LANDSCAPING POTENTIAL OF VALLEYS*

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Valleys which include significant elements such as watercourses and different forms of alluvial plains are a notable phenomenon in Czech landscape. Their importance does not stem from their size, but rather from their internal structure, their spatial position in a particular area, and, what is most important, from their functional and landscaping complexity. Currently, valleys and their flood plains play an outstanding role in different revitalization and rural development projects, and they help respond to the ever growing needs which call for the application of socio-cultural viewpoints in landscaping. Until nowadays, in most papers on landscaping this issue has been dealt with only marginally or partially, from a narrow point of view of a particular field. Therefore, the objective of this paper, which is only a small contribution to the topic, is to help meet the rapidly growing needs of our society in terms of the social (recreational, living) and aesthetic (compositional) functions of valleys, and to define some generally applicable guidelines. On the one hand, this paper evaluates two historic parks which both benefit to a high degree from the aesthetic preconditions of valleys. On the other hand, its authors draft a project for a landscape treatment of the Jizera River Valley, trying to apply an approach that would respect all current social requirements for its further use. Finally, the paper defines sixteen general aesthetic principles which should be applied when working with valleys and which would respect them as important elements of the overall landscape plan.

flood plains; vegetation; terrain; watercourses; ecology; aesthetics; recreation; landscape as a space for living

INTRODUCTION

Major economic, social and demographic changes together with growing requirements in terms of ecology, living and aesthetics find themselves reflected in the current need of a complex solution of the present-day rural landscape. Considering these requirements and the varied and broken Czech topography, valleys are units of a highly singular character which is perceptible both in their narrow (internal) potential and in their broader (external) relations with the landscape. For these two landscaping viewpoints to be applied we need to define the compositional values of valleys, and valleys need to be seen as a unity of content and form of complex landscaping works. This approach is topical not only from a personal point of view, but also because most authors either tend to define the aesthetic values of landscaping works too generally (Librová, 1988; Stibral, 2005; Žák, 1947; Clark, 1966) or they apply a very narrow or even deformed perspective, holding partial viewpoints such as economic, ecological, technological or other as if these were the only existing positions (N e u h ä u slová, 2001, 2003; Ministry of Agriculture, 2003; M a c h a r, 2002; Czech Society of Landscape Engineers, 2003). Czech authors who deal with valleys in the broader context of the landscape or in relation to the system of bio-geographical regions are Culek (1996), Culek et al. (2005) and Sklenička (2003). The present paper contributes to the search for an integrated landscaping solution of valleys, since they are an important part of Czech landscape and may be perceived as regional systems or functional zones with a high potential for enhancing further development of rural areas.

MATERIALS AND METHODS

In the Czech Republic valleys have only been defined generally, despite being a significant landscape-determining phenomenon. L \ddot{o} w and M \acute{i} c h a l (2003) distinguish between "broader river flood plains" more than 400 metres wide and "prominent valleys" more than 50 metres deep, which account for 4% (3165 km²) and 4.2% (3288 km²) of the state territory, respectively. N e u h \ddot{a} u s l o v \acute{a} (2003) defines a "system of alluvial forest communities dependant on valleys" and C h y t r \acute{y} et al. (2001) speak about "plant communities dependant on valleys". However, these global classifications, which tend to be based mainly on the natural conditions of flood plains, do not see valleys as dynamic spatial wholes and do not count with their setting in the terrain nor with the wider context of the landscape. Therefore, a great number of other local valley biotopes remain omitted, although with many valleys, their diversity and functional interconnection

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is very typical and also highly inspiring from an aesthetic point of view. On the contrary, in terms of compositional potential, the present paper sees valleys from a broader point of view as systems of biotic, abiotic, natural and anthropogenic elements and factors which all form a certain type of interconnected zones that are functionally dependant on the external landscape or environment. Applying this approach, the authors of this paper analyzed three different areas:

