

# Green and Blue Infrastructure for Sustainable Development of the City. Case Study of Vilnius City, Lithuania.

Vaiva DEVEIKIENE, Ona DEVEIKYTE,  
Steponas DEVEIKIS (Lithuania)

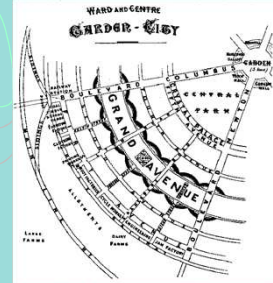
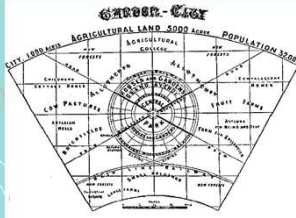
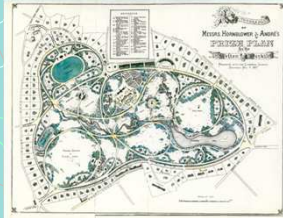


## Content of the presentation

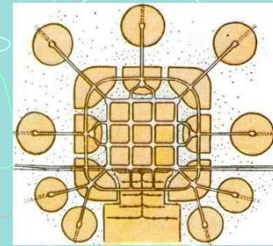
- **Greenery and water in the cities:** old history and many experiences.
- **Vilnius and its riversides**
- **Challenges and projects for sustainability**
- **French parks' creator stories:** André in Lithuania and Uruguay
- **Conclusions and final up**



## City planning ideas and practice

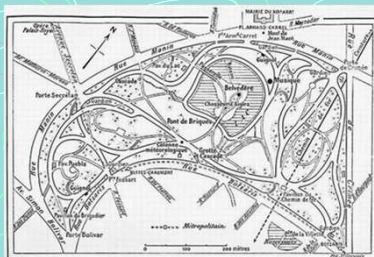
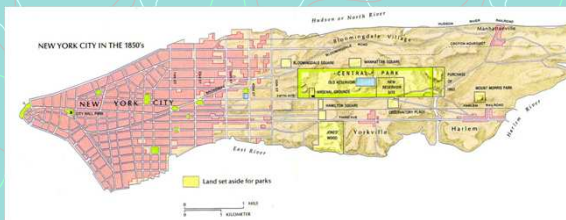


- Baron Haussmann's *renovations in Paris* between 1853–1870;
- *Public parks* in industrial cities: New York, etc.
- Austrian architect Camillo Sitte: *city planning according to artistic principles*, 1889
- Concept of *garden-cities* by E. Howard, 1902

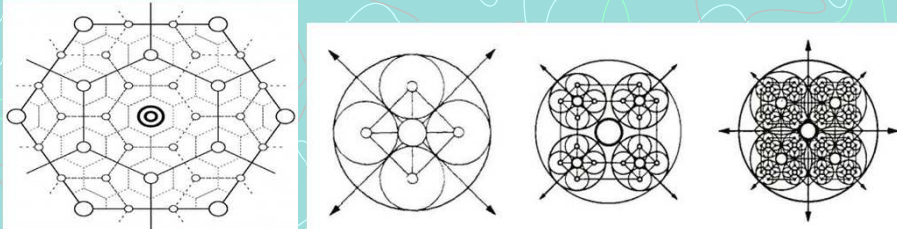


## City planning ideas: public parks in cities

*Central Park* in New York, 1858; *Buttes-Chaumont* in Paris, 1867;  
*English Garden* in Munich, 1789

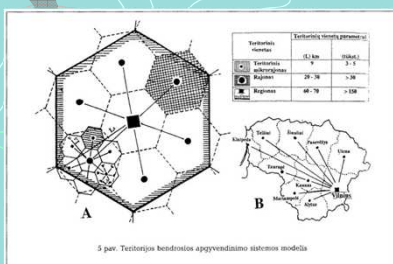


## City planning ideas and practice (cont.)



- *Central Place Theory* by German geographer Walter Christaller was applied for human settlements and urban systems planning, 1933.
- *Designing the City – towards a more sustainable urban form* by Hildebrand Frey, 1999; and *Visions of Sustainability* by H. Frey and Paul Yaneske, 2007. **Social infrastructure** and easy access to it.

