



Original Article

The Management of Green Areas in the Urban Environment

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Abstract

In the simple meaning of green areas nature is expected to carry out many functions in an urban context, which are useful to explain the descriptive characters needed for the analysis and comprehension of specific phenomena.

Besides being a significant component of the urban scene, vegetation is also one of the most appreciated: generally speaking, vegetation is synonymous with quality.

The structural pattern of green areas, which apparently occupies uneven spaces among buildings, regulates in fact the planning order of the fabric of the city, as an organic system, in which its matrix organises and shows the social mechanisms of the city itself.

Starting from a general scheme, the research has to discover the criteria which determined the structure of the environmental and “naturalistic” scene of a specific site, considering the various elements which can illustrate the cognitive context of the territory itself.

The comprehension of the site characteristics and the trends of certain phenomena thus becomes crucial to supervise and control the territorial development respecting its qualities with an efficient filing system.

The survey then becomes an indispensable instrument for knowledge which is not limited to the analysis of a specific situation but should lead to the understanding of possible associations and connections. Due to these complex relationships the research cannot be limited to a single professional, but needs to integrate different professionals: landscape surveyors, botanists and specialists on plant protection as entomologists and pathologists.

Therefore a system of analysis was experimented, from a general perspective to a detailed one, considering all the intermediate degrees. Through the studies of the relationships between the different steps, the connections between the scale of human perception and the scale of territorial management may be understood.

Keywords: Green area survey, management, filing system.

INTRODUCTION

The presence of nature, diametrically opposed and the antagonist model of the sought-after tidiness inside the city, once constituted the basic element for circumscribing and defining the image of the urban aggregate; today, if one excludes the big cities, one can still find this aspect in many towns where natural sites have become the real dialectical element of choices in the formal configuration of the urbanised environment (Cullen, 1976).

The general characteristics of the territory, such as the morphological profile, are reflected in more minute elements which numerous questions derive from, such as the presence if any, of particular types of flora and fauna which have over time modified or, at least differentiated and made unique, the relationship which man has entered into with nature, with the specific place and with his genius loci.

This dualism of intents, rooted in the complex human practice of making settlements based

on primarily practical and functional aspects, has, over time, set down the essential conditions of the appearance, movements, rituals and practices of the modern-day city.

In those places where architectural elements embark on a direct dialectic with the environmental and vegetable context, or in the cities or settlements located in areas where living conditions are extreme or again where lack of maintenance has allowed nature to re-emerge in its ancient sites, specific conditions exist within which man re-experiences direct contact with the natural setting.

This relationship may however also be re-experienced where the artificial landscape has been directly influenced by development which respects the typical elements of the territory, in little towns or near the countryside; but this perception has been lost inside the city for a long time now.

Both the city and the former village were always constricted and limited by the use of boundaries, dividing them from nature; the ritual itself of positioning, the result of an agreed pact with the *genius loci*, included operations aimed at defining the boundaries between the chaotic natural world and the ordered unnatural world.

These limits which were originally guided mostly by a functional and ritual logic have been modified by man's behaviour, by his system of relations, social structures and various behavioural reasons which have imposed new rules and new dynamics of articulation between two, increasingly different worlds (Mumford, 2002).

Echoed in architecture and the criteria for organising space this logic modified and inverted the original reasons for order through an often catastrophic reinterpretation which led to the realisation of now independent, urban structures, in total and absolute contrast with their origins, where even the green areas assume an artificial guise, interpreted as pure and simple aesthetic mediums and meeting a functional requirement (providing shade) or, in the more refined cases, as a means of biotechnological intervention.

Within this almost total denial of "nature" there are places where this transformation may be read, manifest of clear repentance; as

Friedrich Schlegel recalls in his Paris travel journals, "E' talmente vario lo spettacolo della vita sociale che, alla fine, si inizia a provare nostalgia della natura" (the spectacle of social life is so varied that, in the end, one begins to feel a certain nostalgia for nature) (Campagnola, 2005).

Dedicated spaces and oases of this nature which man has for numerous reasons so long done without and for which he now feels a deep nostalgia, are now re-proposed; well-planned oases which delineate through the plan/nature relationship the deep sense of urban change, highlighting its inventions and in practice marking the passage of time.

The presence of clearly-defined spaces inside today's metropolises, where the passage of time becomes almost imperceptible, enables by reflection a celebration of the city, of its artifice and frenetic activities which today fill the roads; the great parks and city gardens which change and move slowly at a constant rhythm with the varying of the seasons, almost seem huge clocks or time machines, inside which man, tired of his own inventions, can once again feel passionate, priding himself on a more or less spontaneous organisation, taking inspiration from that matrix so complex and out of reach which nature is.

