arrived and invaded the Andean countries, changing social, cultural and economic systems. An important factor in their conquest and colonization was the religious institution. From the first moment on the boats leaving from Spain were accompanied by several religious persons. Religious activity was not only directed to spreading the word, moreover it played an important role in politics. The different religious groups functioned as intermediates between the Spanish and Andean people. Religion was also used as a mean for repression. The different religious groups built their constructions as a method to spread the Christian faith, changing the cultural habits and ways of living of the indigenous people but also to show Christian supremacy by building upon native religious constructions. The colonization of Alto Peru, the later Bolivia, started around 1540 ending 285 years later after the wars of independence in 1825 (Guardia, 1995, p.25-26). It is said that 95% of the inhabitants of Bolivia is Christian, which shows the great impact Christianity has had.

Cultural heritage in Bolivia stems from the four previous named historic periods. Different places are mentioned in the world cultural heritage list of UNESCO such as the old colonial cities of Sucre, Potosí and the Jesuit missions in Santa Cruz. The only Andean structure in this list is Tiahuanacu, near La Paz.

### 3.4 RELEVANT SOCIO-ECONOMIC INDICATORS

The following table indicates the Human Development Index as an indication for the quality of life in the country.

	Life expectancy (Years)	Literacy (%)	Enrollment (%)	GDP per capita (\$)	HDI
Bolivia	62	85	70	2355	0,648
Latin America	69,6	87,8	74	6880	0,760
Chile	75,2	95,6	78	8652	0,825

Table 6: Comparison of Bolivia with Latin America and Chile, 1998, Source: Informe DH 2001

It can be seen that the human development index of Bolivia is 0,648 with 1,000 being a country with an optimal quality of life (as measured by the four indicators life expectancy, literacy, enrolment in education and GDP per Capita). It can be seen that Bolivia scores beneath the average of Latin America in all its indicators.

Politics in Bolivia during recent years were based on four lines of thinking about development that were integrally executed. First, there was "Opportunity" with the goal of stabilizing economy and creating employment. Secondly, there was "Equality"

containing most importantly poverty reduction. Thirdly, there was "Institutionalisation" encompassing juridical reforms, reforms of the public sector and fights against corruption. Finally, "Dignity" with emphasis on the drug war against Coca (MinBuZa, Internet Site, 2003). The government supported decentralization and community participation as important keys to achieve the above stated goals. The economic reforms resulted in a stable climate with an economic growth of 4%. However, most of this growth was absorbed by population growth and income distribution did not improve (MinBuZa, Internet Site, 2003). Still Bolivia is economically one of the poorest countries in Latin America as is showing the GDP indicator in table 8. The economic situation in Bolivia worsened because of the Latin America crisis of 1999. The war against drugs is still going on, blocking a black-market money economy, resulting in fewer possibilities for investment. Mines have closed, and civil unrest continuous because of the prices of drinking water, gas, public transport and because of the coca eradication. Finally, the process of decentralization is difficult because of institutional weaknesses and lack of knowledge at local level<sup>6</sup>.

When the economic figures of the Cochabamba department are looked at a striking difference can be seen between rural and urban areas. The following table indicates this difference by looking at the percentage of poor people in these areas. It has to be said that the definition of poor is hard to make. This table defines the poor population as someone who does not have access to the minimum of basic needs. That can be in the field of housing, water and sanitation, electricity and combustible for cooking, level of education and access to health services.

SECTION	Percentage of poor people according to Census 1992	Percentage of poor people according to Census 2001
Bolivia	70,5%	58,6%
Province of Cochabamba	71,1%	55,0%
The town of Cochabamba	46,5%	33,8%
Arani, first section including the town of Arani	85,7%	68,0%
Arani, second section	98,0%	94,9%

Table 7: Percentage of Poor People, Source: INE, 2001

The figures show that on average Bolivia is making progress in poverty reduction (although 58,6 % is still one of the highest in South America). The department of Cochabamba is following this trend together with the town of Cochabamba and the town of Arani (that makes up most of the first section). The striking difference can be seen when comparing these figures with the second section of Arani, being a mostly rural part. There, in 2001, still almost 95% of the people lived in poverty. The majority of the population in the province of Arani works in agriculture<sup>7</sup>. The role of manufacturing and services is only around the 10% where agriculture makes up for more than 70% indicating that a big part of the province of Arani lives from agriculture.

### 3.5 RELEVANT TECHNOLOGICAL INDICATORS

Several institutes are active in the field of restoration and rehabilitation projects in Bolivia. International organizations like the ICOMOS, ICCROM and UNESCO have as a main role to finance cultural heritage projects and to do scientific research after intervention in cultural heritage buildings, for instance in the field of earthquake

<sup>6</sup> This was also seen in a workshop with the population of a small town in Cochabamba named Totora in which I participated. The workshop was organized to find out which possibilities Totora had to attract tourism. Institutional weaknesses and lack of knowledge were seen as great difficulties at a political level (workshop 10-06-2003).

<sup>7</sup> Figures of Arani and Collpaciaco of 2001 are available but there is a significant percentage (47,5 and 45,1 percent) who have not responded to the question about work. Therefore these figures are not used in this research.

engineering <sup>8</sup>. More practically Bolivian institutions like the PRAHC, PRAHP and PRAHC (from Cochabamba, Potosí and Sucre) are involved in real interventional projects. The institute PRAHC-UMSS in Cochabamba has its precedents in Sucre and Potosí in the forms of PRAHS and PRAHP.

### 3.6 CONCLUSION

Below the characteristics of the most important national, regional and local aspects of the environment will be summarized that are considered to have an impact on the rehabilitation project of the Convent Santa Catalina de Collpaciaco. First of all can be seen that the region of the Convent is relatively poor, living from agriculture in dry surroundings. Moreover great part of the population is indigenous speaking often only Quechua. Also in this part of Bolivia the Spanish have been present for hundreds of years leaving Christianity and the Convent in Collpaciaco. From a technological point of view it is interesting to see that a number of institutes are working in the field of rehabilitation of cultural heritage buildings, from which the PRAHC-UMSS institute is the most important in this research. Important to take into account in the further technological elaboration is the fact that Collpaciaco is situated in an area with medium risk for earthquakes.

---

<sup>8</sup> The meaning of these abbreviations can be found in the list of abbreviations at the end of the report.

# 4. Current Building Characteristics

## 4.1 INTRODUCTION

This chapter will describe the current building characteristics of the Convent Santa Catalina de Collpaciaco. To obtain the information about the technical system the site was visited several times. First two days of measurement were organized, a short summary of these days can be found in appendix III and II. The first day was used to generally measure the building, measuring inside and outside. This information was processed in the computer and the missing data were measured during the second day. During the second day also the physical-technical performance of the Convent was assessed. These days, and several visits next, were also used to obtain information about the function and use of the Convent at present.

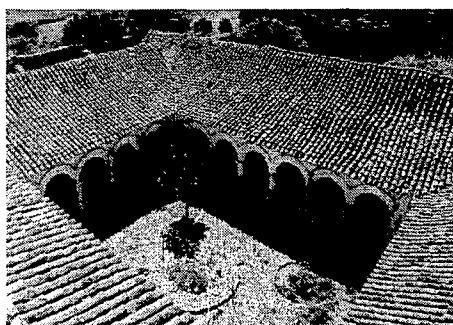
## 4.2 TECHNICAL SYSTEM

### 4.2.1 GEOMETRY

The Convent of Santa Catalina is one of the most important historical architectural structures in the department of Cochabamba (Tourism Unit, Cochabamba). It shows a classical architecture, Baroque-Mestizo style, with a sober façade designed around the entrance and a patio surrounded by arcades. The building can be divided in four different architectural forms. The first two are the two courtyards; the third one is the church and the fourth one the tower. The following text will describe the spatial structure of the Convent by describing for each of these archetypes their way of entrance and dimensions. This will be done by ways of a tour through the building starting in front of the main façade. Photographs, as shown in appendix X, will make the tour complete. The direction of the photographs is given in illustrations eight and nine showing drawings of the first, second and third floor of the Convent.



Front Façade Convent Santa Catalina



Main Courtyard (photo 2)

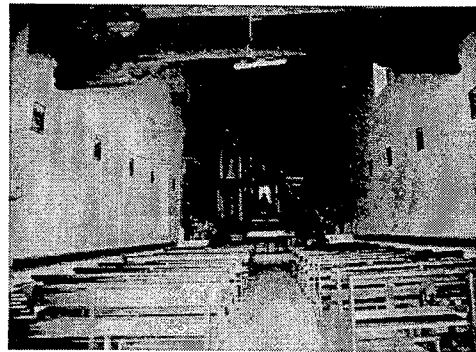
The main façade (photo 1) of the Convent consists of two levels showing a sober classical architecture. Two large and heavy wooden doors on the right form the main entrance. A second entrance can be found in the left part of the main façade. The main courtyard can be reached by entering the main entrance on the right. The main courtyard measures 188 m<sup>2</sup> and is surrounded by an arcade (photos 2-5). From the corridor around the courtyard, six rooms can be entered, two of which have an inside door to another room. The rooms differ in size from 17,1



m<sup>2</sup> to 41,3 m<sup>2</sup> (room numbers: 1100-1106, 1111 and photos 6-7)<sup>9</sup>. Furthermore, the corridor gives access to the second courtyard, the main entrance, the Church and the tower. The tower gives access to the second floor of the main courtyard by a steep, narrow and uneven stairs. The corridor of the second floor gives entrance to four spaces (photo 8). The first one is, when leaving the tower, immediately on the right being the choir of the church. The other three are rooms of 23, 26,1 and 16,7 m<sup>2</sup>. Room number 2100 is the room in which the famous General Sucre has slept. Room number 2102 gives access to a room connecting the two patios at second level. Furthermore room number 2101 has a balcony in the main façade. The tower stairs leads further up, narrowing even more to 600 mm in width, to meet at the top the bell tower. From this point the village of Collpaciaco can be seen (photo 9).

Leaving from the main courtyard into the second courtyard (288,6 m<sup>2</sup>) makes up a different view. A large part of the second patio lies in ruins (photos 10-11), and a part of the main façade is being restored, making it a less impressive spectacle than the main courtyard. The building exists of a corridor that gives entrance to 2 rooms (16,9 and 30,4 m<sup>2</sup>) and the second entrance of the Convent. A stairs, which is now in a bad shape (photo 10), leads up to the corridor of the second courtyard. At the moment the floor of this corridor is absent leaving no way to enter the second floor. However the second floor of the second courtyard can be entered by ways of the tower stairs and room 2102. The second floor exists of one space divided by two small walls into spaces of 25, 34 and 21,9 m<sup>2</sup> (photo 12).

The last part of the Convent is the most important, the Church. This exists of two spaces, the service (photo 13) measuring 124,8 m<sup>2</sup> and the sacristy measuring 15,1 m<sup>2</sup>. Two large doors in its west façade give access to the church. There is a passage behind the main altar showing a window in the eastern façade. The Convent is situated at one side of an open square. The square is used for community gatherings and a game of football. The southern façade can be seen at photo 14, photo 15 shows the eastern façade. Photos 16 and 17 give an impression of the Collpaciaco area.



Interior of Church (photo 13)

#### 4.2.2 MATERIALS

The Convent of Collpaciaco was built in the year 1570. There are indications that first the Church, tower and main courtyard were built. After this the Convent was expanded with the second courtyard. Nowadays five archetypes can be identified. First there is the construction with two levels being the main building at the front façade. Secondly there are the two strips of one level building occupying two sides of the main courtyard. Thirdly, the Church that can be classified as a different form of construction. Fourthly the tower, which forms an independent entity in a constructive way and finally there is an area around the second courtyard, which now lies largely in ruin.

Materials that were used are traditional materials like adobe, wood and stone. Its heavy build adobe walls form the main part of the constructive system (see illustrations eight and nine showing plans of the building). Almost every adobe wall in the building has some kind of constructive function. The main walls, at first floor have a width of a little more than one meter. At second level the walls are less heavy, approximately 700 mm. The walls at right angles differ in width (at first and second level) from 600 to 750 mm.

<sup>9</sup> For room numbers and position of photographs see illustrations eight and nine

Different arcades surround (partly) the two courtyards. The columns at second floor level are constructed of traditional brickwork measuring 220 in square. The floors built with wooden beams, differing in size, on which a layer of bamboo and finishing material is fixed. A rafter construction is used for the roof. The rafters are connected with horizontal beams over which bamboo and tiles are put. The vertical loads of the building are directed from the roof by the outside walls of the construction to the foundation and soil. Also the first floor bears on these walls. Ground floor bears its loads (probably) independent from this construction. Windows, doors and their frames are made of wood. These elements are generally rotten because of lack of maintenance like painting.

#### 4.2.3 PHYSICAL-TECHNICAL SYSTEM AND COMPLEXITY

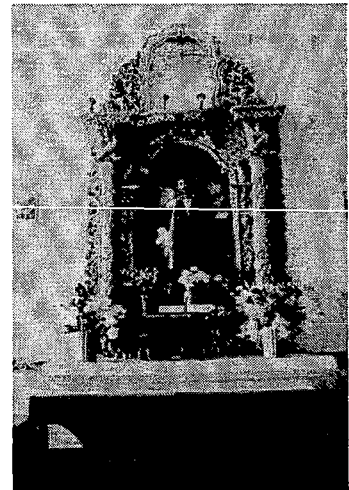
During the site inspections some technical problems were encountered. It is necessary to execute a thorough investigation in these problems, which until this moment has not taken place. For instance information is lacking about soil and foundation characteristics. Some severe damages can however easily be seen. First of all there are the ruins in the second courtyard. Not more than half of its walls are still standing. Another interesting part of the building is the backside facade that has an inclination of some three degrees, parting from its stabilizing walls. This parting of the facade from its stabilizing walls can also be encountered around the principle entrance. Moreover different parts of the roof of the building are in bad shape, clearly bending through, missing joists etc.

The building's physics is greatly influenced by its massive and solid structural system. Because of the heavy walls of the construction there will be little temperature changes during day and night. Natural lighting is limited in many spaces of the building. Window openings are present but the spaces are too high and have a too big floor area to be day-lighted sufficient. Because of the heavy walls sound insulation qualities between rooms are good, also the ceilings are heavy which make them more or less insulating for noise. Almost all spaces have the possibility for ventilation.

### 4.3 FUNCTIONAL SYSTEM

#### 4.3.1 FUNCTION

The Convent is located at the main square of the village Collpaciaco. A stone road leads to its walls. From the tower of the Convent the dry agricultural fields can be seen, but also the river that gives life to its surroundings. The actual situation of the Convent is such that the little church is in use, containing altars of the Augustine Saints Santa Catalina and San Isidro. The church is rather good conserved because the community always has taken care for its maintenance, despite their limited resources. The church is used for services and festivities. The main festival of Collpaciaco is that of Señor San Isidro Labrador which is celebrated May 14-15. During these festivities the ritual of "Llank'ada" is performed which represents the rotation of the soil during the sowing preparation. The population sees the Saint as a farmer who works hard until he is perspiring and tired. Part of the festivity is a procession of the inhabitants carrying the image of the Saint and lighting firecrackers, ending up in the church of the Convent. Close to the Convent live a few nuns who maintain and organize the religious services. Part of their work is in education and it can therefore be seen that the Convent is used for small classes of children for religious tuition. At the moment the main courtyard is mostly used for important village meetings. The bells in the tower are played when an important meeting, which involves all of the people, is held. (Conversation with one of the responsible Nuns, 26-03-2003).



San Isidro Labrador

Also part of the Convent is used for storage, for instance room 1101 is used to store onions.

**4.3.2 COSTS (FINANCE)**

The terrains of the Convent were property of the church however over time they passed on to the village of Collpaciaco. It is those two actors, both the Catholic community and Collpaciaco community, who maintain the Convent in its current state. In January 2001 the Order of "Don Bosco" intervened in the building renovating the stone archways in the central patio and the northern part of the roof of the Convent. The funds came from religious institutions and voluntaries. In the beginning of 2003 Father Antonio Díez began with a renovation of the roof of the Convent, being that part that was most deteriorated. The reason that Father Antonio Díez intervened can be found in importance he addresses to the Convent. The Convent is in his eyes a very important structure, which has to be preserved for future generations. Father Antonio Díez organized the intervention when he saw that no other institution was trying to preserve the building.

**4.4 CONCLUSION**

The floor areas of the different spaces in the Convent can be found in appendix XI. The following pages show the plans of the Convent, scale 1:250. Appendix XII contains drawings of some of the cross-sections, as indicated in the plans of the Convent. A summary of the most important building characteristics can be found in the following table. The roof construction and the inclination of some walls can have a great influence on the possibilities for rehabilitation, indicated with (+++). Of lesser importance are the ruins in the second courtyard (++). When the element is not directly limiting or interesting for future rehabilitation a (+) is given.

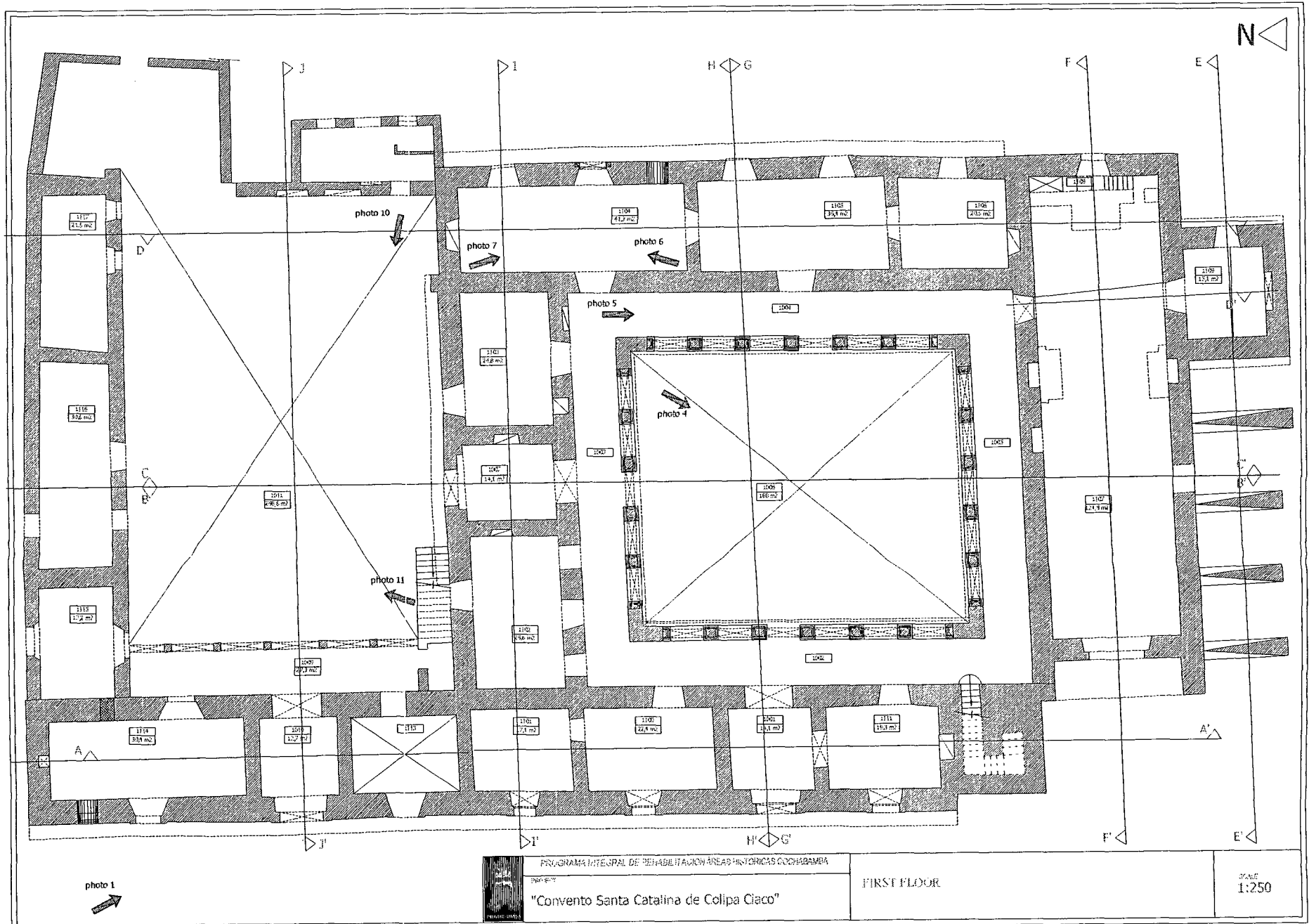
Current Technical System		Current Functional System	
	<u>Geometry</u>		<u>Function</u>
++	Constructions situated around two courtyards	+++	The Church is still actively used
+++	Main building of two levels	++	The main courtyard is used for village meetings and festivities
+++	Three building blocks of one level		
+++	Church	+	Some rooms are used for storage
++	Tower		
	<u>Materials</u>		<u>Costs (Finance)</u>
+++	Traditional materials: wood, adobe and stone	+++	The Convent is property of the Collpaciaco community
+++	Wooden beam construction for floors	+++	Finance of previous intervention came from religious sources or voluntary work
+++	Wooden rafter construction for the roofs		
++	Heavy build walls of adobe		
	<u>Physical-technical and Complexity</u>		
	<i>Technical state:</i>		
+++	Roof construction is in poor state		
+++	Some walls have an inclination		
++	A part of the Convent lies in ruins		
+	Window and Door frames are partly rotten		
	<i>Building physics:</i>		
+++	Limited lightning		
+	Constant internal climate because of heavy construction		

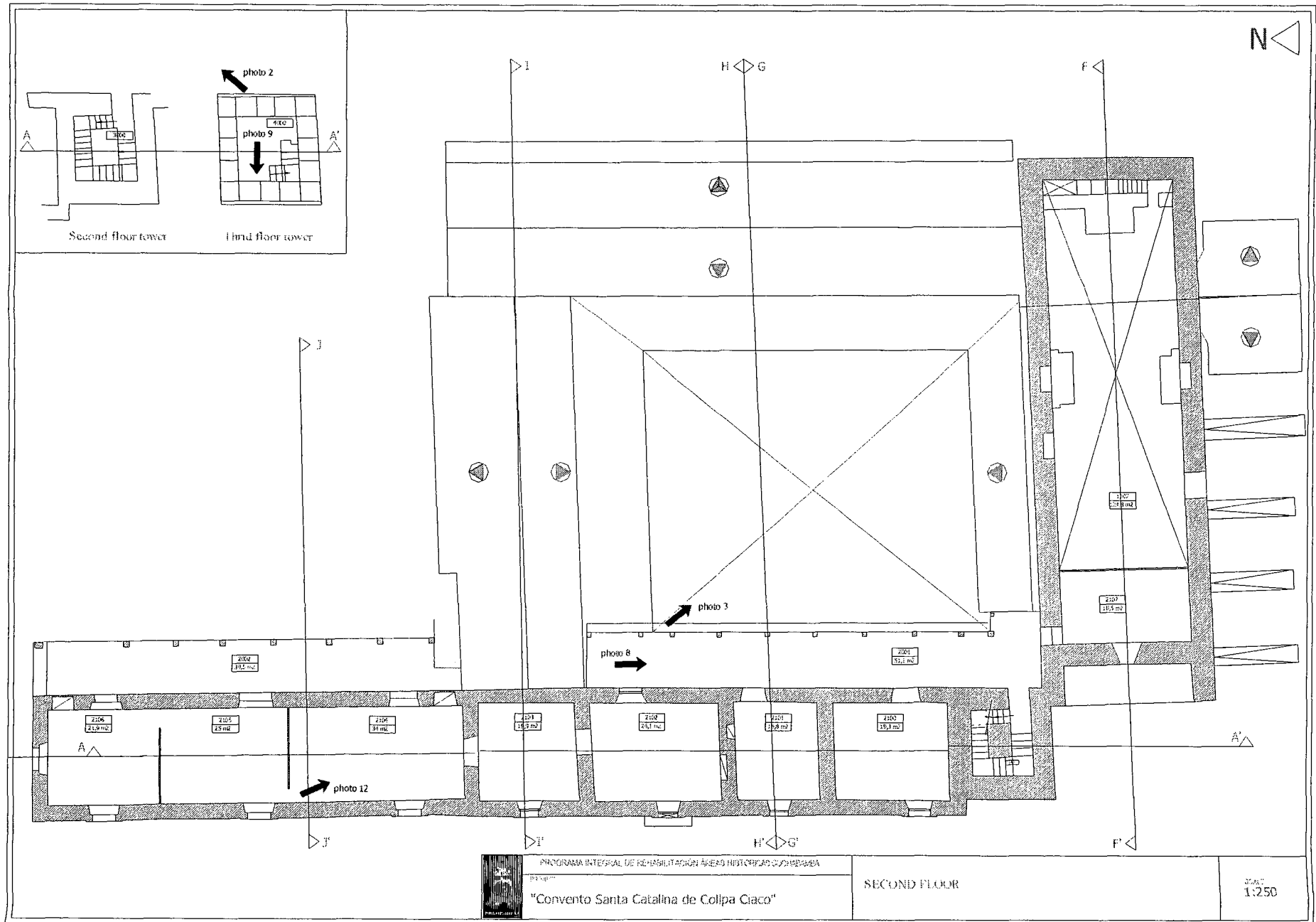
- + Not directly interesting or limiting for future rehabilitation
- ++ Should be taken into account in future rehabilitation
- +++ Of important influence on future rehabilitation

**Table 8: Summary of Building Characteristics and their Importance for Rehabilitation**

The following two pages show figures 8 and 9:

**Figure 8: First Floor and Figure 9: Second and Third Floor of the Convent, Scale 1:250**





PROGRAMA INTEGRAL DE REHABILITACIÓN ÁREA HISTÓRICA CUCHIBAMBA

ETAPA II

"Convento Santa Catalina de Collpa Ciaco"

SECOND FLOOR

SCALE  
1:250

# 5. Current Values of the Convent

## 5.1 INTRODUCTION

This chapter will discuss the different values of the Convent in its current situation. As is identified in the literature study four different values will be discussed: social, economic, cultural-historic and technological values.

