Research Article

Barbara Badiani*, Stefano Barontini, Barbara Bettoni, Sara Bonati, Marco Peli, Antonella Pietta, Barbara Scala, Marco Tononi, Nicola Vitale

Lake Garda lemon houses (Italy): Opportunities of a sensitive, marginal area in urban planning

https://doi.org/10.1515/cass-2017-0010
received November 15, 2016; accepted June 21, 2017

Abstract: The lemon houses of Lake Garda provide Ecosystem Services, due to their history and their deep rooting in the landscape. Unfortunately, Urban Planning hasn't ever taken into account these possible benefits. In fact, it has always allowed their reuse as residences and it has sustained the conservation of the buildings only. The lack of interest in reintroducing lemon growing or other agricultural activities has produced a noticeable impoverishment of the local landscape. To overcome these limits, Urban Planning should be oriented to implement practices, which take root in and bring out the variety of local landscapes. In order to reach this result, Urban Planning may help to bring some lemon houses, especially the abandoned or the most vulnerable ones, back to their original agricultural vocation, reintroducing autopoietic agricultural techniques, which are in balance with the environment. An interdisciplinary approach may be adopted in a profitable way, to strengthen the efficiency of the Urban Planning. Aiming at this interdisciplinary approach the paper reports our first investigations concerning the contribution of different disciplines, which will help Urban Planning to consider, in case of the reuse of Lake Garda lemon houses, immaterial benefits and to reintroduce activities linked to their original vocation.

Keywords: Cultural landscapes; Agricultural Systems; Rural—urban environment; Land management

***Corresponding author: Barbara Badiani,** DICATAM, Università degli Studi di Brescia, Brescia, Italy, E-mail: barbara.badiani@unibs.it
Barbara Bettoni, Sara Bonati, Antonella Pietta, Marco Tononi, DEM, University of Brescia (Italy)
Stefano Barontini, Marco Peli, DICATAM, University of Brescia (Italy)
Barbara Scala, BEST, Politecnico of Milan
Nicola Vitale, Independent scholar

1 The lemon houses as Cultural Ecosystem Services and the role of Urban Planning

The *limonaie del Garda* (Lake Garda lemon houses) are terraced citrus gardens, made of local stone (Figure 1). They are spread along the coast of North—Western Lake Garda, where the magnificent and well—known Gardesana road runs (the area is named Alto Garda, in Brescia Province, Northern Italy, and the Municipalities of Salò, Gardone Riviera, Toscolano—Maderno, Gargnano, Tignale and Limone del Garda belong to it). In the past, during the winter, the lemon houses were closed by movable wood and glass panels, becoming heated greenhouses. Here the delicate citrus trees could be cultivated in open soil at latitudes where the climate would not normally allow it.

Even if citrus were cultivated in Southern Italy and citrus gardens existed in other Italian regions (Campania, Tuscany and Liguria), the products of Lake Garda lemon houses were greatly appreciated both in Italy and abroad in Central and Northern Europe. Local fine citrus *cultivars* (the *Madernino*, or lemon of Maderno and the citron of Salò) were already known and cultivated in the XVI Century [1]. The fruits were regular, with thin skin and abundant juice, so they were required both as food and in pharmacology. They were also considered a precious gift especially in Northern Europe, where there was a great appreciation of Mediterranean culture. As an example of this interest we report the representation of a Lake Garda lemon house published by the German merchant and botanist J. C. Volkamer in Nürnberg in 1713 (Figure 2) [2].