## Lithuanian model of settlements system

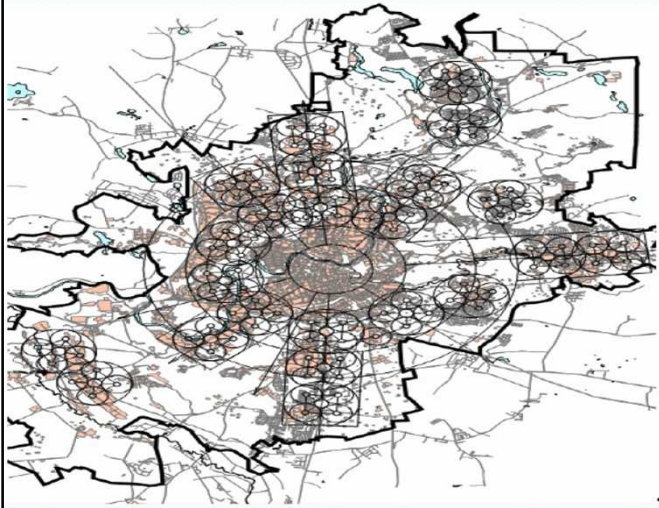


- Ideas of W. Christaller (1893–1969) were the basis of regional planning and urban settlements system developed in Lithuania by prof. Kazys Seselgis (1915–1998) *et al.* in 1962–1964.
- The system was based on the integrated hierarchy network of settlements from capital-city, regional cities, district centers, local centers and local rural centers.
- Aspects of community, cultural landscape and heritage development were left beyond to be covered in the following phases of territorial planning.



## Vilnius development model

(according to H. Frey theory)



**Neighborhoods** or districts in city, where the social and other infrastructure are developed and easy access to its.

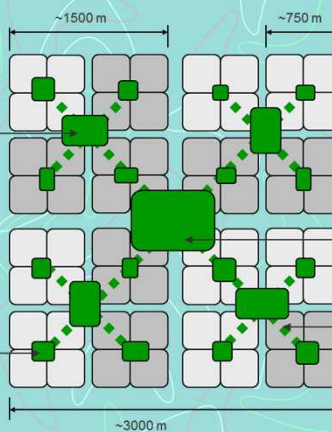
Configuration and concentration of city's built territories.

Directions of city development and communication systems.

## Modeling of greenery's system in city

**Green area of district or neighborhood (*barrio*)**

**Greenery of quarter or block**



**Urban public park, central park**

**Green connector**

## Methodological and legal framework

- European Landscape Convention, 2000 (Lithuania, 2002; now in 37 countries)
- Other EU Directives and regulations

### Lithuanian laws:

- Law on Protected Areas, 1993, 2003.
- Law on Immovable Cultural property Values Protection, 1994.
- Law on Land, 1994, 2004.
- Law on Construction, 1996, 2003.
- Law on Territorial Planning, 1995, 2004.
- Law on Greenery, 2007.

## Water as a frame for urban development

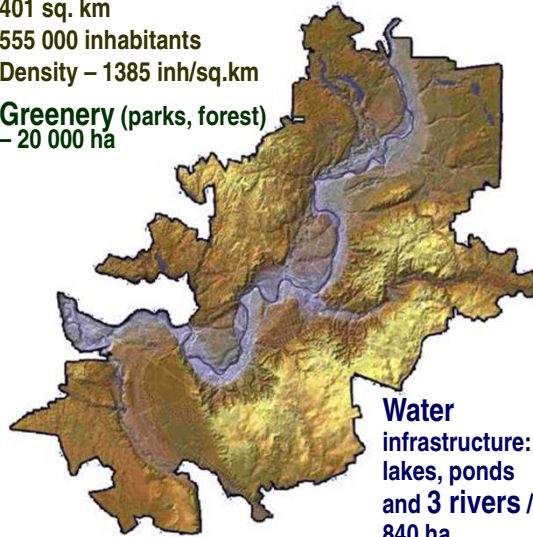


**Neman/Nemunas river and old cities Grodno (BY) and Kaunas (LT)**  
Ancient figures in J. Koppmayer, 1688. Library of the Vilnius University.

## Vilnius city – geographical conditions

401 sq. km  
 555 000 inhabitants  
 Density – 1385 inh/sq.km

**Greenery** (parks, forest)  
 – 20 000 ha



**Water infrastructure:**  
 lakes, ponds  
 and 3 rivers /  
 840 ha



## River life in the past: Vilnius in 19th century

1874



1874



1904

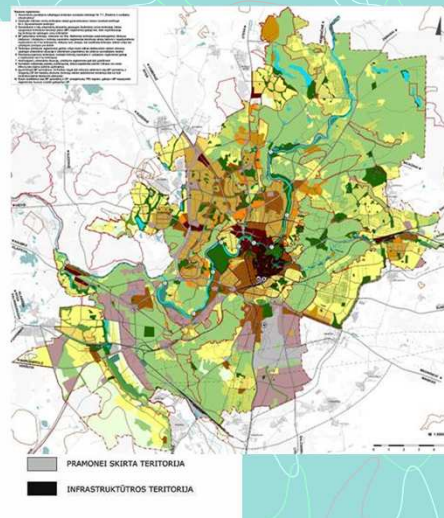
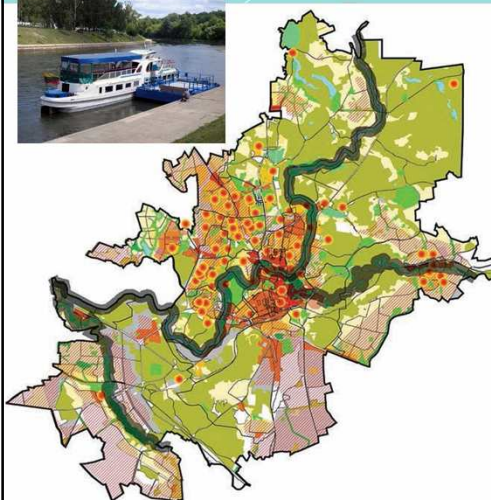




