Reconstruction after a programmed disaster. The construction of a dam: Zuri and Cantalupo Ligure, Italy

Prerequisites for Post-Disaster Regeneration of Historic Cities

Judith Ryser
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Editors

Silk Cities

Silk Cities is an independent professional and academic initiative for knowledge exchange, research, engagement and raising awareness on under-explored contextual and global challenges and opportunities. Its initial geographic focus was on those countries along the Silk Roads in the Middle East and Central Asia. This region is the home of long lasting urbanism and civilisations, therefore enjoys rich tangible and intangible heritage built over millenniums and centuries of history. However, the region also suffers from contextual and global challenges affecting societies and cities. Additionally, it has suffered from a variety of destructive incidents especially in recent decades, ranging from natural hazards to human induced origins, from earthquakes to wars.

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Prerequisites for Post-Disaster Regeneration of Historic Cities
E-book edited by Ryser, J., Arefian, F.F., 2021, Silk Cities

Urban Heritage Along the Silk Roads
Book edited by Arefian F.F., and Moeini S.H.I., 2019, Springer

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Book edited by Arefian F.F. and Moeini S.H.I., 2016, Springer

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Preface

Post-disaster reconstruction, disaster management, risk reduction and urban resilience form important themes of Silk Cities activities as the initial geographic focus of Silk Cities is the Middle East and Central Asia which during recent decades have suffered a variety of destructive incidents, ranging from natural hazards to conflicts and wars. This is also linked to my personal practice-based experience. My four years of working with reconstruction stakeholders including disaster-affected families during post-disaster urban reconstruction in the historic city of Bam, a world heritage site, triggered my doctoral study and further research and academic activities on the subject matter at international level. This experience was influential in founding Silk Cities.

Post-crisis city recovery is multidimensional and post-disaster reconstruction is a manifestation of physical recovery that should facilitate other kinds of recovery, including psychological, social and economic recovery and enhance future resilience of residents. Nevertheless, even in normal situations cities are complex mega-systems and managing them in historic contexts is even more complex as it also connects with collective memory and layers of history underneath tangible and intangible urban aspects. Dealing with disasters in such contexts significantly intensifies complexities and requires understanding layers of complexities from disaster management, urban development and heritage perspectives, their overlapping areas, stakeholders and practical consequences in the field, especially when working with disaster-affected locals.

There is a need for multi-perspective and multidisciplinary examinations of cases, listening to different voices and trying new approaches and tools. This publication aims to contribute to such explorations by bringing together different disciplines and standpoints. It is the first self-published and open access e-publication by Silk Cities and represents another milestone in its journey.

As acknowledged separately, chapters are based on peer reviewed and updated revisions of a selection of papers presented at the 3rd Silk Cities international conference. Silk Cities 2019, entitled: Reconstruction, recovery and resilience of historic cities and societies, held at University of L'Aquila, 10-12 July 2019. The idea of holding the third Silk Cities international conference on historic cities suffering destructive disasters emerged from the 2nd Silk Cities conference in 2017, hosted by the Bartlett Development Planning Unit (DPU) at University College London (UCL) in

2017. The focus of Silk Cities 2017 was on reconnecting population with urban heritage in the Middle East and Central Asia that included a theme on post-disaster reconstruction. During and after the related thematic sessions at the second conference the need for further discussions and more in-depth attention to this urgent matter was highlighted. Soon after, I first visited L'Aquila in 2018, nine years after the 2009 earthquake, and heard the testimony of the city's disaster-affected residents. It was a clear case that, when disaster occurs, it is the city and its residents who bear the consequences of insufficient attention paid to complexities of organising urban reconstruction and to their role in the multidisciplinary aspects of city recovery. Given the specific nature of the conference subject and the fact that L'Aquila, like many disaster-hit cities in the Middle East and Central Asia, enjoyed a rich history of urban life and heritage it made sense to take the conference there.

The large geographical coverage of the papers presented at the conference portrays the subject matter as a global challenge, for which this e-publication together with the Silk Cities printed book on historic cities in the face of disasters (published by Springer in 2021) act as frontiers. Aligned with Silk Cities strategy, they are forward looking and aim to set new directions and to initiate new discussions. Directions set out in this publication can be traced further in the printed book.