Because of the local geomorphology, lemon houses are terraced and delimited by stone walls uphill, placed against the steep mountainside of the western coast of Lake Garda. They are placed near the watercourses and face East and South—East, or sometimes even North—East, to be exposed to solar heat during the early morning hours. This expedient was important to preserve the lemon trees during the winter. They are often closed on

Figure 1: *Prà de la Fam* lemon house in winter (Tignale, Brescia Province)

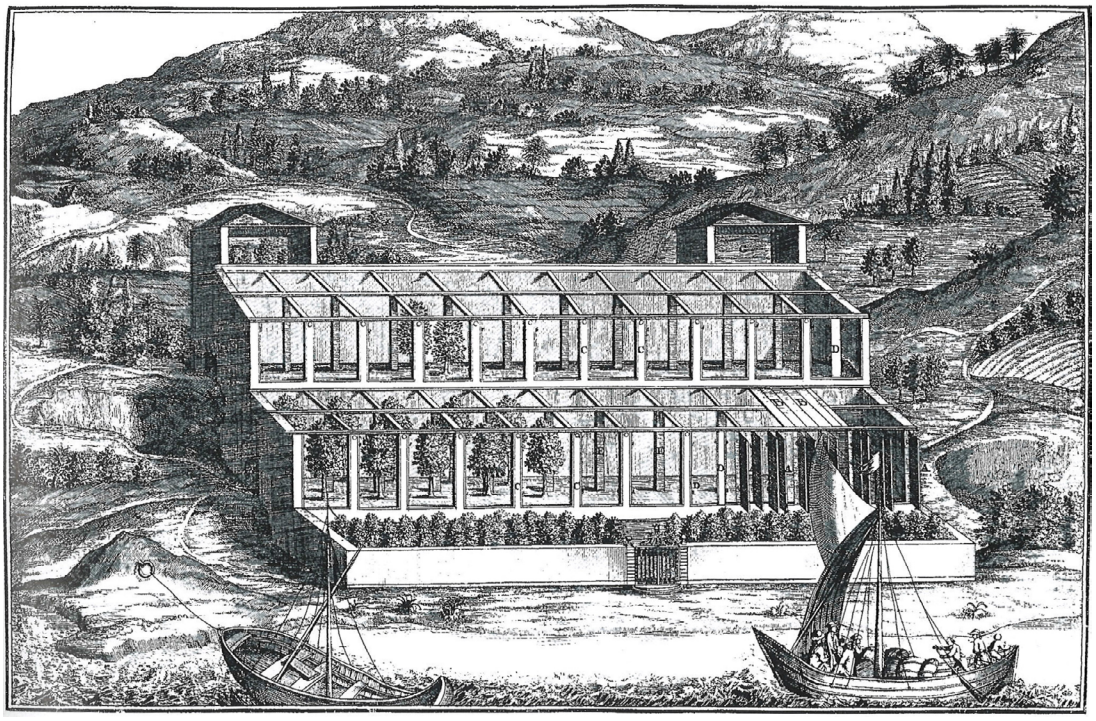

Figure 2: Representation of a Lake Garda lemon house drawn by the German merchant and botanist J. C. Volkamer (Spectaculum Hortus Hesperidum Salodienses, 1713 [2])

two sides by stone walls and sometimes there were rows of cypresses to protect them from the downhill wind. Studies and surveys concerning Lake Garda lemon houses [3,4] highlighted how all the elements of the gardens were designed according to the needs of the cultivation of citrus trees in those special conditions. These studies also highlighted how all of them had reached a remarkable degree of modularity and standardization. The modularity and standardization testify a process of refined techniques, which is extremely interesting because of the antiquity of the gardens. The production of citrus had always been linked to other valuable ancillary productions, like olive trees and grapevines, but for a long time lemons were one of the most important resources of wealth for the citizens of the Alto Garda region [5,6]. The maximum spread of the lemon houses was reached in the first half of the XIX Century and it has diminished gradually until today. Now it has been reduced to a few units [4].

