

The Principle of the Leading Aspects. University in the large scale - variety in the small scale. Reflexions on the design-orientated use of perennials in public spaces.

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Keyword: Thank you for the invitation

To begin with, I would like to express my thanks for the opportunity to talk to you today here in Kraków at the conference "Ecological Diversity - Theory and Practice".

Biodiversity describes, as is well known, the "variety" of characteristics or ecosystems. In addition to the variety of species, genetic diversity and the variety of ecosystems are summarised under this term. Even if the plants are not "everything", when we speak about biodiversity, they are still an important aspect for understanding the term.

My lecture will be about the plant itself and its application.

The keyword "plant" makes you think of the seasons, of growth and development. You also think of the variety of species, and of the various different sites where plants grow.

Additionally your attention quickly wanders to the beauty, which is created by a plant on its own - or also by a plant in its communitisation with other plants, which transforms the plants into something very special.

With my presentation, I would like to share some thoughts with you, which move back and forth between diversity in the ecological sense and variety as a contribution to the design in the aesthetic sense.

That much upfront:

When talking about the use of plants there is an astonishing - at least for me - and also gratifying "proximity" of the term diversity as it is described in accordance with vegetation science, which is now oriented towards the rules of design theory.

I myself am not only a landscape architect, but also a qualified gardener. I think this is the reason why I feel that I am able to talk about the use of plants here. Before studying for a degree in landscape architecture I trained as a perennials gardener, and then worked as a landscape gardener. For a time, I also was in charge of a garden where I was working with a group of youngsters with special needs.

I owe the years of learning about the fundamentals and gaining those experiences to my terribly poor A Levels. Due to my poor average marks, I had to wait 5 years before I could finally begin my degree in Landscape Architecture at the TU München-Weihenstephan.

In addition to the practical and functional aspects, the design part of my work has always been very important to me.

That, if you wish so, in a few words describes my "personal diversity".

Keyword: Structure of the lecture

My lecture on the application of plants today is sub-divided into theory and practice:

1. Theory

As an introduction, I would like to make a few basic comments about the term "diversity" and the (mis)understandings coming with it. In addition, I would like to look at the connection between design theory and the science of vegetation, which is very important for my work when dealing with plants. From this connection I derive the fundamentals of my personal approach called "The Principle of the Leading Aspects".

I would like to supplement this "gardener and designer view" to diversity and the use of plants with a few remarks regarding the spatial environments in which plantings in the Urban Landscape Areas are laid out.

2. Practice

In the second part of my presentation, I would like to show you a few plantings, which I have designed in accordance with "The Principle of the Leading Aspects". Regarding plant diversity, which is far greater for herbal plantings than for trees and shrubs, I shall restrict myself to showing the examples for perennials plantings and an example of wide-area sowing of meadows rich in species.

Theory

Keyword: Diversity of Plants

Diversity is the term most frequently used in connection with the use of perennials in public green spaces. Diversity, however, does not mean exclusively the variety of types, and can consequently not be seen from a vegetations science point of view only. Design considerations also play an important role.

The diversity of the types of plants stretches to thousands, the details on the number of flowering and foliage plants is even more varied in the differing reference books.

Similarly, the variety of the garden cultivated sorts is incalculably high and constantly on the increase. To have an overview is definitely difficult.

When dealing with a wide range of trees, shrubs, perennials, flower bulbs and available seeds the designer runs the risk of getting tangled up in the jungle of the varieties in the catalogues and in the search for the presumed necessary locations to be planted.

In recent years, the tree nursery and perennials market garden catalogues have become works which are several hundred pages "thick".

The idea of the (plant) diversity is - in my opinion - mostly misconceived and many misunderstandings and disputes in the application of plants originate from here.

The appearance of our plantings cannot be left to chance. The formula "diversity equals very colourful and equals natural" is incorrect: we do not need a green or even a colourful muddle up.

What matters, therefore, is not to want "A Little Bit of Everything Everywhere", but rather to intentionally concentrate the plant variety of the perennials and trees. Rather than being placed in the urban environment on the basis of the accumulation of phytomass [total amount of living organic plant matter in one area] plants need to be planted in zones. Or – there exists another possibility: one can simply leave something out from the enormous available variety!

Too much variety generates visual chaos. Where possible, for the application of plants the motto prevails: Less is More!

Keyword: The art of design and the science of vegetation

The use of plants always has something to do with design, and this in a very distinctly marked, local environment. Reactions to the environment will have to differ, and yet always the same design principles are to be applied.

