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# botanic /bəˈtænɪk/

## noun

- of or relating to botany or plants.
- designating or relating to herbal or botanical medicine.

Oxford English Dictionary, 3rd Edition



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Patrick Blanc is a French botanist, researcher, and inventor of a simple technique for growing plants on vertical surfaces with no soil and minimal maintenance. A specialist in rainforest understory plants, he has created hundreds of indoor and outdoor vertical gardens in a wide range of environments globally. Catherine Mosbach is a Paris-based landscape architect. Founded in 1987, Mosbach Paysagiste has designed many award-winning projects including the Bordeaux Botanic Garden, The Louvre-Lens Museum grounds, and Taichung Central Park. Blanc and Mosbach spoke with Karen M'Closkey about their collaboration, the differences between working as a botanist and a landscape architect, and the relationship between design precision and the spontaneity of life.

+ Catherine you are a landscape architect with a background in the life sciences, and Patrick you are a botanist who has traveled the world to study plants, in addition to creating hundreds of your own designs. What projects have you worked on together and how did your collaboration begin?

+ The plants available from nurseries are a tiny fraction of the over 400,000 known plant species. Can you speak about how you source plants and if you've seen changes in the horticultural industry over the last few decades?

CM We met for the publication *Pages Paysages*, which I founded in 1987 with Marc Claramunt, Pascale Jacotot, and Vincent Tricaud. The journal was a wonderful opportunity to merge scientists, philosophers, artists, and other practitioners. We wanted it to be about experimentation and exploration of different design approaches. I invited Patrick to write a paper about the work he had done on vertical gardens for the garden festival Chaumont sur Loire 1998. The title of the text we proposed to Patrick was "Be a Plant." It was a powerful paper, very philosophical. Then we [Mosbach Paysagiste] won the Bordeaux Botanical Garden Competition in 1999, which was one of our first major commissions. In the past it was normal practice for botanic gardens associated with universities to be experimental and so it was absolutely necessary for me to not simply make a public space but to make a space that was experimental in terms of how it represented landscapes of the Aquitaine Basin region. Patrick worked with us on the tree species and climbing and aquatic plants in a didactic way. It was a great collaboration.

PB I am lucky to be able to travel all over the world. In some countries I can obtain local plants for my projects, while in other countries, it's almost impossible to have local plants. I first prepare a list of the plants I would like to use and then make some modifications according to what is available from local nurseries. But plants from local nurseries does not necessarily mean native plants. In Europe, nurseries have plants that come from many places – some from Europe, many from Malaysia, Japan, China, very few, unfortunately, from the United States. This is very different from, for instance, California where many nurseries specialize in native Californian plants. The same is true in Australia, New Zealand, and South Africa. But in Europe, or in other areas in the US outside of California, unfortunately, it is not possible. It's a pity because when I visit the US and see all of the interesting species in the Appalachian Mountains, in all the states south of New York to Florida, all of North Carolina, South Carolina, Virginia, I wonder, "Why don't they cultivate these species?" For some projects, that is what I do when the plants are not available. In Japan, for a project for the Shinkansen, I

observed that the mountains surrounding the city of Yamaguchi were covered with forest. Because we had two years before the project had to be realized, I proposed that we go to the forest to gather some cuttings or seeds to propagate. So, it was wonderful because we—the architects and people from eight nurseries—went into the field. The nurseries then propagated the plants for two years – all 150 species used in the project come from a 15 km area around the Shinkansen Station.

CM In Europe, it's quite easy to get species from all over Europe. It's not protected, it's open. The nurseries have to be specifically managed, however, so there is a high standard in terms of the plant stock. But in a place like Taiwan, for our Taichung Central Park project, it's totally different because it is an island and you can only use what is available on the island so as not to bring pathogens or possibly invasive plants. At the same time, the natural areas are protected so we could not get native plants from the region. Nor do they have the nursery regulations like we have in Europe – the plants are treated very badly. When they are old, they are respected as gods but the nursery plants are treated like trash so it was very difficult to get the quantity and quality of trees that we needed – 10,000 trees. And nor could we get many of the species we wanted because we could neither import plants nor gather them from the surrounding areas.

+ Do you think projects like the one in Japan where you grew the plants for it can end up changing nursery practices, or do you think it was a one-time situation? And is your preference to use native plants when you can and, if so, what do you mean by that in terms of a plant's geography?