What next?

Under normal circumstances we would have been preparing our 4th international conference, but nothing has been predictable nor normal in 2020 and 2021 so far. Confronted by a global health crisis the challenges the global community had to face because of Covid-19 tested the resilience of us all. With social distancing in place and cautionary measures likely even after successful vaccinations Silk Cities moved toward digital tools. "Urban Talks" around new directions and critical thinking on our cities in the context of a global pandemic and beyond is one example.

Silk Cities continues to engage with both younger and experienced generations of academics and practitioners and the public who care for and have experience in dealing with real life urban matters of cities of concern.

Hope you enjoy the book!

Dr. Fatemeh Farnaz Arefian

Fig.I Geographic coverage of this publication - global level (created by Maria Diez, Fundacion Metropoli)

Fig.II Geographic coverage of this publication - Italy (created by Maria Diez, Fundacion Metropoli)

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Preparing a peer-reviewed e-publication during a global pandemic requires collective dedication. The editors therefore are grateful to Nafiseh Irani and Ali Puya Khani our colleagues at Silk Cities, Maria Diez, and all the authors for their commitment to the project, patience, and flexibility to pursue it as it was envisioned. Thanks all who made this publication possible in a challenging period of "Work-from-home".

Chapters of this e-publication are based on peer reviewed and updated revisions of a selection of papers presented at the third Silk Cities international conference, Silk Cities 2019, entitled: Reconstruction, recovery and resilience of historic cities and societies. It was held at the University of L'Aquila, 10-12 July 2019. Initiated by Silk Cities, the conference was organised by Silk Cities, University of L'Aquila and University College London (UCL). Organising conferences is a collective effort and this conference enjoyed support and contribution of the conference conveners, strategic advisors, and the scientific committee which reviewed papers for the conference and provided feedback, also as guest speakers. They are acknowledged in alphabetic order: Prof. David Alexander, University College London, UK; Dr. Fatemeh Farnaz Arefian, University of Newcastle, Silk Cities & University College London, Singapore, UK; Prof. Yves Cabannes, Emeritus Professor in Development Planning, Portugal, UK; Prof. Lina Calandra, University of L'Aquila, Italy; Prof. Simonetta Ciranna, University of L'Aquila, Italy; Prof. Julio D Davila, University College London, UK; Dr. Donato Di Ludovico, University of L'Aquila, Italy; Prof. Alireza Fallahi, Shahid Beheshti University (SBU), Iran; Arch. Barnaby Gunning, Independent, UK; Mr. Arif Hassan, Independent, Pakistan; Prof. Andrew Hopkins, University of L'Aquila, Italy; Prof. Paola Inverardi, University of L'Aquila, Italy; Prof. Cassidy Johnson, University College London, UK; Prof. Hidehiko Kanegae, Ritsumeikan University, Japan; Dr Alexy Karenowska, University of Oxford, UK; Prof. Ramin Keivani, Oxford Brookes University, UK; Prof. Jamie MacKee, University of Newcastle, Australia; Dr. Roger Michel, The Institute for Digital Archaeology, UK; Dr. Iradj Moeini, Shahid Beheshti University (SBU), Iran; Mr. Babar Mumtaz, DPU Associates, Pakistan; Dr. Florian Mussgnug University College London, UK; Prof. Antonella Nuzzaci, University of L'Aquila, Italy; Dr. Richard Oloruntoba, University of Newcastle, Australia; Dr. Lucia Patrizio Gunning, University College London UK; Prof. Paola Rizzi, University of L'Aquila, Italy; Prof. Salvatore Russo, Iuav University of Venice, Italy; Ms. Judith Ryser, ISOCARP and Fundacion Metropoli, UK; Prof. Antonello Salvatori, University of L'Aquila, Italy; Ms. Anna Soave, DPU Associate, UN-Habitat Iraq Programme, Iraq; Prof. Alessandro Vaccarelli, University of L'Aquila, Italy; Prof. Suzanne Jane Wilkinson, University of Auckland, New Zealand.

