

## Urban and Cultural Resilience: Built Heritage, Culture, Technology, Future

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Received 31/7/2020    Revised 21/2/2021    Accepted 24/2/2021

### Abstract

In the Western and in the Mediterranean cities a broad reading of cultural dynamics, together with the overlapping of the historical layers and an historical-based reading of cities and territories, allows readers to identify the presence of a continuous combination of dynamics of urban and cultural resilience. Appearing in bibliographies separately only in recent decades, urban and cultural resilience, social-economical system (SES) and adaptive circles can be used to theorise structural patterns recurring over time in specific contexts. This essay highlights the resilient structure of urban developments, cultural expressions, design, arts, quality gastronomic products, diffused craftsmanship and diffused know-how in the second half of the 20th century in Italy, delineating some resilient future perspectives for the continuation of these dynamics.

### Keywords

Resilience

Cultural Resilience

Cultural Heritage

Social-economical Systems

Adaptive Circles

## 1. Introduction

Italy's geographic position has always been read in at least two ways: the southern protuberance of continental Europe, or the centre of the Mediterranean Sea. Acknowledging the cultural exchanges that occur with the continental perspective as fundamental for the constitution of Europe and for shaping some features of Italian identity, is remarkable how the sea-connections have varied over the Ages. The Mediterranean context hosts broad complexities and a complex network of relationships overlapped during its millennial anthropic history. There, powers and religions clash and histories, networks and exchanges overlapped, making it the centre of the existent world until the Modern Age. Nowadays, despite the hard process started in the 17th century that bring the national States to become the 21st century's actual democracies, the Mediterranean Sea is still a supranational entity, where all the urban dimensions — including the ones of the deep inland areas — are shaped and influenced with different intensity by this common Mediterranean background.

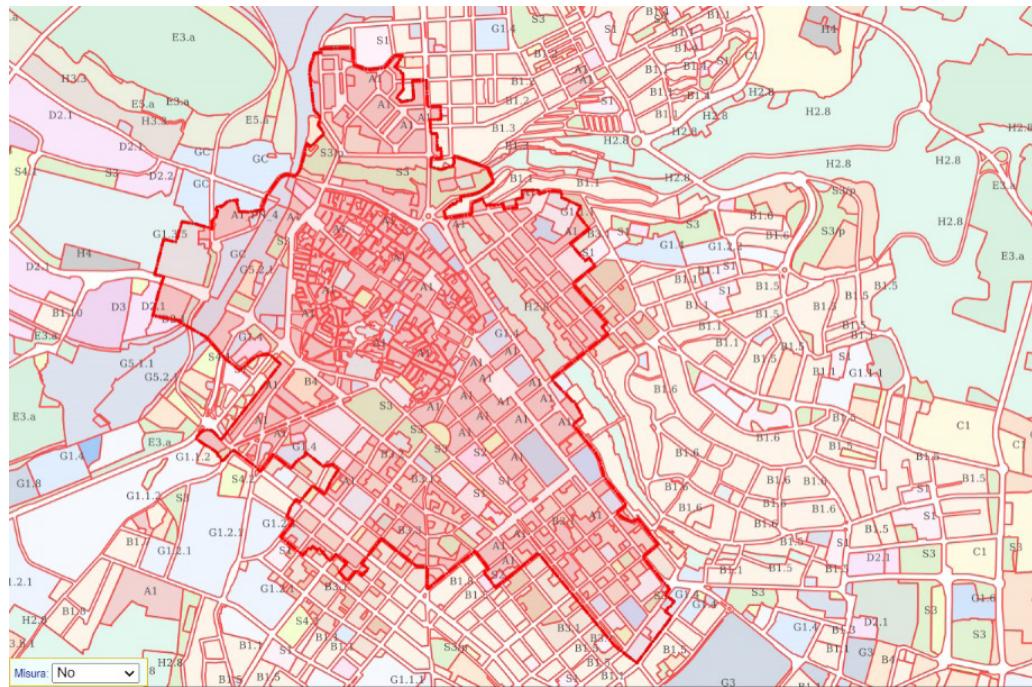
The urban and cultural resilient recurring patterns existent in the Italian context, objects of this research, are primarily influenced by this common sea and by the role of its historical stratifications and complexities. For this reason, the different realities, local differences of the Italian national identities represent an uncountable heritage, impossible to be quantified and to be measured. Hence, the methods of this empirical research are constituted by a historical reconstruction for section 2; a bibliographic research for the resilient features in section 3 with the formulation of parallel and transversal readings of the topics; a research on the main resilient aspects for the sections 4 and 5.

