Architecture & Urbanism in the Age of Planetary Crisis

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24. Redrawing Reconstruction: Defining a Mapping System for the Comprehension of Urban Metamorphosis Following Extreme Events

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Introduction: Urbicides

In recent years the term Urbicide, the voluntary and deliberate destruction of an urban environment for violent purposes (Berman, 1996), has re-emerged in architectural and urban planning debate in light of the growing number of cities that have been involved in major conflicts and thus require innovative reconstruction strategies (Aleppo, Damascus, Sanaa, Mosul, Benghazi, etc.). Numerous studies have been devoted to the subject with a focus shifting from the construction of a historical perspective (Hippler, 2014), to the issue of cultural identity and heritage preservation (Bevan, 2006. Bold et al, 2017. Allais, 2018); from geopolitical and economic reverberations (Coward, 2004. Ikle, 2005) to the use of ICT instruments for investigative purposes (Weizman, 2011, 2018) or to military tactics adapted to urban planning (Porteous&Smith, 2001. Franke, 2003. Graham, 2010). In the field of urban studies, numerous researches, mainly devoted to post-ww2 Europe, have attempted to construct an organised history of reconstruction processes (Diefendorf, 1990. Cogato-Lanza&Bonifazio, 2009. Johnson-Marshall, 2010. Cohen, 2011. Moravánszky, 2016) exploring the different design approaches in terms of urban and architectural strategies.

However, a huge knowledge gap exists in the analysis and systematisation of processes of urban metamorphosis following conflicts, large-scale social problems or natural disasters: a comparative study of past cases highlighting similarities and differences, allowing for their critical assessment, has never been fully developed. The aim of this paper is to define a drawing based analytical system able to generate a better understanding and a clear categorisation of the reconstruction processes. We intend this drawing method as a knowledge system for the comprehension of historical metamorphosis in urban morphologies and as an operative tool to increase the learning experience necessary for the upcoming reconstruction processes.

Already in 1917 Patrick Geddes wrote with Victor Branford the book *The coming polity, a study in reconstruction* (1917) advocating for the need of a research, scientific in method and prospective in the outlook, capable of linking the past with the future and seeing post WWI reconstruction as a unique chance to test this method. For Geddes the regional survey, intended as a organised scientific knowledge system based on statistical evidences applied on the territory through maps, is the key tool for the construction of urban and regional designs conscious of the complex entanglement of context variables (Hewitt, 2012) and showing the unwavering faith in science as a remedy to social problems. In Geddes' words:

> "The future we can see but dimly. The more sharply we can outline the past in the present the more clearly we may discern the image of the future. For the future is not disconnected from the past but it is continuous withe it. By selection and recombination of past tendencies surviving into the present we shape the future. Hence the first requisite of foresight is a true and clear ideas about the past (1917, 18-19)".