The use of plants which is orientated towards the creative aspects and appearances, besides theories and personal views, has to take into consideration the natural site conditions and the pure gardening knowledge of the claims of plants and their development. As a landscape architect, not only do I have the aspects of the site and the science of vegetation in mind, for me the creative moment formed by the appearance of the vegetation plays an equally important role. In my opinion, the use of plants is thus the symbiosis of creative aspects and vegetation science insights, and the linking together of aesthetic considerations and ecological matters. This includes the use of gardening cultivated varieties and also one or another indigenous plant breed.

We know that the design and appearance of flowers and plants have an emotional impact and are, therefore, of particular significance for the well-being of the human being. Consequently, it is necessary to break down the selection of plants in order to use them creatively. When organising vegetation, the first approach is to look at the perceptive processes and the creativity laws. The perception of our environment is, in the end, nothing else than a physiological process which takes place via our eyes and the processing of the perceived stimuli in the brain. For the latter there are certain rules, which have to do with perception psychology and the theories of the art of design.

The art of design predominantly mentions a few elements such as clarity, uniformity and succinctness. The most important design rule is: Create uniformity on a large scale and variety on a small scale! This distinguishes variety from variation and/or an alternating iterative combination of a few creative elements. Furthermore, the rule quite consciously prevents the simple accumulation of as many differing elements as possible.

A further art of design dogma states: colour trumps form! Especially when dealing with the diversity of perennials and annuals, this principle must, in my view, be given one's best attention. Colour can cover up any shape or design.

From the science of vegetation we know that, depending on their habitat, a few types can dominate a plant colony. I am now talking about plants with leading aspects: they characterise the optical appearance of a planting together with the seasonal change in the vegetation. The leader plants are supplemented by different companions, which are less conspicuous in appearance but contribute to the diversity of species.

In nature you can find oak–hornbeam forests, a whitethorn–sloe shrubbery, the Valeriano-Filipendulino and many more. The eponymous plant breeds predominate. Respectively, they create the "aspects" and are supplemented by more or less numerous accompanying species, which are subordinate or represented only isolatedly.

Hence there is an original link between the art of design and the science of vegetation: it is a simple principle, but it leads to diversity and a conscious appearance of the plants.

Related to planting design, I would like to summarise some fundamental thoughts:

Trees and perennials belong together: in the sense of uniformity on a large scale and in the sense of diversity on a small scale. What applies is: the variety and colourfulness of the herbaceous layer of perennials and geophytes and the summer flowers need a rather quiet background and hence a rather uniform tree planting in order to be able to create a harmonious appearance. Considered by itself, this system applies in the same way when working only with perennials and summer flowers.

The adjacency of free standing and formed trees, of lawns and meadows, of planted and wild perennials is in this sense a contribution to diversity. Respectively, they are one and the same element, only one is less striking than the other.

Keyword Urban Landscape Areas

The possibility of being able to use the same plant quite differently makes it necessary to take a look at the quite different sites and site conditions of the Urban Landscape areas. Today, I only want to briefly touch on this subject with a pointer to the "diversity of ecosystems". It defines, in addition to "diversity of species" and "genetic diversity", the so well-known meaning of diversity.

We find a strict, architectural application of the vegetation as a creative element with tree grids, cut hedges, formal flowerbeds and lawns.

On the other hand we have a naturalistic application of the vegetation as a creative element with groups of trees, free-growing hedges, wild perennials and meadows.

The possibility of applying one and the same design element in different ways means reacting to the changing environment of Urban Landscape areas.

Thus, these opposing approaches can be side by side in a garden, a park and a town. For the concept of a planting the environment with the respective area structure plays a further important role. So much for theory.

Practice

The Perennials Meadows at the Bathing Lake in the Landscape Park Riem, München

In the south of the Messestadt Riem, the Landscape Park Riem was completed in 2005 in accordance with the plans drawn up by Latitude Nord, Paysagistes (Paris).

A central design element in the approximately 200ha large Landscape Park Riem is the bathing lake. The water body is almost 10ha in size - with the adjacent shore area the total area is about 15 ha.

The large scale of the landscape park is expressed not only through the creation of huge forest zones, which break up the park, but also through large scale perennials areas. Altogether the perennials plantings at the bathing lake take up a space of about 2.5 ha and are subdivided into three zones that are, respectively, planted with three different plant communities. The generosity and expansion of the landscape park are reflected in the following principles which apply to the perennial plantings: spatially or optically cohesive areas are planted with one plant community, respectively. The perennials are planted as meadows; trees only very occasionally occur.