## Vilnius nowadays: river axis in city planning



## Vilnius city Master plan: 3 river axis development



## Neris River valley development in Vilnius



Neris river and its valley are the main elements of the nature framework in Vilnius city; it embodies very important nature areas – the Verkių Regional Park, Valakupiai forest, surroundings of Kalnu Park, Vingis park and other. Near Neris river important cultural heritage objects survived and new urban structure developed in last years.

Discussed directions of development and management:

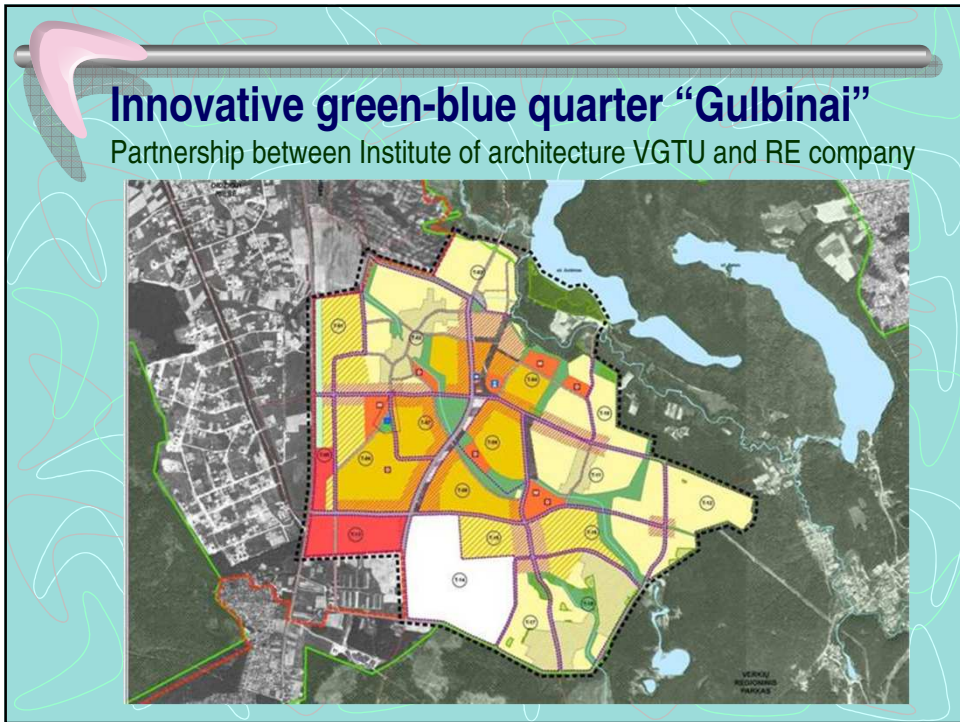
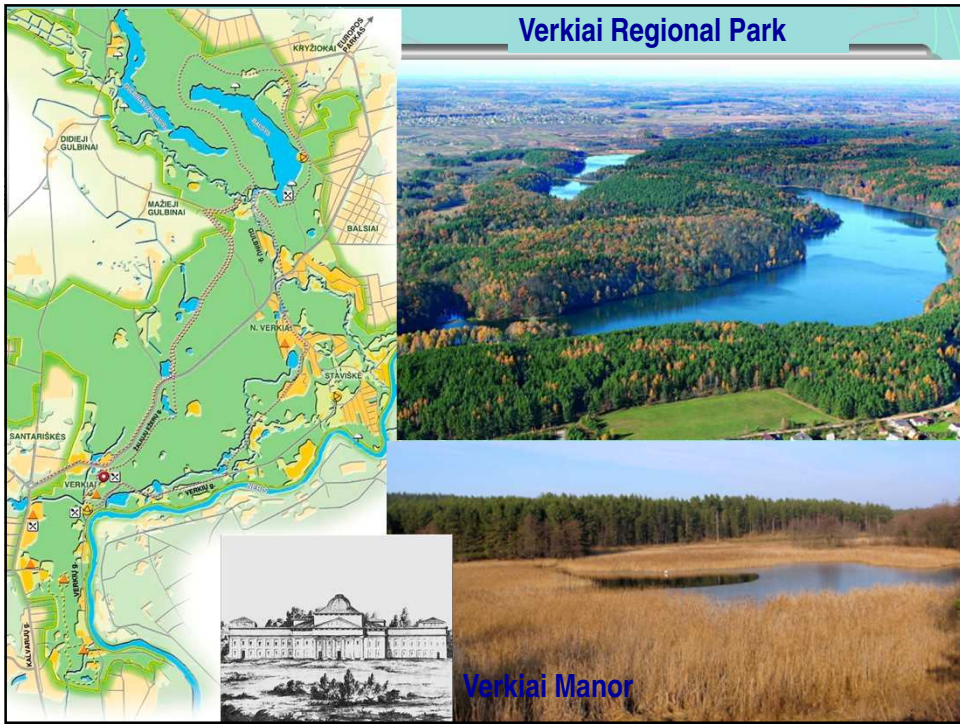
- Ecological Park
- Urban Park
- Meadow Park
- Sport Park