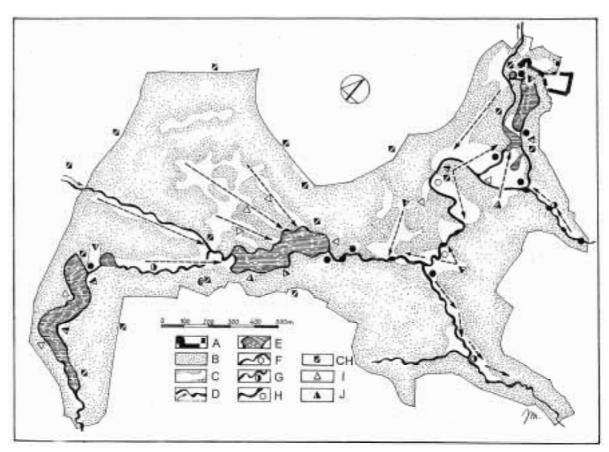
Průhonice Park. The composition comprises a system of valleys, a marked setting of peripheral slopes, two streams with their secondary tributaries, extensive valley meadows and a system of richly diversified vegetation. The overall surface area is 240 hectares, the difference in altitude between the valley bottom and the surrounding terrain oscillates between 0–60 metres, and the total length of the park paths is 40 kilometres.

Lednice Ponds, a part of the Lednice-Valtice Cultural Landscape. The composition comprises three ponds, a system of five dominant historic buildings and lookout towers, and a peripheral area covered with high-growing woody species. The total surface area accounts for approximately 350 hectares, the difference in altitude between the valley bottom and the surrounding terrain oscillates between 0–15 metres, and the length of the pathways around the pond area is 14 kilometres.

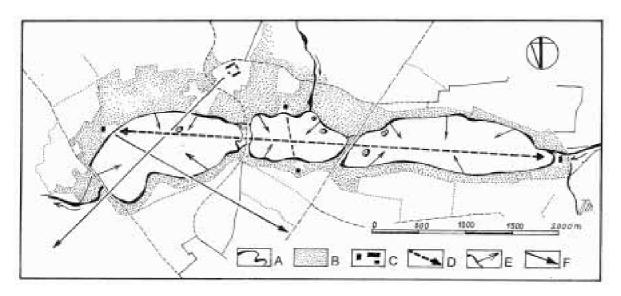
Jizera River Valley, district of Turnov. The compositional basis is formed by an extensive flood plain which is mostly used for farming, by less marked setting in terms of topography and vegetation, and by an uncoordinated system of trees and shrubs. In the region there is a need for anti-flood measures, for a more intensive nature protection, and, simultaneously, for enhanced residential and aesthetic values and functions. The total surface area is 975 hectares, the difference in altitude between the valley bottom and the surrounding terrain oscillates between 0–15 metres or 0–30 metres in the eastern part.

The following criteria were used as a foundation for defining final, generally applicable methods and compositional principles:

- The basic landscaping value of valleys is the protection and creative development of natural elements such as terrain, water and vegetation which are the heart of the compositional content and form.
- The composition of valleys must reflect dynamic historical evolution of anthropogenic factors and express their highly distinctive features.
- The compositional concept of valleys needs to be prepared in tune with currently existing rural settlements and with their further development.
- Valleys play a highly important ecological role, particularly in terms of regional ecological stability and in revitalization projects. From the point of view of complex landscaping solutions they are unsubstitutable.
- In order to meet with the typically multifunctional character of valleys, landscaping solutions must bear in mind the overall landscape plan.

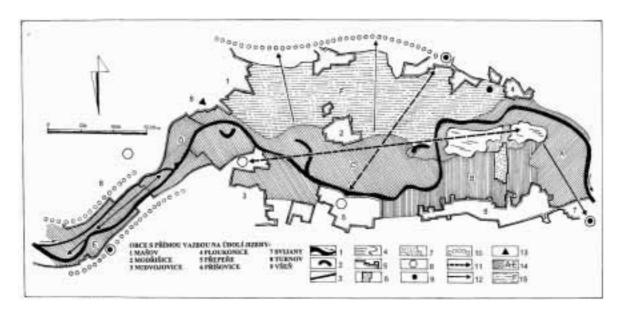


- A) In **Průhonice Park**, the heart of the composition is formed by a set of valleys with two streams and their tributaries. The spatial solution consists in a system of vistas through valley meadows with dominant and very typical flood plain landmarks in the form of the three biggest ponds. One of the distinctive features of the park is its compositional structure which is exclusively internal and optically fully isolated from the external landscape. The park cannot be optically perceived as one compositional whole, or as a "higher-rank composition", due to a notably broken topography. A castle, B continuous vegetation of woody species, C meadows, D watercourses, E ponds, F watercourses in the form of flood plain meanders, G watercourses in the form of torrents, H moving water effects, CH man-made historic artefacts, I lookout posts (routes) on the bottom land level, J panoramic lookout posts from higher levels of the peripheral park setting.
- B) Lednice-Valtice Cultural Landscape Lednice Ponds territorial unit. From the point of view of landscaping, the wide and shallow alluvial valley includes three ponds, a peripheral strip of vegetation and a circular pathway with five destinations in the form of different historic monuments. The landscaping solution may be interpreted as a continuous interconnected whole (higher-rank composition), as a set of partial images (lower-rank composition) or as a part of the adjacent broader external landscape. This triple compositional dimension is highly valuable from an artistic point of view. In the heart of the composition there are the ponds and their islands. The set of historic buildings serve as