## 5.2 CURRENT SOCIAL VALUES

From the previous chapter can be seen that the Convent plays a central role in sustaining social relations in the village of Collpaciaco and neighbouring villages. Its main value at the moment is its religious value. It accommodates the religious institution by giving services on Sundays and during Catholic festivities. Many people attend these services coming from Collpaciaco and its vicinity.

Moreover it is a central place for community gatherings and festivities. Giving the Convent an important role in sustaining the social relations in and around the village of Collpaciaco. The Convent is only opened during a social activity. During normal days the Convent is locked. From several visits it became clear that the community is proud of their Convent, they were more than willing to show the building and help with the measuring of it. Therefore it can be concluded that the Convent plays a role in giving identity and pride to the people of Collpaciaco.

## 5.3 CURRENT ECONOMIC VALUES

It can be said that the Convent, leaving out of consideration the Church function, does not really have an economic use value. There is the economic function of storage room, but this can hardly said to be significant. At the moment the Convent is a public building, used only for public purposes like religious schooling, festivities and public meetings. On the other hand there will be certain costs/m<sup>2</sup> that have to be paid for its maintenance. No exact information is available how many maintenance activities, and their costs, are executed at the moment. However it is clear that the church is maintained. This indicates that there is some kind of system to financially organize its maintenance.

However the building has economically some kind of value, its heritage value, in economic theory this is called non-use value. For instance, there can be a wish to leave behind the cultural heritage asset for future generations, which can be expressed financially (Mason, 2002). This is also the case for the Convent, of which the financial discussion of rehabilitation was just started during this research. Finance for the first phase of the rehabilitation project was more or less secured in July 2003. The "Prefectura of Cochabamba" together with the University of San Simon will finance this first phase that contains a thorough investigation into the constructive state of the building and the mapping of architectural features of the building. The costs of this first phase are relatively small, 10.000 US Dollars. The financial agreement has however until this moment not been signed by the village of Collpaciaco. The sub-burgomaster gave some reasons for this. First of all there is doubt whether the Prahc-Ums has sufficient economic and social knowledge for it is an architectural research institute. Moreover the Prahc-Ums does not support the idea that the sub-burgomaster joins the project team, although the sub-burgomaster has relevant experience in the field of rehabilitation and of

course valuable information about the region. Finally the sub-burgomaster has no confidence in that the project will also be executed for it is estimated by the Prahc-Ums that this will cost approximately 800.000 US Dollars (Interview with Felix Rojas Rojas, 15-07-2003).

There is also another actor who is interested in financing the rehabilitation of the Convent, which is Father Antonio Díez. Antonio Díez is communicating with Spain (his family or a religious institution) and tries, for two years now, to get money to finance the rehabilitation. Father Antonio Díez however supports the project and way of finance as is indicated above.

#### 5.4 CURRENT CULTURAL-HISTORIC VALUES

The first part of this valuation will be a historical significance statement in which the historic significance of the Convent Santa Catalina de Collpaciaco and its inhabitants becomes clear. Various groups inhabited the Convent during its interesting history. The following timeline reveals these groups. This paragraph will shortly tell something about the various groups, their way of life and their relation to important historic events.

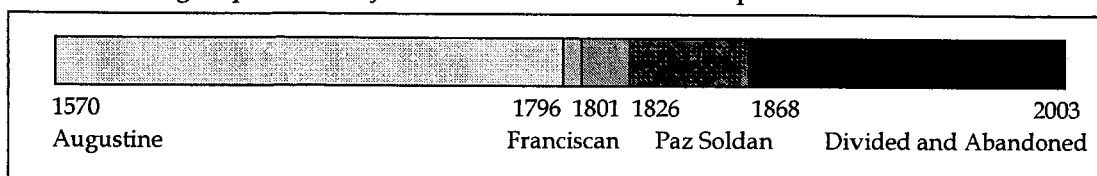


Figure 10: Occupants of the Convent in a Timeline

The first religious group who arrived in the Valle Alto was the Augustine. On November 25, 1570, they founded the Convent Santa Catalina de Collpaciaco. (Roda Busch, 2003, p.19). There are various scholars, who attribute to the Augustine, during the first century of colonialism, great achievements in the field of economy, missionary and architecture and other forms of art. The way of life of the Augustine was humble and poorly. They wore black ropes, lived in a strict silence, ate poor food and lived three days in the week only on water and bread. At one moment in time the pastoral live was changed to academic live building universities, schools, hospitals etc. The financial support from the Spanish crown was stopped because they ceased their work of doctrine. Therefore they had to buy fields and produce. Making the way free for a more convenient life, away from the strict religious life (Roda Bush, 2003). Between the year 1788 and 1791 a letter was sent by Viedma to Spain telling that the Augustine were losing their faithful life. In 1793 the Convent stopped carry out its religious function and the Augustine left. However they continued to have haciendas in the area around the Convent.

In August 1796, arrived at the Convent Santa Catalina de Collpaciaco a new Franciscan community of the "Colegio de Propaganda Fide". They had traveled different lands before finally arriving in Collpaciaco: Spain, Germany, Austria, Italia and Argentina. They had made various travels of incursion in the actual region of Chapare and Mosetenes, before they went to live in the Convent. The Franciscan did not live long in the Convent and in 1801 they left for the Convent of Tarata (a village closer to Cochabamba). From this time on until 1825 little is known. When there lived religious men there were few, also because of the war of freedom that was going on, in 1825 the new republic of Bolivia was born. In 1826 the Convents throughout the country were officially closed and Mister Paz Soldán went living in the Convent of Collpaciaco. Paz Soldán was a friend of Antonio José de Surce (one of the closest companions of Simón Bolívar in his wars of liberation) and came from the city of Arequipa in Peru. Ancient stories of that time tell that one day Bolívar and Sucre went by the Convent on their way to Mizque, having a good night rest in Collpaciaco. The possible room of their stay is still decorated with a band in the colors of the Bolivian flag. During the 19th century the

estate became one of the richest and most important in the Cochabamba department. New structures were added and the estate possessed nine granaries, 420 animals and a huge and diverse fruit harvest. Soon after the death of Paz Soldán in 1868 his four sons divided the estate. The four parts functioned totally independent and were the first step in the process of the estate falling apart by selling little areas of land. Some time in history, the Convent was abandoned. However, it remained of importance for the Collpaciaco community.

Another important part of the cultural-historic values of the Convent is its inventory and architectural features, elements, materials and spaces. These have to be inventoried, documented and evaluated as to their historical and architectural significance. To do this specialized knowledge is necessary. This was not available during this research, however some interesting features can be named without valuing them on historical and architectural significance. First of all there is the Bolivian flag painted in the room where Bolivar has slept. Secondly there are several pieces of furniture, sometimes in a very bad shape, like benches, chairs, closets and a piano. Thirdly it can be seen on historic photos that a balcony was situated in the front façade, remains of this balcony are still visible. Finally, finishing materials like wallpaper and ceramics are still visible. It must be said that a more thorough investigation in this field is necessary.



An Old Piano and Kitchen Stove

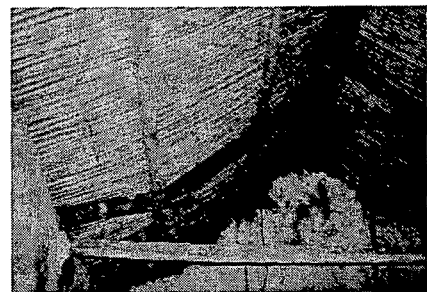
## 5.5 CURRENT TECHNOLOGICAL VALUES

As is indicated in the discussion of the technical system of the building, there are three aspects of the building that need a more thorough investigation for these can impose serious limitations for rehabilitation. The following questions should be answered:

1. Why have some constructive walls an inclination what makes them separate from their stabilizing walls? And what constructive interventions in these walls should be taken to safely make use of the building?
2. Why is a part of the second courtyard encountered largely in ruins?
3. Which roof parts need strengthening or replacement to make the roof safe for use of the building?

Reasons for the constructive failures can be for example: damage sustained due to an earthquake, soil settlement, insufficient maintenance, age and human intervention. The Convent is located in an area with medium risk for earthquakes (see for more information on earthquakes appendix XIII). It is however difficult to say whether or not the described problems are the result of earthquake events. No clear signs of earthquake damage could be found (like cracks leaving points in wall openings with high stresses). These aspects could not be investigated more elaborately during this research because information is failing about for example soil and foundation characteristics. With this information failing the limitations and possibilities of the technical system of the Convent are assessed in a more practical way that is discussed in the desired situation of the technical system.

At the moment many parts of the roof hang askew. The main reason for this is the heavy loads of the finishing materials on the roof construction together with the lack of constructive elements (like rafters) at places where they have been in history. It can



Collapsed New Rafter



also be seen that one of the new rafters made in the latest intervention is already collapsed. In general it can be said that large parts of the roof construction have to be rebuilt to make them safe. During restoration of the roofs the old tiles and rafters should be used as much as possible. Moreover the connection between rafters and walls should be taken care for because of earthquake possibilities. An elaboration on this can be found in the discussion of the desired technological values of the building in the next chapter.

## 5.6 CONCLUSION

The following table gives an overview of the previous discussed values of the Convent. These can be seen as possible values to preserve or improve during rehabilitation. The values are given a measure of importance where (+++) means important for rehabilitation, (++) is that it should be taken into account during rehabilitation and (+) is not directly limiting or interesting for rehabilitation. The religious function is valued as very important to preserve during rehabilitation. The most important economic characteristic of the Convent is its non-use value. Its current use values can be said to be not interesting for rehabilitation. The religious history, sensory feelings and the church are important cultural-historic values of the Convent. The roof construction imposes a safety threat for the use of the building and moreover will ask considerable funds for rehabilitation. The connection of the roof construction with its bearing walls (earthquake resistance) should be taken care for. Finally a thorough investigation to why some walls have an inclination is needed.

	Social Values		Economic Values		Cultural-Historic Values		Technological Values
+++	Central role in sustaining civil relations mainly in the religious institution	+++	<u>Non-Use Values</u>	+++	<u>Intangible Elements</u>	+++	<u>Problems of technical system</u>
			Various possibilities to get finance because of non-use values	+++	231 years of religious history		Lack or bad state of rafters of roof construction
++	Convent is important for well-being of the people (identity and pride)	+	<u>Use Values</u>	+	42 years of history as a wealthy hacienda	+++	Connection of roof with walls
			No real economic use values at the moment	+++	<u>Tangible Elements</u>		Need for further investigation after inclinations
				+++	Church and decorations		Need for further investigation after ruins
				++	Room of Bolivar with painted flag		
				++	Furniture		
				++	Finishing materials like wallpaper		

- + Not directly interesting or limiting for future rehabilitation
- ++ Should be taken into account in future rehabilitation
- +++ Of important influence on future rehabilitation

Table 9: Summary of Current Values of the Convent and their importance for Rehabilitation

## Desired Situation

# 6. Desired Values of the Convent

### 6.1 INTRODUCTION

This chapter will introduce the desires for the rehabilitation of the Convent of different actors in the process. Discussing the desired social, economic, cultural-historic and technical values of the Convent after rehabilitation will do this. The main variable for changing the social and economic values of the Convent is its '*functional use*'. Various actors have their own desires on the functional use of the Convent that stems from economic and/or social needs. The desires on functional use are called '*use scenarios*'. The most important actors in the rehabilitation process of the Convent globally express two different desires on its functional use. The first is using the Convent as *hotel* combined or not combined with additional tourist services. The other is using the Convent as a *boarding school*. Next this research will also define the possibility of a combination of hotel and boarding school as an option. Finally the situation of no intervention will be discussed using a new or other building for fulfilling the desired values.

The first part of this chapter will discuss the desired social and economic values of the Convent that indicate the opportunities to establish a hotel or a boarding school in the Convent. For this purpose also the tourist industry as well as the educational sector are discussed. In the second part a description is given of the technical and cultural historic values that should be met when rehabilitating the Convent.

A point of departure in the above-described discussion is that the rehabilitation of the physical elements of the building is financed. The financial discussion will emphasize the maintenance of the building after rehabilitation rather than the costs of the physical rehabilitation.

### 6.2 SOCIAL AND ECONOMIC VALUES IN THE FORM OF SCENARIOS

#### 6.2.1 SCENARIO HOTEL

##### *The Actors and their Desires*

The objective of the institute Prahc-Umss is to develop municipalities using their tangible and intangible cultural heritage value, seeking to improve the quality of life or the inhabitants. It defines the Convent of Collpaciaco as cultural heritage and therefore is interested in the rehabilitation project. The Prahc-Umss identifies organizing and stimulating tourism activity as the way to reach this general development goal. In this light their idea is to turn the Convent (partly) into a Hotel. This can be combined with some other tourist attraction being for example a restaurant or museum. The scenario of making a hotel in the Convent was researched in several ways. First of all through interviews and experience the view of the Prahc-Umss was elaborated on.

Furthermore interviews were held with hotels in Cochabamba and the region of Cochabamba. This was done to get an expert opinion about the possibilities and limitations to make a hotel in the Convent. The operationalization, way of sampling and a summary of these interviews can be found in appendices VII, VIII and IX.

Finally a research was done within the student population of the Greater University of San Simón. This is the biggest public University in Cochabamba city. The research involved a questionnaire about the role of tourism and cultural heritage in development. The operationalization, way of sampling the Spanish and English versions of these questionnaires can be found in appendices VI, V and VI. 58 students from different educational directions gave their opinion on questions and propositions. The results are supposed to give an insight in the opinion of the student population of the University of San Simón and with that in an important group of youth in the region of Cochabamba. The questionnaire gave data in different fields. First of all data was gathered about the strengths, weaknesses, opportunities and threats of using tourism and cultural heritage in development. The results of this part will be shown in the discussion of the tourism sector. Also information was gathered about the desires of the research population regarding economic development by ways of tourism activities. These results will be shown in this chapter. Results of the questionnaire regarding cultural-historic values and their importance will be shown in the discussion of the desired cultural-historic values of the Convent, later on in this chapter.

The scenario indicated by the Prahc-Umss institute identifies a hotel as the most appropriate function for the Convent. By organizing a commercial function like a hotel, a direct economic impulse can be given to the area of Collpaciaco. This is also the vision of Prahc-Umss who has as an objective to generate possible scenarios for the sustainable human development leaving from a tourist strategy (Prahc-Umss, 2003). Because of the attractiveness and the possibilities of transportation, the Prahc-Umss sees the Convent as a possible place to develop tourist activity. In this light, they identify a lodging establishment as the possible function for the Convent.

#### *The Sector Setting of the Scenario*

The desire to make a lodging establishment in the Convent is closely related to the tourism sector. This paragraph will shortly assess this sector in Bolivia and the Cochabamba region. Use is made of the questionnaire distributed under the student population to assess the strengths, weaknesses, opportunities and threats of the sector.

The "Law of promotion and development of tourist activity in Bolivia"<sup>10</sup> is the legal framework for the Vice Ministry of Tourism<sup>11</sup> to work. It declares tourism as a strategic activity for the integral development of the country of Bolivia and tourism as an export activity (Vice Ministry of Tourism, Website). Important aspects in this development are the private initiative as the fundamental pillar for dynamism in the sector supported by improvement of infrastructure and services. The original villages and communities have to participate and benefit from tourist activities. Finally a sustainable conservation of patrimony has to be reached. The Vice Ministry sees great opportunities for tourism in overall economic development through employment creation, increasing tourist arrivals and earnings of receptive tourism. The following data will shine light on these aspects of tourism development in Bolivia.

#### *Opportunities of Tourism*

The possibilities to use cultural heritage in tourism activity and with this stimulate development in Bolivia is largely supported by the student population. They see Bolivia as an attractive country for tourism as can be seen in the results of the first proposition.

---

<sup>10</sup> "Ley de Promoción y Desarrollo de la Actividad Turística en Bolivia", ley 2074

<sup>11</sup> The Vice Ministry of Tourism is part of the Ministry of Economic Development.

<b>Proposition 1: Bolivia is attractive for tourists in relation to other countries in the world.</b>								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
0	2	1	7	4	14	27	0	3
0%	3,4%	1,7%	12,1%	6,9%	24,1%	46,6%	0%	5,2%

The second proposition that states that Bolivia is attractive for tourists in relation to neighbouring countries is answered also very positively. The final proposition of the questionnaire asks the respondents opinion on whether or not Bolivia has to exploit its cultural heritage using tourism and cultural industry activities. More than half the research population answers this positively agreeing totally with the proposition as is showed underneath.

<b>Proposition 16: It is desirable for Bolivia to exploit its cultural heritage using tourism and cultural industry activities.</b>								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
1	1	1	6	5	11	30	0	3
1,7%	1,7%	1,7%	10,3%	8,6%	19,0%	51,7%	0%	5,2%

Tourism is however not seen as a condition to preserve cultural heritage in Bolivia as can be seen in the results of proposition 2.1.

<b>Proposition 2.1: Without using cultural heritage for tourism and/ or cultural industry activities, it is difficult to preserve cultural heritage in your country.</b>								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
4	2	0	20	8	7	13	1	3
6,9%	3,4%	0%	34,5%	13,8%	12,1%	22,4%	1,7%	5,2%

So it can be said that the student research population thinks that it is desirable for Bolivia to use cultural heritage in tourism activities and also that Bolivia has great opportunity for this. However tourism is not a condition for preserving cultural heritage in Bolivia. In general the student research population supports the opinion of Prahc-Umss.

Having this in mind the student population also thinks that there are opportunities to create more tourist activities by using cultural heritage as can be seen in the following table. This is supported by the answers on proposition 1.1 where the majority agreed with the proposition that Bolivia has opportunities to achieve economic development by ways of tourism. They think the greatest opportunities are in tangible heritage such as buildings and cities.

<b>Question 1: Is cultural heritage used for tourist and cultural industries in your country?</b> 1=Not Used 4= Frequently Used 7=Used a Lot		
<b>Question 2: Do you think that there are possibilities to create more tourist and cultural industry activities by using cultural heritage?</b> 1= No possibilities 4= Some Possibilities 7= Many Possibilities		
	<b>Question 1</b>	<b>Question 2</b>
Building and Cities	4.3	6.0
Arts and Crafts and Audiovisual products	4.3	5.7
Traditional ways of Society	5.2	5.7
Traditional skills and know-how	4.2	5.5
Languages and oral traditions	3.9	4.8
Average Total	4.4	5.5

Interesting in the case of the Convent in Collpaciaco is whether or not these opportunities also count for the rural population in rural areas. The students had the opinion that there is a good change for the rural population to profit from tourism. This can be for instance

through sale of woollen products or other artesian products. The results of this proposition can be seen below.

<b>Proposition 9:</b> The rural population has a good chance to profit from tourism and cultural industry activities in their region.								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
5	1	1	7	4	8	30	0	2
8,6%	1,7%	1,7%	12,1%	6,9%	13,8%	51,7%	0%	3,4%

Moreover the student population agrees on the propositions that tourism can be important for dialogue, 44,8% agrees totally that tourism can be important for international dialogue and 36,2% agrees totally that it is important for inter-regional dialogue within Bolivia. So tourism can also possibly serve to promote communication between different social groups.

#### *Threats of Tourism*

The following four propositions from the questionnaire give insight in the threat of tourism as defined in the literature study. This is the threat that tourism can influence culture and cultural heritage, changing for example the traditional way of live of the people or destroying cultural heritage through pollution or a surplus of tourist visits. This could lead in the end to an alienation of the people from their own cultural heritage. Whether or not these threats are relevant for Bolivia is measured in the following three propositions:

<b>Proposition 6:</b> Tourism and cultural industry, as forms of globalization, will significantly influence (or have significantly influenced) the cultural heritage in your country.								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
3	0	5	11	7	12	13	3	4
5,2%	0%	8,6%	19,0%	12,1%	20,7%	22,4%	5,2%	6,9%

<b>Proposition 11:</b> Your country must try to limit the influence of tourism and cultural industry on cultural heritage, even if this means lower profits.								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
12	7	6	17	3	5	3	2	3
20,7%	12,1%	10,3%	29,3%	5,2%	8,6%	5,2%	3,4%	5,2%

<b>Proposition 7:</b> Your country must aim for higher profits even if it means a change in the traditional way of live.								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
11	2	3	9	4	5	21	0	3
19,0%	3,4%	5,2%	15,5%	6,9%	8,6%	36,2%	0%	5,2%

The student population does not fully agree that tourism will significantly influence the cultural heritage in Bolivia. Moreover on average they are of the opinion that making profit with tourism is more important than the possible influence on Bolivian culture and cultural heritage. It must be said that (especially in proposition 7) there is a great difference of opinion, however most respondents do favour profits above a possible change in traditional way of live of the people involved. As a conclusion can be said that this threat must not be seen as significant in the choice whether or not the Convent can support a tourist function, however influences of tourism should be as small as possible.

#### *Strengths of Tourism*

A major force of making economically use of cultural heritage can be tourism. Several publications stress that in recent years the demand for cultural destinations has become a major force in the global economy (Grefe 1990, 1999; Pearce and Mourato 1998). It can be seen that on a national level the turnover of restaurants and hotels was 3,4% of the Gross

Domestic Product. The GDP of the Province of Cochabamba in the year 2000 was 3.781 million Bolivianos. The part of the turnover of restaurants and hotels was 3,4 % (INE, 2001). This is the same percentage as on national level.

#### *Weaknesses of Tourism*

Table 10 gives the amount of tourist visits in Bolivia and Cochabamba, divided by national and foreign tourist. It can be said that on average 15% of Bolivian tourism visits Cochabamba. When the activity of the tourist market in Cochabamba is investigated, it is clear that tourism visits are becoming less from 1996 onward. Together with this trend, it can be seen that there is building up a surplus of hotel in the area of Cochabamba.

	1993	1995	1997	1999	2001
TOTAL BOLIVIA	829.624	997.491	1.099.575	1.117.334	1.005.585
National tourists	68 %	65 %	64 %	63 %	64 %
Foreign tourists	32 %	35 %	36 %	37 %	36 %
COCHABAMBA	124.065	164.288	170.891	166.792	140.839
Bolivians	77 %	79 %	77 %	77 %	80 %
Foreigners	23 %	21 %	23 %	23 %	20 %

Table 10: Amount of Tourists per Region, Source: Vice-Ministry of Tourism and INE (Instituto Nacional de Estadística, Bolivia)

The interviews with five hotel managers of different hotels gave the same information<sup>12</sup>. Table 11 shows that one hotel is mostly full, 2 are half full, one gets some visitors and one almost nothing. Four of the five hotels blame the political situation in Bolivia for the little tourists that are visiting Cochabamba. Blockades, civil unrest and strikes scare tourists away.

	Stars	Amount of rooms and visitors	% of tourists % foreign	Is it possible to make hotel in Convent?
Hotel Portales	5 stars	109 Rooms 48% Full	25% tourists 50% foreign	Yes
Hotel De Kaluyo	5 stars	18 Rooms Little visitors	50% tourists 40% foreign	No, because of political situation in Bolivia
Hotel Colon	2 stars	45 Rooms Little to no visitors	-	No, there is no money to invest
Hostal Colonial	1 star	15 Rooms Almost full	70% tourists 80% foreign	Yes
Lodging Aroma	No stars	65 Rooms 50% Full	10% tourists	Yes, but very difficult in current political situation

Table 11: Some results of interviews with hotel managers in the area of Cochabamba

On the question, whether or not it is possible to make a profitable hotel in the Convent three of the five managers gave a positive response. However, one of them says that it is very difficult in the current economic and political situation of Bolivia. The two managers who said it is not possible to make a profitable hotel also gave this explanation. With a better economic and political situation, it is well possible to make a profitable hotel, according to the respondents.

Another possible weakness of tourism is that the most opportunities for tourism are found in the large and important cultural heritage sites in Bolivia. Proposition 8 of the questionnaire tried to measure the opinion of the student population on this point. It can be seen that a majority supports the proposition that Bolivia has to select the large and important cultural heritage items to use for tourist activities. Only their will Bolivia find economic perspectives.