## Recreational and sportive track / aboard

24 kilometres longitudinal



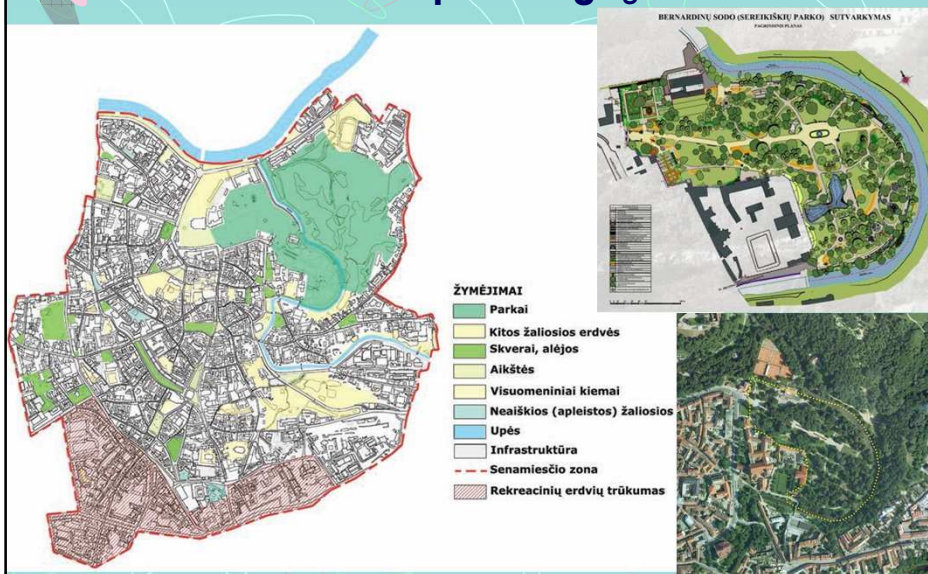




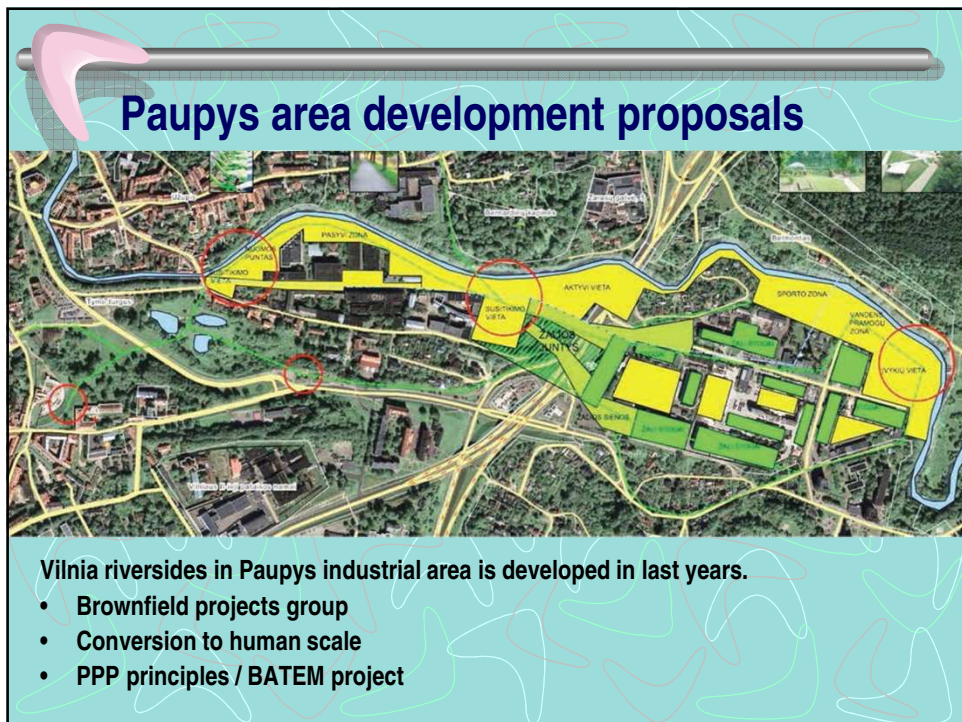
## Gulbinai quarter planning: environmental and landscape aspects, rain water management system