Despite the call to architects and urban planners launched after WWI by Geddes in order to develop an organised knowledge on the theme of reconstruction, a scientific approach to past experiences and current conditions is yet to be fully explored. Only the development of tools specifically intended for designers will allow to equip experts with the technical knowledge
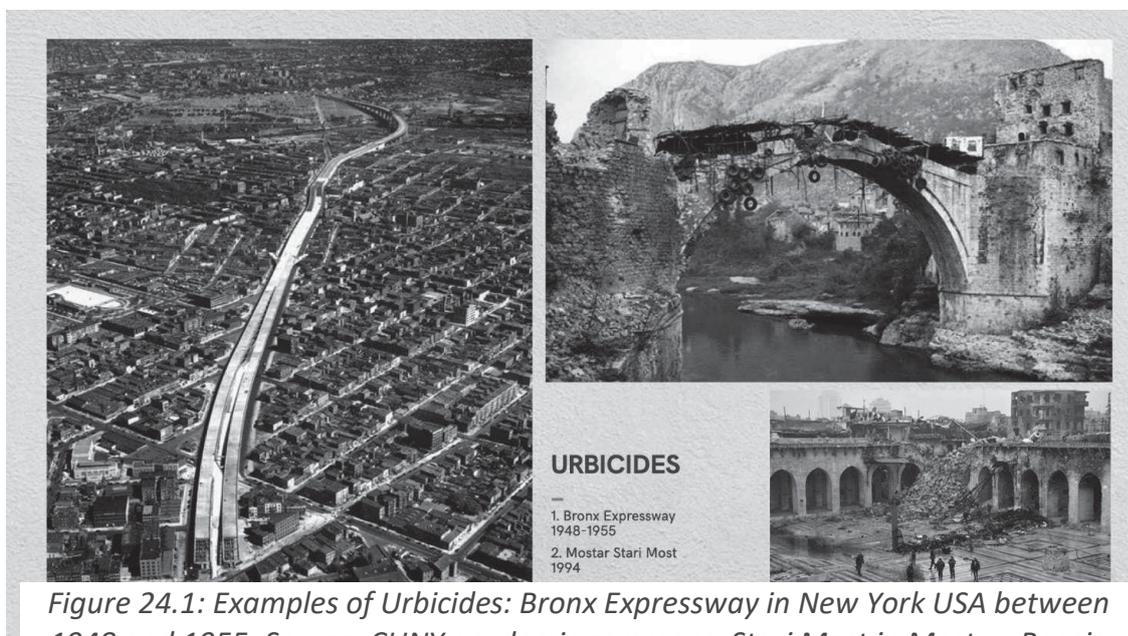

Figure 24.1: Examples of Urbicides: Bronx Expressway in New York USA between 1948 and 1955. Source: CUNY academic commons. Stari Most in Mostar, Bosnia Herzegovina in 1994. Source: SENSE - Transitional Justice Center. Umayya Mosque in Aleppo, Syria in 2013. Source: Al Monitor.

needed for the assessment of short and long period results of reconstruction interventions and the design of valuable future strategies based on a solid conceptual framework. The survey approach gives a key value to permanence and continuities in the urban fabric, despite all the necessary changes and metamorphosis related to economic, social or functional necessities. In this vision the trial and errors mechanisms that allowed historical settlements to reach the highest possible level of habitability (Benevolo, 1971) can be reproduced in a substantially shorter timeframe, and avoiding major social distresses, only by a society that through the use of scientific analyses comprehend and accepts the value of permanence and continuity. The use of statistical evidences applied on the territory is a basic element in the reconstruction of, first and foremost, a state of equilibrium with resources and social instances, which loss is often the most common among the multiple interconnected causes of contemporary conflicts (Harrison, 2019).

The comprehension of past dynamics as an engine for future strategies becomes even more important in contemporary urban conflicts where the two phases of urbicide through erasure of the urban form and reconstruction for financial exploitation are seen by the different ruling powers as interlinked elements with the final goals of maximising economic profit and minimising social dissent. Military techniques are extended to urban planning through a series of strategies defined by Stephen Graham as *New Military Urbanism* where

> "techniques of urban militarism and urbicidal violence serve to discipline or displace dissent and resistance. They erase or delegitimise urban claims and spaces that stand in the way of increasing predatory forms of urban planning that clear the way for super-modern infrastructure, production centres or enclaves for urban consumption and tourism (2010)".

This extreme condition that marks the complete bonding between the military systems and the financial and industrial complexes (in this case represented by the construction industry) is the final result of a slow but steady evolution that has characterised totalitarian and democratic power structures throughout the whole XXth century. From Francisco Franco's *pueblos adoptados* (Centellas Soler, 2006), to the major disembowelment of city centres in Italy promoted by Marcello Piacentini (Nicoloso, 2018) in the fascist era, from erasure of the old Bronx district promoted by Robert Moses in the 60's (Ballon&Jackson, 2007) to the selective targeting of the central district conducted by belligerent parties

in Beirut during the Lebanese civil war and concluded by *Solidere* (Mango, 2004. Sawalha, 2010. Ghandour&Fawaz, 2010) different ruling powers have used destruction and reconstruction as two interconnected and continuous instruments denying any value to urban permanence and constructing urban landscapes solely devoted to financial speculations or purely propagandistic values.

