LOST AND FOUND
Processes of abandonment of the architectural and urban heritage
in inner areas. Causes, effects, and narratives (Italy, Albania, Romania)

Edited by Annunziata Maria Oteri

ArcHistoR EXTRA

Note sugli effetti dei disastri naturali sui piccoli centri in Calabria durante il XX secolo. Il caso di Ferruzzano

Nino Sulfaro (Università *Mediterranea* di Reggio Calabria)

Sebbene i disastri naturali verificatisi in Calabria – terremoti, frane e alluvioni – nel corso del XX secolo siano stati numerosi e abbiano spesso causato danni molto gravi, identificare gli effetti sul patrimonio edilizio è piuttosto difficile. Una delle ragioni di questa mancanza di identificazione è che molti lavori di intervento post-disastro non sono stati completamente documentati.
Il presente saggio propone alcune note su questi aspetti, concentrandosi sul caso di Ferruzzano che, per la sequenza di eventi accaduti in questo piccolo centro nel corso del XX secolo, può essere considerato particolarmente interessante.
In questa prospettiva, si può infatti affermare come la storia sismica di Ferruzzano sia rilevante sia in termini di effetti sul patrimonio costruito, sia in termini di problematiche sociali, considerando il conseguente processo di "abbandono infinito" che ha caratterizzato tutto il XX secolo.

LOST AND FOUND
Processi di abbandono del patrimonio architettonico e urbano nelle aree interne. Cause, effetti, narrazioni (Italia, Albania Romania)

www.archistor.unirc.it

ArcHistoR EXTRA 13 (2024)
Supplemento di ArcHistoR 19/2023
DOI: 10.14633/AHR404

ISSN 2384-8898
ISBN 978-88-85479-11-1

OPEN ACCESS

Notes on the Effects of Natural Disasters on Small Towns and Villages in Calabria during the 20th Century. The Case of Ferruzzano

Nino Sulfaro

Although the natural disasters which occurred in Calabria – earthquakes, landslides and floods – during the 20th century have been numerous and have often caused very serious damage, identifying the effects on the built heritage is quite difficult. One of the reasons for this lack of identification is that much post-disaster intervention work was not fully documented. Thus, there is very little literature on the subject and the archive documents have practically never been ordered and classified[1]. The 1908 earthquake is an exception where there is a significant number of studies and archive documentation available, relating, however, almost exclusively only to the two large centers affected by the disaster, Messina and Reggio Calabria[2]. The two cities, in fact, were the only ones to be rebuilt through a specific project and to have part of their monumental heritage reconstructed, restored, and repaired. The small towns and villages of the provinces, particularly in inner areas, however, were almost never the object of reconstruction plans: in most cases, relocation was preferred, abandoning the old settlements which, for safety reasons, should have been even demolished[3]. This rarely happened, and the old settlements were abandoned and destined to become ruins (fig. 1).

1. See Mareggi in this volume, pp. 152-201.

2. See, above all, Valtieri 2024.

3. See Sulfaro in this volume, pp. 44-89.

Figure 1. Brancaleone Superiore, Reggio Calabria. Ruins of the old settlements abandoned during the 20th century due to hydrogeological disorder and never demolished (photo N. Sulfaro, 2015).

Figures 2-3. Canolo Vecchia, Reggio Calabria. Some patchy transformations show how the old small town has been partially inhabited over time (photos N. Sulfaro, 2022).

On the next page, figure 4. Ferruzzano, Reggio Calabria
(ortophoto by L. Barazzetti 2022).

Some other small towns, however, continued to be partially inhabited for the entire century, and were the subject, over time, of patchy interventions of reconstruction, repair and demolition by the owners of those structures which, from time to time, due to further earthquakes or floods, were no longer safe (figs. 2-3).

The present essay seeks to develop these aspects, focusing on the case of Ferruzzano which, due to the sequence of events that occurred in this small town during the twentieth century, may be considered particularly interesting. It is a small town located on a hill, a few kilometers from the Ionic coast of the province of Reggio Calabria (fig. 4). We cannot define it a "ghost-town", as it is still inhabited and frequented by those who, in the past, moved to the coast but continue to have a second home there. In comparison to other abandoned small towns and villages in the same area, such as Brancaleone or Africo, and despite Ferruzzano suffering the same depopulation processes[4], it apparently seems better preserved: there are not so many ruins or collapsed roofs, and many houses, while abandoned, retain everyday objects and furnishings belonging to a not-too-distant past (figs. 5-6). These traces tell us that the population in Ferruzzano still lived in the town until the 1990s, when funds were allocated for the creation of a new settlement closer to the coast[5]. The damage due to the last strong earthquake, in 1978[6], had led the Regional Government to declare the town uninhabitable due to safety concerns and, consequently, the process of depopulation inevitably accelerated.