dominant features. The compositional setting is formed by a compact strip of vegetation and sporadically elevated terrain. A – ponds, B – peripheral strip of vegetation, C – dominant historic monuments as target and lookout posts, D – basic vista – main compositional axis 6 km, E – set of partial views – lower-rank composition, F – long-distance compositional interconnectedness (the hills of Pavlovské vrchy 12 km, Vrbice village 11 km).

C) **Jizera River Valley (Turnov district)** – a proposed solution. Division of the territory into zones, bearing in mind current needs in terms of water management, ecology, farming, recreation and art (composition).



A-very active forms of nature protection with limited forms of farming and recreation, B-farming and holiday resorts, anti-flood modification of the terrain, C-farming and leisure, D-closing of the area for construction and gradual anti-flood revitalization, E-municipal park, F-farming land outside Q100 flood area as a compositional part of the valley.

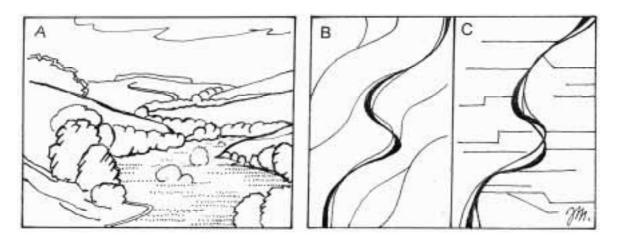
From a spatial point of view, the landscaping solution will be based on the use of vistas for emphasizing the longitudinal valley axis and on the inclusion of the external landscape landmarks into the artistic conception of the zones A–F. Vegetation in zones A–E shall be composed of bird cherry-ash woodland occasionally mixed with alder carrs, the F zone is a transition to woodrush-beech woodland (N e u h ä u s l o v á, M o r a v e c, 1997).

Situation: 1 – Jizera river, 2 – cut-off river meanders, 3 – municipal raceway, 4 – lakes in the old sand pits, 5 – border of the developed parts of the settlement, 6 – inadequate industrial buildings, 7 – mobile recreational equipment, 8 – dominant historic sites, 9 – significant lookout posts – localities, 10 – external setting of the valley in terms of topography, 11 – main compositional axes, 12 – other compositional lines, 13 – main recreational and tourist entrance into the area from the town of Turnov, 14 – zones within Q100 flood area, 15 – zone outside the flood area.

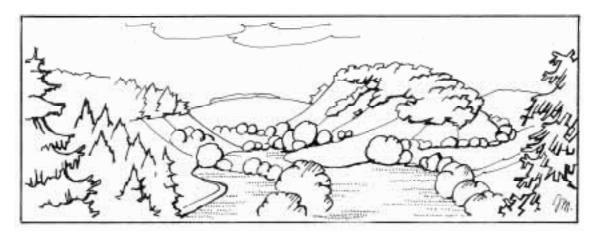
RESULTS AND DISCUSSION

Based on an analysis of all support documents and materials, we defined the following sixteen compositional methods, approaches and principles applicable for landscaping treatment of valleys.

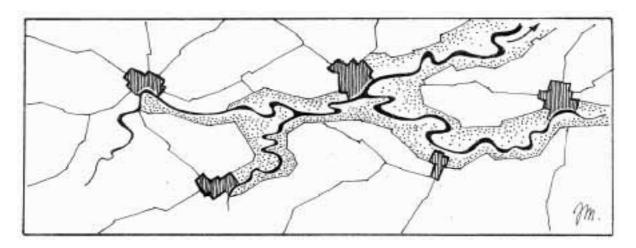
1. Valleys represent a genuine curvature which reflects natural shaping of a particular region (A). Therefore, they are a primary element and should be considered when designing a harmonious (B) or contrasting (C) interpretation of a broader landscape composition. One of the basic compositional principles which express a positive unity of ecological, economic and aesthetic principles as well as a connection of valleys to the external landscape consists in emphasizing the curvature of the valley with a set of vegetation elements in the form of trees and shrubs and with valley meadows.