Leonardo Benevolo and the *sceneggiatura* drawing method

The systematisation process of reconstruction case studies and the establishment of an analytical drawing method should start from a clear definition of the final goal of this overwhelming task. The objective of this method is to construct a knowledge system that allows to understand the past, with its processes of decision making and morphological metamorphosis leading to the current urban settings. Retracing the transformations allows not simply to witness past experiences but constructs an operative tool for the comprehension of urban dynamics, with the final goal of steering future intervention strategies in light of an increased knowledge of the reconstruction processes.

In order to achieve this goal the tools to be used are not those of the architectural historians, that tend to operate as archivists or advertisers (De Giorgi, 1987), focusing mainly on the artistic and poetic value of the spatial solutions without trying to retrace the operative steps that have lead to the final object; but rather those, analytical and operative, specific to designers. This tools have been defined by Leonardo Benevolo in numerous texts (Benevolo, 1959, 1968, 1991) that see history of architecture as a discipline equal and complementary to design: on one side the definition of spaces based on the understanding of the surrounding context (design) on the other the search for an understanding of the design choices of the past through the analysis of the current built environment and its formation mechanisms (history) (Albrecht, 2015). In this vision the two discipline differ only in the order of the operations, they can be overlapped and interchanged through a commutative property and are conducted through the same tools. Drawing, being obviously a key tool in the design process, becomes a key element in the historical analyses as well as the only element that allows to fully comprehend past design choices in analytical terms. In this way

> "architecture should again belong to everyday life, architecture is a technique to solve spatial and time limitations, it is a technique like all

others, but its sense of responsibility is greater then average: the long duration of its products, the multiple relationships it generates. This passage requires a lowering of tone and an analytical scruple, which instead are increasingly lacking (Benevolo, 1988, 53)".

This careful type of analytical approach is defined by Benevolo as *sceneggiatura* (scriptwriting) of the physical transformations, where architectural projects or urban environments are described and defined through all the specific features of the object and its context as it would happen in a screenplay for a cinema or theatre production. One of the most important *sceneggiature* written by Benevolo is the clear demonstration of the inextricable link between historical analysis, critical assessment and design processes developed for the San Pietro complex in Rome (Benevolo, 1990) and presented in Casabella n.572 in 1990. Benevolo immediately marks the difference between his type of analysis and contemporary architectural history:

> "this brief retrospective analysis helps to understand why a pertinent critique, which is lacking for contemporary architecture, is also missing to some extent for architecture from the past. Archeology with its technical apparatus connected to the excavation and restoration operations is equipped to offer exhaustive analyses of the oldest buildings. The history of art, which grew up on the trunk of the opposing intellectual tradition, does not suppose a professional competence in the field of architecture or a technical precision homogeneous to the design work, but instead a precision of a documentary and literary nature, curiously disarmed when it descends on the concrete physical ground (1990, 55)".

Benevolo's *sceneggiatura* sums archival precision with critical re-drawing by individuating three key moments in the history of the urban complex: the arrangement of the piazza before Bernini's project, the completion of the colonnade with the parallel arms and the definition of the ovoidal square operated by Bernini between 1662 and 1670 and the current conditions following the demolition of the *Spina dei borghi* and the construction of *Via della conciliazione* based on the design by Marcello Piacentini and Attilio Spaccarelli completed between 1937 and 1950. The three phases are not only described and documented with significant archive materials (historical maps and engravings) but are also drawn at the same scale and with the same type of visual representation in order to eliminate the discrepancies given by the

different drawing styles. The current condition is measured and defined in plan and section with the aim of comprehending not only the relationship between the different parts of the complex constructed in different timeframes but also the reasoning behind the design decisions due to constrictions given by previous steps of construction. This type of analysis allows to understand the reasoning behind each design decisions that cannot be explained through the simple observation of the current state of the urban environment. As an example the dimension and orientation of Bernini's colonnade is given by the willingness to create a visual and physical continuity between the *Scala Regia* constructed by Antonio da Sangallo anche the urban axis of the *Via Alessandrina* that connected it to Ponte Sant'Angelo at a distance of around 1.400 meters. This relationship is today completely denied by the new shaping of the urban environment following Piacentini's interventions but can quite easily be observed through the evolution of Benevolo's drawings.