In this perspective, we can state that the seismic history of Ferruzzano is relevant both in terms of effects on built heritage and in terms of social issues, considering the consequent "never-ending abandonment" process, as anthropologist Vito Teti defined it, which characterized the entire 20th century[7].

4. *Ibidem.*

5. See Legge Regionale 24 January 1997, n. 3 - Integrazione a modifiche alla legge regionale del 24/02/1979, n. 2, recante: "Disciplina degli interventi nelle zone della provincia di Reggio Calabria colpite dagli eventi sismici del marzo aprile 1978".

6. See Bottari *et al.* 1982.

7. See Teti 2008.

Figures 5-6. Ferruzzano, Reggio Calabria. Objects and furnishings belonging to a not-too-distant past (photos N. Sulfaro, 2022).

Earthquakes and abandonment in Ferruzzano

According to the chronicles, the devastating earthquake of 5th February of 1783 had already caused the destruction of most of the town and provoked 35 victims out of 550 inhabitants[8]. The town was slowly rebuilt over time but, one century later, the 1894 earthquake again caused much damage. Despite the epicenter of this seismic event being far from Ferruzzano – on the Tyrrhenian side of the province of Reggio Calabria – the chronicles report the opening of cracks in many buildings and the widespread collapse of walls and roofs in the town[9]. However, it is, above all, the 320 earthquakes of varying intensity that occurred between 1894 and 1907 that strikingly demonstrate the seismic instability of the area in that period[10].

This instability undoubtedly contributed to spreading the perception of the lack of safety in the area. However, we should mention how a heavy wave of depopulation due to economic issues had already started at the end of 19th century, when several hundred inhabitants moved to the United States of America to work on the construction of channels and railways in the area of Buffalo-Rochester[11]. In addition, the construction of a railway along the Calabrian Ionic coast in the same period began to attract people away from the hill to settle near the coast[12].

On 23rd of October 1907 a catastrophic earthquake struck Ferruzzano, the epicenter of a seismic event, IX of the Mercalli scale for 15 seconds. The effects on the small town were devastating, with the collapse of many buildings, while in other settlements, the damage was less severe. Aid arrived very slowly due to weather conditions and the impossibility of reaching Ferruzzano by road. According to official data, 167 people died, of which 158 in Ferruzzano (approximately 8% of the town's population). The other 9 victims were from Sant'Ilario dello Ionio, Zopardo and Casalnuovo di Africo; there were also some 90 injured, of which 50 in Ferruzzano, 8 in Sant'Ilario, and 7 in Zopardo[13].

8. Sarconi 1784.

9. ASRC, Prefettura, Atti del terremoto del 1894, b.1, fasc.83, Relazione sui danni causati dal terremoto avvenuto il 16 Novembre 1894 nel Comune di Ferruzzano, redatta dall'architetto G. Antico, Siderno 22 dicembre 1894. 1894. See also Riccò 1897.

10. See Guidoboni *et al.* 2018.

11. Teti 2008, p. 410.

12. See Sulfaro in this volume, pp. 44-89.

13. ACS, Ministero dell'Interno, Direzione generale dell'amministrazione civile, Terremoti, el.4, b.22, fasc.25000.4.5 (1907-08), Terremoto 1907 Rapporti degli ispettori ed altri funzionari, Relazione del Comitato governativo di soccorso pei danneggiati dal terremoto 1907 nella provincia di Reggio Calabria, Roma 1908. ACS, Ministero dell'Interno, Direzione

We should underline that this earthquake was also the first natural disaster after the Unification of Italy, so it had a national resonance (figs. 7-8). The head of the Italian Government Giovanni Giolitti launched a National Committee to raise funds for the inhabitants, with the aim of recovering and sheltering the homeless, and collecting funds from public administrations and private individuals.