Nature, now in the simple sense of greenery, possesses, as one might easily imagine, multiple functions within an urban context; functions which it is useful to clarify, even briefly, to see what the subsequent descriptor characters useful for analysing and understanding the specific phenomenon are.

As regards appearance, the contrast of the vegetation with the architectural panorama acts as a reminder of the territorial characteristics and appearance, in the sense that it immediately recalls and re-evokes the presence of a wider, more specific natural level within which the artificial space moves.

This sample space, alternating in an irregular chequer-board of greenery and buildings, regulates, in brief, the planning of the city with its fabric; structured as a system the matrix itself of which becomes a signal directing the social mechanisms inside the city.

It regulates aspects of “value” and “meaning» and entails as a result, specific duties which the city must set itself so as to be able to preserve such coexistence, reversing the situation in which in the same way the territory and “nature” accepted the city.

Terms which act as the basis for organising a data medium which takes the aspects described into consideration and which manages to analyse, even briefly, a condition which is not only linked to the object under examination but which is also subject to a considerable system of relations.

Starting from a general framework, it will be useful to answer the questions regarding the positioning of a specific site or element, from a territorial scale to the narrowest hinterland so as to comprehend, by means of the opportune printouts, the form of this sample space.

The general conditions of “nature” at a territorial level are reflected, in fact, in the guidelines of the city and its urban planning sample space; specific elements and conformations determine choices relative to the general guidelines of development, to the materials and, actually, to some extent to everything, in the same way that the city regulates those consequential spaces which we call green spaces, from city gardens to the larger parks, once marginal countryside and now more or less pleasing oases.

Actually, as a result of large-scale urban development architecture rarely re-proposes a direct relationship with nature and the vicinity of “unplanned” elements beside large buildings enriches that overly poor both chromatic and formal dialogue which the city often offers in exchange.

There are vital reasons, as well as taste, which have helped to preserve the larger green areas, for example their function as a green lung, providing oxygen able to slightly improve the quality of city air means that they cannot be cut down since a certain percentage of green areas inside the city must be preserved.

So, analysing the element which best represents the vegetable world from a perceptive and figurative point of view, the tree, it's worth checking what it requires to live and grow in an artificial environment;

needs which are often overlooked and which lead to a limited aesthetic and functional performance or to the definitive cessation of the activities for which it was presumptuously planned (Fig. 1).

A plant is not just, as we architects are often inclined to believe, an ornamental element like a statue or a bench, but a form of life, a creature in a specific, biological chain which regulates life at various levels just as it merges different environmental levels; from the world of invertebrate animals to vertebrates, including man, the plant is the creator and, at the same time, the place where incredible mechanisms and operations take place which, starting from the microcosm end up by altering the structure of the territory and environment (Robinson, 1999; Tiberi and Roversi, 2000).

Just think of an emblematic figure such as the cypress, the oak or the pine tree, at least in the central regions of Italy, they become the symbol of specific landscapes or of entire expansive territories such as regions; the physiological imbalance created by the presence of a specific agent may result in it extinguishing itself in a short time due to the consequences of sudden and large-scale infestations of arthropods and/or pathogenic agents, rapidly altering the landscape.

Understanding the inclinations of places and the dynamics of certain phenomena thus becomes of vital importance for the purposes of regulating the development of the territory while respecting its specific characteristics, through efficient planning.

In this case the survey becomes an essential instrument for acquiring information which is not limited to the analysis of a phenomenon but which must align systems of phenomena so as to understand their relations and connections if any; it is precisely on account of these complex ties that the study of a territory cannot be limited to the skills of a sole professional figure but must integrate different skills, from the landscaper, to the botanist and forestry scientist and, subsequently to those responsible for its protection: entomologists and pathologists

The instruments useful for preserving the naturalistic heritage may thus be found within

the surveying and census operations, if performed with a critical interpretation which takes into account the dynamics of the place, understood not as mere sites but as structures sub-divided space and character, and never separated from the chain of environmental systems which they must be inserted and contained within.

If the tree or plant is therefore seen as the natural scenario within which specific phenomena occur and as the element which can be identifiable and surveyed for the purposes of control of the territory, it is naturally seen as the spontaneous level at which to predispose a methodology of analysis which takes into consideration all the phenomena which are inherent to it, depending also on relations with other systems.