## 2. Italian cultural and urban complexities in the 20th centuries

After the Fascist regime and the consequent World War 2, the pivotal moment in Italian history is widely recognised to be the aftermath of this last world conflict. The immediate post-war reconstruction of 1946-1950 slowly led to a positive economic conjuncture in the 1960s and 1970s. This moment of national progress, economic improvement and overall national healing corresponds with a period of physical edification of the lands and economic, demographic and productive growth. From this moment, cities and territories broke the existent balance with the landscape and grew up losing contact with their original nature, their scale and their natural landscape. The massive urbanisation and the relevant internal south-north migration, with masses attracted by the faster and richer northern cities' industrial developments, changed the nation's inner balance. With the growth of the modern industries, the poor primary sector based on the countryside stopped absorbing the majority of the workers and the new share of the society gained quickly overall better condition of life and wealth. The urbanisation of rural, agricultural and fragile coastal lands was carried out in the name of the diffused dichotomy of progress equal urbanisation, with aggressive housing and industrial development policies that gave rise to industrial compounds for thousands of new industrial workers. The major cities, historically the centre of diverse political powers for centuries (Milano, Roma, Torino, Napoli, Firenze, Palermo, Bologna, Genova, among all), in the 1950s-1970s recorded a continuous growth of the population in their territories, while in the decades 1970s-1980s they recorded a counter-urbanisation [contro-urbanizzazione], defined as the intense urbanisation of the system of small villages and peripheral towns around the main already developed municipalities (Arca, 2007), erasing the centuries-long relationships of the main centre with their territories. The merging of the towns, the birth

of new neighbourhoods, new big-scale modernist housing settlements, the densification, the occupation of former productive soils created in the 1950s, 1960s, 1970s an epochal urban fracture. These dynamics and the role of the consumer society quickly changed the physical and social balances of the Country homologating customs, flattening traditions and all the previous local regional richness of differences. New centres, new infrastructures and new landmarks created a new national anthropic geography able to change the role of the historical and cultural values, concentrating and grouping them – symbolically and metaphorically – in old specific areas, the centri storici [historical centres]. In poor physical condition, semi-abandoned and scarred by the war, unhealthy, not equipped with modern-life comforts, historical centres were simply the oldest part of the city, contraposed to the new modern ones. Old centres didn't interest anymore people, developers or politicians, busy to pursue comforts, urbanisation, real-estate incomes and growth in other parts of the municipal territories. The concentration of the diffused heritage values is not only symbolic, but it coincided in these decades also with the introduction of the firsts national zoning laws in 1942 and 1968: with them, the historical built heritage became normatively recognised and included in the zoning urban normative tools. The constitution of the Zone A [Zona A], "areas of historical, artistic and of particular environmental relevance" (law DM 1444/1968) is associated with the aforementioned idea of centri storici: located both in the urban and in the rural context, they represent the visible memory of the city as a place of political power, handicraft tradition, historical cultural mecenatismo [art-patronage] and art production. The century-long process of capital's accumulation is visible in the architectures and the Zone A's spaces of the nobility, of the bourgeoisie, and of the religion: so, the built heritage of palazzi, monuments, spaces, churches and all the contained pieces of art. But this isn't a prerogative of the city: agrarian traditional production's sites, ancient paths, diffused immaterial rural heritages,

villages, villas, meeting places and landmarks are subject to the same normative protection and to the same zoning rules. Hence, from 1968 law onwards, the urban planning zoning regulations proceeded in parallel with the cultural heritage's set of regulations. This long cultural and legal debate included the achievement of a National framework on the cultural heritage and the landscape in 2004, a legal tool to determine the normative extent of the cultural dimension - despite the definition of the consistency of the built cultural heritage had been edited and further clarified by other laws. It is remarkable that this law included in it the notion of the landscape anticipating the National official late ratification of the European Landscape Convention in 2006. This notion is nowadays widely recognised and sees the landscape as a structural matrix, container of the economic and productive sector, backbone of the built anthropic layer (Settis, 2013). The year printed does not match the reference(2012 or 2013) capable of blending together anthropic, productive, economic and residential tracks. This view inverts the typical dominion of the constructed environment in favour of a systemic thinking of the spaces and history as a unique body. In this unicum, "everything is in a mutual relationship and in a continuous relationship with the outside" (Longhi, 1950): there's a hidden network of references which also includes historically anthropic activities, integrating part of the built cultural features. Nowadays, it is possible to read this historical network in the urban planning regulation at the local level: each municipality have the legal duty to adopt a zoning law which regulates all the urban development and that it includes the indication of the built protected heritage. The example of Figure 1 shows the border of a defined centro storico in a small city while the figure 2 shows, in the same town, the difference between the rural and the urban cultural heritage zoning. The Figure 3 highlights the complexity of the historical heritage's zoning in a contemporary metropolitan scenario characterised by a various orographic profile.



(Source: The planning department of Sassari Municipality, 2014)

**Figure 1** Sassari's municipality zoning: the A Zones shows the historical heritage. Over the National laws, the local regional regulations developed in collaboration with the regional Cultural Heritage office request a clear identification of the historical centre's border, highlighted with the thick line. This border includes also some recognisable architectural development of late 19th and 20th century, indicated with the B letter and with another colour.