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Reconstruction after a programmed disaster

The construction of a dam: Zuri and Cantalupo Ligure, Italy

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Abstract

In this chapter we present two case studies of the research "The 'Osso' of Italy" of submerged settlements: restoration, reconstruction and translation of memories. The main objective is an in-depth and comprehensive study of submerged settlements as consequence of the construction of water reservoirs. These operations which took place mostly between the 1930s and the 1950s, common in Italy and Spain, triggered three phenomena: the disappearance of villages and their rediscovery for tourism purposes; the construction of new population centres with the related problem of the production of memories; and the translation of memories of buildings dismounted before their submersion into new buildings, or parts of them. These two cases are related because the first one, the submersion of the village of Zuri in Sardinia in the early 1920s seems to have become a model of reconstruction for other cases in Italy, while the second one, the Cantalupo Ligure (Alessandria) case, was finally not carried out.

The "planned" disaster which represents the construction of a dam is a good opportunity to analyse the reconstruction plans which involved the population historically and which at present constitutes an opportunity to reflect on the needs of the population when their homes are about to disappear. It enables us also to reflect on the topic of "collective memory" in order to build new concepts through which to analyse and design very contemporary fields of study, themes and topics, such as those related to villages in areas with high seismic risk or hydro-geological instability.

Keywords: Reconstruction, Dam, Urban-planning, Zuri and Cantalupo Ligure, Italy

5.1 Disaster, abandonment and re-foundation: research about submerged villages

"The disaster ruins everything, all the way leaving everything intact" (Blanchot, 1986, p. 1). The disaster, says Blanchot, "means being separated from the star" (p. 2), so it means not to be under the asters. It means leaving every reference system, go out from every order, from every measure, from every possible reference colocation in space. The disaster disrupts living, not only because it destroys the things that men have to cure and defend; not only because it destroys the things that men have to construct, but because it denies men to measure themselves with divinity, denies them to live poetically, as says Heidegger . The disaster seems to mute people, but, we think, in the philosophy of Heidegger (2018) it is possible to find a way out: the central role of remembrance thinking (Andenken), tracing remembrance that is a characteristic role of architecture. Indeed, remembrance thinking could be of extreme importance when the disaster prevents us from looking at the sky or, even worse, when we are obliged to leave the places we know to go somewhere else from which we will see another sky, other asters that we do not know. Destruction upsets the memory but at the same time it turns on the desire for excavations, for discovery, for study that unsettles places, thereby increasing memory storage. After a disaster, in particular after the abandonment of a loved place, people rebuild their present not only in view of the future, but they re-find, re-write their past, they reinvent – in an etymological sense – their memory.

The disaster, then, becomes the germ for the re-foundation, for a current situation of intense debate on the reconstruction of entire settlements due to various natural disasters such as earthquakes, tsunamis or floods which unfortunately are expected to be more and more frequent due to the undeniable climate change. Perhaps a research path to carry out future reconstruction proposals is to look to the past.

Spain and Italy, due to their particular orography and climatology and a series of political circumstances which happened during the 20th century, became two leading nations in the construction of dams for the production of electricity and irrigation water. The construction of dams was justified by the process of industrialisation of cities and increasing demands of electrical energy and water for irrigation. However, we must not forget that these phenomena were mainly linked to the fascist regime of Mussolini and its development policies in Italy until the end of World War II and later and, unquestionably, to the Franco regime in Spain which saw in the construction of dams one of its greatest economic and infrastructural achievements. In these political contexts, the true impact of these actions was in many cases silenced and even masked by the news of the press that extolled the sacrifice of the inhabitants of these places for the common good and the progress of the country.