The articulated network of systems which invests a natural territory and in this case a park, presents itself as a complex enigma of stories and volumes which identify two different systems, those of elements and of relations.

MATERIAL & METHODS

The specific features of the operations defined as "surveying and documentation of green areas" are connected with the complexity of the subject itself; traditional methods of analysis are based on plentiful census apparatus composed of records of the individual elements which, despite often appearing exhaustive, generally present deficiencies as regards the identification of systems of relations existing between the individual subjects classified and still suffer from the concept of element as unique specimen, as a single asset to be preserved (Fig.2). These systems produce a quantity of detailed data useful for the analysis and even for the conservation of the individual arboreal unit but do not take into due consideration the environmental relations and peculiarities which the element acquires in its relations with the surroundings (Bertocci et al., 2006). We have therefore tried to experiment a system of analysis which starts from a general picture to then go into detail, bearing in mind all the intermediates scales of interpretation which make it possible, by studying the links existing between the various levels, to understand the relations existing between the scale of human

perception and that of "management" of the territory.

The creation of exact criteria of grading is the first procedure useful for defining the logistic framework of action, with the intention of surveying such area.

For each of the aforesaid systems a hierarchy needs to be established which can be used when planning the census operations so that the various environmental levels for which an adequate representation of the territory needs to be made and predisposed can be identified. This should aim not only at comprehending the mass of data gathered but also at reconstructing the characteristics analysed typical of the level in question.

Defining the environmental levels of analysis therefore it proved both useful and necessary to clarify what the descriptors and features specific to the place were which made it recognisable; through the creation of a series of demarcation lines and virtual boundaries we were able to direct the analysis and surveying programme, structuring it around the needs which the place required according to the said original division.

The first schematisation of the natural fabric led to the identification of various types of subjects of which the homogenous characteristics needed to be identified, outlining the relations between the various levels of investigation; the levels of investigation of each element of discretisation are positioned following a pattern built-up on a range of responses deduced from cognitive and orientating operations, and the goals which the databank sets out to achieve (Parrinello, 2006).

To suppose the elements helps to clarify the model of the current, real state of relations and makes it possible to foresee what the most opportune operations are so as to define the representative instruments best able to express the real conditions of what is to be illustrated.

In a discretisation of a specific urban context the elements referred to are the buildings, residential groups, blocks and so on up to the larger areas and cities themselves, while the relations between them are organised by the connective tissue of roads and squares; inside a garden or park the elements making up the whole are limited practically to the individual plants which, even when constituting mixed or homogenous groups, present levels of relations limited by physical free space, only the presence of another element marks the space, a space in which no symbol present is able to transmit the area of pertinence of one or other plant; this is therefore a continuous relation.

So, while for a green area in general the relational fabric becomes highly complex compared to a merely urban context, it's important to clarify how this relation may be considered direct or indirect, principal or secondary and when this defines or not, a limit, a boundary in defining a possible set. Below the places identified as elements and the respective general criteria of division identified for the park of Villa al Ventaglio are shown (Fig. 3):

GENERAL UNIT (G.U.)

- The general unit is the object of the survey campaign and is also the landscape unit identified by the site structure. The boundaries are often defined for administrative purposes as well as physical ones
- Record code: Arabian notation

ENVIRONMENTAL UNIT (E.U.)

- In the park system, these units maintain their own identity which is also considered separately. The units are arbitrary divisions (according to functional, typological or formal requirements) useful for the disjunction of the whole system
- Record code: Latin letters
- Basic identification criteria: orographic morphology, evolution of the park, ontological characteristics, to form defined entities related to the developed life

MORPHOLOGICAL UNIT (M.U.)

- Morphological units are defined by the division of environmental areas which have homogenous characteristics on a macro-scale into the areas themselves
- Record code: Arabian notation
- Basic identification criteria: physical morphology

PLOT UNIT (T.U.)

- The plot units are the basic units and those which compose the green tissue. They are often defined by groups of trees and they represent the status and the point of the relations enquiry of the single vegetable element
- Record code: Small letters
- Basic identification criteria: the possibility to individualise groups with homogenous characteristics

VEGETABLE UNIT (V.U.)

- The vegetable units analyse every single vegetable phenomenon with a detailed record

sheet (relations study, identification of the species, physical description, vegetative condition)

- Basic record code: Roman notation
- Basic identification criteria: the single tree or shrub

Following this initial general definition one can foresee the recording of the relations arising from an initial interpretation of the spaces and places through an understanding of the same not as entities in their own right but as mediums of communication between those elements previously defined.