The final drawing proposed by Benevolo in the Casabella article is the key element of his analysis: he overlaps the condition before Piacentini's intervention with the current one showing with only three layers the complex entanglements of urban continuities and breaks. The drawing is presented with three simple colours: the red buildings are unchanged in the two timeframes, the yellow are the demolished and the blue the reconstructed, while the hatched yellow and blue shows the buildings that were reconstructed on areas previously occupied by other buildings. The sum of these layers allows to define a powerful tool for the comprehension of the urban metamorphosis allowing a
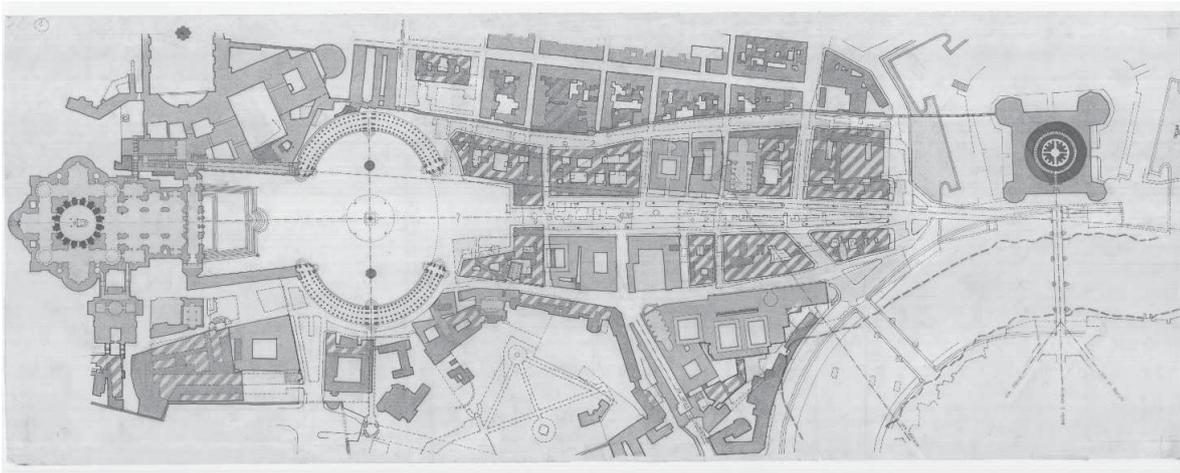

Figure 24.2: Transformation Map of the San Pietro complex with overlap of Gianlorenzo Bernini's project (1662-1670) and current settings with Via della Conciliazione by Marcello Piacentini and Attilio Spaccarelli (1936-1950). Source: Leonardo Benevolo Archive Università Iuav di Venezia.

trained eye to understand in a single glimpse a complex design history.

Benevolo does not see this drawing as the conclusion of the analysis but rather as the foundational element that allows to construct a design proposal made strong by the full comprehension of the complexity of the historical stratifications. In the book *San Pietro e La Città di Roma* (Benvolo, 2004), the *sceneggiatura* will be further expanded and clarified leading to a design proposal for the reconstruction of the *Spina dei borghi*, based on the necessity to re-established the original visual axis denied by the current condition. The analytical drawing approach enables the designers to avoid banal errors derived from a bad comprehension of the context and its history. Piacentini (never openly quoted in the text), as well as is rival Gustavo Giovannoni, was lead to the costly involuntary error that erased the equilibrium of Bernini's vision, by the lack of comprehension of the design history that could instead be fully understood through a careful drawing analyses based on a precise selection of the available archival materials. The continuity in terms of operative tools is a necessary mean for the drafting of design proposals fully aware of the historical evolutions and capable of taking responsibility in the morphological metamorphosis of the urban environment. In these terms, the city is seen as a palimpsest that jealously keeps the traces not only of its latest additions but of the whole sum of modifications applied on the natural and human support throughout its long history. Benevolo summarises his ideas in the conclusion of his article by tracing the possible future uses of his analytical drawing method:

