FORME DELLA TERRA E FORME URBANE
FORMS OF THE EARTH AND URBAN FORMS

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Observing the long course of the experience storica, it is possible not to perceive all the civilisation of the World Antico who have chosen the locations in which the cities were made in the history of the city, because of the recognition of specific values of space and geomorphologic capacities of the co-ordinates of the city in order to facilitate the development of the places. Therefore, recognizing the value of 'generative' that can be integrated to the natural landscape and facilitated the development of the places. Thus, identifying some processes of representation, each of which offers the possibility of investigating some specific structuring processes of urban form.

Keywords: Progetto urbano, geografia fisica, città e territorio.
Urban design, physical geography, city and territory.

Abstract - The relationship between the forms of Earth and the forms of the cities has ancient origins. Over the centuries, many settlements were born following the recognition of spatial vocations based inside the geographical forms. In this sense, the projects for the Maglana quarters in Rome, and the project for Monteruscello, by Agostino Renna, can be considered as paradigmatic examples, because they represent an attempt to define settlements principles that correspond to the geomorphologic characters of the territory. The proposed paper intends to analyse these projects, in particular through the method of the critical drawing, identifying different scales of representation, each of which offers the possibility of investigating some specific structuring processes of urban form.

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sostrato orografico, riuscendo a conformare luoghi connotati da differenti caratteri spaziali.

Città e topografia I: Pergamo e Priene - Pergamo e Priene possono essere considerati due antichi paradigmi della felice alleanza stabilita tra l’uomo e la natura attraverso l’architettura. Di fronte a queste opere si è colpiti, come scrive Camus riferendosi all’Acropoli di Atene, da «una sorta di gioia esilarante per l’audacia prodigiosa (con cui) gli architetti hanno giocato non con misure armate alla distanza, ma con le forme messe a disposizione dalla natura stessa del sostrato orografico.

Osservando il sito su cui è stata edificata l’Acropoli di Pergamo, è possibile riconoscere la presenza di un crinale ‘sinuoso’ e articolato in sua altimetria, e di un versante ripido, definito da presenza di un crinale ‘sinuoso’ e articolato nella natura stessa del sostrato orografico. Perciò, alla luce del riconoscimento delle form e naturali, ricavate da una forma concava, è possibile riconoscere la presenza di un crinale ‘sinuoso’ e articolato in sua altimetria, e di un versante ripido, definito da presenza di un crinale ‘sinuoso’ e articolato nella natura stessa del sostrato orografico.

Città e topografia II: la Magliana (Roma) e Monteruscello (Pozzuoli) - La cultura architettonica italiana del secondo Novecento si è confrontata in più occasioni e in vari modi a definire la sintassi della costruzione della città in rapporto alle form e, rispetto ai principali nuclei problematici del progetto urbano e, tale scuola di pensiero ha già prodotto, in diverse occasioni e in vari modi, a definire la sintassi della costruzione della città in rapporto alle form e.

Conformazione del declivio, rendendo necessaria la costruzione di terrazzamenti artificiali e di muri di contenimento, ha consentito la costruzione di spazi urbani e di isolati urbani che, innalzandosi su podi e basamenti, orientano la veduta verso sud aprendosi al paesaggio vasto della pianura. Il sistema degli edifici collettivi, in questo caso, è composto di polarità interne al tessuto, ricavate attraverso l’alterazione puntuale della griglia (agorà, mercato, santuari, teatro), e di polarità esterne (ginnasio, stadion) che si collocano lungo il perimetro dell’insediamento, consolidando il limite in alcuni punti.