The plant selection is restricted to robust wild perennials or cultivated perennials with wild perennial character. All perennials must be compatible with mowing. This is the only way to guarantee permanent maintenance. The plantings with 250.000 perennials were realized in August 2003.

On the south bank over a length of about 650m and up to 20m wide grows the "Iris-Mints-Meadow". Over the entire length it merges into a 2 m wide, planted shallow water zone.

Primula veris forms the early spring image, which provides a covering of yellow to the area without companions. All other aspects are dominated by the colour blue, which is joined by white. *Iris sibirica* forms the spring aspect. Thereafter, various types of mints (*Mentha pulegium*, *Mentha x speciosa* 'Jokka', *Mentha spicata*, *Mentha spicata*, *Mentha longifolia*), together with *Veronica longifolia* and *Nepeta sibirica* create the aspect until in autumn, when *Aster laevis* and *Boltonia latisquama* dominate. The companions throughout the year are *Camassia cusikii*, *Valeriana officinalis*, *Sanguisorba officinalis*, *Lythrum salicaria*, *Alchemilla epipsila* and *Geranium wlassovianum*. The flowering perennials are "mixed" with *Molinia arundinacea* 'Karl Foerster'.

After almost 10 years, there have of course been changes. Some species are now fewer in number, some have completely disappeared, and others again have spread considerably. Also, the site is not really ideal for *Iris sibirica* as the leading aspect herbaceous perennial. I actually wanted to plant a *Hemerocallis* meadow, but as the park with the lake lies in the transition to the open landscape, this

concept was not approved by the conservation authority.

The irises are diminishing, by contrast *Alchemilla* is spreading. *Lythrum salicaria* has completely disappeared. With the spread of *Molinia altissima*, the meadow has more shade in the autumn. For that reason *Boltonia* is now only still growing in the fringe areas.

But:

The leading aspects concept is also stable with the spread of other species, which are different to those dominant species originally envisaged. Vegetation is not static - dynamic and change are characteristic for lively plant societies. I accept this happily, but am glad to say that to me on design-visual grounds this important leading aspects principle appears to be a permanent feature.

This also applies to the two other herbaceous perennials plantings at the bathing lake, the "reed bed" and the so-called "Riem-Haide". I do not wish to discuss individual species in detail; I will show a few images without speaking about them, which will get across the dynamic changes with the coming and going of individual species.

From today's point of view, I would like to correct the agreement made with the Gartenbauamt der Stadt München, [Horticultural Office of the City of Munich] which was settled at the beginning of the planning: except for mowing, no further maintenance measures are to be carried out after three years of intensive maintenance (so-called rectification period and establishment maintenance as part of the contract for the planting works). Despite mowing, small woody plants are spreading in the perennials meadows. Because of the mowing they cannot grow large but their stems are becoming wider every year and consequently they will oust the perennials.

It would certainly be beneficial for the perennials meadow if, every now and again, the stems were cleared. On the other hand: maybe it would also be interesting to see how the planted meadow continues to change in the sense of a succession.

In an even larger area of the Landscape Park Riem, we sowed meadows rich in species. The sowing was also based on the "Leading Aspects Principle". Here the numbers were not fixed for the individual species, but the respective necessary percentage share of individual species for the overall seed mixture we used was fixed. For the individual sections in the park, we had put together individual mixtures so that there was not only "a meadow" - but several. They not only differed in the leading aspects, but also in the species combinations.

Species-Rich Types of Meadows in the Landscape Park Riem, München

The significant idea behind the plant concept of Gilles Vexlard and Laurence Vacherot is a clear allocation of themes: there are trees planted alongside one another as thick forests, groves of trees, tree and bush hedges and open meadows where individual trees are only sparsely distributed.

The creation of the open meadow areas has the aim of establishing typical meadows with sage-oat grass-societies and nutrient-poor grassland areas permanently in the landscape park.

To a large extent, the natural extensive areas have been created as species-rich meadows. Similarly, under the trees, the herbaceous layer was created with species-rich seed mixtures.

The natural open meadow areas and the herbaceous layers under the trees share about 110 ha of the 200ha large landscape park.