Many villages disappeared completely under water which led to the construction of new population centres with buildings and structures that replicated not only the external appearance of these lost villages and ancient buildings, but also in some cases their former topographic placements. In respect to the villages, empty or consolidated as ruins, the citizens that were forced to leave remained nevertheless linked to these places. Many of these populations came back periodically to maintain some traditions or rites. This occurred to the populations whose villages had been submerged. They

came back when the increasingly frequent periods of drought exposed their homes. All these phenomena tell us about a relationship between dwelling and the earth itself, the one they were once physically attached to, and with which these dwellers have still a connection, even if that earth no longer exists as they knew it as it was submerged and disappeared. This situation allows us to ask ourselves to what extent dwelling is related to the earth itself and how it is possible to maintain this link, especially when it is physically broken. This reflection can help to find the roots for the reconstruction project of destroyed areas as a result of war or natural disasters, such as earthquakes. In this respect we think that it is possible to take as an example another kind of disaster, in this case programmed, such as the construction of dams. Such a situation does not allow to return ever again to "that" earth; historically, however, as we have seen, people have tried to maintain a link, in order to relieve their trauma.

Looking afresh at this part of the history of Italy and Spain, still only little analysed from an architectural point of view, enables us to understand that the construction of a dam, due to its natural, but especially social, implications when it comes to the submersion of a population, can be compared to a disaster, albeit a "programmed" disaster. In relation to the reconstruction of the new settlements such "programming" sometimes led to a broader reflection on what was the best option to relocate families and, in some cases, even let the reconstruction be negotiated with the inhabitants.

According to the general conclusions of the studies by Fujikura and Nakayama (Fujikura and Nakayama, 2019) livelihood reconstruction for re-settlers resulted in failure due to lack of, or poor resettlement plans for many dam construction projects. They point out that the World Commission on Dams (WCD) conducted comprehensive comparative studies of 125 existing large dams and intensive studies of eight dams. It published a report in 2000 with recommendations for dam development. However, the recommendations were not adopted by the World Bank and were rejected by some Asian countries such as India and Nepal. The WCD, therefore, failed to establish widely accepted norms for dam development. The Asian Development Bank (ADB) announced its Safeguard Policy Statement in 2009. This includes safeguard requirements for involuntary resettlement, including criteria for compensation and land acquisition which are based on purely economic aspects. They also state that it will be difficult 'to mitigate the attachment of re-settlers to the submerged land', without however offering any solution to solve this situation that is repeated in all cases of resettlement due to a dam construction.

These general studies and conclusions provide a very valid intellectual framework to act on economic development strategies. However, as De Wet (De Wet, 2005) points out, in the cases "where social, spatial, economic and political relations are intimately intertwined, where resources have multiple uses and meanings and where livelihoods are multi-stranded, complexity is not simply an aesthetic or intellectual value- it is the key to socio-economic viability and sustainability- and to overlook that complexity is to undermine the basis of both livelihood and community". This idea is shared by Cernea (Cernea, 2009) who argues that the magnitude of the combined material and non-material impoverishment risks and losses experienced by the re-settlers exceeds the redeeming powers of narrow compensation-centred solutions offered by conventional economics. He identifies a structural incongruity in policies which define their goals as improving or restoring the livelihoods of re-settlers and rely only on compensation as

virtually the sole means for achieving either of these goals. De Wet also states that for reasons of efficiency and cost-effectiveness, planners are predisposed to simplify this complexity to manageable dimensions, which often leads to skimming over the top of insider complexities and ambiguities, and at worst, getting them fundamentally wrong.

Therefore, the study of these historical cases permits us to go through these processes with hindsight perspective in trying to analyse what happened and to draw some conclusions that could enable us to design future strategies for the reconstruction of other settlements after un-programmed disasters. In particular, in the study of the two Italian cases presented below, we are analysing the repetition of the same model of reconstruction and the contradictions that this repetition implies.

5.2 First case study: Zuri, Sardinia, Italy

The modestly inhabited area of Zuri in Sardinia, Italy with about 200 inhabitants in 1923, became one of the first known cases of an entire submersion of a village for the construction of a dam in Europe. Furthermore, due to the presence of a magnificent church, San Pietro di Zuri, a Romanic-Lombard construction of the thirteenth century, Zuri offers the occasion to study one of the first monuments dismantled and moved to another place caused by the construction of a dam. Fortunately, a lot of documentation about the process is preserved. On the one hand, the hydroelectric company itself financed a book on the transfer of the church, published in 1926 and written by Carlo Aru, the architect in charge of the process. On the other hand, the work of Lucia Putzu, "Angelo Omodeo e l'isola delle acque. Un archivio racconta" (Angelo Omodeo and the island of waters; an archive tells) (Putzu, 2008), has widely analysed the archive of Angelo Omodeo, engineer in charge of construction of the dam. In addition to this, several local researchers published different studies that enable us to trace the whole submersion and reconstruction process of the settlement.