A first provisional encampment was set up in Saccuti, an area close to Ferruzzano, where the inhabitants were supposed to be temporarily relocated (fig. 9). Government inspectors proposed that the Committee consider the hypothesis of reconstructing the town in another place due to the great difficulties of rebuilding the town on the original site. By the end of 1907, nothing had yet been rebuilt. Funds were allocated for housing to shelter homeless families, in Saccuti, closer to Ferruzzano where, in the aftermath of the disaster, a provisional encampment had been established. Here, tents were transformed into brick houses.

As is well known, in 1908 another devastating earthquake occurred the area of the Strait of Messina. Its effects also included Ferruzzano where no repairs of the damage of the 1907 earthquake or reconstructions had yet been carried out[14]. There were no victims, but much new damage. After the earthquake of 1908, 350 out of 400 (87.5%) buildings had collapsed or had to be demolished; 25 buildings were seriously damaged and just another 25 had no serious damage[15].

Many milder but still ruinous tremors occurred in the area in the following two years; in that period many inhabitants of Ferruzzano lived in shacks in the old town where the rubble was still in the place, while the wealthiest families begin to move to Brancaleone *Marina*, about fifteen kilometers from the town.

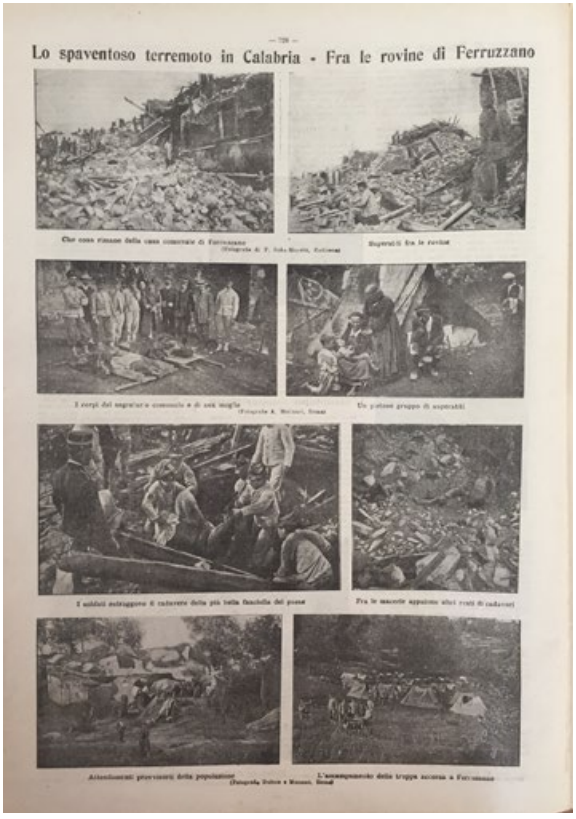
We should mention that Ferruzzano had already been included among the centers to be transferred with Law 9 July 1908 n. 445 (Provisions for Basilicata and Calabria)[16]; however, the small

generale dell'amministrazione civile, Terremoti, el.4, b.22, fasc.25000.4.5 (1907-08), Terremoto 1907 Rapporti degli ispettori ed altri funzionari, Prospetto degli edifici pubblici danneggiati dal terremoto del 23 ottobre 1907 e ammontare dei danni redatto dal Genio Civile, Reggio Calabria 15 January 1908; *ibidem, Prospetto delle case danneggiate dal terremoto del 23 ottobre 1907 in provincia di Reggio Calabria e lavori eseguiti, Reggio Calabria 30 novembre 1907.*

14. ASRC, Prefettura, serie I (Affari generali), inventario 24/I, Appendice, fascio 433, fasc.95, Corpo reale del Genio civile, "Elenchi dei proprietari di case danneggiate dal terremoto del 1907 nei diversi comuni del circondario di Gerace, i cui lavori di riparazione secondo le perizie redatte dal Genio civile di Reggio Calabria non furono iniziati od ultimati a causa del terremoto del 28 dicembre 1908", Reggio Calabria 25 April 1910.

15. Baratta 1910.

16. See Sulfaro 2024 in this volume, pp. 44-89.



Figures 7-8. The cover and a page of an Italian magazine of 10 November 1907 with a report on the eartquake of Ferruzzano (private collection of the author).

Figure 9. Ferruzzano, Reggio Calabria. The new town of Saccuti (photo N. Sulfaro, 2018).

town was never completely abandoned, and the decision to build a new town in another place was not taken for many years.