> "Design coherence remains a practical and personal skill, which becomes increasingly difficult to convey and is forgotten over time. The reading of the documents on the construction of the square gives continuous evidence of the contrast between Bernini's reticence and the amateurism of his interlocutors, and this is only the beginning of a misunderstanding that continues to this day. Critics today have the task of resolving this disagreement in the light of the historical account, and the attempt is just as important to understand the architecture of the past as it is to properly discuss and better design contemporary architecture (1990, 60)".

The analytical drawing approach defined by Benevolo is still valuable today and can represent a mechanism that allows to comprehend and define the urban modifications of destroyed and reconstructed urban patterns. Only through this patient process it is possible to depurate architectural history from a vision

based on personal sensibility or on stereotypical archival documentation that too often employs tools that are radically different from those of the design experts. The analytical drawing approach is applicable to all urban areas that have undergone major metamorphosis linked to conflictual events, social distresses or natural disasters. The key element is the definition of the appropriate *sceneggiatura* for each area since most case studies will not have the crystal clear definition of phases that characterises the San Pietro case. With this regard, the choice of the key dates for the selection of the analysis timeframe becomes a pivotal element that steers all future operations. The decision is heavily linked to the availability of data that becomes the first and most important factor but the definition of the timeframe layers must be taken with the greatest care, particularly in fast-growing and fast-modifying urban environments.

Critical Redrawing

The sceneggiatura method identified by Benevolo was applied by the research group Urbicide Task Force at Università Iuav di Venezia to a series of
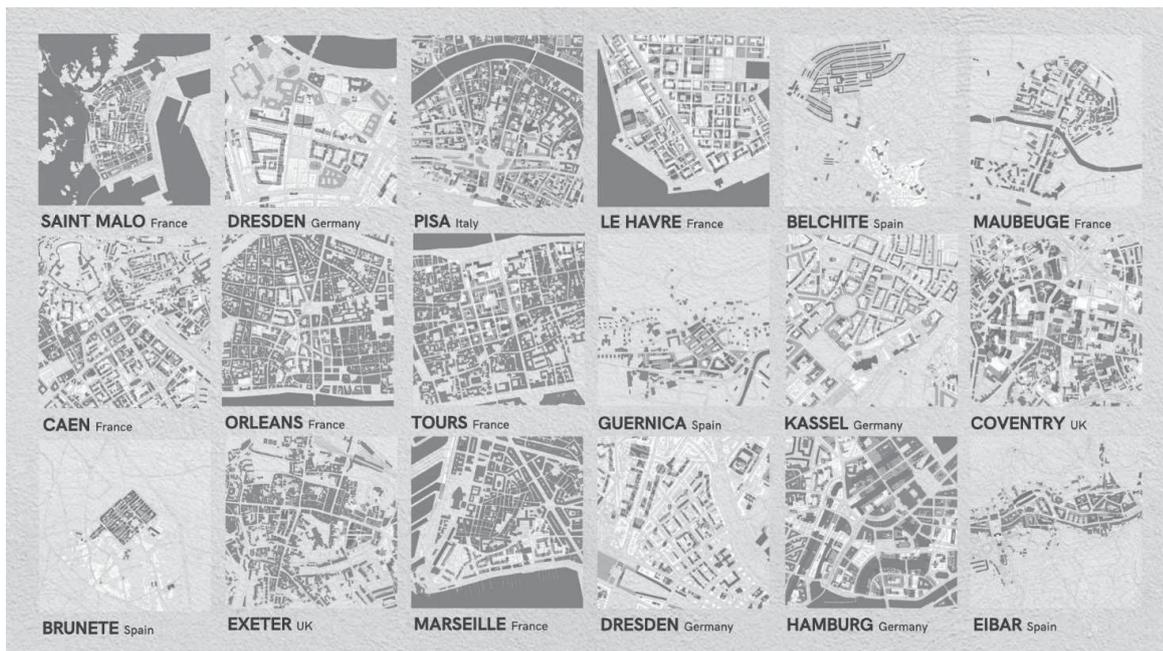
Figure 24.3: Transformation maps for the cities of Saint Malo, France (1944-1961); Dresden, Germany (1945-1989); Pisa, Italy (1943-1960); Le Havre, France (1944-1964); Belchite, Spain (1937-1964); Maubeuge, France (1940-1963); Caen, France (1944-1957); Orleans, France (1940-1960); Tours, France (1940-1962); Guernica, Spain (1937-1956); Kassel, Germany (1943-1970); Coventry, UK (1943-1962); Brunete, Spain (1937-1946); Exeter, UK (1942-1950); Hamburg, Germany (1943-1960); Eibar; Spain (1936-1960). Source: Urbicide Task Force, Università Iuav di Venezia.