Dalla descrizione dei progetti appare evidente come sia gli architetti di Pergamo che quelli di Priene abbiano assunto le forme naturali presistenti come ‘campo d’azione’ in cui poter dispiegare gli strumenti costrittivi e le tecniche costruttive proprie della disciplina architettonica. Inoltre, la comparazione di questi due paradigmi urbani rende possibile costatare come le differenti conformazioni geomorfologiche dei territori possano suggerire l’assunzione di differenti principi insediativi e sintassi costruttive. Infatti, seppure entrambi gli insediamenti abbiano sfruttato le caratteristiche geomorfologiche del suolo nei processi di definizione e costruzione della forma urbana, la complessa articolazione formale del suolo roccioso su cui sorge Pergamo ha ispirato una composizione tra volume e forme, la quale è successivamente, sulla base di differenti principi di similitudine con i progetti antichi, sopratutto, in particolare modo attraverso un’analisi di alcune paradigmatiche esperienze progettuali - di riconoscere le intuizioni contenute in questi progetti e, soprattutto, di indagare le loro nuove possibilità applicazioni all’intero delle mutate condizioni che interessano i teritori urbanizzati contemporanei. Inoltre, i progetti per l’espansione del Quartiere Ina-Casa alla Magliana (1959) di Saverio Muratori e il progetto per il nuovo insediamento di Monteruscello (1983) di Agostino Renna sembrano presentare alcuni principi di similitudine con i progetti antichi, soprattutto per quanto riguarda la definizione dei processi di funzionalità formale che si definiscono in relazione alle forme del modellato orografico.

Nel sistema collinare della Magliana è possibile distinguere la presenza di quattro elementi geo-
gli urbanistica che Renna assume per definire la struttura del nuovo quartiere. La griglia, costituita attraverso l’iterazione di insulae terrazzate è conformata in modo tale da permettere di vedere, anche dal punto più basso dell’insediamento, la parte alta della città. Per questa ragione, la profondità delle terrazze diminuisce in modo progressivo salendo di quota.

Inoltre, è possibile notare come, pur essendo generalmente omogeneo, il declivio è caratterizzato da una forma ‘scalettata’, dovuta alla progressiva sedimentazione delle colate laviche che hanno conformato i pendii collinari come una successione di ‘balze’. Tale conformazione presenta tratti di discontinuità che sono risolti puntualmente attraverso l’alterazione degli elementi che compongono la griglia stessa, ossia gli isolati: le insulae terrazzate si deformano seguendo l’andamento delle isospie naturali. Inoltre anche Renna, come Muratori, sperimenta differenti modi di declinare il rapporto tra morfologia urbana e topografia edificia attraverso la dialettica con la topografia: la variazione del tipo della residenza a corte chiusa o aperta, derivata dalla tradizione partenopea, è ottenuta attraverso la diversificazione del rapporto tra l’edificio e il suolo, attraverso la conformazione dei terrazzamenti e delle alterazioni dei piani di posa suggerite dalla consistenza dei salti di quota. Dall’analisi di questi progetti risulta evidente come sia Muratori che Renna riconoscano il valore operativo che l’interpretazione dei caratteri geomorfologici può assumere all’interno dell’impostazione metodologica del processo progettuale. Anche in questo caso, però, il sistema collinare della Magliana offre a Muratori opportunità altre rispetto a quelle che offre a Renna il leggero pendio collinare su cui sorge il nucleo centrale di Monteruscello. Per tale motivo, come si è già visto per Pergamo e Priene, i due progetti assumono differenti sintassi compositive, che sono implicitamente indicate dalle distinte peculiarità formali che caratterizzano il modellato orografico dei rispettivi siti.

I paradigmi della città-natura - Il doppio confronto ‘Pergamo-Priene’ e ‘Magliana-Monteruscello’ ci permette, innanzitutto, di riconoscere un valore di generalità nelle qualità formali (sintattiche ed espressive) del paesaggio e nei possibili modi con cui l’uomo può interagire con esse. A prescindere dai continui e repentini mutamenti che si succedono nel tempo cronologico della storia, questo valore re sembra perdurare e continuare a essere operabile, ovviamente in modi sempre differenti, attraverso il progetto urbano. In secondo luogo, all’interno di ognuna delle due coppie, i progetti insistono su territori differenti e perciò, pur presentando evidenti similarità rispetto alla postura assunta nei confronti del tema del rapporto con le forme orografiche, essi presentano evidenti dissimilarità.
porti di convivenza tra fatti urbani e fatti naturali, forme della natura possono assumere rispetto alla definizione dei principi insediativi e dei caratteri spaziali degli insediamenti antropici. Per concludere, accettando l’invito delle idee di una forte relazione tra progetto urbano e geografia fisica, i progetti descritti rivelano una chiara vocazione formale, insediamenti antropici.