Due to their history and deep rooting in the landscape, Lake Garda lemon houses can provide Cultural, Regulating and Provisioning Ecosystem Services. The Cultural Ecosystem Services are linked to the cultural heritage principally [7,8] and the meaning of their cultural value for the territory of Alto Garda deserves to be studied in—depth. The lemon houses are in fact a historical example of localized and specialized agricultural production, which required greatly skilled workers. Due to the morphological complexity of the landscape and to the great requirements of citrus fruit cultivation, they were built on the basis of a symbiotic and, to many extents, autopoietic relationships between human and nature. The paradigm of autopoiesis, which stand for self—production (of living systems), was originally introduced in the field of biological sciences to describe a living system as "a network of processes of production of components that is continuously, and recursively, generated and realized as a concrete entity (unity) in physical space, by the interactions of the same components that it produces as such a network" [9]. According to this paradigm, every process which acts in the living system contributes and is subordinated to its autopoiesis. This paradigm was subsequently extended to the landscapes, becoming an important key to understanding them as the result of mixed natural and cultural interacting systems [10]. According to Scaglia, who strongly pointed out that citrus "were not a fruit of nature, but of human work and capital" [5], we think the autopoiesis paradigm contributes to clarifying the dense network of relationships between human and nature which underlies the functioning of Lake Garda lemon houses. Being a terraced landscape, their maintenance furthermore contributes to reducing soil erosion and runoff production, and mitigates the hydrogeological hazards, thus providing Regulating Ecosystem Services. Nowadays lemon houses do not explicate anymore the Provisioning Ecosystem Services as in the past, but they can offer opportunities to cultivate and produce a wider variety of agricultural production.

All these benefits (cultural, regulating and provisioning) maintain their original sense and possible new functions in the current socio—economic system. However, as a matter of fact, most of the lemon houses which are recognizable today have been restored and are used as residences with gardens. The citrus trees have practically disappeared, like the richness of the cultural heritage. Only few isolated initiatives are working to keep alive traditional lemon growing, but they find it difficult to be supported and spread. For example, there are the activities of the local Slow Food association, the museums of *Prà de la fam* in Tignale and *Castello* in Limone del Garda and the private lemon house *La Malora* in Gargnano (the latter being still cultivated by means of traditional methods). Urban Planning played a role in the abandonment of traditional agricultural activities, due to two prevailing points of view which have influenced rules and tools: one has been the restoration of the buildings for touristic purposes as the main goal of Urban Planning and the other has been the need to avoid the abandonment of the existing housing stock. A deeper knowledge of all the possible immaterial benefits of Lake Garda lemon houses might help to overcome the limits of Urban Planning and to find a way to reuse lemon houses for more affordable and competitive functions than the investment in real estate. To reach these goals an interdisciplinary approach is needed.

In this perspective, Lake Garda lemon houses are an intriguing opportunity to test the potentiality of the interdisciplinary research group *Le dieci giornate della vera agricoltura e de' piaceri della villa*, recently set up at the University of Brescia. The research group, whose name goes back to the title of the first opus of agronomist Agostino Gallo [9], involves university scholars and independent researchers belonging to many disciplines, such as Agronomy, Architecture and Building Restoration, Economic Geography, Economic History, Hydraulic Engineering, Hydrology, Philosophy, Philology and Urban Planning.

At the basis of our perspective there is the idea to study lemon houses and their functioning as a deeply—anthropogenic agricultural ecosystem. Accordingly, we studied the lemon houses with the aim of taking into account the mechanisms and the relationships between anthropogenic and natural factors, which determined

their birth, fortune, decline and transformation. From our point of view, lemon houses are not only a rare and unique object, which must be preserved, but something more complex which must be studied in—depth from different points of view. Moreover, in our opinion, this approach will help to find a way to solve another limit of Urban Planning: the lack of experimentation opportunities, which is due to difficulties in the definition of appropriate operational tools, starting from surveys which are more and more detailed and accurate.

Hereinafter, for the case study of the Municipality of Gargnano, the following contributions are reported:

1. A critical study of Urban Planning previsions and rules for lemon houses approved to date and an in—depth study of the relationship between lemon growing and some relevant projects of mobility infrastructures. The aim is to highlight weaknesses and lack of Urban Planning tools and rules for the protection of lemon houses;
2. A point made in the field of Economic History about the useful sources to enlighten the framework of economic and social relationships related to the agricultural activities in the study area and to understand the roots of the cultural and historical value of lemon houses;
3. A focus of Economic Geography about the features of the current environment and socio—economic context, which includes the presence of a number of stakeholders, networks of farming and handicraft activities. The aim of this contribution is to compare solutions in the reuse of lemon houses;
4. The summary of a previous study in the field of Hydrology and Hydraulic Engineering, in which the standardized components of the water supply system are surveyed, described, measured and tested. The purpose of this contribution is to propose technical solutions for an agricultural reuse of the terraces, which is respectful of the historical structure of the landscape.