Belatedly protected by a law framework, valorised sporadically and not organically, outdated and lacking care, city centres and rural provincial realities got slowly emptied of citizens and vital forces not interested anymore in uncomfortable spaces. Conversely, they attracted low-income citizens and, in some occasions, the attention of the criminal organisations looking for low-guarded spaces for illegal activities. Further obligations and protective instances created by the legal frameworks about the built heritage became an onerous owner's responsibility, making not economically viable the permanence of trades, commerce and business in these depopulated areas. Some heritage buildings often became museums, representative venues, and public buildings: maintain the symbolic value of past centuries. The total number of protected built heritage is hard to be quantified due to the fragmented nature of the

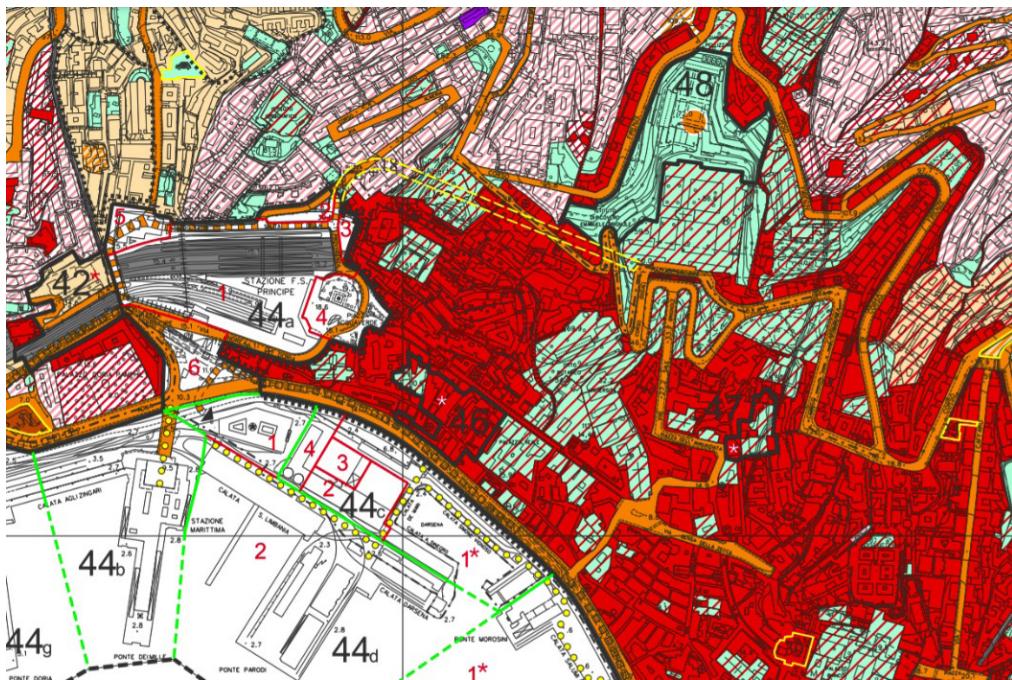
national administrative reality: a shared baseline, the 2019 CRESME report, identify 2.150.000 buildings built before 1919 in on a total of 12.200.000 building present in Italy. To state that almost 2 out of 10 buildings are historical and protected is however a an insufficient estimation of the real consistence of the topic, which leaves aside the protected heritage built after 1919, over 600 archaeological sites, thousands of areas of archaeological risk, monuments, monumental complex, natural features and parks, etc.

It is thus possible to say the survival of the Italian built heritage is a complex matter of both normative and practical stratifications of events, laws, urban dynamics deeply intertwined with the history. With these forewords, it is possible to identify the resilient features and some recurring patterns of resilience of the context previously defined.



(Source: Comune di Sassari, 2006-2014.)

**Figure 2** Sassari's municipality: localisation in the Italian context and map of the zoning; detail of the cultural heritage map. The light full-hatches represent the area of “conditioned protection”, an area of respect complimentary to the main cultural asset, requested by the regional regulations as said for the Figure 1; in these areas, every intervention should be strictly evaluated by the authorities. These area can contain archaeological ruins (green border and hatch) and/or “identitarian” cultural heritage (blue border and hatch – i.e. villas, churches, palaces, etc.). In both cases, only preservation is allowed. Note in the South West corner the border of the historical centre as indicated in Figure 1; the numeric codes are the ID of each single heritage built asset: Sassari's municipality (125.000 inhabitants in a surface of 547.04 sq.km) contains over 600 built cultural heritage assets.



(Source: The planning department of Comune di Genova. (2014). Map 38, PUC [Urban Plan], 2014 Revision.)

**Figure 3** Genoa metropolitan city's current zoning law: the dark red contour and the red diagonal hatch represent the extent of the Zona A in the historical central port area, close to the main train station. Other colours represent other zones (i.e. non protected post-war building developments, national importance infrastructures or public services of historic value or not).

### 3. An Urban and Cultural Resilient Matrix

#### 3.1 Cultural Resilience: Characteristics

A common trait in various disciplines (psychology, anthropology, archaeology), cultural resilience is intrinsically a hybrid concept which aims to explain how permanence of cultural values and their relationships with the context can be read under the topic of resilience (Clauss-Ehlers, 2004). Another clear recent definition of cultural resilience involves the “capability of a cultural system (consisting of cultural processes in relevant communities) to absorb adversity, deal with change and continue to develop” (Holtorf, 2018). In the focus of this research, the cultural resilience is consequentially seen as a bonding agent on different instances: physical and conceptual aggregation and preservations of values of heritage and communities; hence, here's a reading of some recurring material and immaterial urban and cultural traits.