<sup>12</sup> See for a summary of these interviews appendix IX

Proposition 8: Bolivia has to select the large and important cultural heritage items and use these in tourist activities, only their Bolivia will find economic perspectives.								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
0	0	3	8	6	11	25	3	2
0%	0%	5,2%	13,8%	10,3%	19,0%	43,1%	5,2%	3,4%

### 6.2.2 SCENARIO BOARDING SCHOOL

#### *The Actors and their Desires*

Two important actors in the rehabilitation process have the desire to use the Convent as a boarding school. Interviews with these actors gave more information about their desires. This information is discussed in this chapter.

The first actor who desires a boarding school in the Convent is the Catholic Church, by ways of Father Antonio Díez. The Church has throughout history been an important actor, closely related to the Convent. Most of its lifespan it existed as a religious structure and until this day the church is actively used. Despite that, the ownership of the Convent switched over to the village of Collpaciaco although the influence of the Church is still very important. The Church is moreover providing means for taking interventional actions, educational actions and religious actions in Collpaciaco. Father Antonio Díez of the María Auxiliadora-Villa Loreto parish is the most important religious figure in the process of rehabilitation. Father Antonio Díez organized in 2003 the renovation of a part of the Convent and moreover is searching for ways to finance further rehabilitation. He himself is working in education in the Villa Loreto area in Cochabamba city.

The second actor who has the desire to make a boarding school in the Convent is the sub-burgomaster of Collpaciaco, Felix Rojas Rojas. Felix Rojas is politically the most important figure in Collpaciaco. His dream is to begin a boarding school during all weekdays providing children with basic education. It is clear that the inhabitants of the village of Collpaciaco and its neighbouring village are important actors in the rehabilitation process. It should be a process with and for these men and women. Therefore the opinion of Felix Rojas, politically representing these men and women, should be very important. During this research plans were made to organize a workshop with these men and women (see appendix IV), problems as is addressed during the empirical issues made this impossible. Therefore two interviews are held with Felix Rojas Rojas that will be used to give an indication of the desires of this important group.

The desire of the previous discussed actors is to make a boarding school in the Convent. There are several reasons for this. Padre Antonio wants to organize a boarding school to improve educational facilities in the area. At the moment children have to travel long distances to the school in Arani, some children have to walk for over two hours. By making the Convent a place where the children can stay for a week the enrolment in education and with that the level of education will grow.

Felix Rojas Rojas has a more specific objective in organizing the boarding school. In his point of view the goal of making the school is the educate the children so that they can return to their village with ideas about agriculture improvement that will eventually lead to improvement of the live circumstances in the same villages (Interview Felix Rojas Rojas, 12-07-2003). Felix Rojas Rojas sees this way of education, away from their parents, as the only way to educate children in other forms of live. It is the only way, in his opinion, to sustainable change on the long term the way of living in these rural villages.

*The Sector Setting of the Scenario*

The Human Development Index showed that Bolivia scores beneath the average of Latin America in all its indicators, also in literacy and enrolment. However, the importance of education is well recognized by the Bolivian government. The actual economic crisis, the social exclusion and the poverty of big parts of the population are the best justifications to improve education in Bolivia (Ministerio de Educación, Internet Site, translated from Spanish).

The first educational reform started in 1994 stressing the need for primary education<sup>13</sup>. A focus point in this reform was decentralization involving both government and the involved actors. It makes that the municipal governments direct the actual educational reform. The first years of educational reform seem rather successful when looking at the statistics. First of all, more years of education were followed by the population of 15 years and older in 2001 (7,7 years) than in 1996 (7,1 years). Furthermore according to the censuses of 1992 and 2001 analphabetism decreased from 20,01 to 13,28%. However, a great differences stays between rural and urban areas. In rural areas analphabetism decreased from 36,48% to 25,77% in urban areas this was from 8,90% to 6,44%. The government in the objectives for the following years records these improvements, but also the major problems are addressed:

1. Consolidate the improvements already made in primary education
2. Decrease the problems of accessibility to education for the potential students. Bring educational facilities closer to the far away villages and make education cheaper for the parents of the students.
3. Strengthen educational capacities by the municipal governments in the environment of decentralization
4. Improve the quality of education on the secondary and university level (Ministerio de Educación, Internet Site, translated from Spanish)

Improvements are made in the educational system of Bolivia, however educational figures still stay behind average Latin American figures. The above objectives address two important reasons for that, first of all the problems of accessibility to education and secondly the lack of knowledge with municipal governments.

According to the census of 1992 a total of 5.788 of the 18.625 persons more than six years old was analphabetic in the province of Arani. In the province of Arani, according to the census of 1992, 50% of the population more than six years old speaks Castellán and Quechua. However, 47,2% speaks only Quechua indicating the indigenous history of these people, 89,4% of the only Quechua speaking population is analphabetic. Nowadays in the villages of the Collpaciaco community there is mostly access to primary education, which will be given until the age of nine. Hereafter many children quit school. One of the reasons for this is that the distance to secondary education is too big, often more than 10 kilometres (as the crow flies), or more than 2 hours on foot (Interview Felix Rojas Rojas, 2003).

A possible threat of giving good schooling to children can be that after their educational period they do not return to their communities. Felix Rojas thinks that this would not be the case. Moreover, a threat is that parents do not want to send their children to the boarding school. It is for this reason that Felix Rojas estimates that only 100-200 out of 800 possible students will come to the boarding school. Finally, a threat can be the influence parents will still have on their children in the weekends. Felix Rojas had a clear goal of educating the children different from the way their parents did, more focused on development and change. He himself said that the influence of the parents could be a

---

<sup>13</sup> There are four phases in the educational system of Bolivia: Initial level, Primary level, Secondary level and after this some kind of higher education like University.



blockade in reaching the goal of villages that actively search for ways to develop their way of living

### 6.2.3 SCENARIO COMBINATION OF HOSTEL AND BOARDING SCHOOL

According to Felix Rojas a functional use of a hotel in combination with a school is very well possible. Socially the benefit will be the improved education facilities in the Collpaciaco area. Interchange of information between students and tourist can strengthen this educational perspective. Moreover, students will familiarize themselves with a new form of economic activity in the form of a hotel.

The educational function in the hotel can be economically supported by the hotel function. This will increase the economic perspectives of the school. At the same time there can be a long-term benefit for the hotel function being that the students will learn and experience how to run a hotel. This way the possibilities for good maintenance of the hotel in the future are improved.

### 6.2.4 SCENARIO USE OTHER BUILDING FOR FUNCTION

The above-discussed scenarios can also be executed in another building. This is feed by the insecurity whether or not finance for the rehabilitation of the Convent will be found on a short term. Felix Rojas supported the idea that it was very well possible, and cheaper, to build the school (and hotel) in a new building. Moreover he himself was doing some research whether or not it would be profitable to make some holiday houses near his home in Collpaciaco. However, he thinks that the Convent has to be used, for this is the only way for Collpaciaco to open up financial resources to organize the two functions both school and hotel. The Convent is the connection of Collpaciaco with financing institutes.

## 6.3 DESIRED CULTURAL-HISTORIC VALUES

### **Sector Setting of Cultural Heritage**

The institution in Bolivia in charge of the preservation of cultural heritage is the Vice Ministry of Culture. This Vice Ministry is a part of the Ministry of Education, Culture and Sports. The goal of this institution is to promote and diffuse the diverse cultural expressions and contribute to the affirmation of the national identity leaving from the viewpoint of a multicultural and multiethnic society that Bolivia is. Their starting point is that cultural heritage is legally protected by ways of the Political State Constitution (Constitución Política del Estado, CPE) which says that cultural heritage is public property and therefore immune. Policymaking, protection and promotion are integral parts of this Ministry. The activities of this Ministry on preservation are however valued in the direction of insufficient preservation action by the sample of students in the questionnaire, which is shown in the following table giving the average scores on questions 3 and 4.

<b>Question 3: Do you think that your country takes sufficient actions to preserve its cultural heritage?</b> 1= No 4= More or Less 7= Yes		
<b>Question 4: How important is the preservation of cultural heritage for you?</b> 1= Not Important 4= Little Important 7= Very Important		
	<b>Question 3</b>	<b>Question 4</b>
Building and Cities	3.4	6.2
Arts and Crafts and Audiovisual products	3.5	5.8
Traditional ways of Society	4.1	5.8
Traditional skills and know-how	3.9	6.0
Languages and oral traditions	3.4	6.0
<b>Average Total</b>	<b>3.7</b>	<b>6.0</b>

Moreover a significant part of the students finds the preservation of cultural heritage important to very important. So it can be seen that from both the side of the government as from a social group in society, the preservation of cultural heritage is thought to be important. The Vice Ministry of Culture aims at strengthening of national identity by ways of preserving cultural heritage. This relation is also seen by the students who agree for over 75% with the proposition that cultural heritage has to be preserved for it is important for cultural identity and pride of the people.

#### **Definition of the Desired Cultural-Historic Values**

The desired cultural-historic values of the building will relate to the capacity of the site to convey, embody, or stimulate a relation or reaction to the past. Different elements are important in this capacity and it is necessary to identify the desired situation of these elements after rehabilitation. In other words which elements of the building have to be preserved? These elements can be divided into two parts being tangible and intangible elements. Tangible elements can have important artistic value, convey knowledge about design and making of the building (technology) and can influence sensory qualities of the building. Intangible elements can be the use of the building in history and the role its inhabitants played in important historical events. In the discussion of the current situation some tangible and intangible elements were identified by ways of a historical significance statement and a beginning of the inventory and evaluation of architectural features.

Before beginning the process of rehabilitation it should be clear which cultural-historic values should be preserved and in what way. There are two decisions that have to be made to clearly define the desired cultural-historic values, which are discussed in the following paragraph:

#### *1. Preservation - Restoration (recuperation)- Renovation*

The PRAHC-UMSS, the regional government of Cochabamba and the village of Collpaciaco have identified the Convent as cultural heritage that should be preserved for future generations. The same actors have decided to improve the social and cultural values of the Convent by ways of refunctionalization. So attention is given to refunctionalization and preservation of historic elements. This form of intervention is called rehabilitation.

The tangible historic elements (geometry and materials) can be approached in several ways, from which a choice has to be made by the actors involved in the rehabilitation project. In the preservation view measures are taken to sustain the existing form without extensive replacement. The restoration viewpoint tries to replicate the building to a moment in history using also new construction to reconstruct missing features. Renovation is the intention to make use the cultural heritage building however with respect for preservation conditions (PRAHP, 1999).

The PRAHC-UMSS organization has intervened several times in cultural heritage buildings in its history. They had a restoration approach to their interventions. By ways of historical research the building was replicated in a historic form. During these interventions new but traditional (finishing) materials were used, replicating history but making the building look new. The intervention in the Convent done by Padre Antonio Díez was done with the renovation viewpoint in mind. The Convent needed to be functional and save again, its structure was respected but new and not traditional materials like reinforced concrete were used. In this research the restoration approach is chosen for the physical part of the building because this is best compatible with rehabilitation. Restoration will use new materials, making the building appropriate for new functions however this will be done by looking at the buildings history. It must be said that at the moment not enough information is present to replicate the Convent from a moment in history (failing photos and physical descriptions). The preservation view

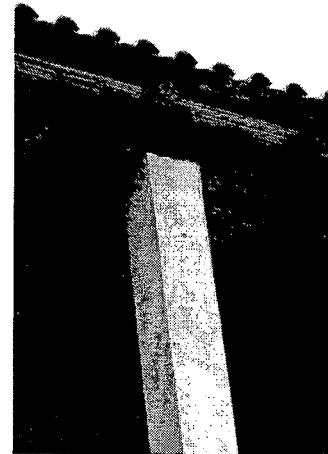
addresses more value to the age of the building, preserving it in its current state, this however would limit the possible functions that could be executed in the Convent.

*2. Refunctionalization – Historical Spaces*

Rehabilitation is evenly a question of restoration of historical spaces as of refunctionalization. This goal can practically be explained as: The historical spaces have to be restored (to a moment in history) the best way possible if this not hinders the functionality of the building. When it hinders functionality than a consideration must be made on what is valued most important.

**Tangible elements to preserve**

To maintain the historic value of a building it is important to use traditional materials and methods during rehabilitation and furthermore preserve as much of the original structure as possible. However refunctionalization needs, lack of traditional knowledge and lack of funding can easily make actors decide to disregard the importance of traditional materials and processes. This can also be seen in previous interventions in the Convent. Lately two interventions were executed being the construction of a new floor in the main patio and the beginning of making a new roof on the left part of the main building. These intervention shows that during construction little attention was paid to historic values. In the patio, stones were used most probably to big and on the wrong height according to differences nearby doorposts. During the roof construction columns of reinforced concrete were used together with new tiles and other roofing materials. It cannot be said that this is wrong, as the sub-burgomaster Felix Rojas Rojas put it: "We were just happy that after a lot of studies finally somebody did something to improve the building". Now that an expert institution like the Prahc-Umss is involved, and funding is available, it can be said that the desired situation is to use only traditional material and processes, restoring the building to one moment in time. This involves finishing materials, furniture and constructive elements (like the balcony). A slight majority of the student research population supports the idea of only use traditional methods and materials during restoration as can be seen in the following table.



Reinforced Concrete

Proposition 15: During restoration, one should only use traditional methods and materials.								
I disagree totally		I partly agree			I agree totally		DK/NA	No data
2	1	4	13	4	13	18	0	3
3,4%	1,7%	6,9%	22,4%	6,9%	22,4%	31%	0%	5,2%

**Intangible elements to preserve**

The use of the Convent in history and partly until this very day is of religious nature. This religious nature is still expressed in the form of tangible elements like the church and intangible elements such as religious festivities. Besides this religious function, the building is important in sustaining civil relations. The inhabitants of Collpaciaco use the Convent for their most important meetings and festivities. The desired situation is that these present and historic uses are respected after rehabilitation. It is desired that important elements of the religious function like the church but also intangible elements as tranquility, rest and serenity are preserved. Moreover, there has to be a space to express other social relations like the village meetings.

#### 6.4 DESIRED TECHNOLOGICAL VALUES

The Convent has to be preserved for future generations and therefore its technical system should be improved in such a way that it will perform well for a long time. Important external factors in the functioning of the technical system are natural disasters. The Convent is located in an area with medium risk for earthquakes. No clear signs of earthquake damage could be found in the general inspections but during rehabilitation the risk of earthquakes should be counted for.

There are three factors that have influence on the amount of damage that a building sustains because of an earthquake. These are the characteristics of the earthquake, sub-soil conditions and the characteristics of the building. In this research the characteristics of the building are of importance. There are six relevant building characteristics that influence the seismic resistance: structural configuration, constructive strength, rigid floors, wall openings, non-constructive elements and maintenance. Measures should be taken to improve these constructive elements. Therefore it is desired to secure the connexions between the roofs and the constructive walls by using bond beams. Moreover the dimensions of wall openings cannot be too big and their location has to be taken into account.

A factor that can change the desired technological values of the building is its future functional use. A difference in function can entail a difference in loads, therefore changes in function always have to be calculated. To identify the limitations of a change in function the construction has to be investigated totally. Only this way can be found out what are the capacities of the construction at the moment. However, at this moment there fails a lot of information about important elements like the characteristics of the soil and foundations<sup>14</sup> what makes it impossible to calculate exactly the capacity of the construction. This investigation will therefore take a more practical focus using its function in history to define the loads it can bear in normal conditions. The building was built as a Convent, the building was used for religious people to live in. After this the function changed to that of hacienda also functioning mainly as a place to live. The starting point of this investigation will therefore be that any function with loads higher than that of normal living function should be directed outside the existing structure. The following table shows the normal living function as the first row (200 kg/m<sup>2</sup>), every function with higher loads cannot be carried out in the convent without extra constructive adaptations. It must be said that it is recommendable to build or put heavy items on the first floor nearby a wall, this can be for example a bathroom. This way the floor construction is loaded more effectively.

Loads	Type of Function
200 kg/m <sup>2</sup>	Houses (living), public or private offices, vestibules and passageways, shops and exposition rooms (until 50 m <sup>2</sup> )
300 kg/m <sup>2</sup>	Hospitals
350 kg/m <sup>2</sup>	Stairs inside houses, lecture halls and conference rooms
500 kg/m <sup>2</sup>	Churches, theatres, gyms, offices and exposition rooms (more than 50 m <sup>2</sup> ), libraries and archives.

Table 12: Loads and Types of Function, source: Neufert

The geometry of the Convent is very closely related with its constructive system. The thick adobe walls form the vertical bearing construction but at the same time give to a great extend form to the geometry of the building. It is defined that for the future functional use of the building all parts can be used, with the exception of the ruins in the

<sup>14</sup> Investigation into this elements was planned but until this moment not executed

second courtyard. This because there technological state at the moment is such that they need large intervention (involving high costs) actions to make them part of the functional use of the building. It is however desired to rebuild these ruins some time in the future in there original state.

For a change in functional use of the building it can be necessary to change geometry, the following changes are identified: Addition of elements (constructive and non constructive walls and installations) or removal of elements (walls, parts of walls or other constructive elements). It is preferable to add elements with little weight, like light partition walls. Moreover it is recommendable to add elements on ground floor, like installations. When an element is added on the first floor it is recommendable to place this close to a constructive wall. The removal of elements may not change the way loads are directed to the soil. When this has to be done it is recommendable to make openings in walls with less vertical loads or places with concentrated loads (near beams). Moreover from an earthquake perspective it is recommendable to limit the number of wall openings until they reach half of the walls length (Tomazevic, 1999). It must be said that it is preferable is not to change the present loads and geometry during rehabilitation. When changes are necessary these have to be as small as possible and their effects have to be calculated.

6.5 CONCLUSION

This conclusion is also divided into two parts. First of all a summary of the desired scenarios will be shown addressing the socio-economic values of the scenarios and the situation in the sector surrounding the scenario. The aspects of the latter will be valued important, less important or not important for rehabilitation (+++, ++, +). The first row shows that the socio-economic goal of both the hostel and boarding school is to improve the quality of life in the villages of Collpaciaco. The hostel scenarios uses the earnings from tourism for this, the boarding school scenario wants to improve the level of education in the villages by which for example on the long term agriculture can be improved. The tourism sector has good opportunities for development but also important weaknesses in the region of Cochabamba. The education sector in Bolivia is valued important for development but big problems are the accessibility to education and lack of capacities in education.

Scenario	Hostel	Boarding School
Desired Socio-Economic Values	<p><u>Social Values</u> Improvement of the quality of life in the villages</p> <p>Diversification of work and employment</p> <p><u>Economic Values</u> Use tourist activity earnings for overall socio-economic development in villages</p> <p>Employment creation</p> <p>Stimulating tourism activity</p> <p>Improving tourism facilities</p>	<p><u>Social Values</u> Improvement of the quality of life in the villages</p> <p>Improving education facilities</p> <p>Improving enrollment</p> <p>Improving level and kind of education</p> <p><u>Economic Values</u> Employment creation</p>
Situation in Sector	<p><u>Opportunities</u></p> <p>+++ Bolivia is seen as attractive for tourism</p> <p>+++ The government sees an important role for tourism in development</p> <p>++ Opportunities for (inter) national dialogue</p> <p>+ <u>Threats</u> Influence of tourism on traditional way of life</p> <p>++ <u>Strengths</u> Tourism is a growing sector in global economy</p> <p>+++ <u>Weaknesses</u> Decrease in Tourist visits to Cochabamba</p> <p>+++ Overcapacity of Tourism facilities in Cochabamba</p> <p>+++ Bolivia is politically unstable at the moment</p>	<p><u>Opportunities</u></p> <p>+++ Recognition of educational problem by the government of Bolivia</p> <p><u>Threats</u></p> <p>+++ Problems with accessibility to education (distance to education and costs for the parents)</p> <p>++ Lack of decentralized educational capacities</p> <p>++ Influence of parents on enrollment</p> <p>++ <u>Strengths</u> Improvements made in (primary) education in recent years (years of education and analphabetism)</p> <p>+++ <u>Weaknesses</u> Beneath average literacy and enrollment in Bolivia compared with Latin America</p>

- + Not directly interesting or limiting for future rehabilitation
- ++ Should be taken into account in future rehabilitation
- +++ Of important influence on future rehabilitation

Table 13: Desired Social and Economic Values per Scenario and their Sector Environment

The second part of this conclusion will address the technological and cultural-historic values that should be taken into account during and after the rehabilitation of the Convent. These can be read as guidelines for rehabilitation and as criteria for the choice of a scenario.

Desired Cultural-Historic Values	Desired Technological Values
<p><u>Tangible</u> Historical spaces have to be restored to a moment in time the best way possible.</p> <p>Only traditional (finishing) materials are used during rehabilitation.</p> <p><u>Intangible</u> Intangible aspects of the religious function have to be preserved as good as possible.</p>	<p><u>Geometry</u> It should be aimed for to not change geometry. If necessary at places with better bearing capacity</p> <p>Dimensions and location of (new) wall openings should be according earthquake regulations</p> <p><u>Materials</u> New traditional materials should be used whenever the old ones are not sufficient</p> <p><u>Physical-Technical</u> Any function with loads higher than that of the normal living function (200 kg/m<sup>2</sup>) should be directed outside the existing structure</p> <p>The roof and walls with inclination have to be improved in such a way that it will safely support the functional use of the building.</p> <p>The roof construction should be bonded with its bearing walls</p> <p>A more thorough investigation is needed into sub-soil and foundation characteristics</p> <p><u>Complexity</u> The rehabilitation should be technologically executable for the current actors in the rehabilitation process</p>

**Table 14: Summary of Desired Technological and Cultural-Historic Values**

# 7 • Desired Building Characteristics

## 7.1 INTRODUCTION

This chapter will discuss the consequences of the different defined 'use scenarios' for the building characteristics of the Convent after rehabilitation. Before starting this discussion some delineation has to be made on those parts of the building that can be used for its future function. Decided is not to take into account the ruins in the second courtyard. The rehabilitation of these structures will entail a relatively large amount of money and time that is most probably not available at the time. On the long term, however, these structures ought to be rehabilitated.

The assessment of the current situation shows that the church is still in use and very important in sustaining social relations in Collpaciaco. Therefore it is desired that the church keeps on functioning the way it does in the present situation. The area of the church will therefore not be part of the use scenarios. Besides this it is desired to make the main courtyard accessible for the Collpaciaco community for village meetings, festivities and other social happenings.

## 7.2 HOSTEL

### 7.2.1 FUNCTION

The following paragraph will address the organization and exact characteristics of the hostel function. There are different ways of organizing a lodging establishment differing in quantitative aspects (amount of rooms) and qualitative aspects (sanitary, food and drink, furniture and services). The regulation for tourist lodging establishments<sup>15</sup> identifies the following categories: Hotels, Apart Hotels, Hotel Suites, Hostels, Guesthouse, Lodging, Resort and a Complex for Tourists. The Apart Hotel is a place where visitors can live for a longer period having their own kitchen. The resort and complex for tourists are focused on the additional recreational services. These two ways of organizing the lodging are not appropriate according to Prahc-Ums. They identify a hostel as the most appropriate choice. A hostel needs fewer rooms (minimum of 10) than a hotel. However, it is mostly of better quality than a guesthouse or lodging. Within the category of hostel, there are different forms of luxury indicated by 1-5 stars.

The Prahc-Ums thinks that a hostel of five stars will be most appropriate in the Convent. The extra requirements for a hostel of five stars are a restaurant, more space per room and in every room a private bathroom. In Cochabamba the average price per double room is 120Bs in a 5 star hostel (Roda Busch, 2003). The Prahc-Ums has, besides the function of hostel, ideas for additional functions. These can be for example a camping for groups, museum, exhibition room, craft workshop, Internet and café. Besides this, they think there will be enough room for the original religious, cultural and social functions of the place.

The interviews with hotel owners and managers in Cochabamba and its vicinity gave however another result. As can be seen in the following table the respondents think that the most profitable lodging would be an inexpensive, not luxurious but comfortable hostel. Four out of the five respondents think that the visitors will be mostly international

---

<sup>15</sup> "Reglamento de Empresas de Hospedaje Turístico", from the "Resolución Ministerial N° 086-98"



tourists interested in culture and a place to rest. Three of the five respondents mention a restaurant as an important additional service. Moreover two of the five respondents mention the option of facilitating conferences. This is at the moment most profitable for a hotel, however the hotel needs a reasonable capacity to lodge the conference members and facilitate diner. Finally it becomes clear that culture and rest are the most important aspects for the future tourist that can be facilitated by for example a museum about regional culture.

	Information about the Hotel		Information about the possibilities for the Convent	
	Stars	% Tourist Visitors % Foreign Tourists	What kind of hostel would be most profitable?	Additional Services
<b>Hotel Portales</b>	5 stars	25% tourists 50% foreign tourists	Comfortable but not luxurious	Museum about regional culture Small conference facilities
<b>Hotel De Kaluyo</b>	5 stars	50% tourists 40% foreign tourists	3-4 stars and made for international tourism	Conference facilities
<b>Hotel Colon</b>	2 stars	-	Not very luxurious but modern facilities aimed at international tourism	Dining room
<b>Hostal Colonial</b>	1 star	70% tourists 80% foreign tourists	Inexpensive for backpackers, resting place for 4-5 days (20-30Bs)	Breakfast facilities
<b>Lodging Aroma</b>	No stars	10% tourists	Inexpensive for international tourism.	Good restaurant and propaganda

Table 15: Results from Interviews with Hotels

A difference can be seen between the opinion of the Prahc-Umss and the hotel owners and managers in the field. The Prahc-Umss focuses on a five star hostel, providing top of the bill services, hotel owners and managers identify however a comfortable but not a luxurious hostel. This will have its influences on the price per night being 120Bs for a double room in a 5 star hostel, a hostel with one or two stars will pay 60-70 Bs. Moreover not every room will have its private bathroom. A choice has to be made for the most appropriate hostel. Looking to the unanimity of the respondents it is better to choose the less expensive hostel. Both Prahc-Umss and the hotel owners and manager agree however on the fact that there has to be a restaurant, serving secure and healthy food.