## Vilnius Old Town planning: green & blue areas

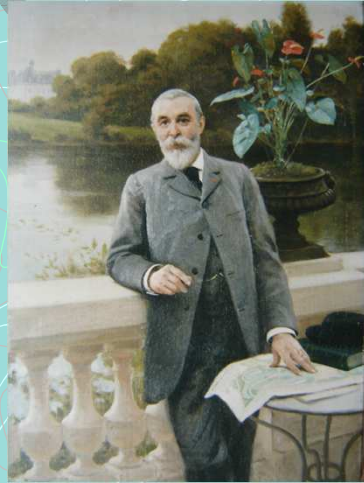








## Edouard André's heritage management experience



Portrait of Édouard André (1840-1911)  
by É. Debat-Ponsan, 1902

The life and works around world of multi-talented French landscape architect are presented in many publications and our paper. Ed. André is a botanist, an explorer, a landscape architect, an urban planner, and a writer of *Belle époque*, end 19<sup>th</sup> century.

Ed. André was worked in Paris and other French cities, in Lithuania, Italy, Russia, Poland, Uruguay. Scientific expedition to South America in 1875–1876.

Public or private parks' creation (Sefton park in Liverpool, Cognac city parks, etc.), transformations of Luxembourg city (since 1872), **Montevideo** (1890–1891) are most important works.