In the areas which carry historical value (the areas called usually Zone A, centri storici or core centres), there are urban (material) and cultural (immaterial) interrelated characteristics. The scale is minute, and the urban fabric is mostly made by aggregations of cellular units built with traditional materials of diverse qualities; the ground floors are occupied by traditional craftsman workshops (often hereditary family-businesses) or commercial activities of modest sizes, constrained in their dimension by the constructive metric of the previous centuries and limited in their expansions by the post-war conservative law bodies in national and local scale. This fabric is interspersed by a limited number of contemporary buildings, but mostly by the old built heritage symbols of the past religious and temporal powers – which in many cities represent the landmark and identity of the town itself and seldom the social, representative and economic centre of a whole province; frequently these spaces are recognised by the local daily routines

and by society (i.e., shores, sea-sides, walls' passageways used as public streets, squares, porticoes, etc.; Figure 4). The social context is a relevant part of the built environment, and is expressed in a characterising layout which promotes the relationships, the social control, the memory of the past and a continuous shift in the public-private relationships, in constant recall with other Mediterranean peers' context (i.e., the North African's Kasbah, the Spanish pueblos, the hilly Greek villages; Maricchiolo, 2015).



**Figure 4** Arcades in Modena: coexistence of public social space, residential, commercial. Modena, 2016.

There are as well immaterial features (i.e. faith, identity, language, habits, etc.), made visible in different manifestations (i.e. religious events, behaviours, customs, traditions, etc.), but the main immaterial feature to take into account in this research is the small-medium artisanal dimension of the production. Product of the working activities, it is the

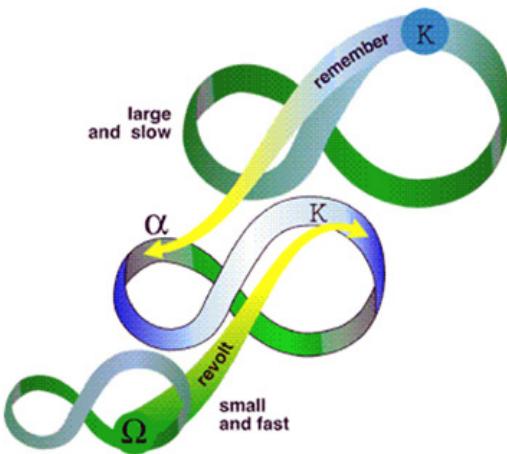
backbone of the Italian economy (over 92% of the total national economic activities are SMEs, with a peak of the 96% of the total in some regions ("Pmi, Quanto Conta in Italia il 92% delle Aziende Attive sul Territorio?", 2019). In detail, some special features (diffused know-how and craftsmanship, cultural expressions) are worldwide recognised in their physical materialisation (design, arts, quality gastronomic products), often referred to as Made in Italy. The link between these special features, the built historical environment and the public and civic values of the historical heritages (Settimi, 2013; Montanari, 2015) is deeply intertwined and it has remarkably resilient traits. In the next section, these traits will be read under the framework of the resilience, the socio-economic system (SES) and the adaptive circles to evaluate the existence of resilient patterns.

### 3.2 Urban Adaptivity

The degree of adaptivity and survival of the aforementioned material and immaterial features is observable through resilience. The roots of the term resilience are notoriously attributable to the fields of biology and materials engineering. The concept of resilience as measure of the persistence of systems and their ability to absorb changes (Holling, 1973) is a wide shared base-concept. Lately, a fundamental and conceptual difference in the nature of the concept was cleared: the "efficiency of function" is the main necessary feature of the engineering resilience (i.e. a material's capacity to return to its original form after shocks or stresses), while the "maintenance of existence of its functions" is fundamental for the ecological resilience (Holling, 1996). Further studies transferred the ecological resilience in different disciplines (Gunderson and Holling, 2002): the transposition of ecological resilience in the urban studies is a contemporary matter of research and recently the deep tie between the ecological resilience and the social system (Kasperson et al., 2005) – also

including the notion of the identity (Rotarangi & Stephenson, 2014) – have been questioned. Further discoveries were made relating two macro components of the resilience: the vulnerability, and the perturbations. The vulnerability is the “exposure to stresses”, and “the sensitivity of people, places and ecosystems” towards (and in) perturbations (Kasperton et al., 2005). The second are interferences or catalysts of processes (Walker & Salt, 2006) which can have a strong influence in reality. They can represent the relationships of resilience with the factors that can induce change. To define the framework, it is necessary to mention the definition of urban resilience as a theory, practice and analytical tool able to understand and explain social behaviours in reference to the planning and spatial dimension (Vale, 2014). On these premises, urban resilience can be considered as a social-ecological system (SES): this a fundamental concept that allows the resilience’s theory in the urban scenario (Walker et al., 2004). All SES are influenced by adaptability, transformability and resilience: adaptability is the capacity of the actors of a system to manage and influence the resilience in a scenario, while the transformability is a measure of the system’s ability to create new systems (also of different scales) during a change of the core factors – ecology, economy, political, social, etc. Resilience is defined in its turn by four interrelated components: latitude, resistance, precariousness, and panarchy (Walker et al., 2004). The interactions among the first three components define the general degree of resilience of an SES, while panarchy relates an SES’s influence with others SES – existing or in the process of birth. More specifically, latitude represents the maximum amount of change the system can stand before losing its ability to recover from stresses; the resistance indicates the amount of resistance to stand a perturbation; the precariousness is the current status or trajectory of the system and indicate how close is it to the limit of impossible recovery of the system (Walker et al., 2004; Gunderson & Holling, 2002). The relations of all these factors in the resilience,