The village society of Collpaciaco is an agricultural adjusted social group. Not many people in the village communities will have enough experience for organizing and maintaining a hotel. Starting a hotel is difficult to organize because of propaganda needs, social connections that have to be established and the dedication involved (see interviews hotels, appendix IX). It will require a significant chance in living and work for a group of inhabitants of Collpaciaco. However, the schooling and experience this group will undergo can be a social enrichment for the village.

### 7.2.2 COSTS (FINANCE)

There are different aspects of a site that influence its economic profitability. First, it is important that the site is attractive for tourism looking to nature, customs, festivities etc. Secondly, the site must be accessible looking at its water, air and land transportation. Thirdly there have to be facilities like lodging, alimentation and other tourist facilities like tours and excursions. All these factors are of influence on the amount of tourist and kind of tourist that will visit a site. The infrastructure facilities more or less exist to go to Collpaciaco<sup>16</sup>. Besides the Convent, Collpaciaco can offer other attractions. These are for

<sup>16</sup> At this moment the road from Arani to Collpaciaco is being paved

example its nature, tranquillity of the province, agriculture, festivities and arts. Moreover the village of Collpaciaco is located centrally in the Cochabamba valley making it easy to travel to other tourist attractions like the pre-Inca ruins of Incallajta, the Chapare region and colonial villages like Tarata, Mizque and Arani. There are however no tourist facilities in Collpaciaco, and little in Arani.

The ingressions of the hostel function can be found in the price per room and the use of additional services. Moreover there can be an indirect effect to other economic activity in the region of the Convent. Identified is that the hostel will have rooms for 60-70 Bs a night. Moreover, a reasonable price for a possible camping will be 10Bs per night. The rest of the ingression will mostly come from the restaurant function.

The Prahc-Umss sees different possibilities for financing and organizing the hostel. First of all the establishment can be rented out to a private institution or company. Secondly, the village of Collpaciaco can start a company. This company will be responsible for the administration and maintenance of the hostel.

### 7.2.3 GEOMETRY

Data was collected on the spaces and areas needed for a hostel function. From interviews with hotels it became clear that a hostel in the Convent should have at least ten rooms. This research will take these ten rooms as a starting point. Moreover it is defined that the hostel will be a two star hostel, measuring 10m<sup>2</sup> per double room and 3 m<sup>2</sup> for every extra bed. In a two star hostel 25% of the rooms have to have a private bathroom. Furthermore it is desired to make a restaurant in the hostel and spaces for administration and reception should be organized. The estimated areas needed for the several sub-functions are shown in the following table.

Functional use	Area needed
Church	Maintain the church in present form
Community gatherings	The main patio
Lodging	<u>Rooms</u> 10 rooms measuring 10 m <sup>2</sup> for a double room (and 3 m <sup>2</sup> per extra bed) 25% of rooms need private bathroom
Administration and Reception	Office, waiting room, bathroom and storage room
Restaurant	Restaurant of min. 10m <sup>2</sup> with bathrooms
Additional functions	Possible: museum, exhibition room, craft workshop, Internet cafe, camping etc.

Table 16: Floor Areas Needed for the Hostel

A possible situation of these functions in the Convent can be seen in figure 11. It is clear that the hostel function uses mainly the two floors of the main building. The other rooms around the main courtyard can be used for the restaurant function or other additional functions as shown in the previous table.

The geometry of the Convent gives limitations for the size of the rooms. The main reasons for this are the relatively big cells in the Convent, which cannot be divided easily because of the little windows per room. Therefore some rooms have 3-4 beds or are used as dormitories. Besides this there are relatively many changes in geometry necessary like partition walls and private bathrooms.

### 7.2.4 MATERIALS

The materials used in a hotel function should be hardwearing and strong but the also should be neat and give a contribution to a good atmosphere in the hostel. The materials

necessary will most probably not be traditional materials, which has its consequences on the cultural-historic values of the Convent.

#### 7.2.5 PHYSICAL-TECHNICAL PERFORMANCE

The hotel function entails more or less the same loads as a living function with a maximum load of 200 kg/m<sup>2</sup>. There is however little daylight entrance in the rooms and therefore good artificial lightening should be cared for. Moreover it is recommendable to provide some source of heat for possible visitors during the rare cold nights that the department of Cochabamba has.

#### 7.2.6 COMPLEXITY

The interventions necessary to make a hostel in the Convent are not complex. However, caution should be taken in making the bathrooms (wet spaces). No water and damp may come in contact with the construction of the Convent.

### 7.3 BOARDING SCHOOL

#### 7.3.1 FUNCTION

The idea of Antonio Díez and Felix Rojas Rojas is to provide education for children until the age of 17-18 years by ways of a boarding school. At the moment there are 800 children who are in the age group to be eligible for education. However the sub-burgomaster counts on 100-200 students that will go to the boarding school. The children will arrive at Mondays and leave at Fridays. During these days food and a place to sleep is taken care for. The children will get classes in the morning and during midday's the children have to work on the field, learning about agriculture. This can be done on the area belonging to the Convent, which is at this moment 12 hectares. The idea is to accommodate the school in the second patio of the building. It is estimated that 4-8 auditoriums are necessary for this function (Interview Felix Rojas Rojas, 12-07-2003).

There is some knowledge and experience available in the field of education with the actors of the rehabilitation project. First of all the sub-burgomaster Felix Rojas has experience in organizing the function of school in the village of Pocoata. This project even gained the award of best development project of the year. Besides, the village of Collpaciaco has its own experience in education. Its school is managed by the church and others and gives education on a primary and secondary level. Moreover Padre Antonio Díez is active in education in Cochabamba city. Knowledge about teaching, teaching materials and other necessities is partly available, it will however be different to organize a boarding school for it contains more functions than sec education. Alimentation, practical work and lodging have to be arranged and organized.

#### 7.3.2 COSTS (FINANCE)

There are some ideas about financing the function of a boarding school. This only includes the costs to maintain the function, excluded are the costs for rehabilitation. The first way to finance the service of education is to demand a contribution of the parents of the children who go to the school. Moreover, the children will work in the field during midday's earning money with their harvest. Thirdly volunteers, national and international, can be used for the professions of teacher and assistants. Finally, it can be tried to find funds within national and international institutes.

#### 7.3.3 GEOMETRY

General data was collected about the ideas about the specific spaces and their area needed to support the function of boarding school. The school should give access to 100-200 students in from the age of 9 to 18 (interview Felix Rojas, 2003). In this research the use scenario is made for 100 students, for this is already a respectable amount of students. However in the future there should be a possibility to accept more students. Most probably not all of these 100 students will make use of the possibility to spend the night

in the Convent, because there is a change for them to sleep with their own families. Therefore the sleeping and resting facilities are made for 60 students only. The previous figures and choices (100 students that attend and 60 that spend the night) are assumptions, so no data is collected about this. Future investigation should be addressed to estimate more clearly the probable amount of students that will attend the boarding school in the Convent.

The most important demands of this function on the spatial structure will be the bedrooms, auditoria and bathrooms. The auditoria can be than be used for both classes and diner activities. The estimated areas needed for the several sub-functions can be seen in the following table.

Functional use	Area needed
Church	Maintain the church in present form
Community gatherings	The main patio
Sleeping and resting	<u>Bedrooms</u> Students: 30 bunk beds (60 students) needing approximately 3,3 m <sup>2</sup> a piece: 100 m <sup>2</sup> Personnel: 8 beds needing approximately 3,3 m <sup>2</sup> a piece: 27m <sup>2</sup>
Educational spaces	<u>Auditoria</u> 100 students needing approximately 1m <sup>2</sup> per person: 100m <sup>2</sup>
Bathroom	<u>Shared bathrooms</u> Close to other functions: 100 students needing 40 m <sup>2</sup> of shared bathroom space
Kitchen	<u>Kitchen</u> One kitchen measuring approximately 15m <sup>2</sup>

Table 17: Floor Areas Needed for the Boarding School

A possible situation of these functions in the Convent can be seen in figure 12. It is clear that this function, only taking into account 100 students, requires a lot of space leaving only three rooms free for expansion. Moreover the geometry of the Convent gives limitations for the size of the auditoriums and with that the amount of students that can enter one auditorium. The other functions can be situated relatively well in the geometry of the Convent. There are however four situations in which partition walls are placed. This changes the geometry within these rooms.

When more students are coming to the boarding school it is desired to rehabilitate also the ruins in the second courtyard and make bedrooms out of them. Working in two shifts can solve the possible shortage of auditoria. One half of the students can work on the field in the morning, while the other half follows theoretical education in the auditoria. The second half of the day this can be switched.

#### 7.3.4 MATERIALS

Non-traditional materials have to be introduced to make the use and maintenance of the boarding school function possible. For instance shared bathrooms have to be made introducing new ceramics. This has its influence on the cultural-historic values of the building. Moreover, the finishing materials have to be strong and hardwearing to appropriately sustain the function of boarding school.

#### 7.3.5 PHYSICAL-TECHNICAL PERFORMANCE

The second floor of the Convent will mainly consist of bedrooms. Bulk beds are used but these will most probably not exceed the defined maximum load on the floors of 200kg/m<sup>2</sup>. In the area of building physics the daylight entrance is a limiting factor in the Convent. Little daylight enters the rooms defined as auditoria, which will have its influence on the amount of artificial light that has to be used. Moreover sound insulation between the auditoria and first and second floor has to be taken into account because the expected heavy use of the building.

#### 7.3.6 COMPLEXITY

The interventions necessary to make a boarding school in the Convent are not complex. However, as is addressed with the hostel function, caution should be taken in making the bathrooms (wet spaces). No water and damp may come in contact with the construction of the Convent.

#### 7.4 COMBINATION OF HOSTEL AND SCHOOL

It will not be possible to combine the two functions as described above in the Convent, because there is not enough floor area available. Some delineation in the scale of one, or both, of the functions has to be made to fit into the geometry of the Convent. However parts of the sub-functions of the two scenarios can be combined like the shared-bathrooms, entrance and kitchen.

#### 7.5 USE OTHER BUILDING

When another building is used for one, or both, of the above-described functions than the geometrical and daylight entrance problems can be overcome. The design of this new or existing building can be more appropriate tailored to its function.

Figure 11: Proposal for Arrangement of a Hostel

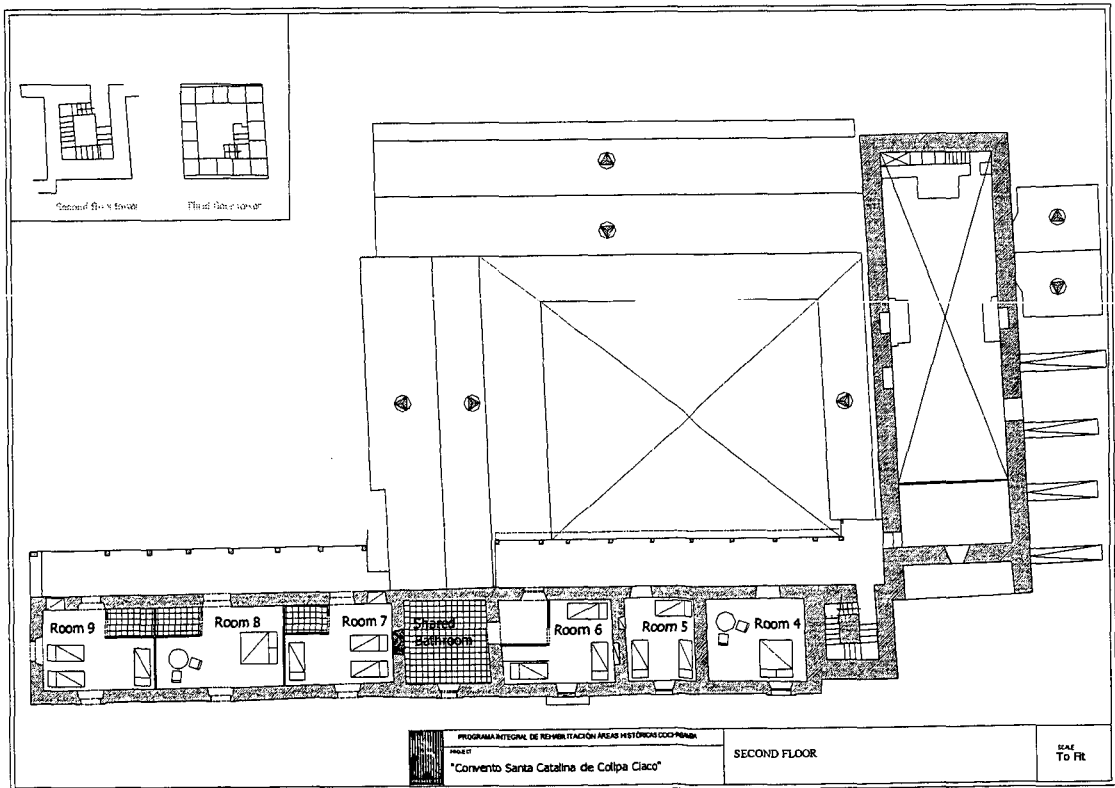
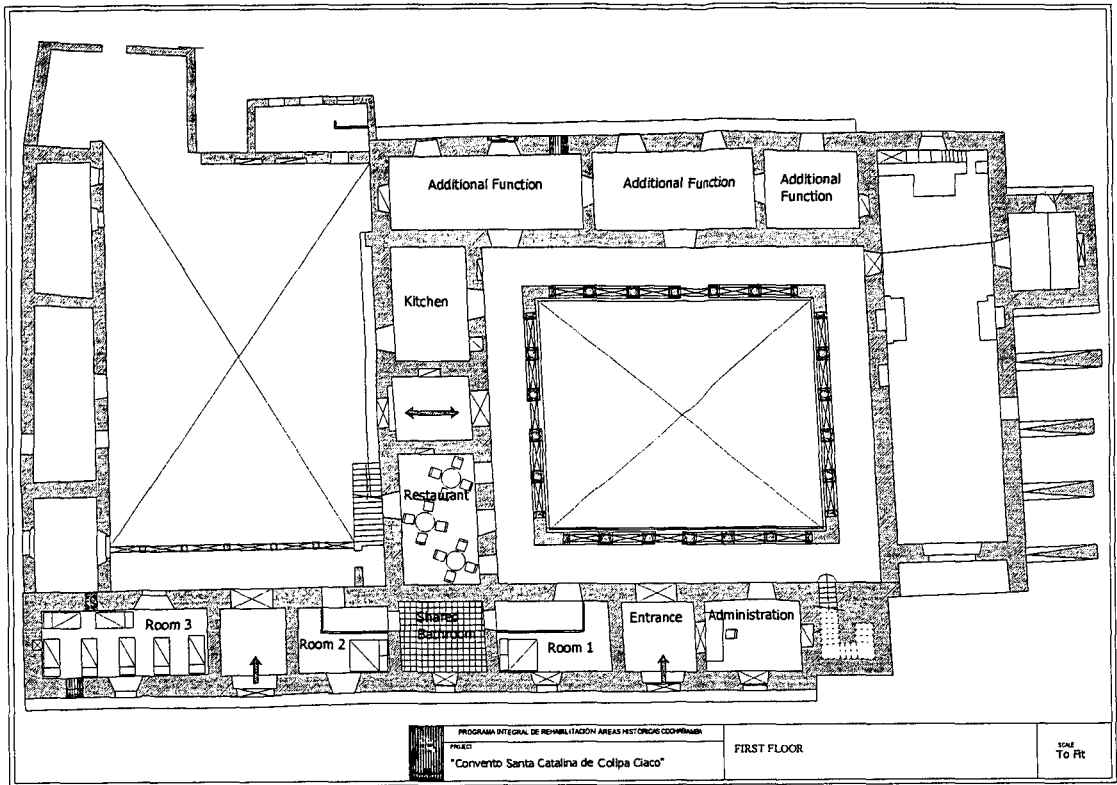
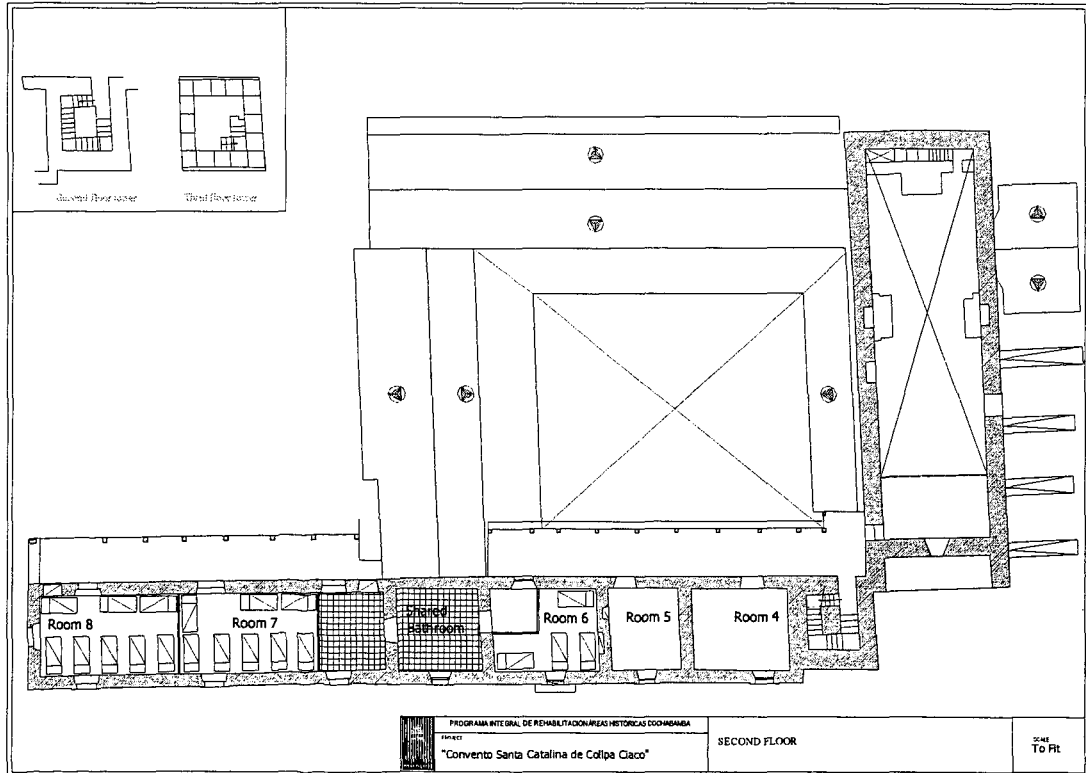
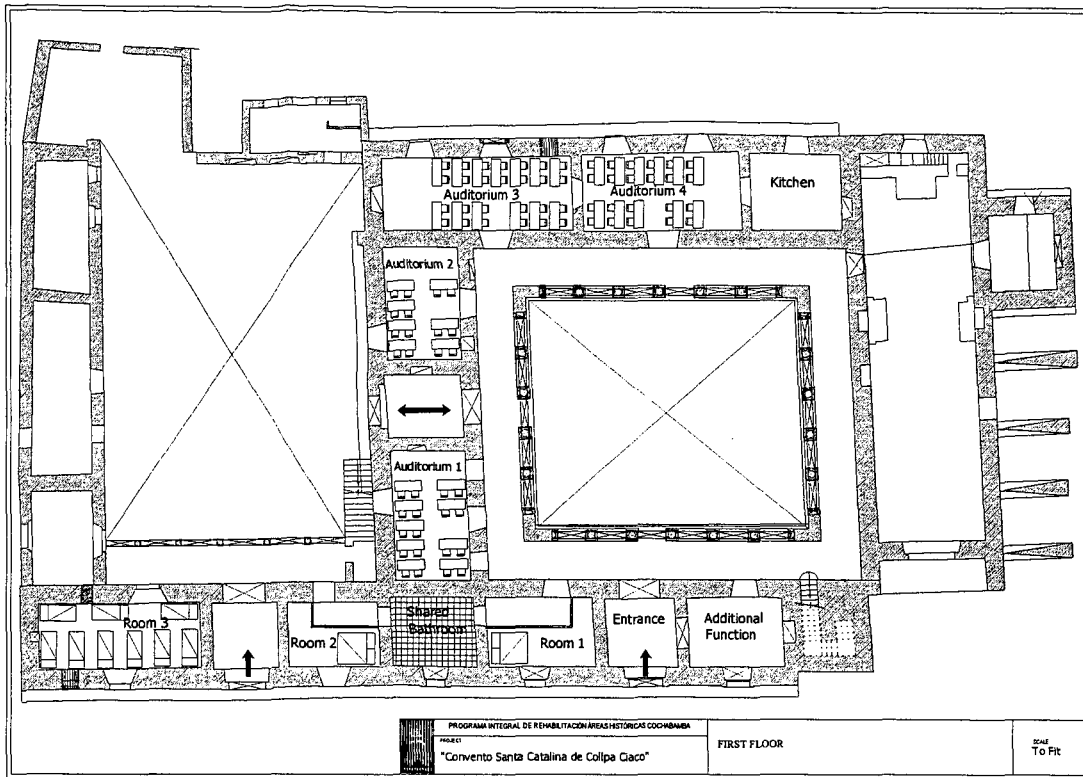


Figure 12: Proposal for Arrangement of a Boarding School



## 7.6 CONCLUSION

The following table shows a summary of important aspects of the building characteristics and how they limit or have possibilities for one of the two scenarios.

	Hostel	Boarding School
Function (organization)	No knowledge about the organization of a Hostel is available with one of the actors in the rehabilitation process	Antonio Díez and Felix Rojas have both experiences in organizing a school. They however do not have experience organizing a boarding school
Costs (finance)	<u>Costs</u> Investment in furniture and other hotel requisites Maintenance Wages of manager and personnel  <u>Benefits</u> Earnings of two star hostel: Double room: 60-70Bs Restaurant Other extra functions	<u>Costs</u> Investment in furniture and other school requisites Maintenance Wages of professors and other employees  <u>Benefits</u> Payment by parents (Inter) national funding Voluntary work
Geometry	Limitations for the size of the rooms because of geometry Relatively many partition walls are necessary (private-bathrooms)	No space left for further expansion Limited size of auditoria Other functions fit relatively well in the spatial structure of the Convent
Materials	Non-traditional materials: hardwearing, strong, clean and beautiful	Non-traditional materials: hardwearing and strong
Physical-Technical	Number of windows and daylight entrance The function will have a load less than 200kg/m <sup>2</sup>	Daylight entrance in auditoria The function will have a load less than 200kg/m <sup>2</sup>
Complexity	Not complex, take care of wet spaces	Not complex, take care of wet spaces

Table 18: Building Characteristics compared with Scenarios



PART III: CONCLUSIONS AND  
RECOMMENDATIONS

# 8. Analyses and Conclusions

## 8.1 INTRODUCTION

The analyses and conclusions of this research are split up into two parts. The first part will give first an analysis on the defined scenarios and will end in a conclusion on the most appropriate use scenario that can be chosen. The second part will give an evaluation of the defined and used methodology to appropriately carry out a cultural heritage building rehabilitation project.

## 8.2 ANALYSIS AND CONCLUSIONS ON SCENARIOS

This paragraph will determine the level of appropriateness of the different scenarios by looking at their social, economic, cultural-historic and technological values and possible impact and comparing that with the environment of the project and the points of departure on cultural-historic and technological values. The different levels of appropriateness are indicated as shown in the table besides.

Level of appropriateness	Indication
Appropriate	(+++)
More or Less Appropriate	(++)
Little Appropriate	(+)
Not Appropriate	(-)

### 8.2.1 APPROPRIATENESS OF THE SCENARIO HOSTEL

#### Technological Appropriateness

In the discussion of the desired values of the Convent some criteria for the technical system were stated. These have to do with the buildings geometry, materials, physical-technical performance or complexity. To make a decision on technological appropriateness of a scenario the impact of the scenario should be compared with these criteria.

Some changes have to be made in geometry of the Convent, mostly adding structures like private bathrooms and partition walls. However the bearing capacity of the construction will most probably not be exceeded by these structures. Furthermore a door is made to enter the bathroom at the first floor (Room 1113). This can be done but care should be taken to preserve the stabilizing function of the wall (not make the door in the corner). The daylight qualities, geometry and the distribution of the windows make that the rooms have to be designed bigger than they have to be, looking to regulations. This makes the spatial ordering of the hotel rooms not optimal. So it can be said that a hostel function can be made in the geometry of the Convent but not optimal.