In ordine a questo, i nuovi quartieri sembrano sviluppare il proprio specifico carattere, e quindi la propria identità, in relazione alle specifiche forme orografiche e, più in generale, alle condizioni ambientali che identificano le parti della città assumono un valore strutturale già contenuto nella geomorfologia e, in questo modo, definiscono il paradigma della forma urbana contemporanea. Nei progetti descritti evidenziano quindi come le diverse vocazioni formali insite nei corpi territoriali suggeriscono analogie e le differenze individuabili tra i progetti genetici che le diverse antropizzazione e le difficoltà con cui si insediano. Oltre a ciò, gli spazi urbani progettati da Muratori e Renna sono delimitati e misurati e, al contempo, sono aperti verso il paesaggio vasto e smisurato. In questo modo, tali progetti indicano come la condizione dilatata della città contemporanea, che ha ormai invaso le campagne e si è proiettata su territori con caratteri spaziali inediti, possa offrire alla disciplina del progetto urbano innumerevoli spunti per possibili future sperimentazioni.

ENGLISH

Looking at the long standing historical experience, it is possible to observe that all the civilisation of the ancient world chose the places to settle according to the recognition of specific geological and geomorphological values, which were able to correspond to their customs, habits and ways of life. River mouths and bends, bays and gulfs (suitable for shelter), the summits of the cliffs (capable of providing natural defence) are geographic elements that have encouraged the foundation and facilitated the growth of ancient settlements. These natural elements have been of great importance for the definition of the settlement principles, the structure of each part of the city and the construction of urban spaces. Therefore, the recognition of the implicit possibilities owned by the orographic substrate has enabled many ancient cities to develop in harmony with the forms of nature and to contribute to enhance over time the original characters of the chosen sites. But nowadays, observing the physical body of the Earth’s surface, it appears clear that a profound modification is affecting the relationship between civilizations and territories. The enormous expansion of the urbanization phenomenon and the increasing intensity of territorial transformation processes seem to have led to a crisis within the relationship between culture and nature. In fact, the change in the scale of anthropic settlements (quantitative phenomenon) is coincided with a wider and more profound transformation that has affected both the structural form of urbanized territories and the space conditions that identify urban characters (qualitative phenomenon).

Expanding along the infrastructural networks, urban areas have absorbed scraps of uncontaminated nature and cultivated fields, making it difficult to distinguish between what is urban and what is rural; cities have invaded the countryside and consumed the land around them. By doing this, they have also assumed fragmented structures, spreading over the territory. In this condition, the terms that we used to identify the different manifestations of the urban diffusion phenomenon - spreaded city, dispersed city, urban sprawl, suburbia, exurbia - tend to designate these phenomena merely as pathological events, as generic urban expansions without form. Therefore, they refuse to recognize the importance that orographic forms assume in the lengthy and stratified constructive processes of human settlements. We may consider, for example, the difference between the expansion of the urban centres in Abruzzo and Marche, which define a comb-shaped structure along the coast line and occupy the river valleys, and the widespread city developed in the Lombard plains region, where the regular signs of the land use overlapped over time in a 'bas-relief' that still allows the ancient form of centuratio romana to emerge in some points. The divergences in these urban configurations show that the implicit qualities of the 'pre-existing' orographic forms have reverberated on the construction of urban areas. Consequently, recognising the possible morphological value of the orographic substrate, the aim of the research is to identify some latent potentials hidden in the deepest side of the diffusion and dispersion phenomena affecting the contemporary cities.