PB It's so difficult to define what "native" is. Native has many different senses, depending on the species. Some species are very narrow organisms, known only from some rocky areas in the world, whereas others have a very wide distribution. Usually, plants growing horizontally in the soil have a quite large distribution area but plants growing on cliffs, for instance along the Mediterranean Sea, have a very narrow distribution. So, I use native plants when there are—like in the San Francisco area—wonderful plants for walls because there are so many rocky areas where plants are adapted to environments with little or no soil. But if you go in the forest of Fontainebleau, I can tell you, there are maybe five interesting species, nothing more. So, of course, it depends. In some cases, it's important to try to use native species, in other cases it's not at all necessary.

But, yes, I do think we can change practices beyond a single project. I am currently working on a project at the Singapore Airport. I brought seeds in my luggage without any declaration, and they were very happy to have new plants to propagate. After two years, there are many new species that they can use in different places beyond the airport.

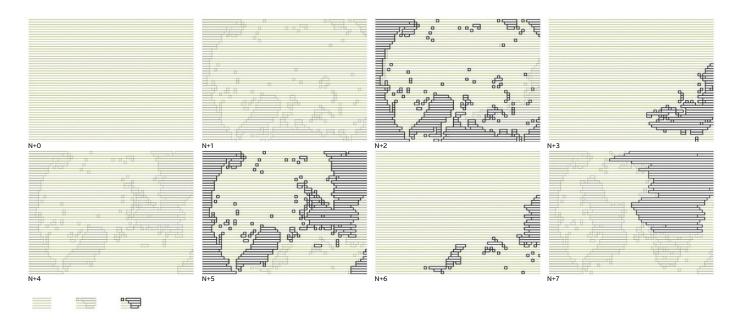
CM It doesn't happen. I could never have specific production for a specific project. Patrick is a botanist so he has much more precise knowledge to be able to say, "I'm sure it will work" whereas we are landscape architects. Even though we have plant knowledge we are not scientific about it. And we are also open to what emerges in some places – seeds are always traveling across the continent and so there are surprises. It's just a way for a plant to adapt to a new condition, like all organic and life processes.

+ Patrickyou spent a lot of time developing the technical assembly and nutrient needs for the vertical garden system but have either of you worked on projects where experimentation is ongoing rather than something that is done prior to a project and then applied to it? PB My vertical garden structure is very simple. It's just a hose with some holes, on a kind of felt, so technically it's nothing. The only important thing is the selection of the species, especially since the gardens are vertical and, when they're outdoors, you have much more wind and light at the top than at the bottom, and also a big difference between summer and winter in terms of a plant's access to light. It is crucial to select the right species for the right place on the vertical garden. Only then

do you focus on creating the best aesthetic value. So this is not experimental. I know the growth habits of the plants in nature, so I try to replicate what they need. It's the same for nutrients. I give nutrients in very low amounts, or in some cases, such as when the garden is fed with water from a fish tank, I do not add nutrients because the fish provide enough. So, again, nothing is experimental. Of course, year after year, I use different plant species and sometimes there are surprises. Some species you see in nature growing vertically on cliffs will not grow well in my vertical gardens but it's not a problem. When you use 200 or 300 species and have one species that is not growing well, others will fill in. Plants are highly adaptable. They come by themselves. This is evolution. This is the miracle of life.

CM When I say experimental, I do not mean in a scientific way, rather, we design some places to be highly controlled, and many other places to be open to the unexpected. But many people are not comfortable with the "unknown," which is a pity. For example, for Taichung Central Park we created mountainous places and planted over 10,000 trees. It was intended to be a forest with its own biological regulation but, in autumn, when the leaves fell on the soil, it was considered dirty and the forest was "cleaned." Of course, this is the opposite of what should happen because the leaves introduce life into the soil. In many places there is a lot of effort to create horticultural displays with plants to make them always colorful and flowerful, which is the opposite of our spirit. So, when I say experimental, it means we design these projects in a way that people can respect and understand that we are pointing to a new direction for landscapes. But it takes a long time, and you need to have the support of those in charge of maintenance who respect the spirit of the project; otherwise, it will be normalized and standardized over time, which cuts out everything spontaneous and takes away what you could learn about creativity and life.

Below: Louvre-Lens prairie planting strategy.



IN CONVERSATION WITH PATRICK BLANC + CATHERINE MOSBACH

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+ How do you engage with those who will take care of these landscapes? How receptive are clients to involving you long term?