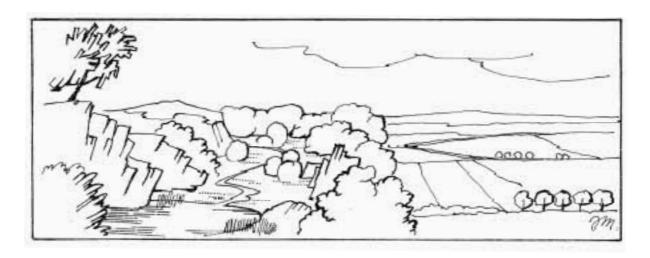
2. With their different assortment of vegetation, with the shape of the terrain and with the presence of different forms of water, valleys are a significant change in the dynamics of altitudinal vegetation zones. The respect for and development of these values and preconditions is important not only from an ecological point of view, but also from the point of view of aesthetics, since in the context of broader relations in the landscape this enhances "intensification of impressions" which may be considered as an important artistic principle in landscape engineering that programmes how people will perceive the space that surrounds them.



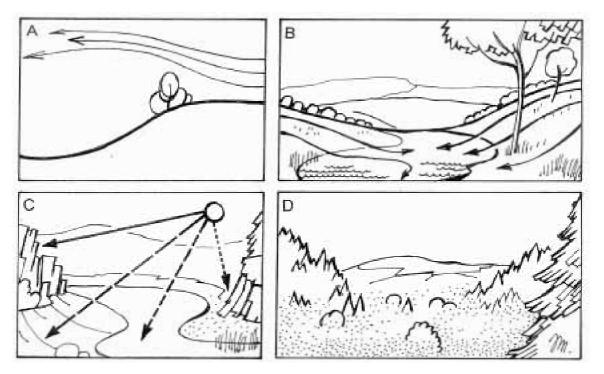
3. The linearity of the valley ground plan is fully in accordance with our current needs of a landscape which would be open to human movement and traffic (strolls, hiking, cycling). These areas tend to be connected with rural settlements, giving rise to an interesting "valley – stream – river interconnectedness" and to a landscape which fulfils general functions in terms of biology, water-management, economy and living, and which offers extraordinary compositional possibilities and challenges.



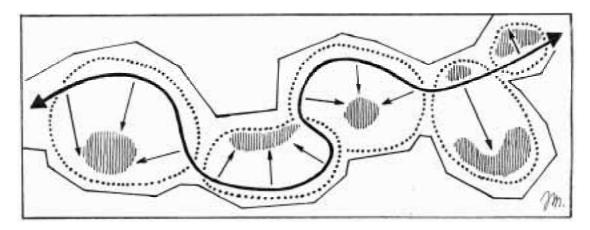
4. Significant creative potential of valleys consists in their privacy which is given by their degree of optical and acoustical isolation. This characteristic induces, among others, a sense of intimacy and physical safety, and enhances intense mental concentration which is a precondition for understanding the composition, for experiencing strong aesthetic impressions and for forgetting about the problems faced in the external world. Therefore, the privacy of valleys is a significant aesthetic value and an important criterion which allows for leisure and mental hygiene. In this context, valleys are an opposite of vast flat plains where they can hardly be substituted, and that is why valleys are highly valuable from the point of view of broader functional zoning. The privacy of valleys, determined by local topography, may be significantly modified according to need by an adequate compositional solution of the external vegetation.



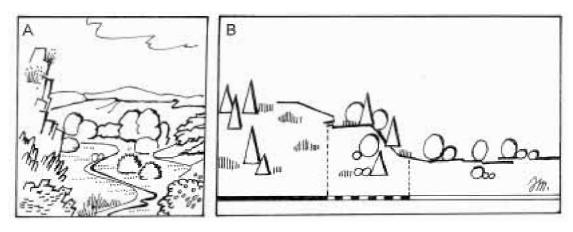
5. The quality of conditions for vegetation and for human recreational use, and the type of composition strongly depend on the specific character of valley microclimate. One of its distinguishing features is a very frequent spatial variability given by different orientation and openness to cardinal points, by configuration of the terrain in question, by a changing position of visitors, etc. The potential of these conditions and their value can be significantly increased by basic compositional parameters, or in other words, by a particular distribution of vegetation and by functional use of different localities. A – wind protection enhanced with wind belts, B – appropriate type of vegetation which allows reflux of cold air and disposal of cold air with a free access to the water plane, C – insolation, its momentary changes and variability throughout the day, D – hygienic inconveniences and aesthetic benefits of foggy valleys. (Changes in spatial situation, optical transparency, light and colour. Different types of weather in the nature may be observed on paintings by František Kaván, Josef Navrátil, Antonín Chitussi, Antonín Slavíček, Max Švabinský, etc.).