The heavy flood of 1951 caused extensive damage to the entire area, and Ferruzzano was included among the settlements to be transferred by the Ministerial Decree 19 May 1960, as provided with Law 26 November 1955 n. 1177 (Extraordinary Provisions for Calabria). In 1965, the architect Ciro Aversa drew up a plan for a new town which was to house 312 families in a 15-hectare area located downstream of the national road (SS 106) and crossing the Canallelo Torrent, near the railway yard[17]. During the construction of the new town, two floods in December 1972 and in January 1973 occurred in the Ferruzzano area, leading to increase the needs up to 450 new houses, as also the inhabitants of Saccuti had to be moved[18].

Subsequently, while the new homes were still being built in 1973 and the families were only partially relocated, another settlement upstream from the national road was planned for a further 300 families. The construction of this new settlement was to continue until 1985 and would only be partially built[19] (figs 10-11).

Meanwhile, the earthquake of 11 March 1978 had caused much damage to the entire area. In Ferruzzano it provoked no victims but caused collapses and cracks to 70% of the buildings; it is also possible to hypothesize that the buildings suffered rather serious damage, given that the demolition of 23 buildings and the demolition of some unsafe walls were ordered[20]. Sixty out of the 920 inhabitants (6.6%) were homeless; the population was evacuated and transferred to hotels in Brancalone for 8 months[21]. After less than a year, they moved to an encampment near the coast. In the following decades, while a few people slowly came back to the houses which could be repaired, the 1978 earthquake constituted the last act of the process of abandonment of Ferruzzano.

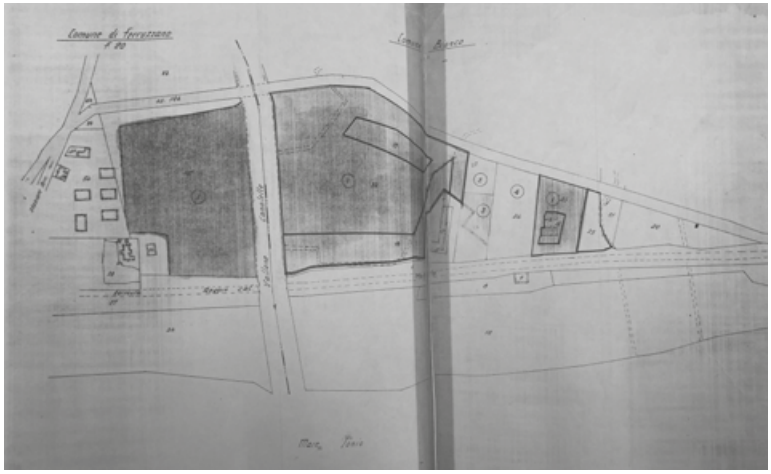
17. See DM 23 October 1965 n. 4724.

18. See the Technical-Economical Report by the Regional Committee for the Transfer and the Consolidation of Towns, Law 31 August 1973 n. 16.

19. See the documents included in PRG 1974 by the architect Sandro Donato (Variante al P.R. approvato con D.M. n. 4724 del 23.10.1968); ASRC, Consolidamenti e trasferimenti degli abitati, Trasferimento dell'abitato di Ferruzzano centro e della frazione Saccuti.

20. ASRC, Expertise 14th April 1978 n. 4891

21. ANSA, Notiziario italiano, 1978.03.12. Roma 1978.



On the left, figure 10. First plan for the relocation of Ferruzzano in an area upstream from the national road (ASRC, Consolidamenti e trasferimenti degli abitati, Trasferimento dell'abitato di Ferruzzano centro e della frazione Saccuti). Below, figure 11. Particular of the general plan of the reolcaiont of Ferruzzano and Saccuti by the company Lodigiani in 1985 (*Concorso per la realizzazione del trasferimento dell'abitato di Ferruzzano Centro e Saccuti*) (ASRC, Consolidamenti e trasferimenti degli abitati, Trasferimento dell'abitato di Ferruzzano centro e della frazione Saccuti).

The reconnaissance of damage and post-earthquake interventions

Apart from the intensity of the earthquakes which were often very violent, especially in the case of 1908, the quantity and severity of the damage caused was generally also attributed to the quality of the buildings in Calabria, almost always too poor and made with materials and construction techniques which were not suitable for resisting seismic events.