CM I am not hired. It's a huge problem. I had a commission, with architect Catherine Frenak, for the Archaeological Park of Solutré [1999–2006] and in that situation they are letting things evolve spontaneously but that is because the soil is protected as an historical monument since it has human remains from the Solutrean [Upper Paleolithic c. 22,000 – c. 17,000 BP], not because of the spirit of our project, which is about sharing knowledge, sharing discovery, and sharing life processes. For example, our design for Musée Parc du Louvre-Lens needs time–especially because the soil is very poor–we need approximately 20 years to see what evolves. It's a much more humanistic way to engage and nourish a dialogue with what you don't know, and accept you don't know, but that depends on the owner of the place. And a huge difference from Patrick is that I work on public spaces. Even if it is a museum or botanic garden, it welcomes the public.

PB It's a little bit different for me because my works—maybe 300 or 400 now—are considered a little bit like artworks. Very often the clients ask me, after some years, about how to maintain the gardens or if they should cut or replace a plant. So, it is very different from working on horizontal space that is accessible by the public and by gardeners. But there are still some problems with the companies selected for maintenance. They sometimes pull-out plants or change them so they can keep coming back for maintenance – sometimes as often as every two weeks. But I have selected my plants carefully and so my gardens do not need very much maintenance, typically only a few times per year.

+ Your first collaboration was the Bordeaux Botanic Garden. Does designing a botanic garden change how you approach planting choice and design as compared to any other landscape project? CM We won the competition because one of the jurors—botanist Claude Figureau—was a researcher who said ours was the only project that opened the capacity for research. The other entries were static, much more like a museum, and with less interaction between the visitors and the space. I learned a lot about the capacity of bacteria as an input for life in the earth and, had I not done that, I would not have had that knowledge for the Louvre-Lens. I was lucky to work with a unique company, using some techniques that we developed for working with soil parameters and stratigraphic boundaries, and used later for Louvre-Lens. But a space cannot just be for one kind of population; it must be open. The Bordeaux Botanic Garden is quite small—six hectares—but it's really powerful to be in this landscape, in the city center. It works as a public space much better than we expected but is losing some of its links to research. As I said before, it depends on the keeper of the landscape. It is a very delicate connection between the landscape and the gardener or keeper.

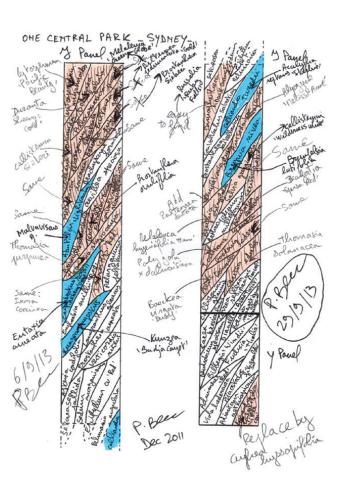
+ Speaking of the afterlife of these projects, I'm curious if you have collaborated with or know of any research that scientists have done on projects you've designed to see how they're performing in terms of their ecological functions?

PB For my vertical gardens you can imagine that the research is mostly about insects, spiders, and birds. But I think the most interesting would be to know about the substrate, which is a very thin layer comparable to the mosses covering the rocks and forest. It would be very interesting to have a thorough study of all the microorganisms—bacteria, fungi, the unicellular algae, the mosses—all of this life in a three-millimeter-thick substrate. I really hope that someone will take on this research to learn which microorganisms arrive spontaneously on these vertical gardens. There is still a lot of work to do—not just in terms of the animals that the plant life supports—but in terms of what arrives in the vertical substratum to support the life of the plants.

CM I think in our case it's much more linked to the power of the place to make a more sensitive link between the people and their environment. People are afraid to be in contact with wildness and with life—with the unexpected—but if we don't have that connection, we lose. The landscape architect, the botanist, and the researcher have the power—actually it's a responsibility more than a power—to create places that

Below: One Central Park, Sydney, Australia.

are open to behaviors and practices other than what we are familiar with. It's the only way to evolve. We are lucky that we have many cultural briefs where we have a lot of freedom to direct the project. We are authorized to do things that are not done in usual cases with strong regulatory frameworks, like in Paris or New York or other big cities, which result in normative projects. It's a bit sad because you don't learn anything anymore. We do not work for our generation, we work for the next generation, but it takes a long time. One life is not enough.





+ Catherine you mentioned future generations and Patrick you spoke about what the plants need to survive. Have your plant choices or thinking about plants changed given what is known about the pace and effects of climate change?