The materials of the roof construction, door and window supports, floors and finishing are largely deteriorated and have to be replaced. The hostel function will demand for strong, hardwearing, clean but also beautiful materials. It is clear that the hostel function will demand relatively expensive looking materials.

The hostel function will probably not exceed the 200 kg/m<sup>2</sup> floor area making it appropriate on this technological criteria. Moreover the rehabilitation should be technologically not too complex and therefore executable for the current actors in the process.

It can be concluded that the Hostel can be made more or less appropriately in the Convent looking to technological criteria: (++)

### **Cultural-Historic Appropriateness**

#### *Tangible*

The hostel function will change some historical spaces significantly because of partition walls or private bathrooms. Furthermore it will probably not be possible to use traditional finishing materials only, for example in the bathrooms. It is however very well possible to use the traditional furniture in the hostel rooms (or museum). Furthermore the room of Simon Bolivar can completely be restored as it was.

#### *Intangible*

Tourism has not been part of the history of the Convent Santa Catalina de Collpaciaco. From a cultural-historic point of view it will therefore be difficult to promote such a function. The function will attract national and international tourist who can change or even damage existing social structures and cultural expressions such as festivities and artwork. On the other hand a hotel function can be very well combined with the cultural heritage value of the Convent. It is cultural heritage of all Bolivians making it desirable to let as many tourists see and visit the site. This must be done in a way that respect for its history is present, having a sober hotel, quiet and peaceful.

A hostel changes radically some tangible and intangible elements of the Convent. However when certain care is taken it can be from a cultural-historic point of view be justified to make a hostel in the Convent, however it will be little appropriate (+)

### **Appropriateness in Current Sector Environment**

Many actors in the rehabilitation process see opportunities to make a hostel in the Convent. The national government of Bolivia sees an important role for tourism in development, in earnings and employment, and sees an active role for local communities in this. The institute Prahc-Umsa thinks that organizing and stimulating tourism activity in villages is the way to reach an improvement in the quality of life of its inhabitants. Felix Rojas Rojas also sees opportunities for tourism in Collpaciaco. The student population thinks it is desirable for Bolivia to use its cultural heritage in tourism activity. The respondents of the interviews with hotels were of the opinion that it is well possible to make a profitable hotel in the Convent. A two star hostel is thought in the Convent, with a restaurant as additional function. This hostel is directed to foreign tourism and is inexpensive, with little luxury but comfortable.

However, there are some problems in the current tourism sector. It is clear that tourism visits are decreasing since 1996. Together with this trend, it can be seen that there is building up a surplus of hotel facilities in the area of Cochabamba. Besides Cochabamba is less popular with foreign tourist than other areas in Bolivia. Tourist activities made for foreign tourist have therefore less opportunity in Cochabamba at the moment.

The reason for the poor situation in Bolivian tourism can be found in the economic and political instability in Bolivia during the last four years. Therefore the hotel managers were of the opinion that first stability had to return in Bolivia and Cochabamba, before it would be wise to begin a hostel in the Convent.

In conclusion it would therefore be inappropriate to start a hostel in the Convent now, however when the macro economic and political climate stabilizes there are great opportunities. So it is an appropriate choice on the (middle) long term (-).

### **Economic Appropriateness**

The most important objective of the hostel scenario is economic development of the village of Collpaciaco. The hotel function will yield a profit that can be used for

maintenance and for general development of the village of Collpaciaco. It would be a function, which generates its own money for maintenance, making the function independent from external finance. Moreover it varies economic opportunities of the traditional agricultural community of Collpaciaco.

There are enough tourist attractions in Collpaciaco and its surroundings so it should be possible to attract, mostly foreign, tourists. The hotel managers were of the opinion that 10 rooms would be sufficient for this amount of tourists. They thought that it should be possible to financially let the hostel function autonomously. It can therefore be said that the function of hostel should be economically feasible when the surrounding sector improves (+++).

#### **Social Appropriateness**

Different ways to institutionally and financially organize the hotel function were put forward by the Prahc-Umss institute. The first option was that other companies could rent the space in the Convent. This option will give the operational tasks to outsiders, and Collpaciaco earns the rent. In the second option a public institution is organized which maintains the hotel and donates its profits to Collpaciaco. This option will ask more organizational skills of Collpaciaco. There is however little or no knowledge about the organization of a hostel available with one of the actors in the rehabilitation process. However it can socially be important to keep the hotel function totally in hands of the village what will make its social organization difficult (+).

### 8.2.2 APPROPRIATENESS OF THE SCENARIO SCHOOL

#### **Technological Appropriateness**

Some changes have to be made in geometry of the Convent, mostly adding structures like partition walls; this however influences fewer rooms than in the hostel function. The bearing capacity of the construction will most probably not be exceeded by these structures. Furthermore a door is made to enter the bathroom at the first floor. This can be done but care should be taken to preserve the stabilizing function of the wall (not make the door in the corner). The daylight qualities and geometry of the auditoria are not optimal, some are too small and too little light can enter the spaces. However the other functions, like dormitories and shared bathroom, can be situated very well in the spatial structure of the Convent. So it can be said that a boarding school function can be made in the geometry of the Convent but not optimal.

The materials of the roof construction, door and window supports, floors and finishing are largely deteriorated and have to be replaced. The boarding school function will demand strong, hardwearing materials to support the heavy use of the building. It is however likely that this can be done cheaper than in the hostel function.

The function will probably not exceed the (200 kg/m<sup>2</sup>) making it appropriate on this technological criteria. Moreover the rehabilitation should be technologically not too complex and therefore executable for the current actors in the process.

On average the boarding school function can be made more or less appropriately in the Convent looking to technological criteria: (++)

### **Cultural-Historic Appropriateness**

#### *Tangible*

The boarding school function will not change many historical spaces; the spaces are mostly used in their current form. However it will be necessary to introduce new finishing materials, for example in the bathrooms. Besides that it will be difficult to use the traditional furniture that can be found in the Convent at the moment. It is possible to arrange that the room of Simon Bolivar is completely restored as it was within the functional use of the Convent as boarding school.

#### *Intangible*

In history the relation between religious and educational work has always been abundant. The Convent is still used for religious education and therefore a change of its function to a school will be defensible in the light of its history. Moreover, the church in name of Father Antonio has proposed to change the function of the Convent into a boarding school. It will however change the once so quiet and meditation place that the Convent was and is in a place where 200 young students will be living. This will certainly change this intangible element of the Convent.

Looking to the above stated considerations it is difficult to defend a boarding school from intangibly defined sensory qualities as rest and quietness. However the history of the Convent is strongly related to education. Moreover spaces are not strongly influenced by the function of boarding school. This makes it more or less appropriate to make a boarding school in the Convent (++).

### **Appropriateness in Current Sector Environment**

The government of Bolivia sees an important role for education in development. On a national level one of the main problems is the accessibility of education because of distances to schools or financial problems of the parents. This is also the case in Collpaciaco where some children have to walk for over two hours to arrive at their schools. The function of a boarding school can tackle this problem and is therefore appropriate when looking to the sector environment (+++).

### **Economic Appropriateness**

Financing the function of the boarding school can be problematic. A lot of investment is needed for the purchase of furniture, educational objects and other items necessary to run the function of school, restaurant and lodging. For the initial investments, it is clear other actors have to financially support the function of boarding school. Felix Rojas thought that foreign aid was the only possibility. After the initial costs of starting up the boarding school, it can be seen that there are different possibilities to finance its maintenance. First of all during midday's the children will work in agriculture that can yield profits to use for maintenance of the boarding school function. Secondly, a little money can be asked from the parents of the children. Thirdly, it is possible to make use of (inter) national voluntary work, for example in guarding and teaching the students. Finally investments of other parties who are stimulating educational activities can be used.

For the initial start-up costs of a boarding school the funding issue is unclear. This however influences greatly the economic feasibility of this function. So it is not sure whether the function of boarding school is financially feasible (-).

### **Social Appropriateness**

Social appropriateness is not only involves the question whether the functional use of the building serves a special social need. It is also a valuation on whether the future functional use can be organized, facilitate by appropriate and sustainable social connections and networks. Organizing the boarding school well will be complicated. However, there is knowledge about organizing a school with some of the actors. Another social problem can be that parents do not cooperate in sending their children to school. It

is concluded that the organization of the boarding school should be socially feasible, depending also on the number of students that attend, but training and education of the people responsible is necessary (++).

### 8.2.3 CONCLUSIONS ON SCENARIOS

Scenario	Technological	Cultural-Historic	Sector Environment	Economic	Social
Hostel	++	+	-	+++	+
Boarding School	++	++	+++	-	++

**Table 19: Appropriateness of different Scenario's**

From the overall valuation of the two scenarios, hostel and boarding school, it becomes clear that the boarding school is the most appropriate at this moment, see table 21. This function serves a great social need in society, that of education. However, its economic feasibility might be a problem. Finance has to be found to pay for the initial costs, and also maintenance of the building has to be secured. To make this function financially more secure a combination of the two scenarios is considered.

Tourism is a way to economically profit from cultural heritage in Bolivia. A way to do this is to make a hostel in the Convent. It is however not necessary to make a lodging in the Convent to profit from tourism. It is very well possible that tourists come and visit the area of Collpaciaco for one day, leaving and going back to Cochabamba the same day. The visitors of the Convent can be asked to pay ingress that will increase its use values. A museum or souvenir shop can help increase the use value of the building. It can be organized that tourists stay and rest the night in the Convent. They will then make use of the facilities of the boarding school like kitchen/restaurant and bathrooms. They can be lodged in one of the rooms on the second floor (see figure 12).

Finally it is interesting to consider using another building as a boarding school. There are some advantages in using another building, it can for example have a better geometry to support the boarding school function, and its technical system can be in a better state. Building a new, or using another building, can be cheaper than rehabilitating the Convent. The Convent is however the only way for Collpaciaco to open up financial resources to organize the function. In other words, the Convent is the connection of Collpaciaco with financing institutes. It is therefore plausible that the Convent is the most secure way to organize the boarding school function.

## 8.3 ANALYSES AND CONCLUSIONS ON METHODOLOGY

### 8.3.1 INTRODUCTION

This research started with the definition of a methodology to appropriately carry out a cultural heritage building rehabilitation project. This methodology was used in the case study of the Convent Santa Catalina of Collpaciaco. This practical verification has given valuable information on the methodology. The following paragraph will discuss the methodology looking at experience in the case of Collpaciaco. Conclusions will be drawn on the validity, reliability and feasibility of the methodology.

The discussion on validity will give information on whether the methodology corresponds with reality. In other words whether in the methodology value is given, or not given, to aspects that seem important, or not important, in the case study.

The discussion on reliability (confidence) will address the uniqueness of the case study and the possibilities to generalize. The questions to be answered are:

1. What are aspects of the case situation that can be significantly differ in other situations?

## 2. In which situations can the methodology be used?

Finally the feasibility discussion will look at the practical problems during the execution of the methodology. This can be on the level of data gathering, decision making, positions of actors etc.

### 8.3.2 VALIDITY

In the discussion of cultural-historic aspects a problem with validity was encountered in the research. There appears to be a lack of clear cultural-historic aspects in the definition of building characteristics. Tangible cultural-historic aspects are, in the used definition, mainly part of the *geometry*, intangible aspects of the *function*. What lacks is the factor 'time' in the definition of building characteristics that identifies the geometry and function of the building in history. This research does this in the discussion of the cultural-historic values of the building. However, it would be methodological better to describe the geometry and function in history in the discussion of building characteristics. After this a cultural-historic *value* can be addressed to these tangible and intangible elements defining whether or not there is reason to preserve or restore.

A second problem with the validity of cultural-historic aspects is that it is difficult to objectively define cultural-historic desires and with that criteria for rehabilitation. The reason for this is that there are no objective standards to compare the possible cultural-historic values. Therefore it is said that the social actors have to decide together which are the relevant cultural-historic aspects. This is however problematic for there are experts and other social actors involved in the process.

### 8.3.3 RELIABILITY

The environment and context of a cultural heritage rehabilitation project will differ from case to case. This research defines the following aspects that can differ considerably:

1. Scale and scope of the cultural heritage building
2. Scale and scope of the actors involved
3. Financial possibilities of the actors involved
4. Expertise of the actors involved
5. Relative importance of cultural-historic aspects and socio-economic aspects in rehabilitation

The difference between projects on the first two points is mentioned briefly in the theoretical discussion. It is said that the scale of the group of social actors in a rehabilitation project will differ according to the cultural importance of the building under investigation. Therefore the assessment of society needs to concentrate on that level that best describes its cultural importance. In the case study of the Convent this was the local to regional level. It cannot be said that this research framework can be used for projects of greater scale, involving more social actors. Differences can lay in the way of data collection, the accessibility of the actors and their level of involvement with the project.

Points three, four and five stand in close relation to one another. Point five addresses the sort of intervention that rehabilitation is. Rehabilitation pays attention to preservation or recuperation of cultural-historic aspects of the building but also to its refunctionalization. These aspects are seldom complementary and often contradictory. Attention should be evenly divided between these two aspects. However, in practice this is difficult because of financial possibilities, expertise of actors and the socio-economic environment of the project. In the case of Collpaciaco in can be said that socio-economic development of the area using the Convent, and a new function, was relatively more important for its social actors than its cultural-historic value. So it is shown that within rehabilitation projects

emphasize can shift between cultural development (preservation and conservation of the building) and socio-economic development (social and economic use of the building). The methodology can therefore not be used when emphasis shifts to the outer limits, meaning that cultural-historic aspects are significantly more important than refunctionalization aspects, and the other way around.

#### 8.3.4 FEASIBILITY

During the case study several problems were encountered. The problems were sometimes of such a nature that the methodology (or conditions to execute the methodology) had to change.

The first problem was that important social actors could not be heard. As is addressed in the empirical issues it was not possible to do a workshop with the villagers of Collpaciaco. These impossibilities, due to external political pressure, have hindered a thorough investigation in the wishes and ideas of the research population. It is therefore concluded that it should be possible to access all members of the research population to execute the rehabilitation project using the defined methodology

A second problem was that there was a seemingly lack of expertise to do a good research in the cultural-historic, technological and socio-economic aspects of the rehabilitation project. The Prahc-Umss is the coordinator in the process; its employees have however mainly studied architecture. They lack, as they have said themselves, expertise in the field of socio-economic investigation. To effectively execute the methodology it is therefore necessary that a multi-disciplinary project team can be formed containing expertise about cultural-historic, technological and socio-economic aspects of rehabilitation of cultural heritage buildings.



# 9. Recommendations

## 9.1 INTRODUCTION

The recommendations will address, as in the conclusions, two parts. The first part will give recommendations on the terms of reference for the rehabilitation process of the Convent Santa Catalina de Collpaciaco. These recommendations will touch upon the most appropriate building characteristics of the Convent, to improve its technological, cultural-historic, social and economic value. Furthermore a timetable is given addressing the recommended actions, actors involved, costs per action and way to finance the action. The second part of the recommendations will address the methodology giving recommendations on how and when to use it. Furthermore a summary of the methodology is formulated that can be of practical use in the future.

## 9.2 RECOMMENDATIONS ON TERMS OF REFERENCE

### 9.2.1 FUNCTIONAL SYSTEM

#### Function

A boarding school is defined as the most appropriate function for the Convent. It is recommended to rehabilitate the Convent so it can fulfil this function. Expertise about the boarding school function can be found by some key-actors in the process, both father Antonio Díez and Felix Rojas. It is recommended that these actors be put in a central role in organizing the function. For they have besides expertise also the desire and motivation to make a boarding school in the Convent.

Figure ten showed a possible arrangement of the boarding school in the Convent. It is however recommended that the different social actors in the rehabilitation process identify together a desired arrangement.

It is moreover recommended to ask a small entry fee for tourist who want to visit the building. This can be for example 20 Bs. what is the equivalent for 3 dollar. When the situation in tourism improves it is desirable to organize the possibility for lodging in the hotel. This can be done in the room labelled room four and five. Furthermore additional services can be thought of like a museum and camping. On the long term rehabilitating the ruins in the second courtyard can create more space for tourist facilities.

#### Finance

Finance is in countries such as Bolivia often a problem. At the moment money is secured for the first phase of rehabilitation. The actual execution phase will cost approximately 800.000 dollars and is not yet secured. It is however worthwhile to make a good rehabilitation plan and terms of reference to attract investors national and international, public and private.

It is recommended to find, together with the execution phase of the rehabilitation, also funds to buy furniture and other boarding school requisites such as books and writing materials.

It is recommended to investigate two other ways of funding the boarding school. The first is funding making use of the agricultural efforts of the students. The second is reasonable payment of the parents.

### 9.2.2 TECHNICAL SYSTEM

The following recommendations on the technical system can be made:

#### Geometry

- Make as little changes as possible in the geometry of the Convent during rehabilitation. If changes are necessary then this should be done in places with better bearing capacity.
- Dimensions and location of (new) wall openings should be according earthquake regulations (as can be found in Tomažević, 1999).

#### Materials

- New but traditional materials should be used whenever the old ones are not sufficient to carry out their function.
- Hardwearing and strong finishing materials should be used to support the function of boarding school

#### Physical-Technical Performance

- Any function with loads higher than that of the normal living function (200 kg/m<sup>2</sup>) should be directed outside the existing structure.
- The roof and walls have to be improved in such a way that it will safely support the boarding school.
- The roof construction should be bonded with its bearing walls.
- Daylight entrance in auditoria should be as optimal as possible.

#### Complexity

- Complementary technical expertise (in fields such as soil and foundation) should be sought outside the organization of the Prahc-Umss because this organization does not have this kind of specialized technical knowledge.

### 9.2.3 CULTURAL-HISTORIC ASPECTS

The following recommendations can be made in the field of preserving cultural-historic aspects of the Convent:

#### Tangible

- Historical spaces have to be restored to a moment in time the best way possible.  
Including: The church and its decorations, Bolivar's room and furniture
- Only traditional materials should be used during rehabilitation and as much materials as possible should be re-used.

#### Intangible

- The intangible aspects of the religious function have to be preserved as good as possible.  
Including: Sensory qualities of rest and quietness

### 9.2.4 FURTHER INVESTIGATION

The following aspects of the rehabilitation of the Convent need further investigation in the first phase of research (before the actual execution):

#### Functional System

- Further investigation in how many students that want to attend the boarding school.
- Further investigation in the characteristics of the students.
- Further investigation of, and search to, possible external and internal financial sources.

#### Technical System

- Thorough investigation of the technical system of the building addressing soil and foundation characteristics, the roof, walls with inclination and the ruins.

#### Cultural-Historic Aspects

- An inventory of architectural features should be made which can then be evaluated to historical and architectural significance and integrity

## 9.2.5 PLANNING OF RECOMMENDED ACTIONS IN A TIMETABLE

Actions and Timetable	Actors Involved Organization of Actors Responsible Actor	Costs of Action Way to Finance Action
Short Term (0-2 years)		
<i>PHASE 1: Terms of Reference</i>		
Organization of multidisciplinary project team	PRAHC-UMSS (responsible) Greater University of San Símón Village of Collpaciaco Catholic Church Department of Cochabamba Province of Arani External Experts	Funds are secured by the Greater University of San Símón and the Department of Cochabamba
Further investigation into the organization and finance of the boarding school	PRAHC-UMSS (responsible) Village of Collpaciaco Catholic Church	
Further investigation into the technical system	PRAHC-UMSS (responsible) External Experts	
Further investigation into the architectural features of the Convent	PRAHC-UMSS (responsible) External Experts	
<i>PHASE 2: Execution</i>		
Securing funds for physical rehabilitation of the Convent	All Actors	National and International organizations, public and private Needed approximately: 800.000 dollar
Securing funds for organization of boarding school function	Village of Collpaciaco (responsible) Catholic Church PRAHC-UMSS	Needed: furniture and other school materials
Execution	PRAHC-UMSS (responsible) External Experts	
Organizing boarding school function	Village of Collpaciaco (responsible) Catholic Church PRAHC-UMSS	Purchase of Equipment Finding Employees Inviting Students and Parents Organizing Agricultural Education Etc.
Organization of tourist entry fee	Village of Collpaciaco (responsible)	Earnings approximately 3 dollars per person
Middle-Long Term (2-5 years)		
Monitoring tourism sector development	Village of Collpaciaco (responsible) PRAHC-UMSS	
Expansion of tourist function	Village of Collpaciaco (responsible) PRAHC-UMSS	
Long Term (5-10 years)		
Further expansion of boarding school and tourism facilities (e.g. part of ruins)	Village of Collpaciaco (responsible) PRAHC-UMSS External Experts	

Table 20: Recommended Actions in a Timetable

### 9.3 RECOMMENDATION ON THE METHODOLOGY AND ITS USE

#### 9.3.1 INTRODUCTION

The following text will give a short summary of the methodology as is identified in the first part of this research. The conclusions on validity, reliability and feasibility will be implemented in this methodology. Furthermore it is described in what situation the methodology can be used.

#### 9.3.2 THE METHODOLOGY AND ITS USE

This rehabilitation methodology can be, most probably, used when the rehabilitation project satisfies the following criteria:

1. The cultural heritage building rehabilitation project is of a small scale, involving social actors on the local and regional level
2. The main variable in the project is the future '*functional use*' of the building
3. Attention is divided between cultural-historic and socio-economic issues
4. All social actors can be contacted during the research
5. A multi-disciplinary project team can be formed containing expertise in the cultural-historic, technological and socio-economic field

When the rehabilitation project has these characteristics the following steps, as indicated in table 23 on the next page, can be taken to appropriately carry out a cultural heritage building rehabilitation project. Shown is that in the discussion of the building characteristics also its geometry and function in history is taken into account.

To research these different steps several data collection methods can be used such as different forms of interviews, literature, enquiries, observation and organizing a workshop. The later is seen as appropriate to research a population with a relatively low level of education, which is often the case in the Bolivian countryside (Cox Aranibar, 1996). Several techniques are described such as drawing, tables and matrices, social drama and games. Every situation will have its own possibilities and limitations for the collection of data about the current and desired situation. Those methods should be used that will give the most profound information within limits of time and money.

#### 9.3.3 FURTHER INVESTIGATION

Further investigation can be done after how to objectively define cultural-historic criteria in a cultural heritage building rehabilitation process. Question that should be answered are:

1. How can objectively be defined which tangible and intangible cultural-historic aspects must be preserved or can be changed?
2. Which actors should be involved in making these criteria and how should they reach consensus?