6. Irregular ground plan of many valleys is a positive feature for landscaping, since it allows us to create a number of partial compositions which will differ in size and shape. Together with varied routes of pathways the irregular shape of the valley gives rise to different directions of vistas, different scales of partial areas, different plant assortments, etc. Thus variability, required both in terms of composition and human recreational use, may look much more natural in valleys than in other conditions, particularly in vast spaces.

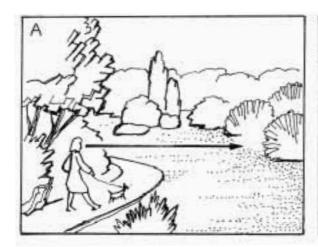


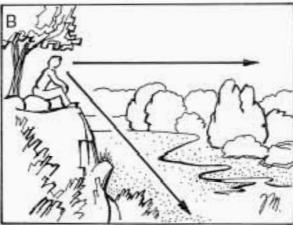
7. Significant landscaping potential of valleys also lies in their vertical segmentation which is related to the local diversity of natural conditions for vegetation. Apart from this "internal valley diversity" (A) there is an "external diversity" on the external border of the valley (B) which is a combination of vegetation from the two neighbouring plant com-



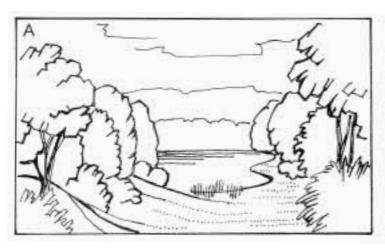
munities. Rich assortment of plants on the external border of valleys is typical of nature, and is highly interesting from the point of view of human recreational use thanks to alternation of open and closed localities. The rich assortment is also of great importance with regard to the type of compositional link between the valley and its external landscape.

8. An extraordinarily important factor which determines the optical perception of valleys is the position of visitors who are observing it or, in other words, the selection of pathway routes and of thematic target localities (the most impressive sites). Altitudinal segmentation of valleys offers two extreme solutions. When on the valley bottom and on its margin (A), the visitor can perceive compositional details and programmed lines of partial compositions while the spatial unity of the heart of the valley (composition) remains untouched. When observing the valley from higher points (B) the visitor sees the composition from above due to a broader vertical angle of the visual field, and, simultaneously, he can also optically perceive the valley as a whole. In this way, the visitor may understand the whole higher-rank composition, summarizing and evaluating his impressions and experiencing an ultimate aesthetic feeling.



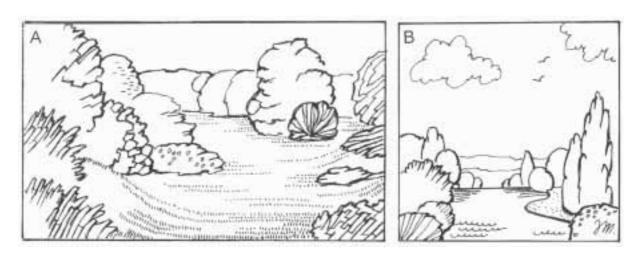


9. Vistas, usually formed by a long ground-plan and higher borders with favourable conditions for the use of high-growing trees, are an important landscaping form to be used in valleys. Therefore, in artistic solutions of valleys, a great importance should always be given to emphasizing a longitudinal compositional axis. Vistas, the purpose of which is to attract the attention of observers, are naturally linked with dominant landmarks. Apart from classical landmarks in the form of cultural and technical buildings, nature-like solutions should make use of natural forms that are typical for the region in question. Thus the content of the dominant landmark will be in accordance with its compositional environment, and the composition will have a stronger aesthetic effect. A pond works as a dominant landmark of a valley flood plain (A). Boulders are a dominant landmark of a vista with a stony brook (B).