Zuri was located in the province of Oristano. The construction works of the dam of Santa Chiara, by the barrage of the river Tirso were carried out from 1917 to 1924. The engineer who directed the works was Angelo Omodeo, whose name was given to the artificial lake created as a result of the construction of the dam. The hydroelectric company responsible for the construction was Società Imprese Idrauliche ed Elettriche del Tirso (SIIE) (Tirso Hydraulic and Electric Companies, SIIE).

Zuri, being in proximity of the river Tirso at an altitude between 85 and 105 meters above sea level, was destined to be submerged by the new basin, because the water level, with the reservoir at full capacity, would have reached the altitude of 109 meters above sea level. In order not to invade the inhabited area of Zuri nor to submerge its church of San Pietro, it would have been necessary to reduce the height of the dam by 21 meters. This would have reduced the capacity of the basin and the consequent benefits by more than half. (Deriu and Chessa, 2015).

It is clear that, considering all the expectations related to the realisation of the work, at that time the biggest in Europe, the appeals to the Government made by the inhabitants of Zuri to save their village, were not taken into consideration. Regarding to the transposition of the church, as Carlo Aru explains (Aru, 1926), the first problem to solve was, obviously, to decide where to reconstruct the new village. When he started to plan the

transposition of the church, SIIE had already chosen to move the settlement not far from the original village on the same slope in the locality of Seddargious that presented the best conditions for the purpose. In the concession regulations (art. 11, chapter II) (Deriu and Chessa, 2015), it was established that the village of Zuri should be reconstructed in a suitable location located on a higher altitude than the lake at the expense of the concessionaire, the hydroelectric company, after consultation with the local governmental authorities according to the laws in force. Aru explains that the construction company explored two possible solutions with the inhabitants: aggregating them into a neighbouring municipality – this solution was discarded from the beginning - or choosing a new locality that would host the new village, "Zuri Nuova". The second solution provided two possible locations. One was the Fenughera locality, included in the territory of Zuri, nearer to the existing village, on the same slope as Aru pointed out; the other one was the locality called Murreddu, which is part of both the municipality of Soddì and that of Boroneddu.

On July 1920 a municipal council was choosing the locality for the reconstruction. It was possible to express the preference for the two sites designated for the possible location of the village in a vote. With a majority of 40 votes against 11 the voters expressed their own preference for the site of Murreddu, over that of Fenughera. In 1920, SIIE had therefore purchased land in the locality of Murreddu, located between the municipalities of Boroneddu and Soddì, to build the houses of Zuri Nuova. In addition to the reconstruction of healthier and more hygienic houses than the existing ones, the SIIE Company would have provided, at its own expense and with its own means, the transport of all the furniture, household goods and agricultural implements from ancient Zuri to the new houses.

The reconstruction project of the village by SIIE provided the arrangement of two water sources, already existing in the locality of Murreddu, to be used for public washhouses, as well as the repair of a source for potable use, with a rainwater collection tank. These springs would become the property of the municipality of Zuri. Additional commitments of the SIIE were: the arrangement of the internal roads and the access to the neighbouring municipality of Soddì; the arrangement of a carriage road from the locality of Murreddu that would take to the provincial road Ghilarza-Neoneli and from there to the built-up area of Borneddu; the construction of the road that would lead from the remaining town of Zuri Antica to Zuri Nuova; the construction of the Municipal Town Hall and the Monte Granatico, the transport of the church of San Pietro and, finally, the construction of a cemetery, with the annexed chapel dedicated to Santa Barbara, in places still to be identified.

Regarding the reconstruction of the church, Aru wrote that the main objective was not to alter the environment surrounding the monument or the "point of view" from which it could be observed (Aru, 1926). It was also important for him to keep the church close to the population of Zuri "whose inhabitants had seen their ancient village and its territory submerged on behalf of a superior and essential requirement of civility" (Aru, 1926, p. 67). According to Aru, it was about conserving an almost unchanged image of the *'natio loco* (original location) (Aru, 1926, p. 68). He stressed the difficulty of solving the problem of relocation since "every inhabitant had to assert his project. It seemed that every family wanted the church on their doorstep" (ibid).