ÉDOUARD ANDRÉ ET RENÉ ANDRÉ	
Architecte-Paysagiste, Professeur à l'École nationale d'Horticulture de Versailles	
17, AVENUE GARNOT, PARIS	
<b>1° PRINCIPAUX TRAVAUX EXÉCUTÉS OU EN COURS D'EXÉCUTION EN FRANCE ET A L'ÉTRANGER</b>	
AMBOIX de LABONT (Général d') ANDRÉS (Ville M <sup>e</sup> )	Parc du Val Larbont (Ariège). Transformation du jardin botanique en parc public.
BEAUDOUX (M <sup>e</sup> de)	Parc de Saint-Cyprien (Dordogne).
BONINCA (C <sup>o</sup> M <sup>e</sup> )	de Saintizel (Savoie)
BOUILLON (Ville de), Luxembourg belge	Transformation des fortifications.
CADORE (H <sup>o</sup> M <sup>e</sup> de)	Parc de Champagne (Loire)
CALAN (V <sup>o</sup> F <sup>o</sup> de)	de Kermaoué (Finistère).
CARPELL D'AVIA	de Llapwryd, Wells (Pays de Galles)
CHARRET (M. Honoré)	du Corbét (Cher).
COGNAC (Ville de)	public (Charente).
COSTA de BEAUCOURT (C <sup>o</sup> G. de)	de Chissay (Lot-et-Cher).
DESMARIS (MM. Paulot, Lucien)	Jardins de leurs hôtels à Paris.
DRETAUX (H <sup>o</sup> A. de)	Parc de Lidonnardrau (Alsace).
HOUCET (Jacques)	de Neuilly Saint-James.
DREUX-HAZÉ (C <sup>o</sup> Et. de)	de Germancy (Nièvre)
FLEURBAEY (C <sup>o</sup> Roger de)	de Dangeul (Sarthe).
FOULD (M. Paul)	de Jambville (Seine-et-Oise)
FUNICEL (Ville de)	public et Casino (Madère).
GALARD (M <sup>e</sup> de)	de Caplan (Landes)
GARNIER (William)	de Blanc Pignon (Jérsey).
GERVAIN (H <sup>o</sup> de)	de Roquépique (Lot-et-Garonne)
HENNESSY (Jean)	de Saint-Herico (Charente).
HOTTINGER (H <sup>o</sup> H <sup>o</sup> )	du Piple (Seine-et-Oise).
JUGÉNÉ (M <sup>e</sup> de)	du Bois-Rouaud (Loire-Inférieure).
KAROLYI (C <sup>o</sup> L <sup>o</sup> de)	de Radvány (Hongrie).
KERNIER (M <sup>e</sup> de)	du Bois Cornillé (Ile-et-Vilaine).
LA MOTTE-HOUDECOURT (D <sup>o</sup> de)	du Fayel (Oise).
LAURISTON-HOUDEY (M. O. de)	du Monstean (Indre-et-Loire).
LESTRANGE (C <sup>o</sup> G. de)	de l'Archette (Loiret).
LUXEMBOURG (Grand-Duché de)	Station thermale de Mondorf-les-Bains.
LUXEMBOURG (Grand-Duché de)	Transformation de la Ciadelle en promenades et lotissement de terrains.
MALLEY (H <sup>o</sup> A.)	Parc des Côtes (Seine-et-Oise).
MONTBRON (V <sup>o</sup> R. de)	du Gué (Vienne).
MONTVEZIO (Uruguay)	Transformation des Parcs et de la Ville.
MONTREMAR (C <sup>o</sup> L. de)	Parc de La Croix (Cher).
NANTEUIL (H <sup>o</sup> A. de)	de la Chevallerie (Sarthe).
PIGOT (M. Ernest)	de l'Hermitage (Vosges).
PINS (H <sup>o</sup> de)	de la Calmithe (Tarn).
POLIGNAC (H <sup>o</sup> de)	de Kerhastic (Morbihan).
POISSON d'ALTON (M <sup>e</sup> de)	Jardin de son Hôtel, Paris.
POISSON (M. Louis)	Parcs des Crayères et des Horais (Marne).
POURCHAN (M <sup>e</sup> de)	Parc d'Hordosse (Lot-et-Garonne).
PORTO-FORMOSO (V <sup>o</sup> de)	de Ponta Delgada (Açores).
POTULICA (C <sup>o</sup> )	de Potulic (Silésie).
POUTALÉS (C <sup>o</sup> Ed. de)	de la Hebertaux (Alsace).
PROVOT (M. Georges)	de Maffliers (Seine-et-Oise).
R-HEINOLD (H <sup>o</sup> Edouard de)	des Aigles, Chantilly (Oise).
ROUSSELIÈRE (V <sup>o</sup> de la)	de Puy sec (Vendée).
ROLLE (H <sup>o</sup> Victor)	de Baudry (Indre-et-Loire).
SAINTE-GENÈS (C <sup>o</sup> H. de)	de la Lorie (Maine-et-Loire).
SENER (M. Lud. de)	de Semsé (Hongrie).
TALHOUET-HOY (M <sup>e</sup> de)	du Lude (Sarthe).
TERRY (MM. Ern. et Fr.)	de Carcass (Cuba).
TERRON (V <sup>o</sup> de)	de Bricasse (Maine-et-Loire).
TREBONT (M. J. de)	de Trémont (Eure-et-Loir).
TRZENKIEWICZ (C <sup>o</sup> Félix, Jean, Joseph et Ladislav)	Parcs de Polangen, Waka, Zatroced et Landwarovo (Russie).
VALÉRY (duc de)	Parc de Valençay (Indre).
VALLEURVE-ÉCLAIRON (C <sup>o</sup> H. de)	de la Farcannière (Vendée).
VIVIER (M <sup>e</sup> de)	de Thouars (Sarthe).
<b>D'EXÉCUTION SUR LE LITTORAL MÉDITERRANÉEN</b>	
IZET PACHA (S. E.)	Parc au Caire.
KHÉIVÉ ABAS HELMI (S. A. de)	de Keubieh et de Montazah (Égypte).
—	de Tchibouki (Constantinople).
KOKOROFF (M. Serge W.)	de Kékéneis (Grèce).
LORD (M. John)	Villa des Lotus (Cannes).
MONTPELLIER (Ville de)	Parc public de l'Esplanade.
PORREY (M. Louis)	Villa Pommery (Cannes).
RUGGHI (C <sup>o</sup> Carlo)	d'Albaro (Gènes).
—	Parc de Novi Ligure (Italie).
<b>2° PRINCIPAUX TRAVAUX EXÉCUTÉS OU EN COURS</b>	
ALEXANDRIE (Ville de)	Parc des Fortifications (Égypte).
AUGONNE (M <sup>e</sup> de)	de Giraud (Bouches-du-Rhône).
AUGOUË (M. M <sup>e</sup> )	Villa de Lator (Égypte).
ESSLING (Masséna, Prince d')	Masséna (Nice).
GODON-DENNETT (M. J.)	Namouna, à Beauclieu (Alpes-Marit.).
GOUVERNEMENT ÉGYPTIEN	Promenades et Jardins publics du Caire.
HOSSEIN PACHA KAWEL (S. A. le P <sup>o</sup> )	au Caire.
ISRAÏM PACHA HELMI (S. A. le P <sup>o</sup> )	au Caire.
ISRAÏL (S. A. le P <sup>o</sup> )	Parc de Zaafaran (Le Caire).

## Édouard François André in South America

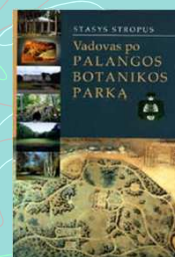
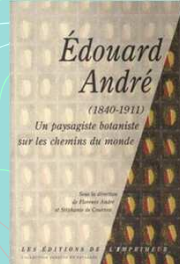
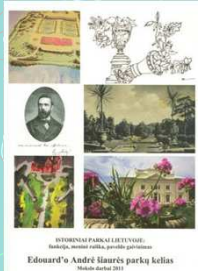
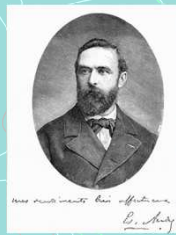


1875–76 – plant-collecting trip to Andes, South America; resulted in **3.400** specimens of plants. He was an expert of Bromeliads.

*Anthurium andreanum*, *Feijoa (Acca) sellowiana* (pineapple guava; *guayabo del país*) introduced to Europe and around world by E. A.