adaptability and transformability levels determine adaptive circles; adaptive circles have four sequential phases which express SES’s capacity to not tend to a static equilibrium but to a constant mutation of these phases (Gunderson et al., 1995; Gunderson & Holling, 2002). The phases are: Rapid growth and exploitation (r), conservation (K); collapse – or release, creative destruction – ( $\Omega$ ) and renewal or organisation ( $\alpha$ ). The last two are the moments where the major changes occur: some value can be lost in the ( $\Omega$ ) phase, while in the following ( $\alpha$ ) phase, “novelty can arise” (Carpenter et al., 2001). With the (r) phase, the system is settled in a new equilibrium, longer but slowly in transition towards the end of the conservation phase (K). During these continuous mutations, the values of resilience, adaptability and transformability are in constant change. The Figure 5 provides a further explanation, also including the role of the panarchy in the system. The next section of the essay will apply this framework to the object of this research: the aforesaid material and immaterial features seen as a SES.



(Source: 10Gunderson & C.S. Holling (Eds.), 2002)

**Figure 5** Panarchy connections. Linked adaptive cycles at multiple scales.

### 3.3 Italian context

The Italian urban and cultural features are based physically and conceptually in the historical heritages; the flexible and latent resilient dynamics and the common traits stated previously have preserved

themselves over the time as parts of an adaptive system. This system is capable of absorbing and processing history and cultural values to develop an extensive set of assets (self-awareness, design, arts, tradition, know-how, craftsmanship and products of the land) that ensure the survival of such cultural values. Referring to the metaphoric nature of the concept and to the complex scenario of the context, it is possible to schematise the technical features of the theoretical resilient framework with the following qualitative values:

- High levels of adaptability, low levels of transformability. During the centuries, many adaptations of the *forma urbis* happened, and the last decades' dynamics (in terms of abandonment, rediscovery and finding of new reading's paradigms on the cultural heritage) of the historical contexts allow a further future broad range of future changes, but still within an acceptable degree of recognisability (constrained in the last century within a conservative normative framework).

- Relevant latitude level. The small-scale's physical fabric of the urban cultural context allowed a strong social mutual control in these contexts. The social balance of private and public spaces has allowed in the Mediterranean city a tolerable quantity of customisation until the 20<sup>th</sup> century: for this reason, urban laws and regulations are seen as limitation of the spontaneous Mediterranean natural processes of space's appropriation and participation in the public space by its citizens (Braudel, 1987). World War II physically threatened the historical centres: the subsequent abandonment has paradoxically created minor loss than a maximum-profit logic of development would probably have done, because of the limitation of transformation's possibilities. This guaranteed the transmission of the heritages to the future (Figure 6). From the immaterial point of view, the civic life of the historical centres is still existent; there's often a link between identity, quality of life and world-wide quality-fame (i.e. for the City of Verona and its landmarks). Nonetheless, the success and the

worldwide recognition reached negative critical effects in many cities, with situations close to the limit of collapse (i.e. the impact of tourism in Venice).



**Figure 6** Abandoned church in a public space in Napoli's historical centre, 2015.

- High value of resistance. As said about the latitude, this value was challenged after the post-war reconstruction in many ways (urbanisation of the soils and shift of the city identity in the suburban areas, neglect of historical spaces and buildings, etc.). Lastly, the chronic lack of national unity (legacy of the old political and territorial divisions) created in the recent decades a competition among the centres to maximise profits under expanding the share of the incoming tourists. This started also parallel paths of discovery territories, heritages, landscapes, tradition, indirectly directing the tourists in many other parts of Italy, triggering and proving how different cultural development paradigms are possible.

- Low critical level of precariousness. In all of the national context, the physical and social conditions' improvements are deeply auspicated. All the process created a general diffused need for renovation, especially for physical maintenance of the heritage (onerous and slowed down by laws and local regulations), the relationship with the private stakeholders (still immature, in certain contexts) and in the general policy making (only recently, reflection on cultural tourism's sustainability are flourishing).

The role of the panarchy needs to be evaluated separately. This feature allows the resilient system to

go beyond its mere survival initiating new systems, new adaptive circles, new dynamics, new realities and new patterns. Its value is interrelated with all the previously mentioned factors. Two examples will clarify.