2 The interdisciplinary approach to design planning solutions of reuse of Lake Garda lemon house

2.1 The contribution of Urban Planning

The study, which concerns how Urban Planning deals with the lemon houses reuse in the Municipality of Gargnano, was articulated into two paths with different aims. In the first path, the aim is to highlight the effects that a choice, which was born in the field of economic interest, can produce on a territory. The thesis we want to discuss is that the decay of the citrus production was not only linked to the historical events to which the historiography usually referred to (e.g. the famous gummosis which occurred in 1855 [4]), but rather it was determined by investment choices in the sector of tourism which, even before 1855, inflicted heavy losses on the citrus production.

In particular, the design of the Gardesana road was studied, to which a crucial role in the decay of lemon houses is given. From a bibliography research [12,13], it emerges that the first design of the Gardesana road was presented in 1846 [14], when the citrus production enjoyed good health [4]. In that period, tourism was considered by local administration and wealthy stakeholders as the sector offering the most interesting and profitable investment opportunities [15], and it was necessary to improve the attractive prospects for it. This was the reason why local administration chose strategies with which they could help touristic development. The enlargement of Gardesana road was one of them. The project was approved, with little regard for the efficient lemon houses, which surrounded it, and which would have been completely destroyed.

In the second path, the urban plans [16-19], approved since 1970 (when urban planning became compulsory in Italy) to date, were compared with the purpose of highlighting:

1. Approaches and rules which were kept during the time;
2. Evident weaknesses in rules;
3. Innovations in the proposed solutions in the rules and spread of experimental techniques.

It clearly emerged that the principal strategy of reuse of lemon houses was only addressed to the transformation into residences. Moreover, the roles and the liabilities of the different public bodies involved in urban planning were clarified. It is our aim during the course of the study to interact with the local administrations to discuss and purpose new rules on the basis of these analyses.

The first local urban plan for the Municipality of Gargnano was approved in 1972. Instead of representing a fruitful opportunity to restore the pristine agricultural vocation of lemon houses, the strictness of the rules and the overlapping of competences in preservation of the landscape produced a deep simplification: the complexity of territorial dynamics and relationships were translated into terms of building ratio indexes and detailed rules concerning the physical aspect of buildings. At the