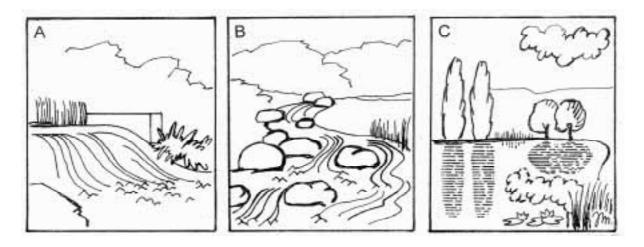




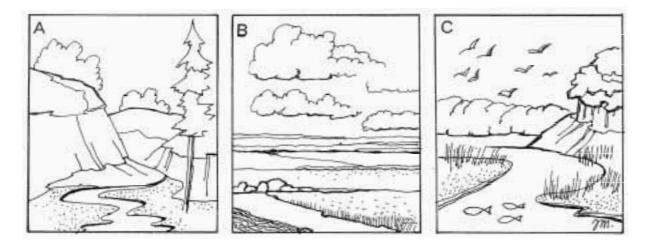
10. The rich number of available compositional elements and forms in valleys requires a simultaneous use of a principle which would unify all perceived impressions. In its most typical natural form, this principle may be represented by valley meadows which are optically perceived as a cohesive and homogenous environment in terms of colour and texture on the one hand, and which provide for a continuous spatial flow of partial compositions on the other (A). Analogically, the unifying principle may also be represented by a large water plane, by an open sky, etc. (B).



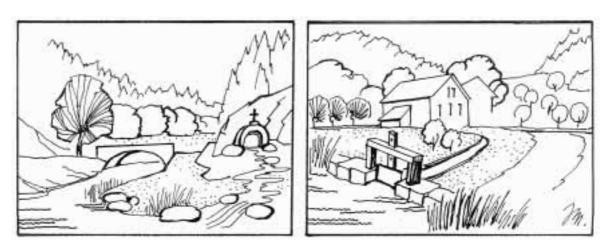
11. Another important compositional element in valleys is very often water, an aesthetic value which generally tends to meet with a very positive response. In case of watercourses (A, B) the compositional potential consists in their line and shape as well as in different forms of water movement and related sound effects. In case of ponds and lakes (C) artistic values lie in their size, shape, ground plan, reflection, light and glitter. Their surface may also give the impression of a horizontal straight line which is acceptable in the open natural organization. From an aesthetic point of view and no matter whether the solution is technical or natural, water can be highly effective on both large scale (in the whole landscape) and in detail.



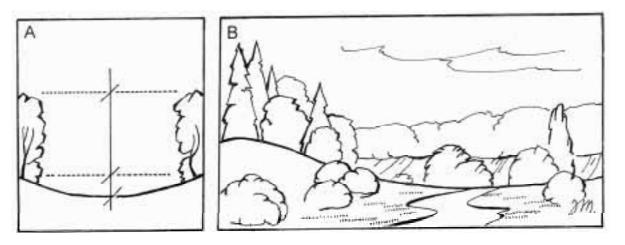
12. The compositional potential of valleys also consists in a specific use of transitional elements which in particular time periods temporarily enrich the landscape with colour, shape or movement. These elements can be atmospheric – mist or clouds (clouds visible from behind the first valley slope /A/ have a completely different effect than those visible above the flat land /B/), or they can be linked to the variability of the sunlight (dawn, midday sunshine, sunset), etc. The hidden location of valleys, the presence of water and the fertility of the bottom land have traditionally offered favourable conditions for higher population of wild animals (C). These values should be included in the content and form of our composition which should allow for a number of very quiet localities. For instance, islands in the middle of lakes can serve as well protected sites for birds and their nests. This value category may also include properly situated grazing lands used by farmers.



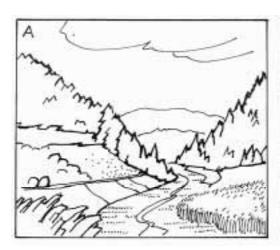
13. Another important factor to be considered in valley compositions is the dynamic historical evolution of anthropogenic elements and their distinctive features. These elements are most often buildings or activities linked with water, such as mills, mill gardens, technical equipment for mills, small bridges, reinforcement of banks, wells, etc. The category of anthropogenic elements may also include old quarries, outcrops and well-preserved or restored historic paths which often used to run through valleys. In the past, valleys were more or less independent units not only from an ecological, but also from a social and economic point of view, and their role in creating the *genius loci* of the landscape may not go unnoticed.