At this level it's worth clarifying what relational unit relates to the specific element for the purposes of understanding in real terms the mechanisms which regulate the life and flows relative to certain aspects of the place being examined.

In general this record-sheet of relations will contain:

1.territorial units: the largest scale units on the record sheet, useful for describing the relations existing between the zones and urban sub-areas and the territory external to the park.

They can be defined as landscape units in which the relations between the appearance of the park and that of the place it is situated in, emerge.

2.environmental units: these are the basic units making up the set of relations of the park fabric, seen as a structured organism, identified generally by the lawns and main paths, they represent a moment of merging and synthesis of the relations of the single element belonging to the fabric with the rest; a discriminating feature of their identification are the aspects assumed in the forms of aggregation of the vegetable units in generating typically identifiable environmental spaces: lawns, flowerbeds, open square.

As well as the roads and open spaces this category can also contain structural elements such as the boundary walls or distribution systems historically generated by specific production functions which have resulted in a particular pattern of relations between the vegetable units.

RESULTS & DISCUSSION

This division follows mainly theoretical parameters established according to general criteria and which probably need to be further clarified so as to divide the case studies of possible sites of analysis into different types of discretisation, both directed towards parks and gardens and towards the green areas of the urban fabric.

We have tried to generate a record sheet relative to the arboreal element which aimed to satisfy the needs connected with the census operations of the state of the trees growing in places destined for recreational and landscaping use, where the objective is to verify not only the species and type of growth form, but also the conditions of health and physiology, as well as identifying the critical management elements.

The census, by defining as well as the landscape and environmental aspects, the diagnostic picture of each tree on the basis of the intrinsic characteristics of the tree itself, any disease, physiological or mechanical destabilising elements, the features of the plantation site and more generally of the context which the tree is situated in, enables, specifically to identify and define the priority measures which generally foresees a considerable commitment in terms of extraordinary maintenance measures.

As regards the planning aspects of green areas, including those aimed at projects of reclamation, it is important to consider the function of an object in an urban context in relation to the compositional or scenographic effects, the scale of landscape as a characterising feature of the town-planning system or the scale of the place so as to define the empty space between built-up areas and focus on the compositional features of the place.

Alongside natural elements such as the sky and water the green area will enable a chromatic contrast able to valorise by contrast, the said artificial features of the environment and that's why it's important to include in the database systems suitable means of interpretation for a careful analysis of these contrasts and values.

The record relating to the arboreal species is elaborated by means of dedicated software and has been divided into four general areas of analysis: grading, historical analysis, physical analysis, and growing-maintenance.

The interpretation, in projectual terms of these operations aimed at defining the theoretic structure and specific descriptors of the database must always be pursued in various directions; trying to immerse oneself and emerge from the exact logic of the individual parameter the aim is to be able to see that multi-dimensional information which traces back to the possible applications of the instrument and, as a result, take into account the possible exigencies which may be remedied by prompt awareness.

The first section relative to grading contains descriptors aimed at placing the element in the context and the record-sheet itself within the general structure of the database; as well as a

record code of the element with correspondence at a cartographic level composed of numbers and letters which follow criteria previously shown relative to environmental levels, the entries shown who has compiled the record sheet, the date of compilation, the number of the sheet (an important entry for scheduling the census operations), general descriptors relative the localisation, type, general state of health and a series of boxes set aside for pictures or drawings of the relevant area.

The historical analysis shows the information which has been accumulated over time regarding the tree or shrub as well as any notes referring to past events or the appearance of the specific tree or shrub in a work of art, painting or literary description.

In the section dedicated to physical analysis, as well as the normal dimensional descriptors of the plant and its parts there are boxes to fill in by drafting the preliminary survey, representing the object in axonometric projection, ground view and cross-section to facilitate the visualisation of the real positioning of the elements

These drawings for the purposes of orientation lead to an interpretation of the object through the concrete space of the context it is situated in: from the axonometric projection which suggests the volumes and general alignment, one moves to a plan which by means of symbols shown in the key, re-proposes the distributive space and the relational dynamics which are then integrated by readings of the elevations through cross-sections of the space around the element.

Since these designs are free of evaluative criteria as regards the limits of influence of a specific tree or shrub we have tried through the record sheet to distinguish two different gradings of what confines with the object: the first showing the elements at ground level, the second inherent to what has a direct contact through the crown or roots etc

In the entries regarding the location in the arboreal fabric descriptors have been used regarding the social position of the element and how much influence this has in defining the set it is found in.