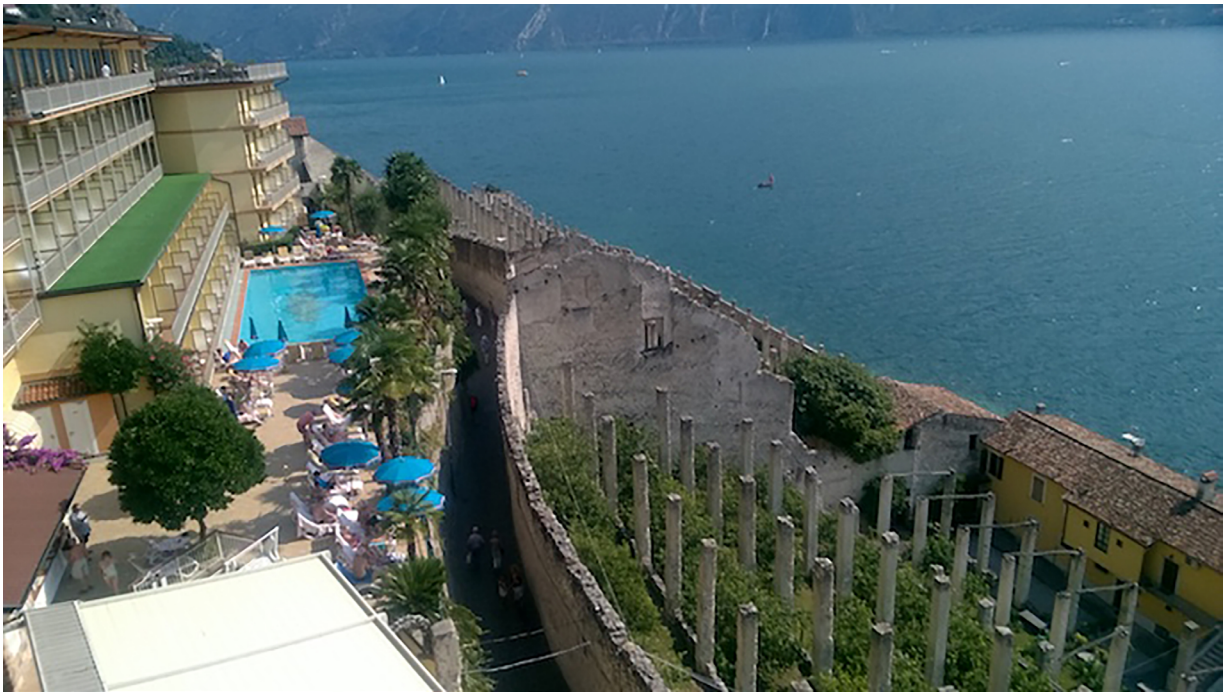

Figure 3: Limone del Garda, view of a lemon house embedded in the urban area

beginning, the lack of farsightedness, due to the lack of awareness of the complexity of territorial relationships, produced the easiest solution: lemon houses could be transformed into homes in the whole territory, even with incentives in volume if they were in an agricultural area, and solely with restrictions on the shape of the buildings and the external materials.

In Italy, since the Fifties, the aim of preserving the landscape and all its elements, which contribute to its image, was reinforced by the role of different public bodies (the Monuments and Fine Arts Office, the Region, the Province and, in the investigated one, the Alto Garda Park). All of them are involved in the planning or authorization processes. The rules they have followed aimed to guarantee only the preservation of the image of the lemon houses with more and more detailed instructions, never interested in the use and in the volumes which can be built. Unfortunately the effect was the preservation of an ideal image (generally reduced to a row of stone pillars and stone walls), which has nothing in common with the worth and the richness of the deep meaning that lemon houses had for society and material culture in the past. Yet another aspect can be still more pervasive. The unconditional acceptance that an area should have a prevailing vocation, like the touristic one in the case of Lake Garda, makes the negative effects of this vocation difficult to be evaluated, with the risk of reducing them to acceptable damage [20]. As an example in Figure 3 it is referred a case of conflict between the touristic exploitation and the terraces and the preservation of lemon houses.

2.2 The contribution of the Economic History

The Economic History analysis will consider a long period, from the Early Modern Period to the period of maximum expansion of local citrus cultivation in the XIX Century. It aims at highlighting how the human work and the invested capitals acted, throughout it, as key elements on the extraordinary development of lemon houses which have characterized the landscape both in agricultural and built areas. This study will increase the strength of the historical value of lemon houses for local communities of Alto Garda. Moreover, it will help to understand the richness of the cultural heritage and the in—depth connections with the cultural identity of the present context.

In the Alto Garda, during the Early Modern Period, citrus cultivation, as well as olive trees cultivation, represented an exception within the agricultural sector, characterized by a low productivity and a serious shortage of landowners' investments. Among the useful sources to study these aspects, beyond the existing bibliography, there are two series of archival documents of the *Ancient regime* of *Magnifica Patria* at Salò, in great part still unexplored. In the first one there are documents linked to the base of *Estimo*, or the estimation of the fiscal revenue. It

was attributed to the community on the basis of the wealth which belonged to the resident population of this area in the Venetian period. The *Estimo* can offer some useful information, such as the description of the composition of the family, the job of the head of a family and the *gravezze* which indicates the property boundaries, location and cultivation [21,22]. The second one is made by documents concerning the inheritances of some wealthy families, or the documents produced in a hereditary succession. Among those, *post—mortem* inventories can be found, which are often accompanied by detailed descriptions of the personal properties belonging to the deceased, the statement of assets and liabilities and the registers of expenses which contain precious information concerning the management of the properties and the employees with special functions [23].