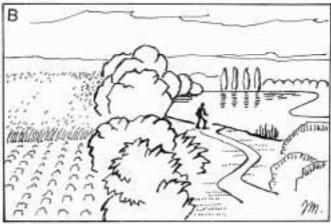


14. The basic compositional values of valleys are their conditions in terms of scale which may be significantly influenced by the height and breadth of their peripheral spatial setting. The relation between proportions, formed primarily by the terrain conditions in question, can be very effectively modified by the height arrangement of the circumferential vegetation strip (A). In many historic valley parks, this frequent spatial illusion is induced all year round with a higher share of evergreen woody species (B). In analogous situations, this type of solution is very typical.

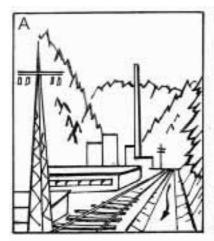


15. Valleys have traditionally been linked with agriculture and forestry, depending mainly on their more or less favourable natural conditions. Narrow valleys with limited space and soil quality have been used for small-scale production, and this has led to its organic integration into the spatial structure of the valley (A). In broad valley flood plains with very good preconditions for highly intensive activities the production sites often tend to be separated from the areas that fulfil other functions – such is the case of the Lednice Ponds (B).

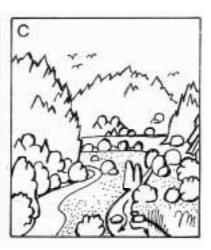




16. In many cases, complex landscaping solutions of largely or slightly devastated valleys (A, B) will involve their more or less intensive revitalization the forms of which must respect, among others, factors related to composition. The most frequent approach to creating new forms of artistic interpretation of valleys should consist in a solution which is close or similar to the nature (C). This type of solution can many times make use of a significant simultaneous coexistence of natural (vegetation, water, terrain) and socio-cultural (recreation, living, aesthetics) conditions. This would be a new type of composition where content and form would express highly multifunctional character of valleys in the past and today and also their landscaping uniqueness.







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Kompoziční potenciál údolních poloh.

Scientia Agric. Bohem., 41, 2010: 29-43.

Údolní polohy zahrnující údolní nivu a navazující terasy a terénní hrany okolního území představují mimořádně významnou a neopakovatelnou součást české krajiny. Aktuálnost jejich krajinářského řešení je dána jednak tím, že se zde souběžně uplatňují podmínky přírodní (vegetace, voda, terén) a kulturně společenské (obytnost, estetika), a jednak tím, že jsou soustavně narušovány zejména nevhodnými antropogenními vlivy danými nejčastěji výrazně úzce resortními hledisky na podnikatelské i řídící úrovni.

Předložená práce je dílčím příspěvkem ke komplexnímu řešení této problematiky s tím, že se zaměřuje na kompoziční potenciál těchto územních celků ve smyslu jejich polyfunkčnosti a výrazně celospolečensky pojatého dalšího využití. Podkladem pro zobecnění těchto hledisek bylo posouzení kompozičních a obytných hodnot Průhonického parku spolu s částí Lednicko-Valtického areálu a zpracování krajinářské studie části údolní polohy řeky Jizery u Turnova. Výsledkem těchto prací je definování kompozičních hodnot či předpokladů, které by měly být při komplexním krajinářském řešení údolních poloh v různých lokálních podmínkách respektovány a dále rozvíjeny. V práci je definování jednak širší kompoziční potenciál, zahrnující vztahy údolních poloh k vnějšímu krajinnému prostředí, a jednak potenciál užší, spočívající v řešení "vnitřních" územních problémů samotných údolních poloh. Dosažené výsledky lze shrnout následovně:

Širší kompoziční hodnoty údolních poloh:

- Lineárnost údolních poloh a jejich prolínání soustavou výškových vegetačních stupňů vytváří předpoklad jak pro systémový rozvoj širší biologické diverzity, tak i pro další, celospolečensky pojaté uspořádání krajiny.
- Zvláštnost souběhu ekologických, vodohospodářských, zemědělských, lesnických, sociálních a kompozičních hodnot vyjadřuje krajinářskou jedinečnost a neopakovatelnost údolních poloh a umožňuje tvorbu kompoziční (funkční) gradace v širších krajinných souvislostech.
- Typická územní vazba údolních poloh na soustavu venkovského osídlení vytváří předpoklad pro realizaci krajinných zón zvýrazňujících kulturně společenská (sociální, obytná, estetická) hlediska.