One example is about the survival of the physical features of the historical built heritage in some rural regions of Italy; more specifically, it is about the cycle of growth, abandonment, rediscovery, renovation and refurbishment of some villages with new functions and destinations activities. The pattern consists of a common general phase of urban, economic and demographic development (growth – r) during the first half of the 20th century, followed by a slow transition into modernity starting from the 1950s which has allowed the survival of the place until now, without compromising the resistance and the precariousness of the system. However, this phase of conservation (K) is accompanied by constant demographic decline and reduction of economic activities given to national economic trends. Mined also by economic territorial survival competition and growth of the main regional centre, emigrations and lack of opportunities create a slow collapse ( $\Omega$  phase) of the social, demographic and economic composition which heavily proved the latitude and the adaptability of the places. A turning point (often, new local political leadership) helped often by innovative and participative digital technologies and the role of the internet, then promotes new paradigms of existence in order to provide a renewal of the social-economic balance and the birth of new economic activities. This renovated interest in the past and its features allows a reorganisation phase ( $\alpha$ ) which leverages more or less heavily in the transformability's level of the context. Practical worldwide-known example are the 1-Euro housing program carried out by different local authorities in several regions; the new concept of diffused hospitality framed in sustainable slow tourism development (Daniele Kihlgren's pilot project for the diffused hotel in the village of Santo Stefano di Sessanio in the early 2000s became a milestone for

similar interventions, Figure 7); or even new pioneer pioneers entrepreneurial projects (the cultural, urban, social and productive refurbishment of the whole village of Solomeo by Brunello Cuccinelli). In all these new balances, it is possible to highlight the role of the panarchy as a bonding agent among the old and the new different adaptive circles – and among the old and the new possible unexpected futures.



(Source: L'Aquila, Abruzzo., 2019)

**Figure 7** The town of Santo Stefano di Sessanio, home of the Sextantio slow cultural tourism project.

Another example involves the survival of the immaterial features proper of the contemporary Italian dimension and of the importance of cultural products, art and design production, industrial design activity, fashion industry and gastronomy – the so-called Made in Italy. In the example of the design, this survival process involves the classic anonymous and anonymous authorial design categories (Bassi, 2007): all the daily-use objects whose fabrication is only sporadically related to a codified design or a patent, but it is mostly related to a communitarian and popular shared knowledge. Here, this can be considered a century-long phase of growth (r). In this phase, transformability and adaptability of the tradition are high since these factors are directly related to the evolving artistic production system of the bottega artigiana [craftsman's workshop] that characterised all the artistic and craftsman production from the Middle Ages until today passing through the fruitful Renaissance Age. Latitude value is however limited because of the low technological level of development of these activities, directly related to the artistic classic culture and to the old traditional craftsmanship

tradition (Brusatin, 2007) and to the limited reception of the continental influences. The transition of this century-old dimension into the authorial objects of industrial design (related to a project, a name, a business-commercial plan, etc.) happened quickly in the second half of the 20th Century only due to the positive economic conjunction and to some particular experiences, related to the entrepreneurial capacity of the single artisan-artist (Baroni, 2011; Filippini, 2013). During this phase, the fast post-war modernisation created the need and the economic conditions for the birth of a new industrial design discipline supported by a renovated productive capacity in continuity with technological development, directly related to social development and to quality of life improvements (Figure 8). It is widely recognised how this development was also partially based on few pre-war industrial entrepreneurship experiences (i.e. Olivetti, Alessi) which constituted the base for the famous prolific season of the Italian design, led by talented designers as Castiglioni, De Lucchi, Nizzoli, Ponti, Sapper, Sottsass, Scarpa, Zanuso. In tolevel of precariousness (represented by the commercial success of the brand or of the design item, for instance).



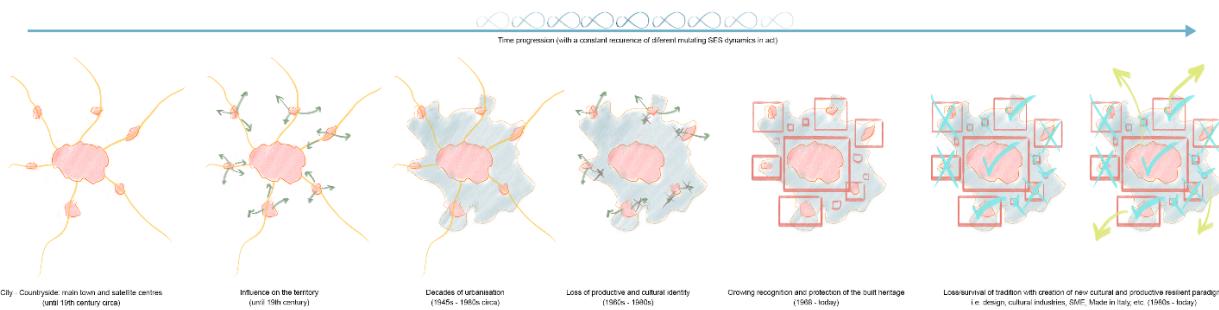
(Source: MOMA Digital Archive, 2020)

**Figure 8** A status-symbol for a changing society, a symbolic transition of the design into industrial production: Marco Zanuso, Richard Sapper, Brionvega Algol 11 Black and White Television, 1964.

The role of the panarchy in these cases allowed the transition of this industrial dimension, while nowadays another phase of reorganisation ( $\alpha$ ) is undergoing, due to the delocalisation of the industries abroad and the recurring economic crisis of the Euro-zone.