2.3 The Contribution of Economic Geography

Starting form the current situation and the possible scenarios of development, the contribution of Economic Geography aims at comparing the amount of benefits due to different possible reuses of lemon houses, which can be previewed in an urban plan. In order to do so, it is firstly crucial to evaluate the gain, which can be shared by the stakeholders. It represents the basis on which the evaluation of the expectations and the possibilities of reuse of lemon houses and its environment can be drawn. A key point is to define what the meaning of "gain" is for the community of Alto Garda. In other words, which are the immaterial benefits of the reuse of lemon houses, that the local community can accept in a future scenario?

On the one hand, the comparison between historical maps, technical maps and aerial pictures will highlight the changes of the lemon houses and of the site. On the other hand, the participant observation will be used. In order to understand the trajectories of a future development and the local expectations, on—site analysis and surveys among stakeholders will be needed, using questionnaires, interviews, focus groups and workshops. In that step, the comparative approach will be adopted looking at other Italian case studies (e.g. Cinque Terre and the coastal area of Trieste), and European ones (e.g. Madeira) that we are going to analyse, evaluating positive and negative aspects of the urban planning strategies, which involve comparable agricultural systems.

At the present time, on the basis of preliminary surveys in Gargnano and Tignale, two possible scenarios can be compared. The first scenario is based on the exploitation of lemon houses for touristic purposes (see par. 3.1). In this case, the results are the maintenance of the building and terraces, but only the aesthetic aspects are preserved. Yet the knowledge and the memory of ancient practices and the sense of the place [5], which were deeply linked to the relationship between human, capital and nature, are lost. The second scenario is based on leading the lemon houses back to their agricultural vocation. Beyond the production of citrus, other traditional ancillary *cultivars* such as capers, olive trees, vineyards, could be reintroduced. This scenario, which can be framed in an agroecological perspective [24,25], will exploit a greater range of Ecosystem Services, viz, beyond the aesthetic aspects, the knowledge and the memories of local autopoietic practices, the food production and the protection of the territory [26,27,28]. Moreover, the lemon houses may become the means with which networks and new economic relationships among stakeholders can arise. This scenario offers many advantages. The spread of activities linked to traditional practices can reactivate the socio—economic local context, involving different people. It will have positive fallout also on tourism, by increasing the offer of local products and involving local restaurants.

2.4 The contribution of Hydrology and Hydraulic Engineering

The work carried out in the field of Hydrology and Hydraulic Engineering aims at investigating the water system of the lemon houses, by means of characterizing the water requirement of the gardens and the traditional irrigation system. Irrigation represents in fact one of the key aspects, which allowed the cultivation of lemons and citrus in non—optimum climatic conditions. Here in fact scarcity of water occurred due to the steep slopes and to the great water requirement of lemon trees. Water supply was managed by means of systems of gardens, strictly linked to the morphological and hydrogeological features of the context. The water system was divided into three main parts: supply system, irrigation and distribution system, and drainage system [29]. As observed during our surveys, particularly the irrigation and distribution systems were meaningfully standardized. The works to collect and store the water are located upstream, with respect to the system of gardens, and either directly take the water from a river, or from a storage tank, or from galleries or flumes dug into the rock.

Here, we will report some results about the water system of the lemon house *La Malora*, in Gargnano. This lemon house was embedded in a complex hydraulic network which, taking the water from a single stream,

supplied a system of a number of lemon houses and mills. The water, driven to the uphill terrace, was distributed by flumes, which ran along the hillside walls of the terrace. They had a spillway at each plot. The traditional flumes were made in sandstone and they were supported by benches (or by pillars in other cases) at a height ranging between one and two metres from the base of the walls. The water refused by the soil was removed by underground flumes, which ran along the hillside wall of the terrace. An underground pipe, covered by stone slabs, the *caladrìa*, allowed the water to run from the uphill to the downhill terraces. The water distribution was provided tree—by—tree, and one tree at a time. The spill was activated by a backwater effect obtained with a sand bag placed across the flumes (Figure 4). The water was driven to the foot of the tree by means of a wooden flume.