These aspects guide the environmental analysis and are able to ensure an understanding of the role which the specific tree or shrub plays in concurring to define the aesthetics of the park.

The Growing-Maintenance area of the record sheet shows a precise list of possible factors which alter or have altered the vegetative state of the element, physical factors such as the climate, potentially unsuitable for exotic species, or regarding conditions associated with the soil

properties; accidental factors such as lightning, hailstones, snow or other; factors linked to man's behaviour, lack of maintenance and urban development; even pollution.

The specific diversity and heterogeneous nature of the local conditions which the trees live in leads to an extreme complexity of management guidelines. In a framework of scheduled management of the ornamental arboreal complexes it is opportune to get an overall picture of the operations (pruning, assessment of stability, felling and /or replacement, maintenance operations etc) in an organic plan which takes explicit consideration of aspects linked to the monumental nature and importance for the landscape of the trees and of the phytocoenosis in the case of parks or mixed forest cover which generally fulfil functions both in terms of landscape and of protection of the territory (Parker and Turner, 1996).

The database, structured for management, foresees in this part a scheduling of operations on each element over time, acting as a fully-fledged automatic agenda at the service of the park operators.

The record sheets of the upper levels are based on the same logic but include descriptors aimed at focusing on increasingly general problems as far as the record sheet for the unitary element of the park, resembling in its entirety a well-organised and critical guide, which could even be used for touristic applications.

CONCLUSION

As well as being one of the significant components of the urban scene, the vegetation also tends to be one of those most appreciated, so much so that green areas, as generally understood, have become the synonym of urban quality. A concept which today has solid roots and has grown and established itself, especially during the mature phase of urban development (from the XIX century onwards), which sees in the presence of a pattern, in other words of diffuse, planned green areas, the response to scenographic and hygienist demands.

Green areas used to transform highly suggestive places or to highlight the perspectives of the monumental viability of gardens and urban routes, also expresses the wish to use naturalistic elements to highlight, through an instinctive process of comparison of measurements, the relation of masses of the buildings.

The nineteenth century vegetable patterns, both at an urban level and of a more restricted area such as a park, were not just mere decoration or a new manifestation of a specific taste emphasising

power, but the proof that public space was renewing its role, designed for concrete activities until then neglected.

Actually, today, following a formal regression in the planning of urban green areas, apart from a series of regional limitations, implemented at a local level too, listing the native species to be used and protecting some rare species, green areas, in their specificity as landscape are never subject to survey. The census of the vegetable heritage is often seen as a synthetic search for an indication of value, an average reference index to refer a quality standard to (per inhabitant). Slowly, even though still triggered by in-depth research developed in ancient centres and nuclei just as in parks and gardens of historic, environmental importance, a more modern awareness is taking root, aimed at the meticulous documentation of every species, on the selection of various specimens and their condition, through the constitution of databanks which rarely manage however to represent and describe relations with the urban fabric.

The architect's eye is eternally focused on the limit between natural and artificial and it is from the merging of this focus with specific abilities able to qualify the state of nature that we believe it possible to create an instrument which already seems to reflect the fragrance of the garden in its scents; as Luis Barrag   Morfin recalls: "la natura per quanto bella non    giardino se non    stata addomesticata dalla mano dell'uomo" [nature, however beautiful, is not a garden unless tamed by the hand of man], and it's in this light that we hope such work may proffer itself as the point of arrival of research which enables further, thematic in-depth studies of the various difficulties still existing associated with surveying green areas (Barrag   Morfin, 2005).

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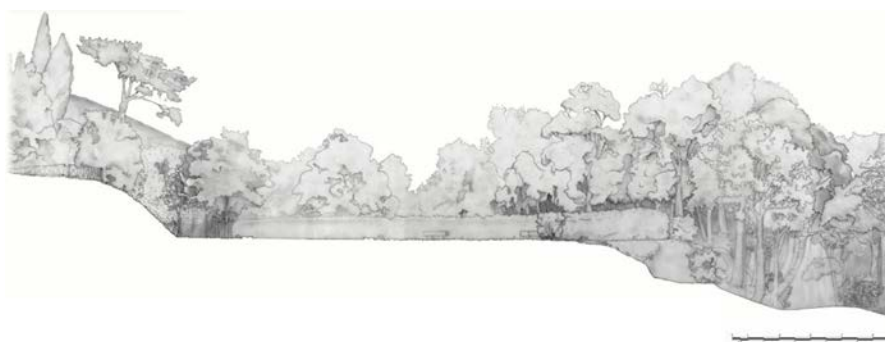