reconstruction case studies following WW2. An operation, never carried out in a comparative way, which makes it possible to reassess the numerous monographic studies on post-war reconstruction processes (Mamoli & Trebbi, 1988. Düwel & Gutschow, 2013) in light of a common evaluation system and therefore to define interpretative categories not limited to critical observation of archive materials but based on different tools such as drawing and its analyses. The operation requires a massive archival effort to recover the maps or historical photographs that document the conditions before the destruction, the level of destruction and the reconstruction processes. The archival data were standardised in the forms of representation to allow the full overlap of the different timeframes. The redrawing makes it possible to illustrate the three different urban structures and ends, as in Benevolo's example, through the creation of a transformation map that overlaps the three moments and clearly shows the process of urban metamorphosis. The analysed case studies were all framed in a 1kmx1km square: a common basis that allows you to compare the numerical data that emerge from the analysis of the transformation maps. The different size of the urban centres, which in some cases today have become megalopolises, sometimes required the selection of the most significant area but in most cases the pre-war dimension of the urban centres allows the framing of the entire historical core, the area often most affected by destruction, within the framework of 1kmx1km.

The case studies examined were around 30 in a period that includes the Spanish Civil War (1936-1939) and the various war theatres of WW2 (1939-1945). From a geographical point of view, the cases are distributed among Austria, Czech Republic, France, Germany, Great Britain, Greece, Holland, Italy, Japan, Poland, Spain and Russia. Geographical distribution does not fully reflect the amount of conflict-induced urban destruction but rather shows the greater amount of archival information available in some contexts than in others. The period identified for the choice of the timeframe at the end of the reconstruction process, which makes it possible to draw up the transformation map, varies significantly: in some cases, characterised by extensive but localised destruction, the reconstruction processes were completed in the 1950s (Marseille, Caen, Florence, etc.); most of the planned large-scale reconstructions were completed in the 1960s (Le Havre, Rotterdam, etc.) while in some examples for economic or political reasons the processes lasted until the 1970s (Kassel, etc.) or even to the '80s (Dresden, London, etc.). A formal date of conclusion of the reconstruction exists only in some cases of top-down planning of the urban form such as in Le Havre where in 1964 Auguste Perret's plan is declared completed (Britton, 1997) or in Rotterdam where Cornelius Van Tra's Basis Plan remains in operation until 1968 (Baaij, 1990). In many cases

the completion of a symbolic building is used as the beginning or end of the reconstruction: in Milan the rapid reconstruction of the La Scala theatre with the inaugural concert directed by Arturo Toscanini on 11 May 1946 and the completion of the Velasca tower designed by BBPR (Pertot&Ramella, 2016) in 1957; in Marseille, the inauguration in 1954 of the new *Vieux Port* district that was deliberately blown up during the Nazi occupation and rebuilt following a design by Fernand Pouillon (Crane, 2004); or again in London where the Cripplegate area sees a radical upheaval of urban forms which culminates with the inauguration by Queen Elizabeth of the Barbican Center in 1982 (Orazi, 2018).