3 Conclusions

The reuse of Lake Garda lemon houses has been studied from the point of view of Urban Planning [16-19]. The study starts from the observation that Urban Planning had never included strategies, or tools, to efficiently exploit their immaterial benefits, such as those linked to agricultural activities, cultural and historical heritage and landscape protection.

The Urban Planning approach has been based on a prevailing purpose [18], linked to touristic exploitation (residences, second-homes, hotels and resorts) [3,13,14,15], thus reducing the opportunities to bring back the lemon houses to their agricultural vocation.

An interdisciplinary approach is considered to offer solutions to overcome the lack of farsightedness of the Urban Planning approach. A key aspect consists in thinking of the lemon houses as not single objects which must be preserved. The lemon houses are rather a system of gardens in relationship with their context and all its formal features, and with cultural, social and the economic features, as well as accessibility and facilities.

An interdisciplinary contribution therefore provides the increase of knowledge of lemon houses functioning as a system and the benefits, which they could offer to the citizens, if they were lead to their original agricultural vocation. This is the base on which Urban Planning may define different solutions of reuse, which are more appropriate than residences. This creates an alternative to the sterile touristic exploitation. As an operational strategy, Urban Planning should include rules by which the use of lemon houses is addressed to obtain a mix of prescribed and binding activities, according to their location, accessibility, presence of facilities and other local features. Moreover, the public bodies involved in the

Figure 4: Activated spillway during an irrigation test at Limonaia La Malora (Gargnano; Brescia Province).

processes of authorization for all the urban transformation should have the task of questioning, not only the shape and the materials of a building, but especially their use.

In the work some first contributions, which help to reach this goal, are reported. The studies in the fields of Economic History and Economic Geography have provided the elements to support the idea that there is a variety of benefits, offered by lemon houses if they are considered as Cultural Ecosystem Services in the perspective of an alternative development to tourism. The knowledge of local stakeholders' expectations can help to understand the sectors in which they are ready to invest [26,27,28]. The studies carried out in the field of Hydraulic Engineering, enlightened the complex hydraulic network, which involves systems of gardens and mills, together with the remarkable degree of standardization of the irrigation and distribution system for some case studies (here the case of *La Malora* in Gargnano is reported). A deeper knowledge of the irrigation and distribution system will contribute to pinpoint the systems of gardens, which could be brought back to agricultural exploitation [29]. In conclusion of this first preliminary study we conjecture that bringing back some systems of lemon houses to their pristine agricultural vocation may be taken into account to propose and codify Urban Planning rules, as well as studying standardized solutions to support this reuse. This process may be considered also in an agroecological perspective [24,25] which would advantage of all the benefits provided by lemon houses as Ecosystem Services [7,8].

Disclosure Statement: The authors declare no conflicts of interest.