Fig1. Drawing of garden section

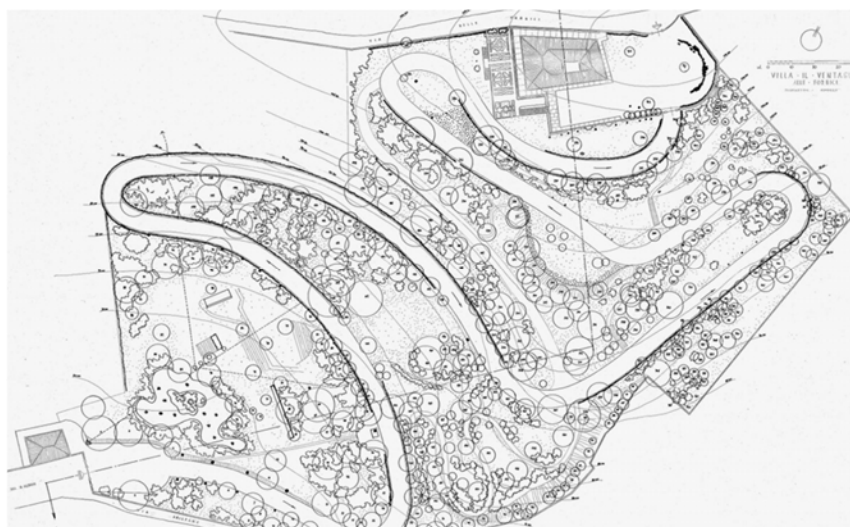


Fig2. General plan of Villa il Ventaglio garden

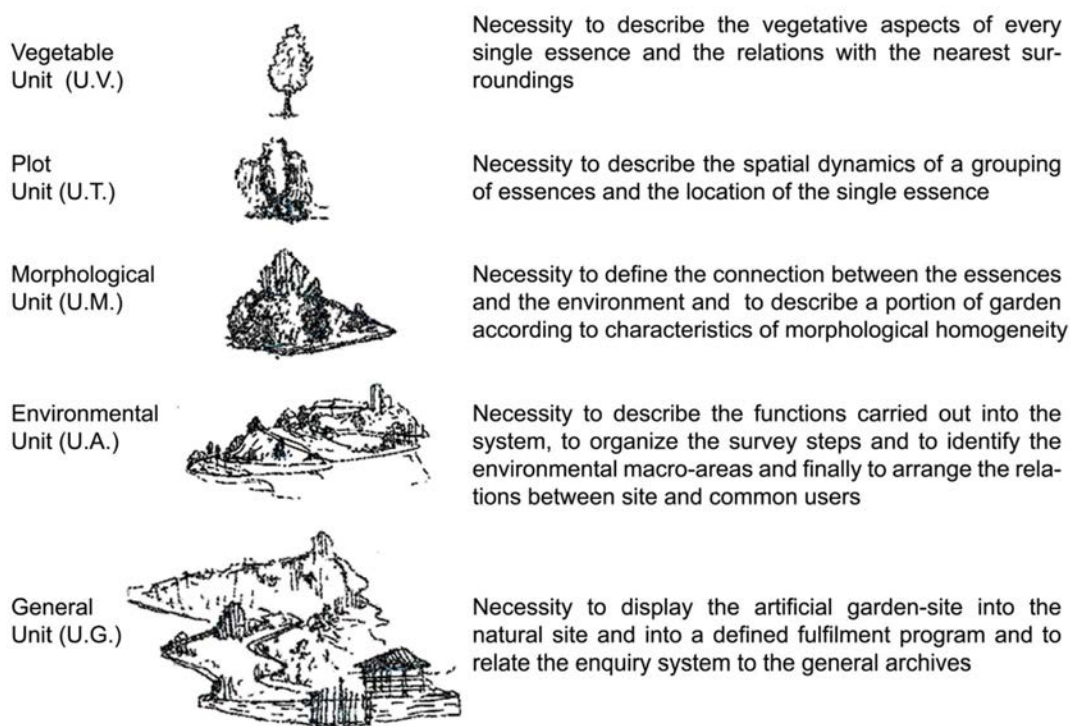


Fig 3. Criteria of division identified for the park of Villa il Ventaglio