Methodology

<b>PART I: Identification of Current Situation</b>			
Chapter	Paragraph	Items to measure	
I.1	General Characteristics of Environment	National, Regional and Local Level	Geographical and physical situation of the project Relevant historic facts Relevant socio-economic indicators Relevant technology institutes
I.2	Current Building Characteristics	Functional system	Function and costs (organization of finance)
		Technical system	Geometry, materials, physic-technical elements and building complexity
		Cultural-Historic system	Geometry and function in history
I.3	Current Values of the Building	Social values	Current values of functional use
		Economic values	Current economic use values
		Cultural-historic values	Values of cultural-historic system
		Technological values	Current performance of technical system
I.4	Conclusion Current Situation		Conclusive Tables

<b>PART II: Identification of Desired Situation</b>			
II.1	Desired Values of the Building per Scenario	Social values	Desired values of functional use
		Economic values	Desired economic use values
		Cultural-historic values	Cultural-historic criteria
		Technological values	Technological criteria
	Sector Environment of Scenarios	Different Scenarios	Strength, Weaknesses, Opportunities and Threats of this sector
II.2	Consequences for Building Characteristics per Scenario	Functional system	Function and costs (organization of finance)
		Technical system	Materials, physic-technical elements, building complexity and geometry
III.3	Conclusion on Desired Scenarios		Conclusive Tables

<b>PART III: Conclusions and Recommendations</b>			
IV.1	Conclusion for most appropriate scenario	Technological	Scenario and technological criteria
		Cultural-Historic	Scenario and cultural-historic criteria
		Sector Environment	SWOT-analyses
		Economic Feasibility	Costs and benefits
		Social Feasibility	Organization of scenario
IV.2	Recommendations on Terms of Reference		Function, costs (finance), geometry, materials, physic-technical elements, complexity

Table 21: Recommendation for Methodology

## Literature

Bojanic, et al (1994), "*Demandas Campesinas*" (*Manual para un análisis participativo*), Embajada Real de los Países Bajos, La Paz

Convenio Andres Bello (1999), *Somos Patrimonio*, Santa Fe de Bogotá, Colombia

Cox Aranibar, Ricardo, "*El Saber Local*" (*Metodológicas y técnicas participativas*), Nogub-Cosude/CAF, 1996

Day (2001), *Geo-Technical Earthquake Engineering Handbook*, McGraw-Hill Companies

Dulski, B. (2003), *Slim met het verleden omgaan*, DuMo (Duurzame Monumentenzorg)

Egmond - de Wilde de Ligny (1999), E.L.C. van, *Technology Mapping for Technology Management*, Delft University Press

Egmond - de Wilde de Ligny (2000), E.L.C. van, *Ingenieur in het Buitenland*, Faculteit Technologie Management, Technische Universiteit Eindhoven

Gaillard (2002), H.C.J.J., *Cross-cultural Research Methodology*, Faculteit Technology Management, Technische Universiteit Eindhoven

Getty Conservation Institute (2002), *Assessing the Values of Cultural Heritage*, Los Angeles

Essays:

Randall Mason , *Assessing Values in Conservation Planning: Methodological Issues and Choices*

Setha M. Low, *Anthropological-Ethnographic Methods for the Assessment of Cultural Values in Heritage Conservation*

Mourato, S. and Mazzanti, M., *Economic Valuation of Cultural Heritage: Evidence and Prospects*

Theresa Sattersfield, *Numbness and Sensitivity in the Elicitation of Environmental Values*

David Throsby, *Cultural Capital and Sustainability Concepts in the Economics of Cultural Heritage*

Getty Conservation Institute (2000), *Values and Heritage Conservation*, Los Angeles

Getty Conservation Institute (1998), *Economics and Heritage Conservation*, Los Angeles

Guardia et al (1995) F.B., *Procesos Historicos De Conformacion de la Red Urbana del Valle Alto de Cochabamba, Asentamientos Rurales/ Villas Coloniales/ Ciudades Republicanas*, Colegio de Arquitectos de Cochabamba and Fondo Nacional de Vivienda Social

ICOMOS (1979), *Carta de Burra, Carta para la Conservación de Lugares de Valor Cultural*, Australia

- ICOMOS (1995), *Carta de Brasilia, Carta para la Conservación de Lugares de Valor Cultural*, Brasil
- INE (1992), *Census 1992*, 1992
- INE (2001), *Statistics Cochabamba*, CD-ROM
- INE (2001), *Statistics Bolivia*, CD-ROM
- Instituto Geografico Militair (2000), *Atlas Digital de Bolivia*, CD-ROM, La Paz, Bolivia
- Inter American Development Bank, IADB (1998), *Heritage Conservation in Latin America and the Caribbean*, Washington
- Langenbach (1997), *Architectural Issues in the Seismic Rehabilitation of Masonry Buildings*, Washington
- Lapperre, Paul E. (1996), *Technologie, Maatschappij en Ontwikkeling: Sociologische Inleiding*, Technische Universiteit Eindhoven
- LeBlanc (1993), *Is Everything Heritage?*, from Internet Site
- Neufert (1977), E., *Arte de Proyectar en Arquitectura*, Editorial Gustavo Gili, S.A., Barcelona
- Prada, G.G. and Truffillo, E. (1998), *Estrategia de Desarrollo Turistico de Cochabamba*, Prefectura del Departamento de Cochabamba and the Unidad de Turismo, Cochabamba
- PRAHC-UMSS, Roda Busch, M. (2003-02), *Convento de Collpaciaco - Valle Alto de Cochabamba*, Cochabamba
- PRAHC-UMSS, Roda Busch, M. (2003-03), *Requerimientos Tecnicos para Empresas de Hospedaje*, Cochabamba
- PRAHP (1999), *Reglamento de Preservación de las Áreas Históricas de Potosí*, Potosí
- PNUD (2002), *Informe de Desarrollo Humano en Bolivia*, Programa de las Naciones Unidas para el Desarrollo, La Paz
- Rettig et al. (1999) J.M., *Conservación del Patrimonio Cultural, Cartas y Recomendaciones Internacionales*, Universidad Central, CONPAL, Chili
- Rojas, E., de Moura Castro (1999), *Lending for Urban Heritage Conservation (Issues and Opportunities)*, IADB, Washington
- Tolles (2000), E.Leroy et al, *Seismic Stabilization of Historic Adobe Structures*, Getty Conservation Institute, Los Angeles.
- Tolles (2002), E.Leroy et al, *Planning and Engineering Guidelines for the Seismic Stabilization of Historic Adobe Structures*, Getty Conservation Institute, Los Angeles
- Tomažević (1999), *Earthquake-Resistant Design of Masonry Buildings*, Slovenian National Building and Civil Engineering Institute, Imperial College Press
- UNESCO (1996), World Commission on Culture and Development, *Our Creative Diversity*
- UNHABITAT (1996), *Istanbul Declaration on Human Settlements*, Istanbul

### Internet Sites

INE (2003), Instituto Nacional de Estadísticas: <http://www.ine.gov.bo>

Getty Conservation Institute (2003): <http://www.getty.edu/conservation/>

ICCROM (2003): <http://www.iccrom.org>

Japanese Law for the Protection of Cultural Properties:  
<http://www.gov.nf.ca/tcr/publications/CulturalPolicy.pdf>

MinBuZa, (2003), Ministerie van Buitenlandse Zaken: <http://www.minbuza.nl>  
Division Cultural Policy: [http://www.minbuza.nl/default.asp?CMS\\_ITEM=MBZ302911](http://www.minbuza.nl/default.asp?CMS_ITEM=MBZ302911)

Ministry of Education, Bolivia (2003): <http://minedu.gov.bo>

Prefectura Cochabamba (2003): <http://www.prefecturacochabamba.gov.bo/>

UNESCO (2003): <http://www.unesco.org>  
Division Cultural Heritage: <http://portal.unesco.org/culture>

Vice Ministry of Culture, Bolivia (2003):  
<http://www.bolivia.com/empresas/cultura/index.asp>



## List of Abbreviations

Bs	Bolivianos (Bolivian currency)
H.S.R.	Historic Structure Report
IADB	Inter American Development Bank
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOMOS	International Council on Monuments and Sites
INE	Instituto Nacional de Estadísticas
MinBuZa	Ministerie van Buitenlandse Zaken
PRAHC	Programa Integral de Rehabilitación de Áreas Históricas de Cochabamba
PRAHP	Programa Integral de Rehabilitación de Áreas Históricas de Potosí
PRAHS	Programa Integral de Rehabilitación de Áreas Históricas de Sucre
T.O.R.	Terms of Reference
TU/e	Technical University Eindhoven
UMSS	Universidad Mayor de San Simón
UNESCO	United Nations Educational Scientific and Cultural Organisation

# List of Tables and Figures

<i>Table 1: Building Characteristics, Source: combination of v. Egmond and H.J. Henket.....</i>	<i>15</i>
<i>Table 2: Different Forms of Intervention, Sources: Getty Conservation Institute and PRAHP .....</i>	<i>20</i>
<i>Table 3: Technological and Cultural-Historic Criteria.....</i>	<i>26</i>
<i>Table 4: Situation in Sector, Social and Economic Criteria.....</i>	<i>27</i>
<i>Table 5: Overview of Methods Used per Situation.....</i>	<i>30</i>
<i>Table 6: Comparison of Bolivia with Latin America and Chile, 1998, Source: Informe DH 2001</i>	<i>33</i>
<i>Table 7: Percentage of Poor People, Source: INE, 2001 .....</i>	<i>34</i>
<i>Table 8: Summary of Building Characteristics and their Importance for Rehabilitation.....</i>	<i>39</i>
<i>Table 9: Summary of Current Values of the Convent and their importance for Rehabilitation.....</i>	<i>45</i>
<i>Table 10: Amount of Tourists per Region, Source: Vice-Ministry of Tourism and INE (Instituto Nacional de Estadística, Bolivia).....</i>	<i>50</i>
<i>Table 11: Some results of interviews with hotel managers in the area of Cochabamba.....</i>	<i>50</i>
<i>Table 12: Loads and Types of Function, source: Neufert.....</i>	<i>56</i>
<i>Table 13: Desired Social and Economic Values per Scenario and their Sector Environment .....</i>	<i>58</i>
<i>Table 14: Summary of Desired Technological and Cultural-Historic Values .....</i>	<i>59</i>
<i>Table 15: Results from Interviews with Hotels .....</i>	<i>61</i>
<i>Table 16: Floor Areas Needed for the Hostel.....</i>	<i>62</i>
<i>Table 17: Floor Areas Needed for the Boarding School.....</i>	<i>64</i>
<i>Table 18: Building Characteristics compared with Scenarios.....</i>	<i>68</i>
<i>Table 19: Appropriateness of different Scenario's.....</i>	<i>74</i>
<i>Table 20: Recommended Actions in a Timetable.....</i>	<i>79</i>
<i>Table 21: Recommendation for Methodology.....</i>	<i>81</i>
<i>Figure 1: Theoretical Framework.....</i>	<i>12</i>
<i>Figure 2: Elaboration on Theoretical Framework: Building Characteristics.....</i>	<i>17</i>
<i>Figure 3: Elaboration on Theoretical Framework: Values of Cultural Heritage Building.....</i>	<i>21</i>
<i>Figure 4: Relation Society and Cultural Heritage.....</i>	<i>22</i>
<i>Figure 5: Elaboration on Theoretical Framework: Environment .....</i>	<i>25</i>
<i>Figure 6: Decision Model to choose the most Appropriate 'Use Scenario' .....</i>	<i>27</i>
<i>Figure 7: Location of Collpaciaco in Bolivia.....</i>	<i>32</i>
<i>Figure 8: First Floor and Figure 9: Second and Third Floor of the Convent, Scale 1:250 .....</i>	<i>39</i>
<i>Figure 10: Occupants of the Convent in a Timeline .....</i>	<i>43</i>
<i>Figure 11: Proposal for Arrangement of a Hostel.....</i>	<i>66</i>
<i>Figure 12: Proposal for Arrangement of a Boarding School.....</i>	<i>67</i>

# Appendix I: Executive Summary (Spanish)

Cada sociedad es caracterizada por su cultura y su patrimonio cultural. El patrimonio cultural es parte de la vida social, la identidad cultural y el orgullo de la población. Los edificios patrimoniales, a cuales focaliza esta investigación, forman un grupo importante en el patrimonio cultural de un país. La valoración, que tiene la sociedad, de estos edificios patrimoniales esta cambiando siempre durante su vida. El cambio puede estar a consecuencia de interferencias físicas (la contaminación, el descuido, las guerras etc.) o cambios en las demandas de la sociedad. Por tanto, la rehabilitación de los edificios patrimoniales debe ser necesario para preservar su valor histórico-cultural y mejorar sus valores socio-económicas y tecnológicos.

El instituto de investigación PRAHC-UMSS se participa en el proyecto de rehabilitación del Santa de Convento Catalina de Collpaciaco en Bolivia. En la primera fase de este proyecto se valora y se escoge las características más apropiadas para el Convento. El tesis la contribuye por responder a esta pregunta de investigación:

*¿Cuál características del edificio mayoría lo mas apropiadamente los valores sociales, económicos, culturales-históricos y tecnológicos del Convento Santa Catalina de Collpaciaco?*

Importante es identificar los aspectos que tienen un impacto al proyecto de rehabilitación. Para contestar a esta pregunta, y resolver el problema complejo de rehabilitación, primero se contesta la siguiente pregunta de investigación:

*¿Cuál aspectos se necesita tomar en cuenta para apropiadamente ejecutar un proyecto de rehabilitación de un edificio patrimonial?*

Se hizo una investigación en literatura para contestar esta pregunta. Aparecieron tres aspectos importantes: las características del edificio, los valores del edificio y el ambiente de un edificio patrimonial. La función, la geometría, los materiales, los costos, la situación física y la complejidad de la producción de un edificio puede describir las características de un edificio patrimonial. Se describe los valores de edificios patrimoniales en cuatro categorías, los valores sociales, económicos, culturales-históricos y tecnológicos. Se describe el ambiente de un proyecto de rehabilitación en una sistema geográfico y físico que actúa recíprocamente con la sociedad. Estos aspectos tienen que ser valorando y avaluando en la situación actual y la situación deseada (la situación después de rehabilitación. Se puede hacer una consideración, con este información, en que características aumentan apropiados los valores sociales, económicos, culturales-históricos y tecnológicos del edificio patrimonial. La discusión teórica mostró que la variable principal para lograr el cambio socio-económico es el uso funcional del edificio. Por lo tanto se hace un modelo de la decisión para identificar la función más apropiada por el edificio patrimonial. Esta decisión implica los criterios sociales, económicos, culturales-históricos y tecnológicos.

La metodología que esta descrita arriba se utiliza en el caso del Convento Santa Catalina de Collpaciaco. La situación actual tiene las siguientes características. Antes todo el Convento se sitúa en una región económicamente pobre y dirigido a la agricultura. La población todavía se utiliza la Iglesia del Convento activamente, otras partes se utilizan durante reuniones o festividades de la comunidad. El Convento actualmente no tiene un valor económico y algunas partes del techo y paredes se encuentran en una forma mala. Los valores históricos y culturales del edificio son sus 231 años de la historia religiosa, sus 42 años de la historia como una hacienda rica y los muebles, las pinturas, los papeles pintados y las cerámicas que sobreviven de estos períodos.

Es claro que hay diferencias en opiniones entre los actores sociales en el campo de la función del edificio en el futuro. La primera idea es utilizar el edificio como hostel, sosteniendo la actividad turística. La segunda idea es utilizar el edificio como internado, mejorando el acceso

a la educación en la región. La tercera idea es una combinación de un hostel y un internado. En la cuarta idea se utiliza otros ó nuevos edificios para la nueva función. Se concluye que el internado es la opción más apropiada, porque hay una necesidad social considerable para mejor acceso a la educación en la región de Collpaciaco. Además los actores importantes tienen experiencia en organizar una escuela. Es que la comunidad tiene más posibilidades de organizar esta función que el hostel. La razón principal para no escoger el hostel es la situación turística. El número de visitantes ha disminuido por la situación económica y política inestable en Bolivia. Sin embargo el sitio tiene suficientes calidades turísticas, haciendo turismo una oportunidad para el futuro.

Se concluye que el sistema técnico del Convento necesita intervención en sus techos y paredes. Se necesita una investigación más completa para hacer lo efectivamente, por ejemplo en las características de la tierra y los cimientos. La entrada de la luz es problemática en la geometría actual. Por lo tanto se recomienda investigar las maneras de optimizar la entrada de la luz en el edificio. Además los espacios históricos tienen que ser restaurados la mejor manera posible, incluido la iglesia y sus decoraciones, la habitación de Bolívar y los diferentes muebles. Una meta debe ser utilizar sólo materiales tradicionales durante rehabilitación. Finalmente se tienen que preservar los aspectos intangibles de la función religiosa tan bueno como sea posible.

Se ha evaluado la metodología utilizada a su validez, la fiabilidad y la viabilidad, en la parte final de esta investigación. Se concluye que hace falta aspectos históricos-culturales en la definición de las características del edificio. Qué falta es el factor 'tiempo' que identifica la geometría y la función del edificio en la historia. Además sea difícil definir objetivamente los deseos históricos-culturales y con esto los criterios para la rehabilitación, por lo tanto más investigación en este campo es necesario. Finalmente se indica que la metodología se puede utilizar cuando el proyecto muestra las siguientes cinco características:

1. El proyecto de la rehabilitación del edificio patrimonial es de una escala pequeña, implicando a actores sociales en el nivel local y regional.
2. La variable principal en el proyecto es la función del edificio.
3. Se divide la atención entre asuntos culturales-históricos y socio-económicas.
4. Todos los actores sociales pueden ser contactados durante la investigación.
5. Se pueden formar un equipo conteniendo conocimiento en el campo cultural-histórico, tecnológico y socio-económico.

# Appendix II: Report First Measurement Convent

## First Measurement of the Convent of Collpaciaco

**Date:** 13 March 2003  
**Present:** Twelve persons (one only halve a day) related to the PRAHC Institute, University of San Simon, Cochabamba, Bolivia  
**Location:** Collpaciaco, 65 km outside the city of Cochabamba, Convent of Collpaciaco  
**Time:** Leaving Cochabamba at 7:30 and returning at 20:30, 10 hours of measurement

- Items Measured
- Facades, roof, windows
  - Plans, first and second floor, ruins and tower
  - Interior heights and windows
  - Levels in terrain
  - Photographs of details, facades, rooms and constructive failures

## Objects used during Measurement

- Tape Line (10 meters)
- 2 Tape Lines (50 meters)
- 7 Drawing boards
- 4 Gums
- Pencils etc.
- 100 Sheets of paper
- 1 Photo camera, rolls and other equipment
- 2 Plumb lines
- 1 Hose and water for measurement of levels in terrain

## Organization of Measurement

### 1) Points of Departure

- Measurement of plans on 1 meter altitude
- Measure as much as possible in every direction
- Take one starting point

### 2) Groups

- 1 Group for the measurement of part 1 and tower (3 persons)
- 1 Group for the measurement of part 2 and church (2 persons, at midday 3)
- 1 Group for the measurement of part 3 (3 persons)
- 1 Group for measurement of levels in terrain (2 persons)

## Report of the Day

It was decided that at seven o'clock in the morning everybody would meet at the Plaza Sucre near the University San Simon. Some food had been brought and after copying some very useful plans of the Convent, eleven persons got into a pick-up truck. In Arani some famous Arani bread was bought together with drinks. We arrived around nine o'clock in Collpaciaco. Nuns living nearby opened the Convent. After organizing the works the measurement could begin. Everybody got off to a fresh and fast start moreover because a great part of the team had some experience in this sort of work. Sometimes improvisation was used for measuring heights or other difficult part of the building. Always could be counted on the inhabitants of the village Collpaciaco in times of need. During the lunch these people were also invited. After the lunch a twelfth person came to help. The plan was to end the work around five o'clock however the measurement took till seven o'clock. After collecting the rubbish and materials a group picture was taken. We thanked the inhabitants of Collpaciaco and arrived around 20:30 in Cochabamba.

# Appendix III: Report Second Measurement Convent

**Date:** 26 March 2003  
**Present:** Two persons, Julieta Jaimes and Tijs den Uijl  
**Location:** Collpaciaco, 65 km outside the city of Cochabamba, Convent of Collpaciaco  
**Time:** Leaving Cochabamba at 7:00 and returning at 20:00

## Items Measured

- Data missing in plans
- Data missing in heights
- Roof details
- Legal and Social data in relation to the Convent

## Objects used during Measurement

- 2 Tape Lines (10 meters)
- 2 Tape Lines (50 meters)
- 1 Drawing boards
- 1 Gum
- Pencils etc.
- 2 Plumb lines

## Goals and Organization of Measurement

Two goals for this day can be identified. First of all missing data discovered during computer drawing had to be measured. Secondly at 10:00 a meeting with Sabino Rojas and other directors of the village of Collpaciaco would be held. This meeting should make clear two legal aspects of the Convent: who owns the building and what are the exact borders of the estate.

## Report of the Day

At seven o'clock in the morning Julieta and I met at the parade of taxis leaving to Arani. We arrived at eight o'clock in Arani. There we took a taxi to Collpaciaco. On arrival the nuns appeared to be in Arani, so we entered the Convent with one of the inhabitants living at the plaza in front of the Convent. We measured some missing data in the plans and at around 9:45 we had a conversation with one of the Nuns living in the village of Collpaciaco. She told us that Padre Antonio had executed the intervention in the second patio. At the moment Padre Antonio is in conversation with his (family) in Spain to get funds for further intervention. His idea is to change the function of the building into a boarding school because of the distances children have to travel to their schools. She told further that in the neighbourhood of Collpaciaco are two schools for mediate and intermediate classes. At the moment the Convent is mainly used for meetings in the main patio. The bells in the tower are played when an important meeting, which involves all of the people, is held. At 10:30 we met with Felix Rojas who is sub-burgomaster of the village of Collpaciaco (this is the highest possible rank in the village of Collpaciaco). Felix Rojas is the brother of Sabino Rojas who could not come to the meeting, and moreover is not a director at the moment. Felix Rojas told us about the recent history of the Convent, several groups had made proposals but not came to interventions. However on initiative of Padre Antonio an intervention had been made. So we had to talk with this man and organize a meeting with all actors. Moreover there should be a document saying something about the property and borders of the Convent. The property of the Convent involves more pieces of land, and the border of Convent is not clearly marked.

# Appendix IV: Workshop Proposal (Spanish Version)

## Propuesta para la organización del primer taller de Collpa Ciaco

Primer encuentro con los actores y sus ideas

### Fase 1: Introducción

Objetivo: Primer encuentro y introducción

Tiempo: 30 minutos, 10:00 - 10:30

Cosas de tratar y sus técnicas:

- Introducción en que es el PRAHC y su cooperación con Collpa Ciaco
- Explicación de la organización del taller

### Fase 2: La historia del convento Collpa Ciaco y su uso en presente

Objetivo: Colección de información sobre la historia del convento Collpa Ciaco y su uso en presente.

Tiempo: 90 minutos: 10:30 - 12:00

Cosas de tratar y sus técnicas:

- La gente debe tener información sobre la historia del convento.
- La gente debe tener información sobre el uso en presente del Collpa Ciaco. Se puede encontrar esta información con la técnica de un calendario de actividades que tienen relación con el convento.

### Fase 3: Necesidades, aspiraciones y demandas por la función en futuro

Objetivo: Seleccionar funciones posibles mirar a sus necesidades y beneficios.

Tiempo: 120 minutos: 12:00 - 13:00 - pausa - 14:00 - 15:00

Cosas de tratar y sus técnicas:

1. Se hace los grupos (5-10 personas), en diferentes campos
2. Taller con los grupos:
  - o Lluvia de aspiraciones: como el convento puede servir por mejorar su vida. Escribe entre una cuadro / matrice
  - o Discusión de beneficios: los actores interesados y como se pueden intervenir
  - o Discusión de necesidades: los actores interesados y como se pueden intervenir
  - o PAUSA?
  - o Dibujas de las diferentes opciones dentro el plano del convento
  - o Elección de las opciones más adecuado

### Fase 4: Presentaciones y cierre

Objetivo: Intercambio de informaciones dentro los grupos

Tiempo: 90 minutos: 15:00 - 16:30

Cosas de tratar y sus técnicas:

Presentación de los diferentes grupos

- Presentación de la idea del PRAHC-UMSS
- Explicación del proceso en futuro, talleres, actividades etc.

### Cronograma del Taller

Actividad	Comienzo	Final	Total
Introducción	10:00	10:30	30 minutos
Taller historia y presente	10:30	12:00	90 minutos
Taller sobre funciones posibles: parte I	12:00	13:00	60 minutos
Pausa	13:00	14:00	60 minutos
Taller sobre funciones posibles: parte II	14:00	15:00	60 minutos
Presentaciones y cierre	15:00	16:30	90 minutos

# Appendix V: Methodological issues Questionnaire

## Sampling

A sample is made from all the students in the university of San Simón. The sample is made in a stratified way questioning persons from four identified major educational directions being:

- Technology Studies (e.g. informatics, electronics, architecture, civil engineering)
- Social Studies (e.g. languages, sociology, anthropology, psychology, education)
- Political Studies (e.g. laws and politics)
- Economic Studies (e.g. economics, business administration)

## Organization

The questionnaires have been distributed, wherever possible, in classes responding to the different educational directions. This to get a good cross-section looking to different students on variables like: interest in the subject, region of birth etc. Being cognizant with the fact that the age structure of this sample will this way not resemble the age structure of the research population. Still this choice is made, for the influence of the first mentioned variables will be more significant than the variable age, moreover, because the research population is relatively homogeneous on age.

## Pre-test

The questionnaire changed significantly several times because of translation problems but moreover because it was too long at first. The translation was made in close cooperation with Ximena Rodan who studies languages in her final year at the University of San Simón.

## Operationalization

After reading and looking to own experience, the following subjects seemed worth investigating taking into account the problem of choosing a new, and economic, function for the Convent in Collpaciaco:

Opportunities and Threats of Tourism and Cultural Industries	
Opportunities	Threats
Economic development	Alienation of the people from their culture
Inter cultural dialogue and understanding	Pressures on cultural diversity and heritage
Maintenance of cultural heritage	
Advantages and Disadvantages of Cultural Heritage Preservation	
Advantages	Disadvantages
Strengthening cultural identity	Cultures are always changing
Necessary for survival of human species	Preservation and its principles

To measure the opinion of the research population on these different items the questionnaire is divided into three different parts. The first part gives an explanation and asks for data personal data. The second part asks the respondent to fill in heritage items of his country and respond to questions about its possibilities for economic development and its need for preservation. The third part tries to get answers that are more profound by giving 18 propositions ending in the possibility for commentary.

## Possibility of comparison

When the same questionnaire is also held in the Netherlands than a comparison can be made between two geographical areas, giving more input for the research on the following hypotheses:

Hypothesis: Developed countries have experience with ultimate commercialisation of cultural heritage, and their experience can be of value for policy in Bolivia.

Hypothesis: Bolivia has now more chances for economic development using cultural heritage than the Netherlands.



# Appendix VI: Questionnaire (English Version)

## CULTURAL HERITAGE AND DEVELOPMENT

*A questionnaire into the ideas about the role of cultural heritage in development*

### Introduction

This investigation defines two groups of cultural heritage, tangible and intangible cultural heritage. In other words: from a historic viewpoint important material aspects and immaterial aspects of the culture of a country.

This questionnaire wants to know your opinion about the cultural heritage of your country and its role (or possible role) in development. Different forms of development can be identified. First economic development that refers to the generation of income by ways of using cultural heritage in tourist or cultural industry activities. Cultural industries use processes of production and distribution, on a global level, for the increase of turnover. The industrial process can improve the production of arts, records etc. These products can be sold by ways of the global distribution. Turnovers can also improve by distribution of books, magazines, films and videos about the cultural heritage of a country. Secondly, cultural development is referred to as the preservation of cultural heritage inside a country.