This dynamic is possible to be observed also in different industries of the so-called Made in Italy, like the fashion, food and wine industries. These industries share the small-scale frugal original artisanal dimensions of design, the territorial know-how, the shared old hand-crafted skills at the base and the local knowledges (diverse as diverse the regional traditions are), the growth and the same international recognition. They are also memories of a diffused small-scale productive sector which still constitutes the backbone of the Italian economy. However, the present and the future of these industries is different from the one of design. Thanks to a solid normative protective framework, formalised also at the European Union level (i.e. the EU quality scheme), panarchy allowed different paradigms of transmission of heritage to the future, such as incentives for preserving the traditions of local production and for preserving the tradition, national and international legal protection in case of fraud (as advanced international law frameworks to protect copyright), positioning in foreign markets, public aid for international promotion, networking, etc. The Figure 9 schematise these processes.

The fully complete recognisability of the phases of all the possible adaptive circles and of the resilient features is related to the action of the perturbations. Different for intensity, nature, strength, shock and stresses can be related to natural phenomena (i.e. earthquakes), anthropic material causes (i.e. the loss of built historical feature due to lack of care and physical deterioration), anthropic immaterial causes (i.e. the misuse or the abandonment of the spaces of craftsman traditions) or to a combination of the previous (i.e. the flooding in urban areas planned



**Figure 9** The diagram exemplifies and summarises the evolution of this text's resilient framework in a schematised typical Italian urban territory. The dynamics of physical evolution allowed the loss of identity and the reinvention of the tradition. The time progression includes a series of uncountable recurrences of SES and panarchy dynamics of different nature which relate the adaptive circles among themselves transforming the composition of the single phases (r), (K), ( $\alpha$ ), ( $\Omega$ ) constantly. Source: image by the Author.

badly which led to loss of heritage). For the scope of this article, a series of present and future combinations of resilient aspects and perturbations will be presented to evaluate how the material and immaterial cultural features can survive resiliently in the Age of extreme digitisation.

#### 4. Contemporary Cultural Resilience Aspects and Perturbations

The relevance of heritage in the national and international context is a key aspect to take into account. Limiting the analysis to the number of UNESCO material (55) and immaterial (12) heritage sites (UNESCO, 2019, 2020) and to the national data regarding museums and their concentration in terms of inhabitants and geographical diffusion (4,908 museal structures, 1 every 50sqkm, and every 6,000 inhabitants, with the 93% of the Municipalities have at least one cultural heritage – moveable or immovable – in their territory; (Istituto Nazionale di Statistica [ISTAT], 2019) there's the contour of the heritage's weight in the whole territory. Considering the 2004's normative main law of the cultural heritage, the extension of the landscape in the concept multiplies the territorial diffusion of the heritage. Reflections on the legacy and the future uses of the past, on the touristic development and on the

mediation with the tourism sustainability are a constant of the cultural discussion (Settim, 2004). Every opinion collocates itself across the two extremes of the cultural heritage's approach: full protection, full valorisation – as stated also in the Constitutional chart of 1948. In reference to the resilient framework, the discussion on the cultural resilience regarding the future of the cultural heritage catches the different degrees of adaptability and transformability on the generic regional-urban features related to spaces, economics, resources. Latitude, resistance, precariousness are instead referred to the local differences and to the inner balances of each context. The mosaic of possible outcomes is extremely granular and diverse, and some examples and facts are here provided. In many cases, the technological development and the raising accessibility to the use of advanced technologies is a relevant factor to determine a local resilient adaptive circle.

In general, the digitisation of collections, heritages, archives, pieces of art with advanced technological feature is, in the resilient logic, an action which aims to limit the loss of the cultural heritage; this can be directly related to all the 4 phases of the adaptive circle frameworks, because it can help to strengthen each of the phases in different ways. Conducted often with advanced scanning technologies,

the responsibility and the approach is often top-down, since the public is the legal guarantor of heritage. Usually this happens within different networks established among different actors – often Mediterranean or European. The EU-sponsored projects facilitate cross-disciplinary collaboration in different fields of cultural heritage, fine arts artifacts, piece of art, archeology, social sciences, cultural heritage data, urban physical connections and data implementation (projects “IPERION”, “SM@RTINFRA”; “E-RIHS”, “ARIADNEplus”, among others); the private nature of some international projects, like the “Google Arts Project”, shares the same nature and the same resilient nature but offer the chance for new paradigms of protection. Several partnerships with well-known Italian institutions and research centers (ENEA, CINECA) are already established in order to digitize the future heritage museums and collections. Remarkable are the projects of “Genus Bononiae Museum”, “MUVI – Museum of Daily Life”, “The Certosa’s projects”, representing high-profile contemporary ways of using structured technological research to allow the digital migration of data while highlighting at the same time the visit experience.