1890–1891 Ed. André prepared plans for the **redesign of Montevideo city** in Uruguay. *Plaza Zabala*, other *plazas*, Central Park (now Park José Batlle y Ordóñez), Park Prado (Miguelete Park) drawn by E. André in *Plan de Embellecimiento y Ensanche de Montevideo* in 1891.

## In Lithuania we are 4 parks, created by Ed. André



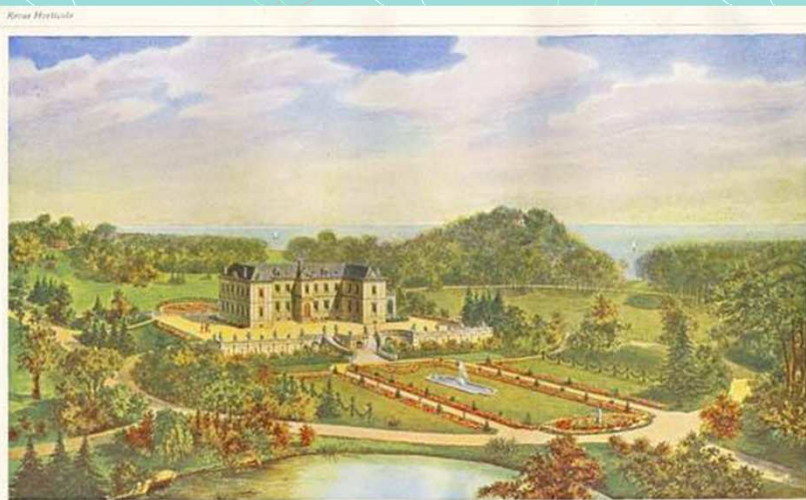


## Palanga Park – coastwise Baltic sea location



© Archives ENSP; Édouard André, 1899

## Palanga Park: in *Revue horticole*, 1906



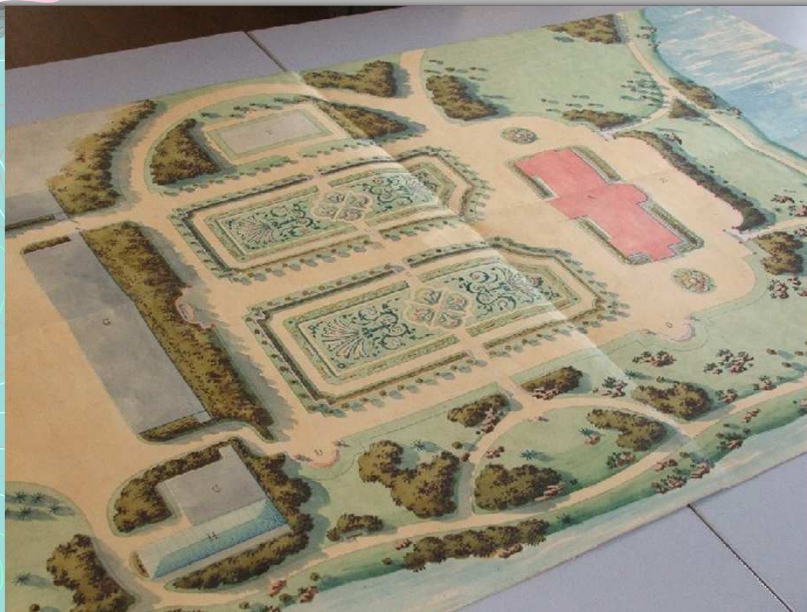
H. Bache del.

Edouard André, Paris.

Parc de Polangen (Courlande, Russie)  
Peinture à la française

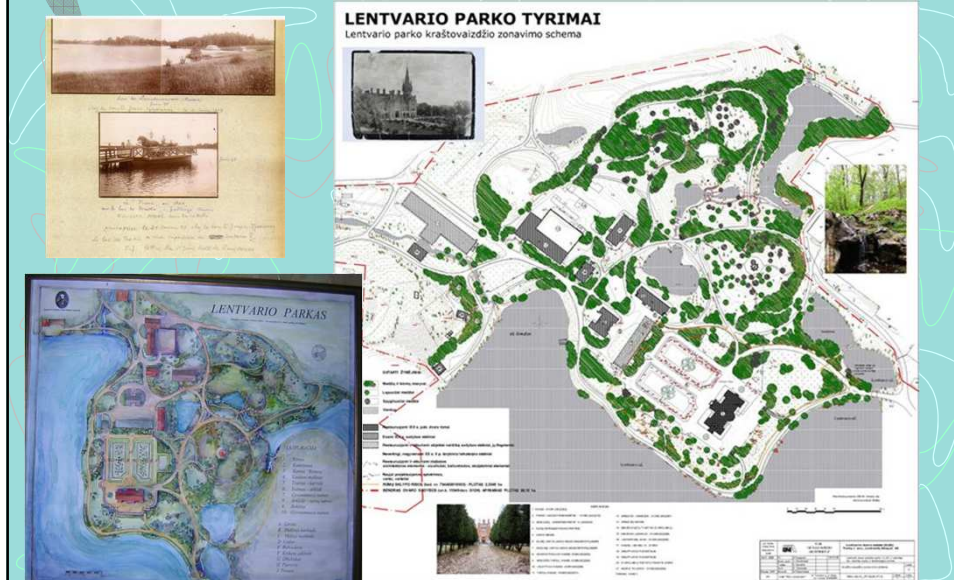


Lentvaris Manor near Vilnius, beginning of 20<sup>th</sup> c.