Please fill in the next table.

Name		Sex
Age	Country and city of birth	
City of residence		Your study and study level
What is your interest in cultural heritage? I am not interested..... I have some interest..... I am interested! O-----O-----O-----O-----O-----O-----O		

Your personal data will be used confidentially

### Explanation

The questionnaire consists of two parts

- 1) You will be asked to fill in a form about what you think is Bolivia's cultural heritage.
- 2) You can give your opinion one a couple of propositions.

### For filling in the first part:

First, a question will be asked about what you find is cultural heritage of Bolivia. Two fill-in forms are designed to make this question a little easier, one for tangible and the other for intangible cultural heritage. Please write in the first column the names of cultural heritage items that you think your country possesses, try to do this as complete as possible giving names and characteristics.

After filling in the first column you are asked to answer the four questions found at the right of the fill in form. The first two questions search for your opinion about the economic development and the role of cultural heritage. The next two questions are related to your opinion about the importance to preserve cultural heritage.

You can answer these questions on a scale with seven different possibilities. Try to find the possibility (cell) that lies closest to your opinion.

*I want to thank you beforehand and I hope you find it interesting filling in this questionnaire!*

**TANGIBLE CULTURAL HERITAGE**

<b>Question 1</b> Is cultural heritage used for tourist and cultural industries in your country?	<b>Question 2</b> Do you think that there are possibilities to create more tourist and cultural industry activities by using cultural heritage?	<b>Question 3</b> Do you think that your country takes sufficient actions to preserve its cultural heritage?	<b>Question 4</b> How important is the preservation of cultural heritage for you?
---	--	---	--

Group	Names and Characteristics	Economic Development	Cultural Development
Buildings and Cities		<b>Question 1</b> Not <span style="margin-left: 100px;">Frequently</span> <span style="margin-left: 100px;">Used</span> Used.....used ..... a lot <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> <input type="radio"/> No answer/ Don't know	<b>Question 3</b> No .....more or less.....Yes <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> <input type="radio"/> No answer/ Don't know
		<b>Question 2</b> No <span style="margin-left: 100px;">Some</span> <span style="margin-left: 100px;">Many</span> possibilities.....possibilities.....possibilities <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> <input type="radio"/> No answer/ Don't know	<b>Question 4</b> Not <span style="margin-left: 100px;">A little</span> <span style="margin-left: 100px;">Very</span> important.....important.....important <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> <input type="radio"/> No answer/ Don't know
Arts and Crafts and Audiovisual Products  (e.g. clothes, pottery, literature, painting, sculpture, radio, television and film)		<b>Question 1</b> Not <span style="margin-left: 100px;">Frequently</span> <span style="margin-left: 100px;">Used</span> Used.....used ..... a lot <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> <input type="radio"/> No answer/ Don't know	<b>Question 3</b> No .....more or less.....Yes <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> <input type="radio"/> No answer/ Don't know
		<b>Question 2</b> No <span style="margin-left: 100px;">Some</span> <span style="margin-left: 100px;">Many</span> possibilities.....possibilities.....possibilities <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> <input type="radio"/> No answer/ Don't know	<b>Question 4</b> Not <span style="margin-left: 100px;">A little</span> <span style="margin-left: 100px;">Very</span> important.....important.....important <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> ----- <input type="radio"/> <input type="radio"/> No answer/ Don't know

**INTANGIBLE CULTURAL HERITAGE**

<b>Question 1</b> Is cultural heritage used for tourist and cultural industries in your country?	<b>Question 2</b> Do you think that there are possibilities to create more tourist and cultural industry activities by using cultural heritage?	<b>Question 3</b> Do you think that your country takes sufficient actions to preserve its cultural heritage?	<b>Question 4</b> How important is the preservation of cultural heritage for you?
---	--	---	--

Group	Names	Economic Development	Cultural Development
<b>Traditional ways of Society</b>  (e.g. Festivities, religion, rituals, markets, customs)		<b>Question 1</b> Not <span style="margin-left: 100px;">Frequently</span> <span style="margin-left: 100px;">Used</span> Used.....used ..... a lot ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know	<b>Question 3</b> No .....more or less.....Yes ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know
		<b>Question 2</b> No <span style="margin-left: 100px;">Some</span> <span style="margin-left: 100px;">Many</span> possibilities.....possibilities.....possibilities ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know	<b>Question 4</b> Not <span style="margin-left: 100px;">A little</span> <span style="margin-left: 100px;">Very</span> important.....important.....important ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know
<b>Traditional skills and know-how</b>  (e.g. about nature, music, gastronomy, sports and games, dances, theatre, and intellectual life)		<b>Question 1</b> Not <span style="margin-left: 100px;">Frequently</span> <span style="margin-left: 100px;">Used</span> Used.....used ..... a lot ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know	<b>Question 3</b> No .....more or less.....Yes ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know
		<b>Question 2</b> No <span style="margin-left: 100px;">Some</span> <span style="margin-left: 100px;">Many</span> possibilities.....possibilities.....possibilities ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know	<b>Question 4</b> Not <span style="margin-left: 100px;">A little</span> <span style="margin-left: 100px;">Very</span> important.....important.....important ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know
<b>Languages and Oral Traditions</b>  (e.g. Histories and Mythology)		<b>Question 1</b> Not <span style="margin-left: 100px;">Frequently</span> <span style="margin-left: 100px;">Used</span> Used.....used ..... a lot ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know	<b>Question 3</b> No .....more or less.....Yes ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know
		<b>Question 2</b> No <span style="margin-left: 100px;">Some</span> <span style="margin-left: 100px;">Many</span> possibilities.....possibilities.....possibilities ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know	<b>Question 4</b> Not <span style="margin-left: 100px;">A little</span> <span style="margin-left: 100px;">Very</span> important.....important.....important ○-----○-----○-----○-----○-----○-----○ ○ No answer/ Don't know

## PART II: Propositions about Cultural Heritage and Development

Please give your opinion about the following propositions. You can answer these questions on a scale with seven different possibilities. Try to find the possibility that most corresponds with your opinion. For example:

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

You must fill in the box on the right when you agree totally with the proposition. However, fill in the box on the left when you are completely opposed to the proposition. The five possibilities in the middle give you more opportunities to express your opinion. When you fill in the box in the middle your opinion is that there are evenly things you agree on and do not agree on in the proposition. More to the right you agree more than you disagree, more to the left you disagree more than you agree. So, try to fill in the box that mostly corresponds with your opinion and feeling.

1) **Bolivia is attractive for tourists in relation to other countries in the world.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

2) **Bolivia is attractive for tourists in relation to neighboring countries.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

1) **Your country has a great opportunity to achieve economic development by ways of tourism and cultural industry activities.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

2) **Without using cultural heritage for tourism and/ or cultural industry activities, it is difficult to preserve cultural heritage in your country.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

3) **International tourism is important for intercultural dialogue between countries.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

4) **Tourism within your country is important for the intercultural dialogue between different regions.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

5) **A threat of commercialisation of cultural heritage can be an alienation of the people from their own cultural heritage.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

6) **Tourism and cultural industry, as forms of globalisation, will significantly influence (or have significantly influenced) the cultural heritage in your country.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

7) **Your country must aim for higher profits even if it means a change in the traditional way of live.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

8) **Bolivia has to select the large and important cultural heritage items and use these in tourist activities, only their Bolivia will find economic perspectives.**

I disagree totally                      I partly agree                      I agree totally  
○-----○-----○-----○-----○-----○-----○                      ○ No answer/ Don't know

9) The rural population has a good change to profit from tourism and cultural industry activities in their region.

I disagree totally      I partly agree      I agree totally  
○-----○-----○-----○-----○-----○-----○      ○ No answer/ Don't know

10) We have to accept that tourism and cultural industries are growing sectors. Therefore, developing countries have to profit from this opportunity.

I disagree totally      I partly agree      I agree totally  
○-----○-----○-----○-----○-----○-----○      ○ No answer/ Don't know

11) Your country must try to limit the influence of tourism and cultural industry on cultural heritage, even if this means lower profits.

I disagree totally      I partly agree      I agree totally  
○-----○-----○-----○-----○-----○-----○      ○ No answer/ Don't know

12) Your country has to preserve cultural heritage against all costs because it is very important for cultural identity and pride of the people.

I disagree totally      I partly agree      I agree totally  
○-----○-----○-----○-----○-----○-----○      ○ No answer/ Don't know

13) The preservation of cultural heritage is of vital importance for the human species because it maintains cultural diversity and with that creativity.

I disagree totally      I partly agree      I agree totally  
○-----○-----○-----○-----○-----○-----○      ○ No answer/ Don't know

14) Culture is always changing, it is therefore it is sometimes not desirable to preserve because that freezes culture in one moment in time.

I disagree totally      I partly agree      I agree totally  
○-----○-----○-----○-----○-----○-----○      ○ No answer/ Don't know

15) During restoration, one should only use traditional methods and materials.

I disagree totally      I partly agree      I agree totally  
○-----○-----○-----○-----○-----○-----○      ○ No answer/ Don't know

16) It is desirable for Bolivia to exploit its cultural heritage using tourism and cultural industry activities.

I disagree totally      I partly agree      I agree totally  
○-----○-----○-----○-----○-----○-----○      ○ No answer/ Don't know

I want to thank you for filling in this questionnaire. I hope to use its results for my study in the Netherlands. When you have any recommendations or comments, you can write them down in the space below.

Comments

# Appendix VII: Methodological issues of Interviews

## Sampling

The sample is made in a stratified way. Variables to make this stratification were:

- Location of the hotel (in the city of Cochabamba or in its region)
- Sort of hotel (hotel, hostel, lodging etc.)
- Number of stars (which indicates lower, middle and upper class hotels)

The first stratification divides the population into two groups, one that are the hotels inside the city of Cochabamba the other that defines the hotels outside of Cochabamba. The second stratification divides the hotels in three groups. The third stratification divides the groups (where possible) into two according to their amount of stars.

## Operationalization

The aim of the interviews with the hotels was to come to a recommendation on the most profitable form of hotel possible in the Convent. This means that within the tourist possibilities of the Convent and its environment two items have to be defined:

- 1) The sort of tourist that will most probably visit the Convent and its hotel
- 2) The kind of hotel that will be most profitable in the Convent

Variable	Indicator		Measurement
Kind of tourist	Country or Region of Origin	Bolivia	Different Regions: Cochabamba Tarija Etc.
		Foreign Country	Name of the country
	Type of Interest		Relaxation Culture tangible Culture intangible Work (conference) Activities, sports
	Budget to spent		Stars of the hotel Lower, middle, upper class
Kind of hotel	Type of hotel		Hotel Hostels Residence Lodging Others
	Luxury		No stars – Five stars
	Break even Point		Amount of visitors needed
	Scale		Number of rooms Number of beds
	External Functions	Direct related	Restaurant: breakfast/ lunch / dinner Clothes washing Swimming pool Tourist information/ guides
		In-Direct related	Museum Café de Internet Restaurant

## Appendix VIII: Interview with Hotels (English Version)

<p><b>Introduction</b>  A good day Sir/ Madam. My name is Tijs den Uijl and I am a student Technology and Society in the Netherlands. I stay in Bolivia for six months to write my thesis in the field of restoration. I am interested in the relation between cultural heritage and tourism. This interview will address this relation in two parts. First there will be questions about your hotel. Secondly I would like to know your opinion about a special case. I would like to know your opinion about the possibilities to make a hotel in the Convent of Santa Catalina in Collpaciaco.</p>	
(Do you mind when this interview is recorded?)	
1. Name of Respondent	
2. Function of Respondent within the hotel	
<b>Questions about the Hotel</b>	
3. Name of the Hotel	
4. Location of the Hotel	
5. Type of Construction, Architectural	
6. What kind of hotel is this? Hotel, Hostel, Lodging etc.	
7. What is the age of this hotel?	
8. How many stars does this hotel have?	
9. How many beds are there and what are the prices per night?	
Dormitories Simple Room Double Room	
10. What are the additional services of this hotel?	
Restaurant/ café Tourist information Washing Swimming Pool Conference Room Internet Service Party Salon	Shops Museum

Can you estimate how much, or what percentage, do your guests spend on supporting functions in your hotel?

Can you make estimation of how many guests you need per year to be profitable

**Questions about the tourists**

How many guests do you welcome in your hotel per year?

How much percent of your guests are tourists and how many stay for their work?

Of the tourists, which percentage are Bolivians?

In addition, from which region are they coming from?

Cochabamba, La Paz, Oruro, Beni,

Can you say what the main reason is for your guests to come to Cochabamba?

(Maybe you can give percentages)

Relaxation

Adventure, sports, eco-tourism, nature

Tangible cultural heritage

Intangible cultural heritage

Other

How do these tourist organize their activities?

With as Tourism Agency or without?



**Questions about the Convent**

The following questions address the possibilities to make a hotel in the structure of the Convent of Collpaciaco. To you know this Convent or the village? Yes/No

I have some more information about its location, architecture and the activities in the region.

Are there, in your opinion, possibilities to make a profitable hotel in the Convent?

Yes/ No :Why?

What would be the sort of hotel, which has the best opportunities to be profitable?

There can be the following variables:

Type of Hotel and number of Stars

(Depends on interests and economic possibilities of the visitor, tourist attractions and the construction itself)

Scale of the Hotel (number of beds, rooms etc.)

Additional Services like

Restaurant/ café

Tourist information

Washing

Swimming Pool

Conference Room

Internet Service

Party Salon

Shops

Museum

I want to thank you for this interview, when you have some recommendations or comments I would like to hear them:

## Appendix IX: Data from Interviews

<b>Name of Hotel</b>	Hotel Colon	<b>Age of the Hotel</b>	53 years old
<b>Name of Respondent</b>	Jasna Matulić Luksić de Carević	<b>Type of Hotel</b>	Hotel
<b>Function</b>	Owner	<b>Amount of Stars</b>	2
<b>Location</b>	Plaza Colon (In the heart of the city)	<b>Type of Construction</b>	Antique Building
<b>Rooms and their price</b>	45 Rooms (6 small ones), paying 60 Bs for one person		
<b>Additional Services</b>	Tourist information and launderette In history, there also was a restaurant but because of competition (restaurants on PRADO) and employment problems, this was disposed.		

### Information about guests

The hotel Colon has difficulties getting guests at the moment. Per week, some 1-2 guests are welcomed. These guests are mostly heading for Cochabamba for their work. The respondent says that tourism is paralyzed and does barely exist; some 10% of the tourists visiting are Bolivians living in the La Paz or Santa Cruz region. The tourists are visiting Cochabamba to know the city, for festivals or for their work or health question (visiting doctors). Because of the low tourist figures and the age of the owner she is thinking about selling the hotel.

### Information about Convent

The respondent was not very positive about the possibilities to make a hotel in the Convent. Main reasons for this statement were that there is no money available in Bolivia, and other regions are a lot more attractive (like the La Paz and Santa Cruz region). In these regions are more industries and moreover international airports. If you however want to make a hotel than it has to be part of a hotel chain and modern. Foreign tourist will visit the site mostly because they have more interest in culture etc. The hotel has to have modern facilities, with dining room, however should not be very luxurious, moreover because this is difficult to execute in an old building. 20 rooms (or less) should be sufficient.

### Other Commentary

A) The hotel Colon has little visitors and the respondent gave different reasons for this phenomena. First of all the amount of tourist visiting Cochabamba is decreasing and now very low, because of political instability and social instability. Secondly there are several new hotels in Cochabamba being part of hotel chains which attract nowadays most of the tourist visiting the city. They are more attractive because they are part of a chain, so tourists do not have to search for their hotel knowing that it is a good one and because they offer the most modern hotel environment.

B) The question was asked whether the government was supporting hotel Colon because of its cultural heritage value. This is however not the case.

<b>Name of Hotel</b>	Hostal Colonial	<b>Age of the Hotel</b>	30 years old
<b>Name of Respondent</b>	Olga	<b>Type of Hotel</b>	Hostal
<b>Function</b>	Administrator	<b>Amount of Stars</b>	1
<b>Location</b>	Calle Junín Centric	<b>Type of Construction</b>	Colonial Style with a patio
<b>Rooms and their price</b>	15 Rooms, paying 40 (simple) and 60 Bs (double)		
<b>Additional Services</b>	Tourist information and launderette, breakfast, telephone, refrigerator, television		

#### Information about Tourists

At this moment, the hostel receives 40-50 persons per week. Seventy percent are tourists from which 80% tourists from abroad. Foreign tourists come mostly from Europe: England, France and Germany. Moreover, tourist from the United States and Israel are visiting the hotel. The Bolivian tourists come from departments like La Paz and Santa Cruz. The most tourists come to Cochabamba, according to the respondent, to see the Chapare region (Villa Tunari) and the various Inca sites in the neighbourhood: InkaRakay, Inkachaca etc. The tourists are visiting Cochabamba without an agency.

#### Information about Convent

The respondent was positive about the possibilities to make a hotel in the Convent. This hotel has to be tuned to backpackers being an inexpensive hotel (20-30 Bs). They have to be breakfast facilities however refrigerator, telephone and television are not necessary. The site should be a site where tourist can rest for 4-5 days. The hotel should have 10-15 rooms. The respondent made however a remark on her own proposal being that there are relatively little tourist who stay for 4-5 days to rest. She estimated that 30% of the tourist would do that.

<b>Name of Hotel</b>	Alojamiento Aroma	<b>Age of the Hotel</b>	40 years old 18 November 1963
<b>Name of Respondent</b>	Catalina	<b>Type of Hotel</b>	Alojamiento
<b>Function</b>	Owner	<b>Amount of Stars</b>	No
<b>Location</b>	Calle Aroma Centric	<b>Type of Construction</b>	Colonial Style, patio 120 years old
<b>Rooms and their price</b>	65 Rooms, paying 10 Bs per person		
<b>Additional Services</b>	Tourist information and launderette, Warm douches		

#### Information about Tourists

Daily 25 to 30 persons are visiting this hotel staying mostly for one day. More or less 10 percent of the visitors are tourists to other 90 percent are visiting because of negotiations or other work. Tourists are mainly foreigners only during holidays Bolivians are visiting.

#### Information about Convent

According to the respondent it is possible to make a hotel in the Convent when you focus on International tourists. However in times of festivities also Bolivian tourists can be counted on. It has to be a cheap hotel without stars like a simple hostel. In the province it is very important to have a restaurant for foreigners have no place or do not trust the places to eat. The respondent thinks that 30 beds would be sufficient. There have to be more tourist attractions in the area. At this moment it is difficult in tourism because of the tourist have fear for blockades and other political instability. It is very important to make good propaganda, for example in the countries of residence by the embassies<sup>17</sup>.

<sup>17</sup> At this moment the light fails in all of Cochabamba city (and other cities in Bolivia). The light of the candles was not sufficient to go on with this interview.

<b>Name of Hotel</b>	Hotel Portales	<b>Age of the Hotel</b>	16 years old
<b>Name of Respondent</b>	Martín Terrazas Granier	<b>Type of Hotel</b>	Hotel (part of a chain)
<b>Function</b>	Gerente de Ventas y Mercadeo	<b>Amount of Stars</b>	5
<b>Location</b>	Av. Pando No. 1271	<b>Type of Construction</b>	Colonial Style but new
<b>Rooms and their price</b>	11 Suites: 160\$ 10 Matrimonial bedrooms 87 Doubles: 77-95\$		
<b>Additional Services</b>	Tourist information and launderette, breakfast, telephone, refrigerator, television, 2 Restaurants, 2 Swimming pools, Conference room, Business Centre, Room service, Grand Salon (856m <sup>2</sup> ), Sauna, Sport facilities, Bird garden, Hairdresser		

### Information about Tourists

Sixty percent of the guests are guests who stay for their work and conventions; it is a hotel for businessman with a good earning. Twenty to twenty-five percent is tourism and the rest are other types of guests. From the tourist more or less half are foreigners. The respondent said that Santa Cruz is more an international tourist location. The reasons that tourist are visiting are bilateral relations, history, climate and it is cheap Cochabamba. Cochabamba is the center of traffic in Bolivia, has three different climates and landscapes and has a great part of traditional people speaking Quechua. The hotel has a capacity to receive 18.000 guests a year; they however receive approximately 9000 guests a year. This is in correspondence with the mentioned occupation rate of the hotel of 47-48 percent. The respondent gave as a reason for the low occupation that after the boom in 1996 to the numbers fell in 2000. Nowadays the hotel is too expensive because of its facilities. The respondent has the opinion that tourist have changed into one who needs a good room, well located but does not need much more. The visitors spent around the 30-50 percent on additional services. There is a linear relation between the length of stay and the percentage of additional expenditure.

### Information about Convent

The respondent sees good possibilities to make a hotel in the Convent. This hotel has got to be part of the Convent and its history. Comfort has to be stressed (good bed and temperature) but not luxurious, with little extra facilities. It has to be a place to rest, think and reflect. However the respondent mentioned that a museum about the regional culture could well accompany the hotel function. Furthermore the respondent said that conventions are a good deal at the moment. However you need a minimum of beds (170 beds per conference). The respondent found it important to define the strength of the product by describing its characteristics and with this definition begin tourist activity. You need information to arrive at Collpaciaco and convince the people of the wonderful tourist attraction that Arani and Collpaciaco are. Important actors are the press, tourist agencies and the receptive entrepreneurs. The respondent gave the example of the Jesuit Missions, Santa Cruz. They are located far away from the city but still tourist come. This because they are restored as new, they are lively and traditions can be seen, they are worth visiting therefore. The respondent stressed that a new tourist place usually does not have the capacity to invest. In development of a new idea the press are important furthermore you need a local operator, who is always there for the tourists.

<b>Name of Hotel</b>	Hotel Resort Hacienda De Kaluyo	<b>Age of the Hotel</b>	3 years old
<b>Name of Respondent</b>	Emilio Flores	<b>Type of Hotel</b>	Hotel
<b>Function</b>	Manager	<b>Amount of Stars</b>	5 stars
<b>Location</b>	In the neighborhood of Tarata	<b>Type of Construction</b>	Modern in form of hacienda
<b>Rooms and their price</b>	18 Rooms, paying 50\$ (simple), 60\$ (double) and 30\$ (triple) all these prices are per person		
<b>Additional Services</b>	Possibilities for seminars and weddings, swimming pool, sport-facilities, garden		

#### **Information about Tourists**

There are two periods with different amount of guests: winter and summer. Now, in the month of July (winter) some maximum of 55 per week are visiting the hotel. Furthermore during weekends convergences or weddings are organized which sometimes attract 500 men and women. Of the visitors 50 percent are tourists and the other 50 percent are guest staying there for business. 30 percent of the tourists are Bolivians (La Paz and Santa Cruz) and 20 percent are international tourists mainly from Europe (Spain, Sweden and Germany). The guests stay often for longer period of time, tourists for 1-15 days, businessman from 2-7 days. Tourists stay here to rest and spent the day on the terrain or walking in nature, businessman stay day and night in the resort. Nature is the most important attractiveness of the area, with its animals and climate.

#### **Information about Convent**

The respondent sees the Convent as a place to rest and meditate, not a place to work. He thinks that the tourists who go there are international tourists. Bolivians will go to other places in their holidays. They go in groups to places where there is more to see and do like the Chapare region. The most profitable hotel needs to be a combination of rest and work, for tourists and businessman. The advantage of a far away place is that the visitors of a conference will not have distraction and can concentrate for 100 percent on their work. A hotel with 3-4 stars must be sufficient for this function, not to expensive and not to cheap.

The respondent says that at this moment in the Cochabamba region little is expected from foreign tourism, because of different political problems in Cochabamba and Bolivia. One problem is the blockades, which are certainly a problem when the hotel is located far away from the city. The respondent thinks that when Bolivia would be more stable and in order more tourist would come to visit because Bolivia has a lot to offer for tourists. At this moment the respondent thinks that making a profitable hotel in the Convent is impossible. Nowadays lots of people are closing their hotels and restaurants in the region of Cochabamba. There is no demand for these facilities and the maintenance of these structures is too expensive to survive this period of less tourist activity.