In order to deepen the ancient origins of these themes and also in order to open the field of reflection to the specific problems inherent in the urban design discipline within the complex contemporary phenomena, four urban projects - two 'ancient' and four two 'modern' - are described below because they are considered as paradigms of the relationship between urban forms and natural forms. The main objective of the analysis is to investigate the ‘correspondence’ relationship between the formal structure of the territories and that of the settlements, namely the ‘generative’ value that can be recognized in the natural forms with respect to the structuring process of urban forms. The critical drawing has been useful for the identification of the interpretative processes through which architects determined layouts and guidelines, geometries and measures of the urban
project on the basis of the recognition of the relations within the structure of the orographic model (i.e. the formal relations between the elements of physical geography). In particular with regard to the modern projects, the analysis observes the ‘conformity’ relationship between geographic elements (plain, river bend, valley, ridge, plateau, hilly cleft and slope) and urban elements (street, square, residential block, monument). The construction of physical models at different dimensional scales has been useful to the recognition of the interpretative processes through which the type-morphological interactions have been experimented in relation to the forms of the orographic substrate, succeeding in conforming places with different spatial characters.

City and Topography I: Pergamum and Priene - Pergamum and Priene can be considered as two ancient paradigms of the positive alliance established between man and nature through architecture. In the face of these works, as Camus writes referring to the Acropolis of Athens, we are struck by a sort of exhilarating joy for the prodigious audacity (with which) the architects played not with harmonious measures, but with the stunning extravagance of the promontories, with the forms made available by the nature of the orographic substrate itself.

By observing the site on which the Acropolis of Pergamum was constructed, it is possible to recognize the presence of a ‘sinuous’ ridge, which is articulated in its altimetry, and of a steep slope, which is defined by a concave form. By interpreting with architectural shapes the orographic pattern of the mountains, the construction of the terraces follows the progressive succession of the ledges that define the articulated altimetry of the ridge. Furthermore, the bases are arranged according to an arc of circumference, which interprets and make geometric the ridgeline, while the enclosure-buildings, which delimit the terraces on three sides, orient these spaces towards the vastness of the valley. The Temple of Athena is placed in tangency with the top of the theatre and builds a strong connection between the parties because it changes the arrangement with respect to the terrace on which it lies and it is aligned with the Great Altar. The Stoà and the Temple of Dionysus, on the other hand, define the limit of the Acropolis to the valley; they build the foot of the settlement and give unity to the whole composition by measuring it.

The second ancient paradigm, the city of Priene, is placed on a tectonic terrace at the foot of Mount Mykale. The geomorphologic step is closed to the north by the steep cliff that separates it from the acropolis, and a slope shapes it and orients the space southwards toward the valley of Menandro. This time, as opposed to what we have seen for Pergamum, the homogeneity of the natural forms that characterize the site has allowed the assumption of a ‘grid pattern’ as a Hippodamian plan. This structure, while being a canonical scheme for the construction of cities on flat territories in the Ancient World, is here engaged by the architects who designed Priene in a different way: in fact, it has been varied in relation to the slopes and the jumps that give shape to the tectonic terrace, by means of significant soil transformation works, such as excavations and terraces. In addition, the perimeter of the urban grid has adjusted to the orographic shapes, following the perimeter of the natural terracing, and the orientation of the slope that overlooks the river valley has strongly influenced the urban form: the shape of the slope, necessitating the construction of artificial terracing and containment walls, has allowed the construction of urban spaces and residential blocks that, rising on podiums and basements, orient the view toward the vast landscape of the plain. The collective building system, in this case, is composed of internal polarities, which are obtained through accurate alterations of the grid (agora, market, sanctuaries, theatre), and external polarities (gymnasium, stadium), which lie along the perimeter of the settlement, consolidating the limit in some points.