PB No. First, as I always say, the most important thing is to stop destroying the natural world because once you destroy the habitat, you destroy the species and then it has no chance to adapt. To adapt to the climate is a luxury, it means you are still alive. The only real battle we need to have is to protect the remnants that are left. I recently visited the Western Ghats forests in India where maybe 5–8% of the forest remains. Most of these species will disappear before they get a chance to adapt. So, in my opinion, it is not important to know how they will change their habit, we just need to give them the space to change and to keep alive what is alive today.

IN CONVERSATION WITH PATRICK BLANC + CATHERINE MOSBACH

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CM We cannot change the world just in one country, or one project, but each small thing can point to a way to change direction. We know very precisely the scientific news and what we need to do, and we have to do it together. We, as landscape architects, can play a small part in changing direction by showing what is possible. I am an optimistic person. It's much more powerful than just repeating what has been done before. But that means we should also be aware of research in a broad sense, not only contemporary works but also looking to history—I recently learned a lot about the power of plants' effects on the water cycle beyond just the liquid phase—for how scientists of the past thought through issues that are relevant to us today.<sup>2</sup>

+ What information should be required knowledge for emerging landscape architects? The knowledge base is so vast—it is something that is learned gradually—but how do you approach it within your office in terms of educating young landscape architects into thinking about plants?

CM That's a difficult question because my primary background before I was in landscape is biology, physics, and chemistry. I am always interested in such level of knowledge. Then, as I mentioned, we made *Pages Paysages* for 10 years. So I was lucky to cross different kinds of knowledge and different kinds of experimentation, which is really important because whatever we do as designers is always an interpretation. It is not enough just to know plants. Everything we do is cultural. I lose my patience when the focus is only on ecology because even ecology is a cultural vision. So, we



need to be open to different ways of learning about our world in a global sense and that is transdisciplinary. I am lucky to have different levels of expertise and lucky to meet many scientists, artists, philosophers, and art critics. We work for all kinds of life together, not just for human, not just for plants, not just for animals. Landscape is always evolving, it's always growing, and that is powerful.

+ I don't know the situation in France right now but in the US there seems to be a waning interest in botany as a field of scientific study. The US government is encouraging people to apply to enter the field.

+ One final question, are there any particular projects that you are working on that you're excited about?

PB In France, the study of botany is, unfortunately, declining and there are very few courses. Most of the botanists are between 40 and 70 or 80 years of age. But globally, the story is very positive. There is a new generation of botanists, most from tropical countries, and there has been an increase in publications written by local botanists. Why? Because during COVID, the European and American botanists did not go in the field, so the local botanists worked by themselves for three years. And now there is a burst of publications, and this is great. Botany, especially tropical botany, has come back to the countries where plants have been studied for 200 years by botanists from other countries.

CM I am in the process of codirecting a large volume about landscape architecture in France focused on the last 30 years of practice. We think France has a very singular approach, and a large number of practices, but we feel we are not so visible. It's ambitious because we are so many people. There are approximately 70 authors – it's a manifesto, really. It will be three volumes and, like *Page Paysages* and *LA+*, it's not only landscape architects, but also philosophers, sociologists, historians, and others.<sup>3</sup>

PB Yes, many. I do projects of all sizes—from interior private gardens, to airports, malls, and museums—and in many places. I continue to learn many things. I recently returned from India for a project at the Bangalore airport and was so surprised by many plant species. I didn't know the counterpart species in Southeast Asia. The same genus has a totally different growth habit and adaptations to different types of supports. What is important, always, is to have the opportunity to travel. Everywhere is the chance to be a botanist. When you are a zoologist, it's much more complicated because animals move. Plants don't move so it's easy to make observations. You have just to open your eyes.

1 Patrick Blanc, "Etre Plante," Pages Paysages Anamorphose 7 (1998–1999): 96–101.

2 For example, John Woodward's "Some Thoughts and Experiments Concerning Vegetation" [1699] and Stephen Hales's "Vegetable Staticks" [1727] are two famous botanists who studied transpiration and forester Viktor Schauberger [1885–1958] who developed unique theories about the movement of water.

3 Landscape Collectif. The editorial board is Caroline Bigot, Marc Claramunt, Philippe Clergeau, Jacques Coulon, Denis Delbaere, Yves Lugimbühl, Catherine Mosbach, and Sylvie Salles. The first volume of the book—titled *Le projet de Paysage, un Manifeste Critique* (Hermann)—will be published in 2024.

Opposite: Taichung Central Park.

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# Smart Plants and the Challenges of Multispecies Narrative

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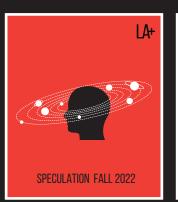
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