The seismologist Guido Alfani, one of the first scholars that studied the earthquake of Ferruzzano of 1907, noted that the severity of the damage in terms of victims and ruins could not be a criterion for determining the intensity of the seismic event[22]. On the one hand, he indicated the instability of the land in the entire area as the main cause; on the other hand, he underlined the "miserable" state of construction in Calabria, which only those who have been there know. According to Alfani, buildings had a problematic resistance in normal times, and they «cease to be houses and begin to be tombs, with the first shock of a slightly intense earthquake»[23]. At the same time, the famous seismologist Giuseppe Mercalli suggested to be prudent in inferring the intensity of the earthquake on the basis of the damage to buildings. Mercalli, in fact, underlined how the earthquake of 1907 had caused less damage a short distance from Ferruzzano, for example in Bruzzano and Sant'Ilario dello Ionio, where the general quality and conditions of buildings were not certainly better. Therefore, the heavy damage that occurred in 1907 to Ferruzzano must be attributed to some circumstances independent of the intensity of the earthquake, such as the nature of the land in that place[24].

In this perspective, the studies carried on in that period by the engineer and geologist Venturino Sabatini represents probably the perfect synthesis of the two positions by Alfani and Mercalli. In 1908, he was tasked by the Italian Royal Geological Office with studying landslide phenomena in Calabria[25]; then, in 1909, he supported the Royal Commission in identifying the most suitable areas for the reconstruction of the towns hit by the earthquake in Messina and Reggio Calabria on 28th December 1908[26].

Based on the observations made during the inspections with this Commission, and also before, for the Commission for the transfer of the inhabitants in 1907, Sabatini focused mainly on the

22. Alfani 1907, pp. 5-6.

23. *Ivi,* p. 7 (translation by the author).

24. See Mercalli 1909.

25. Sabatini 1908.

26. Sabatini 1909.

geological characteristics of the land, but also analyzed the conditions of the buildings, paying particular attention to the construction techniques used, as a factor that aggravated the effects of the earthquake. He underlined the role of the soil-building relationship, observing how in this part of Calabria foundations were a rarity in buildings: «the houses ordinarily rest on the ground, even if this is on a steep slope, or on vertical cliffs, therefore while upstream they have one or two floors, downstream they have three or four»[27]. He observed how often in Calabrian settlements the houses rested on the rock outcrops, like in Africo, or almost suspended over the void like on the crags, as in Roccaforte del Greco and in Roghudi. According to Sabatini, even without the help of an earthquake, in these cases the houses were destined to collapse with the slow crumbling of the underlying crags. In fact, these were often seen fractured underneath the buildings, as in Gerace, Roccaforte, and Ferruzzano[28]. As in other sites, including Bruzzano, and Brancaleone, where these formations are reduced to a mass of blocks *in situ* (fig. 12), the sandstone that forms the rocky outcrop where Ferruzzano is located shows a prevalent division according to vertical planes and therefore prisms, whose disintegration, according to Sabatini, was the main cause of the 1907 earthquake disaster (figs. 13-16). Among the lesions observed by the geologist, there were older and more recent ones; among the former, as shown in a drawing (fig. 17), there is the lesion that crossed the town, bordering the Croce and Belvedere districts and which locals dated back to the 1783 earthquake. Furthermore, along the crags, several prisms also show transversal fractures; some prisms can be seen completely detached from the remaining rock, and above one of them rests an abandoned house[29] (figs. 18-21). In the earthquake of 1907, a part of the town above the crags was destroyed, falling into a chasm following the rotation and subsequent collapse of the underlying prisms. At the same time, the internal fractures of the rock accentuated that movement and many other houses collapsed or were damaged[30].

Apart from Sabatini's studies and the general data relating to the damage to buildings in percentage, there are no studies or archival documents relating to the individual damage recorded on buildings. The only post-earthquake pictures we have effectively describe the rubble scenario, but do not allow us to identify still existing buildings (fig. 22). The 1908 earthquake occurred when the rubble had not yet been moved away, and probably no interventions were made on buildings in terms of

27. *Ivi, p. 83.*

28. *Ivi, p. 85.*

29. Sabatini 1908, pp. 34-35.

30. *Ivi*, p. 36.

Figure 12. Brancaleone Superiore, Reggio Calabria (photo N. Sulfaro, 2015).

On the previous and on this page, figures 13-16. Ferruzzano, Reggio Calabria. The rocky outcrop where Ferruzzano is located shows a prevalent division according to vertical planes and prisms (photos N. Sulfaro, 2023).

