

---

## A big change for botanic gardens in Europe: going from the 19<sup>th</sup> to the 21<sup>st</sup> century.

Philippe Richard

### Abstract

Since the Second World War, botanic gardens have kept the same look according to the basic botanic concept as they had at the end of the 19<sup>th</sup> century, “the golden age”. What could a collection look like today? Let's take into account sustainable development, introduce new medias, and replace the useful (but not very attractive) generic collections by thematic ones. In short, let's become more attractive in order to capture other publics, not only scientists or old gardens lovers, but younger people, not especially interested by nature nor ecology. If conservation is more important than ever, education is taking the lead. For example, to present a plant taken out of its context is probably less efficient considering the fact that it is a living organism, dependant on its environment. Experiences of transformation in the collections are described, such as Bordeaux, but also other places in France and through Western Europe.

### Keywords

Plant, ecology, change, collection, environment, use, ethno botany

There is a great diversity in the botanic gardens' world. A rich context which gives the opportunity to talk about botany. During the 20<sup>th</sup> century, new means to show nature were found in the gardens.

Many themes allow us to understand botany. In Bordeaux, we were able to undertake our project of a new botanical garden in a renovated part of the city. In a Concerted Development Zone (ZAC), on industrial wastelands, we had an opportunity to build an extension of the “old garden”, located in the city centre. It is a very nice place, very attractive as an old fashion garden, well-designed at the end of the 19<sup>th</sup> century. A systematic collection is the main attraction, approximately 2,500 taxa. Considering that it is very important to keep it, as a reference, and also as a good place to teach botany to young -and older- people and to show biodiversity - what could be more efficient than a systematic collection to achieve that?

In the new place, in another district, on the other side of the river, that's where we decided to present things in a different light:

- A systematic collection, or generic collection, cuts the link between the plant and its surrounding context. Then, it becomes more difficult for people to understand that it is **interactive** with the other organisms of its environment.
- It is best to show the plant within its habitat, the ecosystem, in order to restore this link.

We led a program based on:

- the explanation of **biodiversity**, by showing a great number of living organisms in the same habitat,
- showing the evolution of the same landscape during a flexible period of time,
- in order to maintain a high level of biodiversity in the human environment, we used natural resources with more attention to ensure a better renewal of the different organisms.

For example, the fence is made of oak wood, collected after a storm...

In this garden, no flower beds, no systematic collection (such as were maintained in the old garden)

The design was made by the landscape architect *Catherine Mosbach* and organized around four themes:

- Aquatic and hydrophytic plants useful for humans, food or health, to purify water, for ornamental purposes, etc...
- Natural habitats rebuilt from basic elements (sand stone, clay...) At the bottom, geological layers, then soil, and at the top individual species of plants.

Eleven local Natural Habitats to show the interactions between organisms and their habitats: sandy dunes, oak forest, calcareous cliffs, wet or dry heaths...

- Forty four beds showing the relationship between human activities and plants, dedicated to ethnobotany:
  - plants used to make alcohol,
  - used in Chinese medicine,
  - used to make oils, rare vegetables, allergenic plants, flowered prairies,
  - attractive plants for the bees, etc...
- Greenhouses showing Mediterranean habitats, mainly from the southern hemisphere, and other topics. They are equipped with photovoltaic cells included in the glass panels of the roof, and rainwater is collected in 275m<sup>3</sup> tanks to irrigate the greenhouses and in some other parts of the garden.

Mostly in the non-English-speaking countries, we have to show people how to use properly, if not avoid totally, chemical products or fertilizers. A public garden has to show, in some well chosen parts, the controlled development of weeds. In France, during the year 2009, 63,000 tons of chemicals were used for agricultural purposes, or in horticultural practices. At least for the latter, the use of such chemicals is not necessary. Botanic gardens are good experimental places to show the results of well controlled growth of weeds. They play an important role for the public and especially for children, and they are the best possible example to encourage simple and efficient techniques, such as:

- Irrigation; we have lessons to learn from farmers living in semi-arid countries ;
- No more use of sprinkle watering in warm and windy countries;
- Manual weeding ;
- Using well identified fallow spaces to help people understand the importance of some wild plants, for health or soil restoration;
- Use of recycled materials, such as cardboard boxes to make layers of compost directly usable for the culture of vegetables, use of wood chip, etc...

In conclusion, all this shows how an original garden is a means of success in the understanding of natural processes. We can use Nature, but we must use its resources very rationally in order to let it reconstitute by itself.

**Figures**

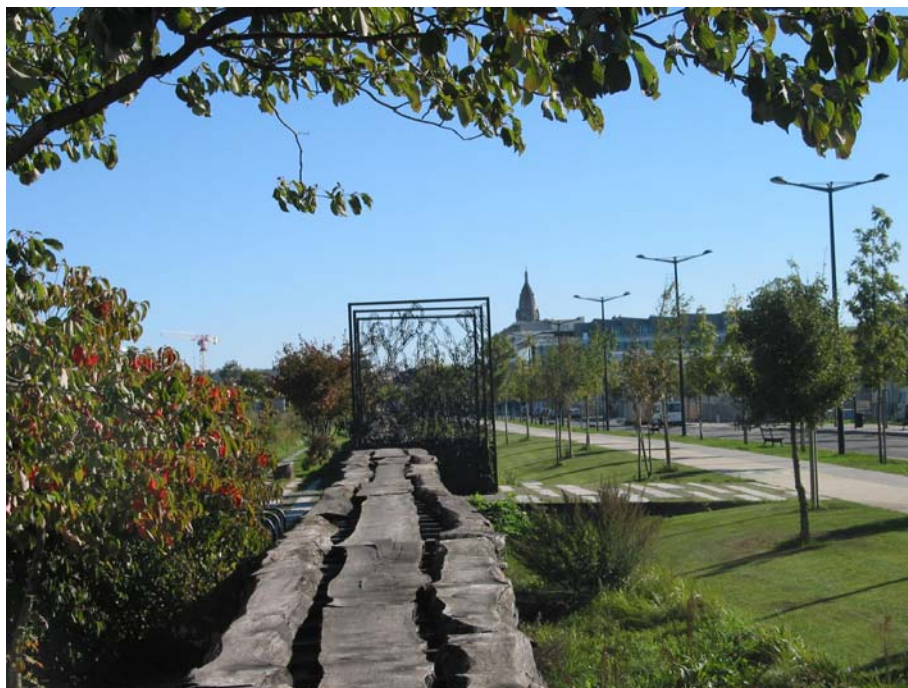


Figure 1: The area of the garden 31 10 06



Figure 2. General view of the garden