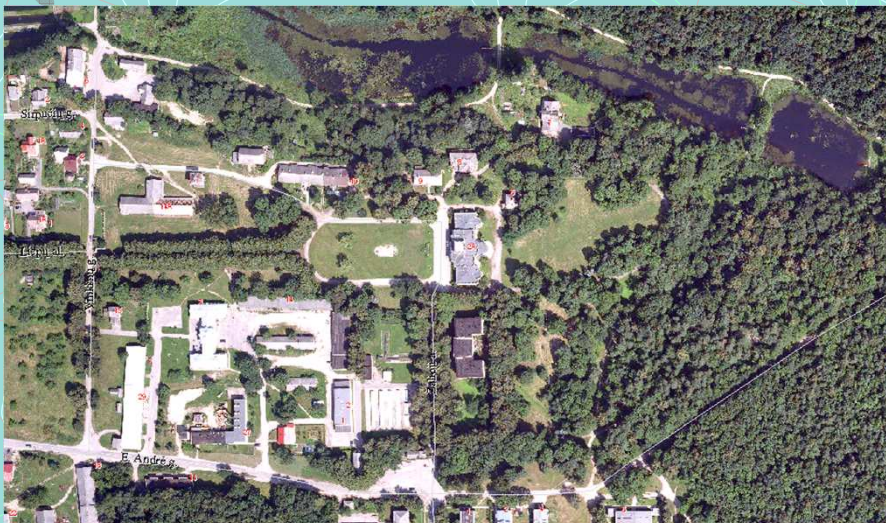


© Archives ENSP; Édouard André, 1899 (?), photo Steponas Deveikis, 2007

## Lentvaris Park research documentation: digital plan, 2008



## Traku Vokė Manor and Park





## Extract from Feasibility study of Traku Voké park by M. Pozzana et al., 2011

**Garden features compared with Edouard Ande treatise on Parks and Gardens 1879**  
*"Know that to embellish our residence means add value to the richness and beauty of our country, helping to beautify the landscape and to be admired by other people."* E. Ande  
 "Traité Général de la Composition des Parcs et Jardins" (p. 157)

**The fountain**  
 In general we can see a maximum surface of the fountain in a symmetrical garden, corresponding to the fifth of the total surface (p. 439)

**Flower parterre**  
 The simplicity in the decoration of gardens in all things, is a guarantee of good taste and it will suffice to indicate consummable patterns (p. 725)

**Cascade and Rockery**  
 The rocks will be placed at a notable distance from the house. They need to form a kind of background in the garden scene, if they are in sight, or they have to give rise to special hidden scenes, if it is possible to detect them from afar (p. 496)

**The Belvedere**  
 The views cut in the woodland, I also called "adornments views", which still have received the same landscape architects of culture. We have to understand this name as some hilly lawn, whose slopes are planted by selected trees, actually grouped, or isolated (p. 318-319)

**2. Present situation / 2.A Garden features**

## Park of Uzutrakis

The park is on a peninsula between two lakes with the river system which is very rare in Lithuania.

Documents of the special planning and detailed plan for the renovation and restoration of the domain of Uzutrakis are prepared.

Thanks to research and professional work, park ornaments and pond water system were restored.

### É. F. ANDRÉ PROJEKTAI LIETUVOJE: UŽUTRAKIO PARKAS

The collage includes: a portrait of Edouard André; a photograph of a large, white, classical-style building; a map of the park area with various zones and features labeled; several landscape architectural drawings, including a plan of a fountain and a view of a garden; and several photographs showing the current state of the park, including a stone bridge over a stream, a large fountain, and various garden paths and structures.



**The main terrace with views of the Galve Lake**



## Conclusions and final remarks

- Greenery and a water bodies are a principal formant of city landscape and structure identity.
- Greenery and water management should be presented in accordance to historical, ecological and economic approaches. Historical and ecological sustainability of greenery and water bodies systems is very desirable.
- Aesthetic of the greenery and water bodies systems should be created to sustainable engineering.
- Sustainability of aesthetic and engineering decisions is the goal to urban planers and landscape architects.

## Conclusions and final remarks

The cultural and natural heritage in Vilnius city and near Vilnius is very important for Vilnius city development.

**Three parks** in Lentvaris, Traku Voké and Uzutrakis created by French landscape architects Edouard and René **André** in 1898–1900, also other historic parks is the framework for green and blue infrastructure of the city with social, economic and aesthetic functions.







**Thank you for your attention**



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