# Appendix X: Photos of Convent and Surroundings



Photo 1: Main Facade

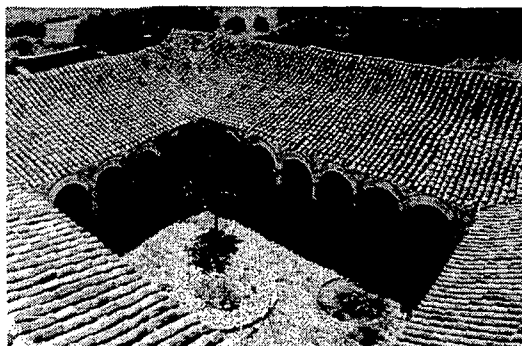


Photo 2: Main Courtyard

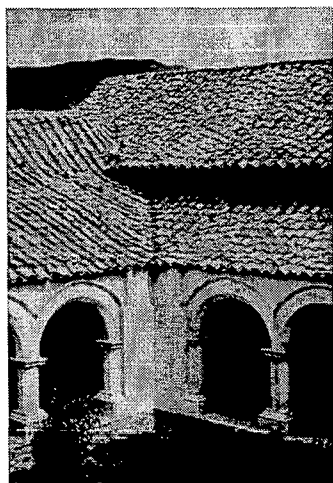


Photo 3: Detail Courtyard

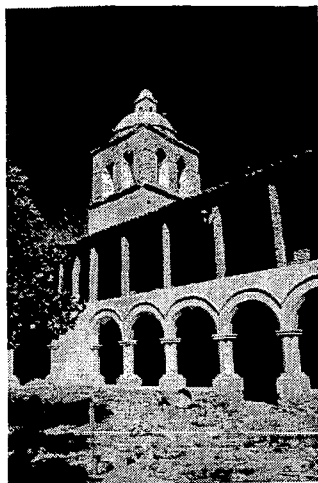


Photo 4: Tower



Photo 5: Archway

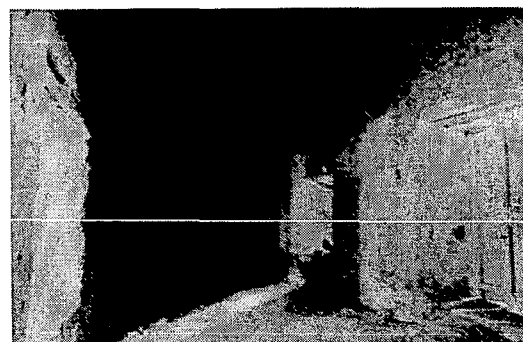


Photo 6: Room 1104

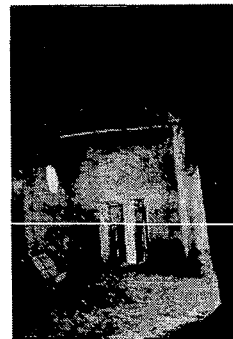


Photo 7: Room 1104

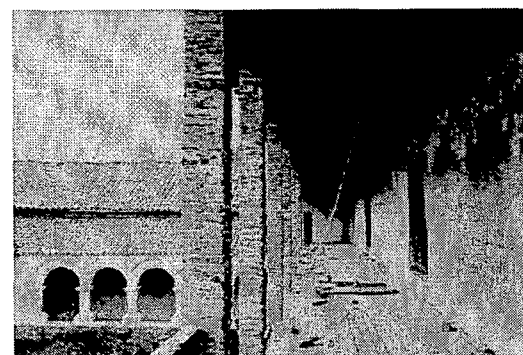


Photo 8: Passage Second Floor Main Courtyard



Photo 9: Collpaciaco from Tower

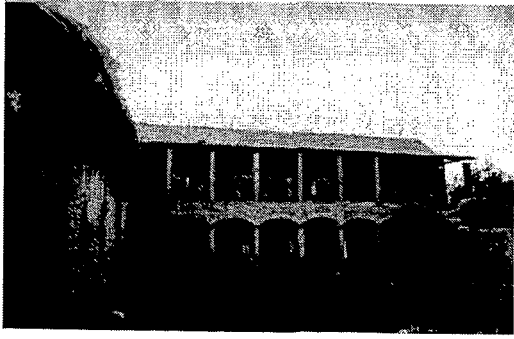


Photo 10: Second Courtyard



Photo 11: Ruins in Second Courtyard



Photo 12: Room 2104

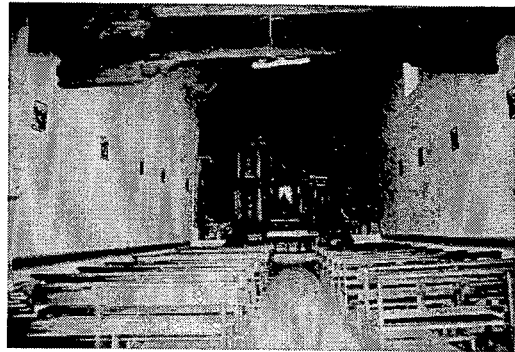


Photo 13: Interior of the Church



Photo 14: Southern Façade

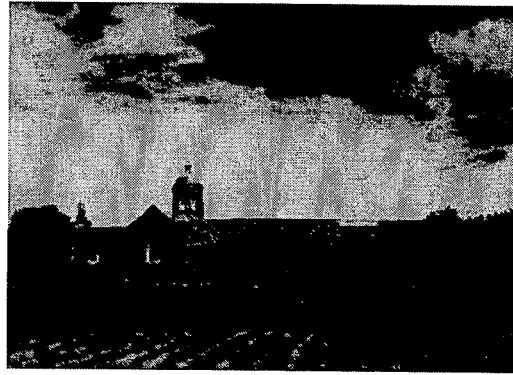


Photo 15: Eastern Façade



Photo 16: Entrance to Collpaciaco



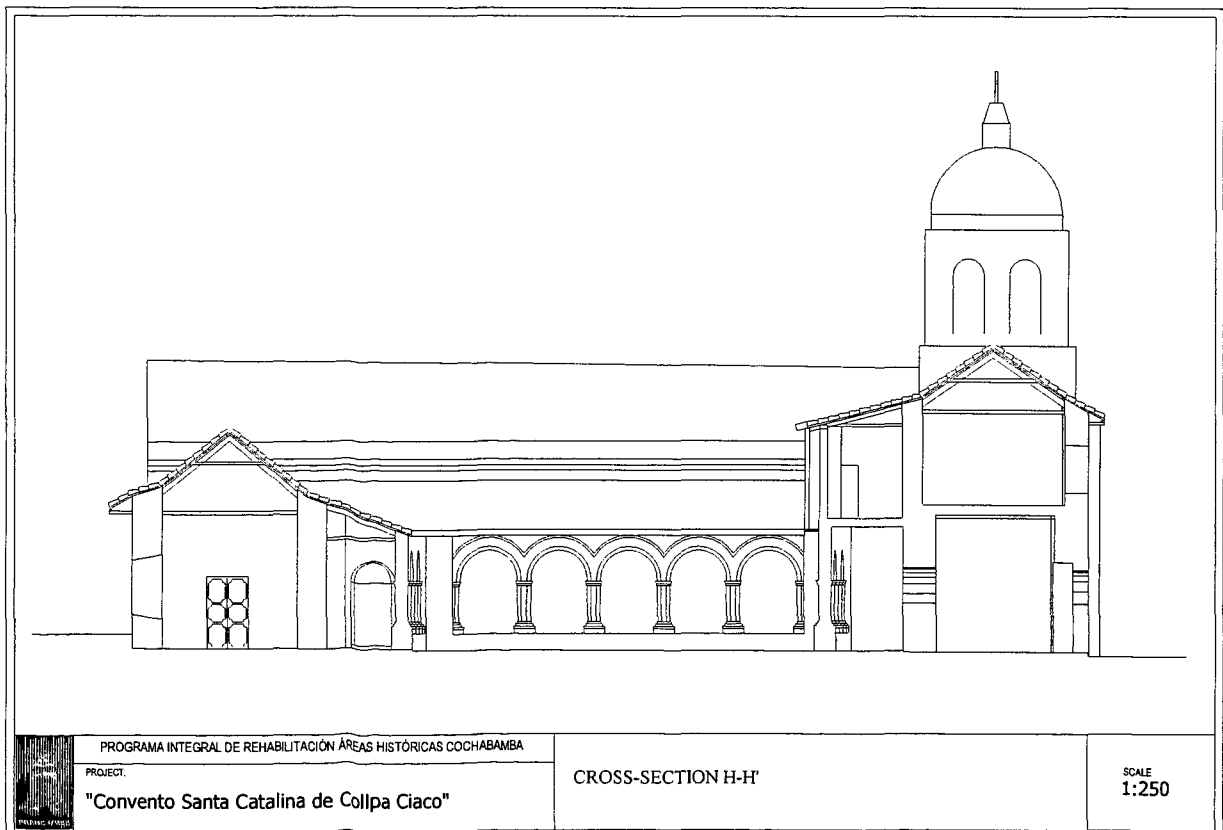
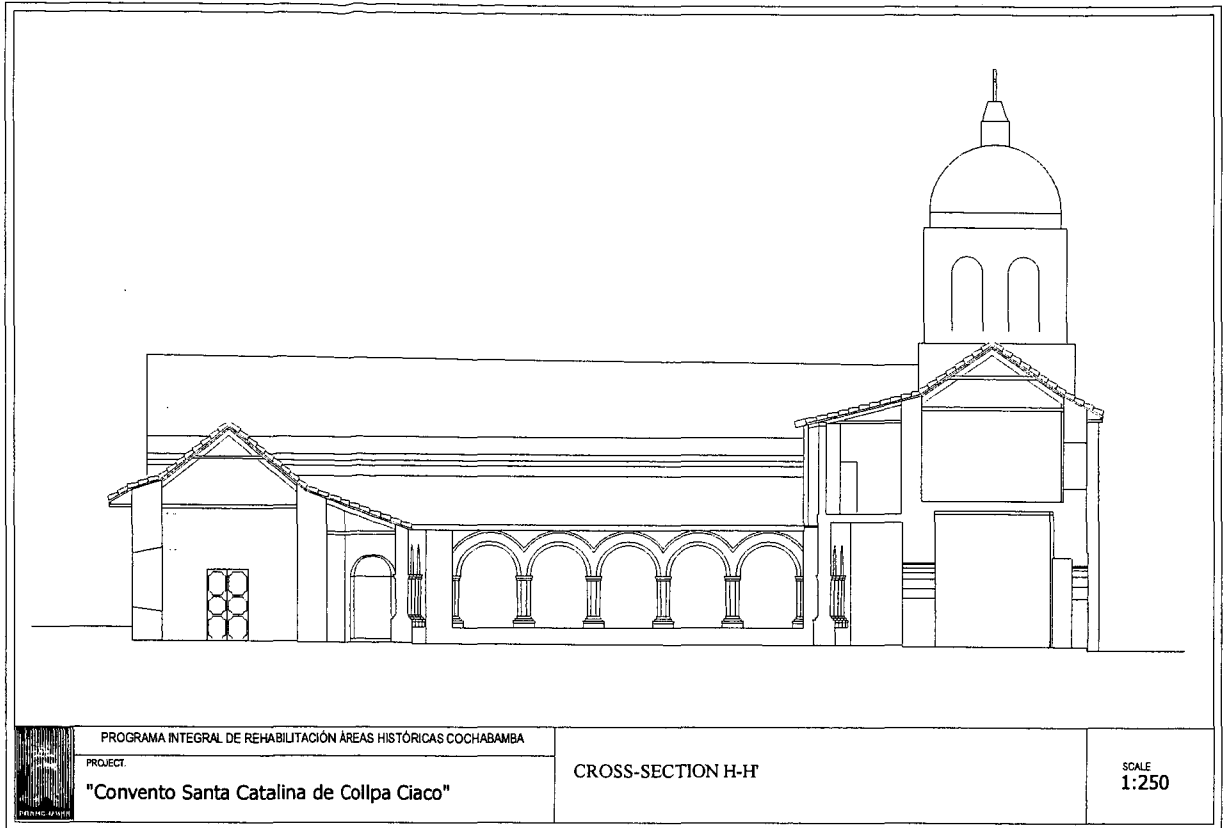
Photo 17: Convent from up the Hill

# Appendix XI: Floor and Window areas of Spaces

Place of the Room	Codification	Floor Area	Window area	Direction
First floor around main patio				
Main entrance	1001	14,1	-	-
Entrance to second patio	1007	14,1	-	-
Patio	1006	188,0	-	-
Corridors	1002-5	142,7	-	-
Rooms	1100 + 1101	22,4 + 17,1	1,64 + 1,52	West
	1102	28,6	4,62	North and Inside
	1103	24,8	1,53	North
	1104	41,3	2,09	East
	1105 + 1106	36,4 + 20,5	3,75 + 1,47	East
1111	19,3	2,73	West	
First floor around second patio				
Second entrance	1010	12,7	-	-
Patio	1011	288,6	-	-
Corridors	1009	27,3	-	-
Rooms	1113	16,9	1,77	West
	1114	31,7	1,89	West
	1115	17,3	Ruins	
	1116	30,4	Ruins	
	1117	21,5	Ruins	
Church				
Church	1107 + 1108	124,8	-	-
Chapel	1109	151	-	-
Second floor				
Corridor main patio	2001	51,1	-	-
Corridor second patio	2002	39,4	-	-
Rooms	2100	19,3	1,36	West
	2101	23,0	1,18	West
	2102 + 2103	15,7 + 26,1	1,99 + 1,16	West
	2104	19,9	1,41	West
	2105	34,0	1,41	West
	2106	25,0	2,44	West and North



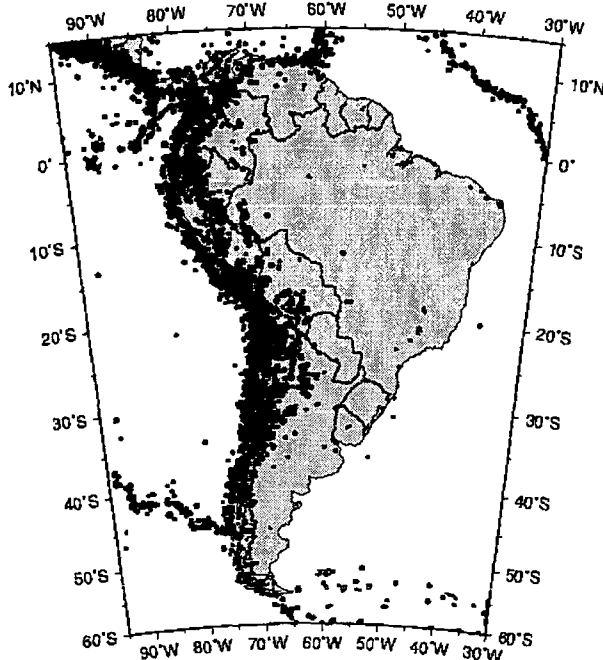
# Appendix XII: Cross-Sections H-H' and I-I'



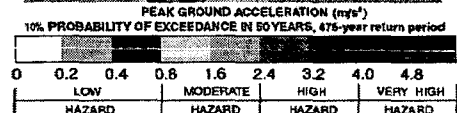
# Appendix XIII: Tectonic Activity and Building

## Tectonic Situation in South-America and Bolivia

The worldwide pattern of earthquake occurrences is well defined. Mostly earthquakes occur where tectonic deformations are taking place. This is mainly along the contacts of crustal plates on a global scale, or at the boundaries of mobile crustal blocks on a regional scale. In South-America the situation is as followed. It can be seen that the hazard for earthquakes in the region of Cochabamba is in the range moderate.



Seismic Activity in South America



Seismic Hazard in South America

## Requirements for a Seismic Resistant Building

The following theories are subtracted from the 'Geo-technical Earthquake Engineering Handbook' written by Day (2001) unless is indicated different. Three main factors can be defined which can have influence on the level of damage of a building after an earthquake.

- Earthquake characteristics
- Subsurface conditions
- Building characteristics

Below the different factors will be discussed.

### 1. Earthquake characteristics

Besides the strength of shaking, which is discussed in the previous chapter, the length of shaking is of importance. The length of shaking depends on how the fault breaks during the earthquake. The longer the ground shakes, the greater the potential for structural damage. In general the higher the magnitude of an earthquake the longer the duration of the shaking ground.

### 2. Subsurface conditions and foundation

The seismic loads developed in the upper-structure have to be transmitted into the foundation soil. It should be prevented that the foundation soil fails before the ultimate resistance of the structure is attained

### 3. Building Characteristics

When renovating an historic building there are limited possibilities for strengthening the structure against earthquakes, especially in the case of building configuration. The main structure already exists and cannot easily be altered because of cultural value, economic constraints etc. However changes in function of the building make it sometimes necessary to change the building configuration. In this chapter some basic principles are given which can be used as a first identification of technical opportunities and problems in the restoration process. Besides building configuration robustness, rigidity and foundation of the construction are of major importance. These factors will also be discussed. It should be kept in mind that strengthening individual structural elements is not enough. In case of seismic strengthening good performance of the whole structural system must be ensured. Therefore, both the lateral resistance of the structure and its ductility and energy dissipation capacity characteristics need to be verified (Tomažević, 1999).

#### *Structural Configuration*

Simple square or rectangular buildings perform better when subjected to seismic loads than those with other projections. It is not known which will be the main direction of ground motion during an expected seismic event. Therefore, the resisting elements should be designed to resist the seismic loads in both principal directions of the building. These elements should be distributed symmetrically along each principal axis in the plan, regarding both lateral stiffness and mass distribution. This will prevent possible torsion vibration. Torsion problems develop when the center of mass of the structure is not located at the center of its lateral resistance, which is also known as the center of rigidity. During an earthquake the center of mass will twist about the center of rigidity, causing torsion forces to be induced into the building frame.

#### *Structural Robustness*

A good connection of the walls to the floors is necessary to prevent out-of-plane vibration of the walls. This will cause their separation along vertical joints at the corners and wall intersections. Uncoupled vibration of separated walls during earthquake will reduce the resistance against lateral loads.

#### *Rigid floor diaphragm action*

The floors have to be rigid to ensure evenly distribution of lateral loads to the walls. To ensure this each floor should be situated in a single plane. Moreover the rigid behaviour should not be altered by discontinuities like stairways.

#### *Walls and wall openings*

Structural walls (which resist the horizontal loads resulting from seismic action) should have a minimum thickness of 300 mm in the case of not reinforced masonry. It is recommended that the distance between the structural walls should be limited depending on the structural system and seismic activity of the zone. However its structural stability should be verified by calculation taking into account vertical load-bearing capacity and out-of-plane bending.

Stress concentration takes place in the opening zones of walls. Therefore openings should be located in walls, which have smaller vertical loads. Moreover they should be located in the same vertical position and symmetrically in the plan.

#### *Non-structural elements*

Also non-structural elements should be taken care of for chimneys, ornaments and partition walls might cause casualties and structural damage during strong earthquakes.

#### *Maintenance*

Maintenance of adobe building is of importance; it is necessary to keep the construction dry.

## Appendix XIV: List of Theses Technology and Society

### **M.Sc. Theses in Technology and Development Studies: 2000**

- 00.01 Eric Lakerveld: Information and Performance. The role of Quality Information Systems in a multinational electronics company.
- 00.02 Martijn Vis: Assessment of the Possibilities to Utilize Large Solar Water Heaters for Industrial and Commercial Sectors in Thailand.
- 00.03 Amber Beermink: Vehicle/Pedestrian Traffic Conflicts. Appropriate Construction Technology for a Pedestrian Crossing at Kejetia, Kumasi, Ghana.
- 00.04 Pascal Vlieghe: Lake Pollution and Vulnerability of Fishing Communities. Mwanza Gulf of Lake Victoria, Tanzania.
- 00.05 Bart Frederiks: Assessment of Sustainable Means of Private Electricity Production. A case study at Katani Ltd., Tanzania.
- 00.06 Rolf Verlaan: Identification of the Opportunities for Sustainable Production of Energy from Biomass Residues in Swaziland.
- 00.07 Anne van Hoof: Maintenance and Utilisation of physical capacity at Ghana Textile Printing Co. Ltd.
- 00.08 Rob van der Werff: The Value of Technical Education. A Cost/Benefit Analysis of Technical education and other Subjects of Education in Tanzania.
- 00.09 John Brenters: Design and financial assessment of small scale sisal decortication technology in Tanzania.

### **M.Sc. Theses in Technology and Development Studies: 2001**

- 01.01 Piet Hein Breeuwsma: The Demand-led Approach to Vocational Skill Training: The Cosdec Programme Namibia.
- 01.02 Eduard J. Boonstra: Establishment of a Calcium-silicate unit Industry in Indonesia.
- 01.03 Arjan van Dal: Assessment of a more Sustainable Sanitation Technology System for a Harijan Community in India.
- 01.04 Benoit Chamuleau: Energy Efficient Low Cost Housing in South Africa.
- 01.05 Arnoud van Bemmelen: Energy Conservation Opportunities in Hotels in Costa Rica.
- 01.06 Herwich Hobbelen: Assessment of Domestic Liquid Waste Runoff, Dar es Salaam, Tanzania.
- 01.07 Sander Gelsing: Solar Home Systems in the Caprivi. Evaluation of the Technology Choice and the Implementation of Small-scale Electricity Technologies in rural Namibia.
- 01.08 Ilse Oosterlaken: Industry Study: Thai Building Material Industry (1960 - 2000) - "Opportunities for SMEs Producing Building Materials: Case of Northeast Thailand.
- 01.09 Joost Ossevoort: Systematic Assessment of Water Pollution in Ebríe Lagoon, Ivory Coast. Modelling eutrophication, followed by an inquiry into the causes and impacts of this phenomenon.
- 01.10 Jeroen Steman: Pre-feasibility Study on Centrifugal Pump Manufacturing in Zambia. An identification of feasible production technologies.

- 01.11 Krista Jansen: Future Supply and Demand for Petroleum Products in Indonesia; Challenges and Options for the Refining Sector.
- 01.12 Marieke de Ruijter de Wildt: The Searching Enterprise. Information Usage of Small Enterprises and Business Development Services. El Salvador.

**M.Sc. Theses in Technology and Development Studies: 2002**

- 02.01 Jeannette Klein: Water Pollution in the Accra-Tema Metropolitan Area. Sources and Impacts. Ghana.
- 02.02 Shila de Vries: Bamboo Construction Technology for Housing in Bangladesh. Opportunities and constraints of applying Latin American bamboo construction technologies for housing in selected rural villages of the Chittagong Hill Tracts, Bangladesh.
- 02.03 An Nguyen: The Introduction of Digital Terrestrial Television in Vietnam. An opportunity study.
- 02.04 Martijn Jonker: Building Technological Capabilities to Improve Performance. A case study of the paper industry in West Java, Indonesia.
- 02.05 Jeroen Nuijten: Sustaining the Basic Research Program of the International School of Photonics. Cochin, Kerala. India.
- 02.06 Brecht Mommen: Changes in the Basic Needs Situation due to Hydro-projects in Nepal. A case study of Kali Gandaki project.
- 02.07 Roy Vink: Assessment of Impacts of Hydro-project Balsa Superior on Economic Activities in the Canton San Ramón de Alajuela, Costa Rica.
- 02.08 Svend Minderhoud: Technological Performance in Indonesian Paper Industry. A case study.
- 02.09 Mirjam Pronk: Sustainable Building Systems for Low-cost Housing in Guayaquil, Ecuador.
- 02.10 Thijs Gilde: "Save Water"- An assessment of the major causes of non-revenue water in the drinking water distribution system of SEMAPA in Cochabamba, Bolivia.
- 02.11 Mark van Stiphout: What are the costs of wetland pollution? Integrating the environmental effect chain and the total economic value for a coastal wetland in Ghana.
- 02.12 Rick Boellaard: Op weg naar ontwikkeling. CFAR-Kasangulu, Zaïre.
- 02.13 Petra Hofman: The effects of the Formalization of Urban Informal Property on the Quality of low-income Housing in Lima, Perú. Problems and Solutions.
- 02.14 Issmail Nnafie: Internet cafés in Dar es Salaam: Problems and Opportunities. Recommendations for e Think Tank Tanzania.
- 02.15 Loek Daemen: The Socio-Economic Effects of Road Maintenance in Iringa Rural and Mufindi Districts, Tanzania. An explorative case study into the input-functions for the calculation of maintainable core-networks.
- 02.16 Christian Rademaker: Anti-Seismic Information Transfer. Assessment of a more appropriate information transfer method for implementing anti-seismic construction solutions in El Salvador.

### **M.Sc. Theses in Technology and Development Studies: 2003**

- 03.01 Maartje van Dalen: Role and Performance of the Indonesian Construction Sector.
- 03.02 Wouter Zegwaard: Distance Learning Solutions to Bottlenecks in Indonesian Education.
- 03.03 Dennis Bours: The dissemination of amorphous solar PV panels for rural households in the Manaus region, Amazonas, Brasil.
- 03.04 Henri Heine: Cleaner Production in Industry: Measurement of the total energy saving potential and cost saving potential of small and medium enterprises in the plastic industry in Santiago, Chile.
- 03.05 Ursula Kirchholtes: The important Crops of Andalusia in relation to Super Absorbent Polymers. Spain.
- 03.06 Carin Bouwman: Wrestling with Development: "Arriving where we started?" A structured overview and analysis of 177 TDS MSc research projects in developing countries: their characteristics, goals and development relevance.
- 03.07 Ellen Geurts: South African development plans and the performance of South African construction industry: Constraints of small emerging contractors in the city of Tshwane.
- 03.08 Bram Saeijs: Science Parks in South Africa: Characteristics and Analysis of Success Factors. A preliminary method for potential success ranking of science parks.
- 03.09 Saskia Dalman: Measurement of sustainability of primary schools in rural areas in South Africa. Development of a tool to measure the sustainability of the Thulani Primary school, Limpopo Province, South Africa.

If you would like to receive a copy of one of the above indicated M.Sc. theses, please contact:

#### **Department of Technology and Development Studies**

Eindhoven University of Technology

M.Sc. research co-ordinator

Mrs Dr.Ir. E.L.C. Van Egmond

DG 1.02

PO Box 513

5600 MB Eindhoven

The Netherlands