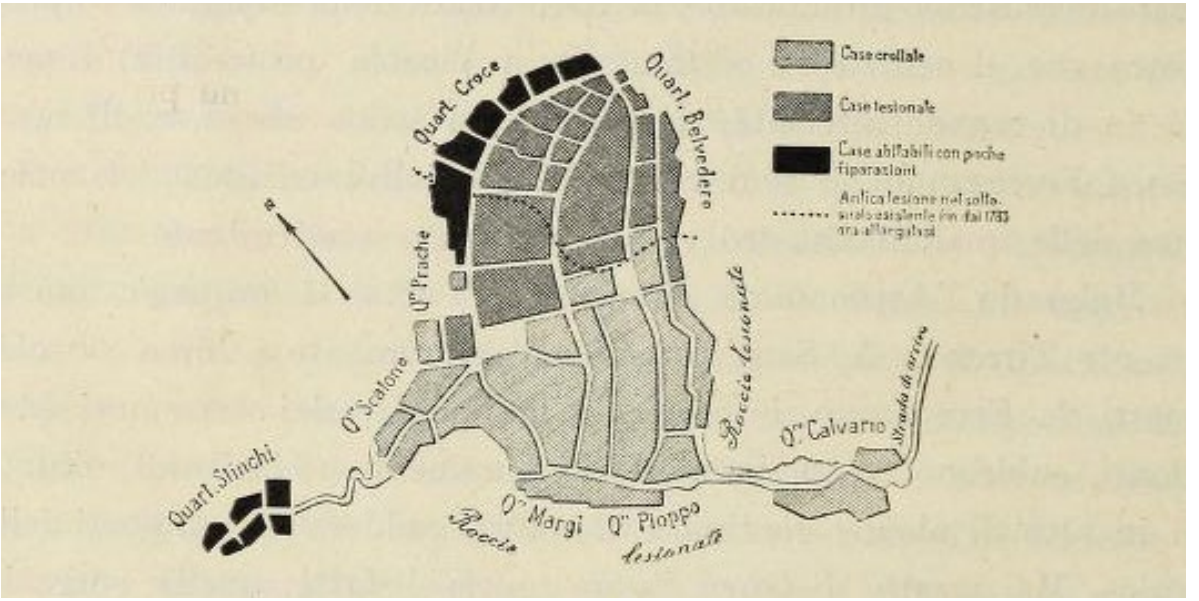


Figure 17. Map of Ferruzzano after the earthquake of 1907 with the indications of damage and collapses. It includes also the sketch of a lesion that crossed the town which locals dated back to the 1783 earthquake (SABATINI 1908, p. 34).

Figures 18-21. Ferruzzano, Reggio Calabria. One of prisms completely detached from the rock (photos N. Sulfaro, 2023).

Figure 22. Ferruzzano, Reggio Calabria. View of the ruins after the earthquake of 1907 from a magazine of the time (private collection of the author).

repairs or reconstructions. For this reason, even if it were possible to identify the possible damage and the related interventions, it would be impossible to distinguish those due to the earthquake of 1907 and those due to that of 1908. The documents drawn up after the 1908 earthquake by the Royal Commissions of which Sabatini was also a member, led the government to adopt legislative measures for planning and regulating the reconstruction and repair of damage.

In this perspective, on the basis of some laws which established the rules for the construction of new buildings and the restoration of the recoverable ones[31], and on the basis of *in situ* observations, it is possible to recognize some interventions carried out after 1908. In particular, these laws prescribed that total or partial reconstructions on the site previously occupied by buildings which for any reason had been destroyed or demolished had to be carried out with all the regulations provided for new buildings. These regulations, obviously, led to a general approach which encouraged the demolition of damaged buildings and replacement with new ones.

31. Law 12 January 1909, n. 12; Law 13 July 1910, n. 466; Law 11 July 1913, n. 1039. These laws were merged in: Ministero dei Lavori pubblici, *Testo unico delle leggi emanate in conseguenza del terremoto del 28 dicembre 1908.* Approvato con R.D. 12 ottobre 1913, n. 1261. Roma 1913 (Royal Decree 12 October, n. 1261).

Figure 23. Ferruzzano, Reggio Calabria. The insertion of a portion bult after the earthquake of 1908 on a pre-existing undamaged masonry (photo N. Sulfaro, 2022).