From the description of the projects, it is evident that the architects who built Pergamum and Priene assumed the pre-existing natural forms as ‘field of action’ in which to deploy the compositional principles and the constructive techniques of architectural discipline. Furthermore, the comparison of these two urban paradigms makes it possible to observe that the different geomorphological conformations of the territories can suggest the assumption of different settlement principles and compositional syntax. Even though both the settlements have exploited the morphological features of the soil during the constructive process of urban form, while the complex articulation of the rocky spur on which Pergamo is built has inspired a composition based on the relationships between different volumes and forms, the shapes of the natural terrace on which Priene lies have suggested a homogeneous and oriented urban structure.

City and topography II: Magliana (Rome) and Monteruscello (Pozzuoli) - On several occasions the Italian architectural culture of 20th century faced with the theme of the relationship between the forms of the earth and the forms of the city. Since its origins the Italian School of urban morphology and building typology has recognized (from the theories of Muratori to those of his students including G. Caniggia, P. Maretto, G. Marinucci, A. Giannini and the Bollati brothers) the centrality of this theme with respect to the main problematic nuclei of urban design, and this ‘school’ has already tried, on several occasions and in various ways, to define the syntax of the construction of the city in relation to the forms of orography, recognizing and exalting the ‘peculiarity’ and the topological characters of the natural substrates. Therefore, in the light of the recognition of the paradigm shift that is affecting urban phenomena, the current research aims at re-examining the categories and tools developed by morphotypological thought, then - in particular through the analysis of some paradigmatic design experiences - at recognizing the intuitions contained in these projects and, above all, at investigating their new possible applications within the changed conditions affecting contemporary urban territories. In addition, the projects for the expansion of the Ina-Casa quarter in Magliana, Rome, by Saverio Maratori (1959) and the new town of Monteruscello, Pozzuoli, by Agostino Renna (1983) seem to have some similarities with the ancient projects, which concern the structuring processes of urban forms that are defined in rela-
tion to the forms of the topography.

In the hilly system of Magliana it is possible to distinguish the presence of four geographic ele-
ments: the N-E plateau, the three S-W ridges, the
hilly saddle that divides them, and the ‘pointual’
plateau. The definition of the settlement principles
and the composition of the urban form in relation
to the orography are not universal since they are
the result of an interpretative process and, for this
reason, Muratori elaborated different projects.
These projects are configured as sets of urban ele-
ments that define long distance relationships
between each other within a discontinuous struc-
ture that ‘leans’ on the peculiar ogographic shapes
of the hilly system. In all the project versions,
Muratori take advantage of the elongated shape
of the three ridges to construct long perspective
streets through a process that make more geomet-
ric the shape of the ridge. The plateau is built
through the identification of another geometric
system, sometimes specular and sometimes con-
vergent to the first, from which the main roads
originate. Since the saddle between the hills is the
point of conjunction of the main roads and the
focal point of the settlement, according to the dif-
ferent hypothesis, it becomes a public park or a
large urban square. Instead since the plateaux are
easily identifiable at great distances and at the
same time offer wide panoramic views, they hold
the construction of isolated public buildings. In
addition, Muratori articulates and conforms each
district of the settlement (the so-called
centre) characterized by the presence of vegetation: a place for
nature through the definition of a privileged view-
point on the landscape: a place for looking at
the nature. In other variants, the buildings rest direct-
ly on the ground and allow not only a visual per-
meability but also a more spatial continuity; in
these cases, the space of the courtyard is charac-
terized by the presence of vegetation: a place for
walking in the nature.

The second case study, Montoruscello, is a
planned city, built after the bradyseism that hit
Pozzuoli in 1983. It is placed on the innermost slopes of the craters inside the Campi Flegrei and
it is opened towards the Caserta plain. The central
district of the settlement (the so-called historical centre) is located on the highest part of the soft
hilly slopes. Unlike the Magliana hills, this site is
characterized by the presence of a natural element: the hilly slope, which is fairly homoge-
neous and which progressively become lighter
downwards towards the valley. Although an artic-
ulated form does not characterize it such as the
Magliana hilly fingers, it is still possible to recog-
nize a kind of topological order in the structure of
this territory, which corresponds to a geometric
order in the structure of the new settlement. In this
case, as well as for Priene, the geometric regular-
ity of the urban grid that Renna assumes to define
the structure of the new quarter corresponds to
the homogeneity of the slope. The structure of
the grid, which is composed by the iteration of ter-
raced insulae, allow seeing the upper part of the
city even from the lowest point of the settlement. In
fact, the depth of the terraces decreases progres-
sively climbing up the hill.