The project of the new village foresaw a radial plan organised around a rhomboidal square of 1500 square meters. Eight radial streets that originate from the square crossed the village. The square seemed to be the most obvious place where the ancient church could be relocated. Although this solution represented a conciliatory way among the different opinions, Aru was opposed outright. According to his opinion, the monument would have been completely sacrificed among the narrow circle of the ordinary houses, both from a generically picturesque and from a specifically perspective point of view. Therefore, at last Aru decided to locate the church along the border of the village and to orient the façade perpendicularly to the axis of one of the streets. He chose this street because it presented a slight slope rising from the square towards the outside of the village. With this new solution, the façade remained visible from the square and from many points of the vast plateau of Campeda. It was possible to have different points of view of the church especially approaching from the road to Soddi. In the ancient village the church had the same relationship with the main street and the altimetry. Therefore, the new plan repeated a specific visual relation between monument and settlement despite the different general setting.

The criterion of looking for the best views for the reconstruction of the monument was very much in line with the ideas of the monumental restoration of the time that was reflected later in the Charter of Athens. "The Conference recommends that, in the construction of buildings, the character and external aspect of the cities in which they are to be erected should be respected, especially in the neighbourhood of ancient monuments, where the surroundings should be given special consideration. Even certain groupings and certain particularly picturesque perspective treatment should be preserved" (Athens Charter, 1931). Furthermore, during the reconstruction by anastylosis, Carlo Aru practiced a stylistic restoration of the church, according to the tendencies of the time and he eliminated non-original parts in order to purify the Romanesque aspect of the church.

According to Pilar García Cuetos (García Cuetos, 2014) the same kind of restorative interventions occurred during the transposition of the church of San Pedro de la Nave in Zamora, Spain, for the construction of a dam between1926 and 1928. This was another example of stylistic restoration undertaken at the occasion of the transfer. In analogy with the case of Zuri, we can find different news in the press of that time on the reconstruction of San Pedro de la Nave about the controversy that characterised the decision on its location and the desire of the inhabitants to have the church close to their homes.

As a consequence of the desire of the Zuri population the plan of the new village presented a very particular distribution. It had a square plan, whose main axis was one of the diagonals that presented an almost perfect north-south orientation. The rest of the village was divided by the other east-west diagonal and by two other perpendicular streets that crossed the entire settlement. As a result, houses - with patio inside – were organised in triangular blocks with their façades along one of the eight streets that configured the village and that originated from the central square. The new houses, one-story buildings with stone facades and gabled ceramic tile roofs, had a similar aspect to the pre-existing ones, as we can see in the photographs contained in Aru's book.

5.3 Second case study: Cantalupo Ligure, Albera Ligure and Roccheta Ligure, Piedmont, Italy

The case of Zuri - widely studied as we pointed out - enabled us to establish a possible parallel between the reconstruction of the Sardinian village and the preliminary projects that we had found for the reconstruction of a village due to the submersion

of three villages in Piedmont. That led us to think that the case of Zuri was employed as a model for the reconstructions that were carried out thereafter in those cases. The projects we had analysed are conserved in the Enel Archive in Naples (Occelli, Ruiz, 2019). Although this dam was not built, and therefore the villages were not submerged, the documentation collected in the archive enabled us to go through the entire process planned for the attempted realisation of this project. This fact is extremely important because during our research we verified how these stories, generally controversial because of their social relapse had been mostly silenced, and it is very difficult or almost impossible to find information about such projects. Perhaps because this was not built, we can affirm that it is one of the best-documented processes of those studied so far. The project is conserved under the signature F 751-752 250 BORBERA. Edison Society of Milan, construction management of hydroelectric facilities.