Užší kompoziční hodnoty údolních poloh:

- Výrazná diverzita přírodních podmínek údolních poloh jako celku je předpokladem pro vytvoření kompoziční rozmanitosti a lokální dojmové gradace – genia loci.
- Prostorová (optická, akustická) izolovanost údolních poloh vytváří výraznou škálu různých úrovní intimity, jako významného předpokladu vysoké obytné a kompoziční hodnoty tohoto prostředí.
- Půdorysná nepravidelnost údolních poloh je předpokladem tvorby soustavy měřítkově a tvarově odlišných kompozičních celků.
- Prostorovým vymezením obvodu údolních poloh je dána možnost výrazného použití průhledu a s ním spojené funkce dominanty jako dvou, v daných podmínkách nejvýraznějších kompozičních principů.
- Významným vegetačním útvarem jsou údolní louky jako kompozičně jednotící forma a popředí dominant s výraznou souběžnou funkcí hospodářskou, ekologickou a vodohospodářskou.

- Voda v přírodě blízkých i technických formách představuje zcela zásadní ekologický a kompoziční prvek vyžadující maximální zdůraznění.
- Výtvarné řešení údolních poloh má svoji zvláštnost v uplatňování přechodných kompozičních prvků, zejména volně žijících živočichů, pro řadu kterých jsou zde tradičně vytvářeny ideální podmínky.
- Významnou kompoziční formou musí být vyjádření historické geneze (stopy) vývoje přírodních podmínek a soustavy antropogenních vlivů, které mají v údolních polohách výraznou specifiku.
- Důležitou formou krajinářského řešení údolních poloh bude rozvíjení odpovídajících forem nejvýznamnějších hospodářských činností, kterými by zde měly být především zemědělství a lesnictví.
- Krajinářské řešení údolních poloh bude velmi často ovlivněno potřebou uplatnění asanací technických prvků a revitalizačními programy, které by měly upřednostňovat přírodě blízké formy a vytvářet tak nový soudobý typ krajinných zón a jejich kompozičního pojetí.

luh; vegetace; terén; vodní toky; ekologie; estetika; rekreace; obytnost krajiny

Photodocumentation



1. An important ecological and aesthetic value of valley flood plains is abundance of ephemeral plants in early spring. Corydalis. Mydlovarský luh.



2. Artistic interpretation of a valley flood plain expressed by stream meanders, meadows, solitary trees and by an emphasized peripheral spatial setting. Průhonice Park.

3. The terrain setting is illusively raised by conifers and deciduous trees and by a large surface of water with mirror effects. Průhonice Park.

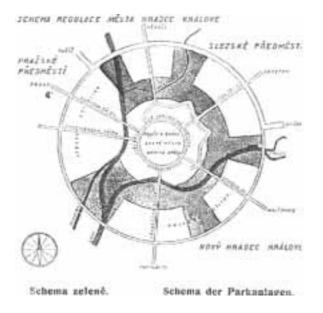


4. Genius loci of the Lednice Ponds in an artistic interpretation by Antonín Vojtek. Border House (Hraniční zámeček), one of the essential dominant landmarks, lies at the end of the main compositional axis of the valley.



5. In Lednice Park, the fundamental artistic values of a flood plain are expressed by a set of natural elements which include ponds, meadows and selected woody species. The vastness and grandeur of the area is emphasized by a system of vistas and by an interconnection with the external landscape.





6. Water regulation plan of the city of Hradec Králové. Abundant vegetation of the alluvial plain enters the city centre along the confluence of two rivers and continues in the form of riverfronts into the surrounding landscape. Josef Gočár, 1930s.



7. The confluence of Elbe and Orlice rivers in Hradec Králové.



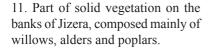
8. Floods are a characteristic phenomenon of valleys and have a considerable impact on extensive areas. Jizera river 2007.



9. Artificial lakes formed by sand extraction significantly enhance the recreational values of the Jizera flood plain.



10. Richly segmented peripheral vegetation strip and intensive farming with diverse surface areas and different distribution of fields, meadows and pastures are significant compositional values in the extensive valley of the Jizera river.





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