The comparative analysis of the transformation maps allows, through critical observation, to build families of intervention strategies and their consequences at the spatial level. The initial decision on maintaining or abandoning the pre-destruction urban form marks a clear watershed between areas where the urban structure is substantially mended with minimal changes (Milan, Pisa, Caen, Saint Malo etc.) and areas where reconstruction is completely different from the pre-destruction setting (Le Havre, Exeter, Brunete, Kassel, etc.). It is also possible to define mixed systems in which the maintenance of some elements considered to be of greater architectural value is accompanied by a radical rethinking of the minute fabric as in Dresden or Hamburg. In other cases, the pre-destruction settlement principle is reinterpreted as the trigger for reconstruction processes by re-proposing the urban form but substantially modifying some key parameters (distances, dimensions of the buildings) as in Orleans or Münster. On other occasions, the inclusion of new functions, wrongly or rightly imagined as more in line with contemporary needs, is the driving force behind the profound modification of the urban layout, such as in Coventry or London. The operation as a whole shows how any attempt at a clear vertical categorisation starting from common characters, in some cases becoming real slogans such as co*m'era dov'era* or *tabula rasa*, must give way to a more fluid division in which the economic, social and political conditions dictate the timing and forms of the intervention strategies. The strong resilience of urban forms emerges with great clarity, dictated above all by the ownership structures and the consequent systems of financial revenues (Bernoulli, 1946), which in spite of total destruction remains capable of directing future design choices. A vision of the city as a unitary body is confirmed (Albrecht & Magrin, 2015), in which the modification of the individual parts is always possible but never indiscriminate with respect to the overall value of the whole ensemble.

The quantitative analysis of the transformation maps can allow a further step

forward in the understanding of the phenomena and in their cataloging, so the next step of research was to define and calculate a series of key parameters: percentage of destruction, area occupied and its variation, number of elements and its variation, average size of the elements and its variation, average of the distances between elements and its variation, percentage of reconstruction on same area and percentage of maintenance of the road edge. The percentage of destruction, which may seem a discriminating element with respect to subsequent variations, is between 95% and 20% and in reality does not substantially alter the subsequent parameters. The most uniform data is undoubtedly the variation between the area occupied before the destruction and the subsequent one which (except for some small towns that undergo a total re-foundation) is in a range between 45% and 85% showing a thin widespread. The data on the variation in the number of elements is also fairly unified and stands between 47% and 95% showing a general simplification of urban complexity in favour of larger and fewer buildings. The figure could be linked to the abandonment of traditional construction methods (which do not allow large dimensions in a widespread manner) in favour of light or heavy prefabrication forms that allow processes of formal uniformity. The two conclusive parameters of the comparison, the percentage of reconstruction on the grounds and the maintenance of the road edge vary substantially between the different cases selected and do not allow a clear distinction between the maintenance of the urban structure completed by the reconstruction of buildings on existing lots and the simple re-proposal of buildings with new forms in high-density contexts and therefore necessarily, but without a clear intention, on previously occupied areas.

Urbicide Task Force intends to further develop the research, also trying to understand if events different in causes but similar in effects, such as natural disasters and socio-economic crises, have radically different impacts on urban metamorphosis. However, it is necessary to reaffirm the use of drawing as a tool for investigation and understanding, not so much of the past with a documentary goal or of the present with an advertising or illustrative function, but as an analytical tool for the understanding of the complexity of urban metamorphosis processes and above all as an operational basis for the creation of strategic urban design tools. Only a full understanding of the reasons and results of past choices can allow today, in a historical context in which catastrophic destructions are continuously increasing and the complexity factors of the reconstruction processes are growing exponentially, to critically insert contemporary choices into an overall trajectory which bases the project of the future on the understanding of the past.

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