In the folder referring to this project the following different types of documents were included. The document of "Expropriations and reconstructions, General considerations" written by the engineer Alberto Bordini (budget specialist and professor of Estimo at the Polytechnic of Turin), and signed in Chiavenna (Sondrio, Lombardy) on 20 December 1931 for the hydroelectric company Società Elettrica Interregionale Cisalpina (Cisalpina Interregional Electricity Company). In the eleven pages of the document Bordini explained the 'animus' that was to follow the expropriation process and the difficulties that it entailed. This document has a marked economic nature, maybe because it aimed to optimise the reconstruction solutions of the new villages caused by the preliminary calculations for the construction of the dam. Indeed, these calculations demonstrated that this dam would not have yielded sufficient income from the sale of electricity to deal with the flooding and subsequent reconstruction of the three affected villages: Rocchetta Ligure (898 inhabitants), Albera Ligure (846 inhabitants) and Cantalupo Ligure (1315 inhabitants), as well as their different fractions: Pertuso, Colonne, Arborelle, Besante, Carraro, Strappesese, S. Nazzaro, Pagliaro inferiore, Astrata, S. Martino and Spinola.

In the same document, some considerations are very interesting for reflecting upon the reconstruction. One of them was the difficulty of assigning the new houses to the inhabitants of these places. Different solutions were proposed. One of these was a draw, but it was objected that the houses could be subsequently submitted to possible exchanges and payments among those affected who would like to change the assigned houses. Therefore, another solution was proposed: an auction starting with the best houses. The houses for which no one made offers would then be assigned to people who had made no offers. The same document indicated that the benefits derived from the sale of the best houses would have been destined to "some pious works in the place", such as a small hospital, a school or others.

Also indicated was the convenience of establishing three housing typologies to be manufactured in series to reduce costs. A survey of all the houses of the ancient villages was carried out to define three categories based on the number of rooms and other functional features. Each of these new typologies was to respond to the characteristics of the best existing house in each of the established categories. The same document also indicated the possibility that the interested parties could build their own house on land assigned to them in the land use plan, under condition that the old house would be demolished, by the authorities, even before the completion of the construction work of the dam.

The study we were analysing already reflected the problem that probably led to the failure of the operation. It was most certainly the insufficient hydroelectric revenue com-

pared to the enormous construction costs of the reservoir and the costs of expropriation and reconstruction which were increased by the revaluation of the lira that occurred in those years.

The file conserved at the archive of Naples contains all the minutes of the meetings between the consortiums of owners, the entities interested in the construction of the dam, the Province of Alessandria, the mayors of the affected municipalities and the hydroelectric company. In addition to these documents, we found several budgets and calculations of expropriation and reconstruction costs, modified successively during progress of the negotiations carried out at the meetings with the different owners. For each detailed plot different amounts were collected corresponding to the compensation calculated for all the inhabitants of the affected villages, together with detailed plans and photographs of some of the buildings that were to be expropriated. We also had access to the designs made for the reconstruction of the different settlements, with plans at 1:100 scale of the three types of houses, hotel model, school and cemetery as well as the general plan for each of them, albeit without date or signature.

Moreover, these folders also contained the correspondence between the company and the different interested entities. Some letters directly referred to the control that should be established on the people who would be part of the consortiums of owners in order to avoid the participation of characters considered "dangerous" for the interests of the company. In addition, several local press clippings were preserved in which, among others, reference was made to the collapse of the Gleno dam, which in 1923 caused more than 300 deaths in the provinces of Bergamo and Brescia with the consequent concern of the inhabitants of the valley of the Borbera. All this documentation enabled us to follow the complex process of construction of the dam and reconstruction of the affected villages from the initial calculations to the last negotiations which, in this specific case, did not materialise. These documents of great historical value enabled us to understand the magnitude of these actions and the different positions of the affected entities.

In addition, from the preserved plans we could study the different typologies of rural houses and service buildings as well as their planning. This kind of documents constitutes a first order source to understand the conception of housing development and habitability conditions during that period, as well as the social needs of the different communities. Last but not least, the survey of the buildings to be expropriated provided important data on the state of conservation and the characteristics of the properties of these villages, permitting to obtain a true "photograph" of the living conditions in mountain villages during these years.