In the case of the built environment, another specification is necessary: the physical safeguarding of heritage isn’t done only to limit the loss of information in the future, but also to guarantee the safety of the surroundings and to avoid human and material loss – raising the resistance of the place, reducing the precariousness. Given the nature of the heritage, bottom-top approaches and technologies are quite common, often within new forms of public-private partnerships. This happen for different reasons, like the growing availability, easiness of use, affordability and management of some technologies (hard technologies about building diagnosis, but also software BIM and GIS-based, online shared warehouses, app-management and digital clouds) but also for the clash with the complex normative, which shift the responsibility of the maintenance and

management to the private owner. This lives with a hidden detrimental competition among all is historical/protected versus all the non-protected. The Ministry of the Cultural Heritage keeps a role of control/veto on all the processes with its local offices. In the logic of the owners, the care and the maintenance isn’t deemed as an easy option. The public introduced only in the last years a parallel set of regulations regarding different tax-credit campaigns, where the State could support a future credit for owners and investors in case of the satisfaction of specific technological requirements during a restoration, a renewal or an implementation of a protected building, etc.

For example, the case of the owners of heritage/protected buildings in the Zone A which aims to renovate or refurbish their estate is a common one. Use of solar panels or air-condition machines, particular contemporary material or finishings and other invasive features are strongly discouraged because the regulations forbid visible alteration of the exterior, excesses of contemporary interventions in the public sides of the building, internal modification of a building’s distributive scheme – and in some cases, also the choice of the external color of the exteriors or of the interiors. The owner, to try to accomplish the renovation and to obtain the tax credits should consequently tailor the intervention on another basis in order to satisfy the normative parameter: sustainable NZEB materials, noninvasive technologies and complex alterations of the project to hide some solutions. The general discouragement is complicated by the necessary extra documentation requested and the aforesaid veto-role of the Cultural Heritage local office, able to stop all the works and evaluate the legitimacy of some interventions, with power to undertake legal actions in case of dissent.

From the point of view of resilience, this common example cause the acceleration of the precariousness level (and of the collapse phase) and challenge the latitude and the conservation phase;

the effects of these combination of dynamics can be multiplied in case of clusters of constructions or in the typical cellular aggregations of the centres, with subsequent creation of conditions of widespread abandonment and low urban quality, potentially related to future urban and social problems – or to the birth of new urban dynamics due to the panarchy's role.

## 5. Future Cultural Resilience Aspects and Perturbations

In future developments, cultural resilience shouldn't lose contact with its physical base also from the urban design perspective: the destructive effects of the natural perturbations are a necessary point to take into account. The climate change adaptation and the physical safeguard of the historical contexts are threatened by the diverse physical risks of the Italian peninsula. Over 60% of the National territory is subject to hydro-meteo risk (mostly related to a combination of flooding and landslide), while 91% of the Municipalities are subject to at least one environmental risk (Istituto Superiore per la Protezione e la Ricerca Ambientale [ISPRA], 2018). The emergency-chain process improvements (community awareness, general diffusion and knowledge of the risk, formulation of emergency routes) and the physical adaptation of the heritage needs a necessary yet urgent improvement. The various actions of prevention shall take into account the formulation of new cultural resilient adaptive circles able to keep together adaptability, transformability and latitude related instances. New paradigms of interpretation and further study on the panarchy are necessary to allow a sustainable transmission of the past to the future.

Another important necessary step to take is in the inclusion of cultural instances in resilient policy-making in the immaterial and material features. While in the industrial design field it can be related to improvement in the production-chain and/or, in the

international promotion, in the normative aspect, in the built environment this can be related to the policy of use of the historical area and to actions which aim to weld these places with the rest of the city. These historical contexts, symbolic and historic cores and centres of the cities, hosts strategic services, commercial, institutional and social urban hubs: attractiveness, back-to-the-city actions and urban quality can be added to the agendas of the public stakeholders, but the main priority is to solve the accessibility's issues – also to kickstart further future projects by other stakeholders. The diffused policies of car-free zones, public transportation, and smart, shared, light mobility, interchange stations can have the power to increase the accessibility to the centres in order to weld the different city parts, facilitate and raise the value of the growth ( $r$ ), conservation ( $K$ ), organisation ( $\alpha$ ) phases of the resilience, avoiding or postponing the collapse phase ( $\Omega$ ). Panarchy's role can influence this as well, for instance creating new paradigm of use and enjoyment of the historical areas, or new urban development opportunities – in terms of spatial use, placemaking activity, sustainable tourism, back-to-the-city activities, etc.

## 6. Conclusions

The relationships between resilience (and its four defining factors), adaptability and transformability can give some generic extents of this topic; but only in studying the complexities and the specificities of a socio-economic context is possible to observe resilient dynamics in their full extension. The future scenarios and the future dynamics start from the same detailed knowledge. Further studies can frame the latent survival mechanism of the historical and urban cultural resilient patterns, in order to observe, identify and frame the adaptive circles. A study of their situations, their gains, losses, stagnations, and growths can suggest future possibilities and future paradigms of discovery. Given the complex nature of

the urban scenario, it seems hard to determine any aprioristic formula, while it seems encouraging to tailor case-by case solutions. The challenge of transmitting the past to the future, preventing and avoiding material and immaterial loss of built and cultural heritage, will request a high level of inclusive and systematic thinking by policy-makers and stakeholders to fully understand the state-of-art of each context. With the support of the digital innovation proper of this Age the road can be easier, but surely not short. In any case, the inner nature of resilience allows future enhancements, since resilience itself is a “continuous journey of improvement, based on the mitigation of emerging issues” (Clarke, 2016).

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