The severely damaged walls, uneven ones, and those which had widespread cracking, had to be demolished. Walls damaged more lightly, however, could be repaired by adding on each individual crack of new masonry well attached to the pre-existing, undamaged one[32] (fig. 23).

Reinforced masonry systems and the adoption of connections between the different structures of the buildings were prescribed; the use of vaults was prohibited, and the use of slabs was imposed, outlawing any overhanging construction, except balconies which had to comply with precise construction standards (figs. 24-25).

One of the most evident post 1908 earthquake reconstructions are the presence of new structures made with stone masonry interrupted by horizontal lines of bricks at a distance not more of 60 cm (figs. 26-27). Generally it is also possible to distinguish interventions attributable to the post-1908 earthquake phase, whose characteristics are directly referable to the prescriptions included in the laws issued in the aftermath of the disaster, such as demolition of damaged upper floors.

32. *Ivi,* Art. 219.

Figures 24-29. Ferruzzano, Reggio Calabria (photos N. Sulfaro, 2023).

Figures 30-31. Ferruzzano, Reggio Calabria (photos N. Sulfaro, 2023).

With the same approach it is often possible to recognize transformations of a distributional-functional nature, carried out not as a consequence of interventions aimed at increasing the safety of the buildings, but of a new socio-economic structure of the small towns in the various periods (figs. 28-29). In addition, based above all on the observation of the introduction of new materials and constructive techniques (e.g., reinforced concrete, new architectural finishings, etc.), it is possible to recognize interventions attributable to the post-World War II period and even more recent phases (figs. 30-31).

Figures 31-32. Ferruzzano, Reggio Calabria (photos N. Sulfaro, 2023).

Bibliography

Alfani 1907 - G. Alfani, *Primi appunti sul terremoto calabrese del 23 ottobre 1907*, in «Rivista di Fisica, Matematica e Scienze Naturali», VIII (1907), 94, pp. 5-8.

Sabatini 1909 - V. Sabatini, *Contribuzione allo studio dei terremoti calabresi*, in «Bollettino del R. Comitato Geologico d'Italia», IV s., 10 (1909), 3, pp. 235-345.

Bottari *et al.* 1982 - A. Bottari, E. Lo Giudice, P.G. Nicoletti, M. Sorriso-Salvo, *The Ferruzzano earthquake of 1978: macroseismic effects and slope-stability conditions in southern Calabria (Italy)*, in «Revue de Gèologie dynamique et de gèographie physique», 23 (1981-1982), 1, pp. 73-98.

Guidoboni *et al.* 2018 - E. Guidoboni, G. Ferrari, D. Mariotti, A. Comastri, G. Tarabusi, G. Sgattoni, G. Valensise, *CFTI5Med, Catalogo dei Forti Terremoti in Italia (461 a.C.-1997) e nell'area Mediterranea (760 a.C.-1500),* Istituto Nazionale di Geofisica e Vulcanologia (INGV), 2018; DOI: https://doi.org/10.6092/ingv.it-cfti5.

Mercalli 1909 - G. Mercalli, *Contributo allo studio del terremoto calabro-messinese del 28 dicembre 1908*, in «Atti del Regio Istituto di Incoraggiamento di Napoli», VI (1909), 7, pp. 249-292.

Riccò 1897 - A. Riccò, *Il terremoto del 16 novembre 1894 in Calabria e Sicilia. Parte I: Relazione sismologica*, in «Annali dell'Ufficio Centrale Meteorologico e Geodinamico Italiano», II (1897) 19, pp. 7-261.

Sarconi 1784 - M. Sarconi, *Istoria de' fenomeni del tremoto avvenuto nelle Calabrie, e nel Valdemone nell'anno 1783 posta in luce dalla Reale Accademia delle Scienze, e delle Belle Lettere di Napoli*, Napoli 1784.

Teti 2008 - V. Teti, *Il terremoto del 1908 in Calabria in una trama di abbandoni di "lunga durata"*, in G. Bertolaso, E. Boschi, E. Guidoboni, G. Valensise (eds.), *Il terremoto e il maremoto del 28 dicembre 1908: analisi sismologica, impatto, prospettive*, DPC–INGV, Roma-Bologna 2008, pp. 405-424.

Valtieri 2008 - S. Valtieri (ed.), *28 dicembre 1908. La grande ricostruzione dopo il terremoto del 1908 nell'area dello Stretto,* CLEAR, Roma 2008.