As we had anticipated, the master plan for the reconstruction of Cantalupo Ligure, designed at a 1:500 scale, was particularly reminiscent of the one of Zuri and had no relation to the previous layout of the inhabited nucleus of its own area, drawn at a 1:1000 scale. The new master plan was coloured with three different colours (red, green and blue) to represent buildings, roads and void spaces respectively.

As in Zuri, the main layout consisted of a plant crossed by eight main streets, whose north-south axis led to the new church, placed at the north end with a small rectangular square in its front, and the crossing of the main streets which formed a central square. The eight main streets were crossed by other concentric streets to the central space, an option that seemed logical because the new town of Cantalupo Ligure had to shelter about 1,300 people, six times more than Zuri.

A priori, and taking into account the model of the central-plan city, such as, for instance, its well-known prototype Sforzinda designed by Antonio Averlino "Il Filarete",

the buildings of greatest importance, such as the church, had to be placed in the centre. This could be considered as an almost "natural" tendency for locating the most important buildings, as we can see also in the reconstruction of the town of Puertomarín in Spain after the flooding due to the realisation of a dam (Pons Sorolla, 1961). Therefore, although the transfer of the church of Cantalupo Ligure was not foreseen and the reconstruction of a completely new one was planned, the master plan followed the same principle as that of Zuri, leading us to think that there was a relationship between both reconstruction proposals that foresaw the same urban configuration around the church with a radial urbanism.

The main difference was that in the case of Zuri, this placement made sense around the significance of the transferred monument, while in Cantalupo Ligure the church was projected to be new. Nevertheless, despite being able to free the urban configuration from the strong anchorage to the monument, it was chosen to maintain the same solution that had been found elsewhere and that could function spatially to respond to the need of the displaced population of a new village.

5.4 The necessary selection of the memories

The two examined cases show how memories of the ancient settlements were reproposed in the new ones by means of a selection of specific features, strongly linked to specific problems of the project programme. Projects of reconstruction denied pure repetition and equally pure difference. In the case of Zuri the new urban layout is very different from the ancient one, but the relationships between the church and the settlements are the same. Also in the case of Cantalupo, the layout obeys the same abstract model, but the new houses repeat some functional features of the ancient ones.

It is not the point of this chapter to judge whether these solutions are more or less effectual, considering that they depend on different historical, social, but also human circumstances that only deeper historical research could enlighten. Our aim was to study historical cases in order to explore design strategies able to respond to current emergencies. Therefore, for us the reconstruction projects of Zuri and Cantalupo were interesting because they taught us that in architecture – but maybe also in our life - memory is a social construct based on partiality and occasionality. Architectural memory of reconstructed settlements is something that arises – like the involuntary memory of the "Recherche des Temps Perdus" by Marcel Proust – due to the urgency of a problem that a project cannot deny.

When asking ourselves, how to rebuild the visual and monumental relation between the church and the settlements, or how to reproduce the functional features of the houses, reconstruction of their memory is a tactical process. We are aware that we can only practice this if we are able to play a double game: satisfying the project programme and, at the same time, – like Aru – choose among the endless problematic multiplicity of the project the problem whose solution can architectonically play the game of memory.

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Post-disaster reconstruction, disaster management, risk reduction and urban resilience form important themes of Silk Cities activities as the initial geographic focus of Silk Cities is the Middle East and Central Asia which during recent decades have suffered a variety of destructive incidents, ranging from natural hazards to conflicts and wars...

-Preface, IV

Silk Cities

Silk Cities is an independent professional and academic initiative for knowledge exchange, research, engagement and raising awareness on under-explored contextual and global challenges and opportunities. Its initial geographic focus was on those countries along the Silk Roads in the Middle East and Central Asia. This region is the home of long lasting urbanism and civilisations, therefore enjoys rich tangible and intangible heritage built over millenniums and centuries of history. However, the region also suffers from contextual and global challenges affecting societies and cities. Additionally, it has suffered from a variety of destructive incidents especially in recent decades, ranging from natural hazards to human induced origins, from earthquakes to wars.

Fostering international dialogue and knowledge sharing, the geographic coverage of Silk Cities reaches out further to other cities, regions and countries which are prone to similar issues and global challenges.