Different seed-mixtures were used to achieve the so-called "short blossom aspect" and the "long-term blossom aspect". The "short blossom aspect" seed-mixture is made up of a few species, which in part blossom in the first year such as *Anthemis tinctoria*, *Daucus carota*, *Echium vulgare* or *Papaver rhoeas*. In the "long-term blossom aspect" seed-mixture, species such as *Salvia pratensis*, *Dianthus carthusianorum*, *Leucanthemum vulgare*, *Campanula patula*, *Centaurea jacea* and *Rhinanthus alectorolophus* dominate.

Due to the soil conditions the sown meadows reach a closed ground cover only after a number of years.

In order to enable the spreading of individual species even more, all meadows are left uncut at least until the middle or the end of June. Hence, the natural regeneration through self-sown seed is possible, especially as the cut grass is left lying there for several days after the mowing. A second cut takes place at the beginning of October. In the run, selected areas of the landscape park should only be mown once a year for cost reasons.

To this date the sown meadows have developed to be very species-rich and blossom-rich. They are not only pleasant to look at; they also create very generous living spaces for the fauna. And, what is very important to me: the species-rich meadows are stable and also enable a high level of use, such as on the sledging hill. Near natural conditions and diversity do not, therefore, exclude design and usefulness.

Open spaces adjacent to residential housing and office / industry buildings GEWOFAG settlement, Am Piusplatz in Munich Abstatt Development Centre, Robert Bosch GmbH

In the design of the green spaces adjacent to the residential housing, we also use perennials. Here the conscious reduction in the selection of plants to only a few species has proved worthwhile: in particular, in regards to maintenance. The powerful blooming of perennials and flower bulbs, i.e. the beauty of the plantings seems to be respected by the residents.

Simple and robust perennial plantings with six to eight species have also proven to be worthwhile when planning the open spaces of the Abstatt Development Centre of the Robert Bosch GmbH. The intensive green roof designed with perennial plantings has won an award by Germany's "Vereinigung der Bauwerksbegrüner" (association of greening buildings) this year in spring.

Krakowski Park and Green Space on the Franciszkanska Street in Kraków

I am more than a little proud that I can introduce you to two projects here in Kraków. These have not been realised, yet, but the approval for the completion has been given. Marcin Gajda of AKG had asked me whether I could help him with the planting design for the two projects. And, of course, I was very happy to lend a hand.

Adjacent to the forest plantings of the so-called "powerful edge", which screens the Krakowski Park against the busy roads, you can find various meadows with naturalistic perennial plantings. At the pond, for example, in the shady sections there is a Hemerocallis meadow, close by there is a Woodruff meadow with mainly indigenous plants, as well as an Astilbe meadow with cultivated garden perennials, which do not occur originally in Europe.

For the Bronowicki Park in Lublin we have prepared a similar concept.

The image shows the green space at the main entrance to the monastery premises on Franciszkanska Street. The selection of plants has taken its cues from the colourful glass windows of the cloister and the famous painting "Paradiesgärtlein" [little paradise garden] (it is the oldest known picture of plants, in which the individual species can be clearly determined). The plants will enhance the small green space in the future.

Summary

I might repeat myself, but for the creation of a harmonious looking, functioning new vegetation, it is important that only a few species dominate. They give distinction to the planting's appearance and are supplemented by accompanying species, which are subordinate in number. Overall, despite succinctness there are varied, if you wish so, naturalistic perennial plantings and meadows on the forest edge.

All that has been said so far indicates:

Dealing with vegetation does not only mean to work with a variety of plants in the gardening or ecological sense. Consequently it can not be defined exclusively in accordance with plant-sociological knowledge and in accordance with best gardening knowledge. I believe that there must be incorporated a coequal design-related understanding when talking about the use of plants. The discipline "Use of plants" needs a structure not only in accordance with vegetation science insights but, in particular, from a spatial point of view as well as in regards to purely aesthetic criteria.

There is no doubt: on any only reasonably suitable site, plants will grow sooner or later without human assistance or even planning and design. Something will grow and flourish. Often there grow fruits as well and these delightful spots become home and living space for flora and fauna. Initially this might do from a diversity viewpoint.

But, as we said in the beginning, the appearance of flowers and plant design are of significance for the well-being of human beings. Therefore, fundamental design rules must be used in the definition of plant variety. Design and its perception in the environment belong to the "variety of the characteristics of biocoenoses".

In the sense of the definition of diversity, one could say, there is "the necessity of the apparently unnecessary".

Thank you very much for your attention.