Although it is generally homogeneous, we can
note that the slope is characterized by a stepped
shape due to the progressive sedimentation of lava
flows that shaped the hilled slopes as a succession
of steps. Within this configuration there are some
irregular parts, which are resolved point by point
through the alteration of the elements that com-
pose the grid itself, i.e. the blocks: the terraced
insulae are warped due to the shape of the natural
contour lines. Renna, such as Muratori, has experi-
mented different ways of declining the relation-
ship between urban morphology and building
typology through the relationship with the topog-
raphy: the definition of the different typologies -
closed or open courtyard blocks, which are
derived from the Neapolitan tradition - is
obtained through the alteration of the relations-
hips between the buildings and the ground. It is
obtained through the conformation of the terraces and
through the alteration of the base level, which is
suggested by the difference in height between the
natural steps. It is evident from the
analysis of these projects that Muratori and
Renna recognize the operational value that the
interpretation of the geomorphologic configuration
can assume within the methodological approach
of the design process. Also in this case, the
Magliana hilly system makes available to
Muratori some possibilities, which are different
from those that the slight hilly slope of
Montoruscello makes available to Renna. For
this reason, as we have already seen for Pergamo
and Priene, the two projects assume different compo-
sitional syntax, which are implicitly indicated by
the different formal peculiarities that character-
ize the ogographic features of the respective sites.

The paradigms of the city-nature - The double
comparison Pergamo-Priene and Magliana-Mon-
toruscello first of all allow us to recognize a
general value in the formal qualities (syntactic and
expressive) of the landscape and in the possible
ways in which architecture could interact with
them. Apart from the continuous and sudden
changes that occur in the chronological time of
history, this value still seems to be operable; of
course, in different ways, through the urban
design. Secondly, within each of the two pairs, the
projects lie on different territories, and therefore,
develop their apparent similarity concerning the
theme of the relationship with the ogographic
forms, they present clear dissimilarities towards
the compositional instruments assumed in the
structuring process of the urban form. The ano-
logies and differences that can be identified between
the projects underline that the various formal
vocations contained in the territorial bodies sug-
gest the assumption of different strategies in the
structuring process of the settlements principles
and the spatial characters of the new urban areas.
To conclude, by accepting the invitation of
the forms of the earth and by adopting the idea of
a strong relationship between urban design and phy-
sical geography, the described projects reveal a
clear formal vocation already contained in geo-
morphology and thus define the paradigm of the
city-nature, which is at the same time ancient and
modern. Their analysis shows that the methodolo-
gies adopted in the design processes still have
strong innovative qualities and seems to contain
some insights that should be useful for the trans-
formation of contemporary cities and territories.
Indeed, by recognizing the etymological value that
the natural forms could have with respect to the
definition of the forms of the city, the new relation-
ship between urban and natural facts, the archetypal
porosity between nature and cities could be an
unmissible opportunity to reconfigure the form
of contemporary cities. In Muratori and Renna's
projects, for example, the interstices of nature
between the parts of the city assume a syntactic
value, namely the value of the pause in the musical
composition, and they are considered as intervals
capable of conferring identity on the individual
parts, by defining them in their finiteness. In
addition, the new quarter seem to develop their
own specific character, and hence their identity, in
relation to the specific ogographic shapes on
which they are constructed. In addition, the urban
spaces designed by Muratori and Renna are
neutralized and measured and, at the same time,
they are opened to vast landscapes. In this way,
these projects indicate that the open form and the
dilated spaces of contemporary cities, which have
already invaded the countryside and have project-
ed themselves on huge territories with unprecen-
dented spatial characters, could offer the disci-
pline of urban design innumerable ideas for possi-
bile future experiments.

NOTES

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