References

[1] Gallo A., Le vinti giornate dell'agricoltura e de' piaceri della villa, appresso Camillo & Rutilio Borgominieri fratelli, Venezia, 1572
[2] Volkamer J.C., Hesperidum Norimbergensium sive de Malorum Citreorum, Limonum Aurantiorumque cultura et usu Libri IIII..., 1713
[3] Crescini F., Quel che fu e quel che resta dei giardini benacensi, Stab.Tipografico del ramo editoriale degli agricoltori, Roma, 1965
[4] Cazzani A., Sarti L., 1992, Le limonaie di Gargnano. Una vicenda, un paesaggio, Grafo, Brescia.
[5] Scaglia B., L'agricoltura della Riviera nel '700, In: Zamboni V., Proceeding of Carlo Bettoni. Economia e cultura nella "Magnifica Patria" del XVIII secolo, Brescia, 1994
[6] Tedeschi P., I *nobili imprenditori*: l'attività agricola e mercantile dei conti Bettoni Cazzago (secc. XVIII-XIX). In: F. Amatori, & A. Colli (Ed.), Imprenditorialità e sviluppo economico: il caso italiano (secc. XIII-XX), Milano, EGEA, 2009
[7] Millennium Ecosystem Assessment, Ecosystems and Human Well-being: Synthesis, Island Press, Washington DC, 2005
[8] Millennium Ecosystem Assessment, Ecosystems and Human Well-being: Policy Responses, Volume 3, The Millenium Ecosystem Assessment Series, Island Press, Washington DC, 2005
[9] Maturana, H.R., The organization of the linving: A theory of the linving organization. Internationa Journal of Man-Machine Studies, 7(3): 313-332, 1975.
[10] Naveh, Z., Ten major premises for a holistic conception of multifunctional landscapes, Land Urban Planning, 57: 269-284.
[11] Gallo A., Le dieci giornate della vera agricoltura, e piaceri della villa. Di Agostin Gallo in dialogo, in Brescia: appresso Gio. Battista Bozzola, 1564
[12] Rotary Club di Salò del Garda Brescia, La viabilità benacense con particolare riguardo alla alla Gardesana Occidentale, Proceedings, 17 November 1958, Desenzano del Garda, Brescia
[13] Province of Brescia, La Gardesana Occidentale, Brescia, March, 1964
[14] Trebeschi M., Archivio storico del Comune di Limone del Garda 1556-1949, Limone sul Garda, 1993
[15] Grazioli M., Il turismo sul Garda nella prima metà del '900, In: Scudellari M. et alii, Proceeding of Il lago di Garda e la storia del '900 (28 September 2001, Salò, Brescia), Tipografia grafica, 2001, 61-85
[16] Comune di Gargnano, Piano regolatore generale, 1972
[17] Comune di Gargnano, Piano regolatore generale, 1992
[18] Comune di Gargnano, Piano regolatore generale, 1999
[19] Comune di Gargnano, Piano di governo del territorio, 2014
[20] Harvey D., The condition of postmodernity, Blackwell Pub., Oxford, 1990
[21] Bettoni B., Aspetti dell'economia agricola bresciana nei secoli XVII e XVIII. Assetti fondiari, produzioni tecniche colturali e mercati, In: Belfanti C.M., Taccolini M., Storia dell'agricoltura bresciana. Dall'antichità al secondo Ottocento, Brescia, Fondazione Civiltà Bresciana, 2008
[22] Bettoni B., Le polizze d'estimo bresciane (secoli XVI-XVIII), In: Alfani A., Barbot M., Ricchezza, valore, proprietà in età preindustriale 1400-1850, Venezia, Marsilio, 2009
[23] Bettoni B., I beni dell'agiatezza, Milano, Franco Angeli, 2005
[24] Altieri M.A., Agrecology, Small Farms, and Food Sovereignity, Monthly Review, 2009, 61.3, 102
[25] Mendez V.E., Bacon C.M., Cohen R., Agroecology as a transdisciplinary, participatory, and action-oriented approach, Agroecology and Sustainable Food Systems, 2013, 37.1, 3-18.
[26] Council of Europe, 2000, European Landscape Convention, ETS 176, Florence
[27] Soini K. & Birkeland I., 2014. Exploring the scientific discourse on cultural sustainability. Geoforum, 2004, 51, 213–223.
[28] Antrop M., Sustainable landscapes: Contradiction, fiction or utopia?, Landscape and Urban Planning, June 2005, 75, 187–197
[29] Barontini S., N.Vitale, F.Fausti, B.Badiani, B.Bettoni, S.Bonati et al., L'irrigazione tradizionale delle limonaie del Garda tra scarsità idrica e antropizzazione del territorio, In: Castellarin A., et al., Proceeding of XXXV National Conference of Idraulica e Costruzioni Idrauliche (14-16 September 2016, Bologna, Italy), Università di Bologna Alma Mater Studiorum A.D. 1088, 2016, 1235-1238