



**Eduardo Souto de Moura**, Architect, Portugal

**For me architecture is a global issue. There is no ecological architecture, no intelligent architecture, no fascist architecture, no sustainable architecture – there is only good and bad architecture. There are always problems we must not neglect; for example energy, resources, costs, social aspects – one must always pay attention to all these!**

# Harmony between the

Portuguese architect Eduardo Souto de Moura presented his famous Braga Stadium, built on the site of a former quarry. In 2004 the European championship soccer games made the stadium known to groups far beyond architectural circles. What interests Eduardo Souto de Moura the most in architecture is the balance between the natural and the manmade.

Interview by Lara Braun, Journalist



# natural and the man-made

**Eduardo Souto de Moura, in your presentation at the Holcim Forum, you said there is no such thing as sustainable architecture.**

We can also look at it another way: there is nothing *but* sustainable architecture – because the first precondition of architecture is sustainability. Sustainable architecture is a tautology.

**Are durable buildings sustainable buildings?**

I have designed durable buildings that became unsustainable. For instance, a market in Braga – an open-air market where livestock was sold. As the community developed into a consumer society, supermarkets were built and people stopped going to that market. Although it was a huge and sound structure, it was no longer sustainable. The building was vacated and left to deteriorate. It ended up being demolished.

**You said that what interests you most in architecture is the interplay between the natural and the man-made.**

A sculptor recently said there is nothing we make in the world but architecture. He said that nature, the creation of God, is what exists in the world, and that everything which is not nature is architecture: ships, houses, graveyards, bridges, roads, and everything else we make. So architecture is non-natural. But being non-natural is not necessarily being against nature. The relationship between the natural and the non-natural should be a natural one; there must be an empathy between the two for both to coexist in harmony. If the relationship is not harmonious, the architecture is not sustainable.

**Eduardo Souto de Moura**, born in 1952 and holder of numerous design awards, is among the most individualistic architects of our time. He studied architecture at the School of Fine Arts in Oporto and was appointed architecture professor at the University of Oporto.

He teaches as a visiting professor at Geneva, Paris-Belleville, Harvard, Dublin, and the ETH Zurich and Lausanne. A neo-Miesian who continually strives for originality, he is making a name for himself particularly through his exquisite use of materials – granite, marble, brick, steel, architectural concrete, wood – combined with unexpected colors and a masterful control of light to produce extraordinary impressions.

In addition to his many residential buildings, schools, and infrastructure projects, Eduardo Souto de Moura designed the spectacular stadium of Braga, gracing the European soccer championships in Portugal with an architectural masterpiece. He presented this work at the Holcim Forum.



**You speak of empathy, yet you say of the Braga Stadium that the architecture competes with the site. Can empathy and competition coexist?**

Yes. First there is the site, then architecture is added, and a new site is created. This new site establishes a sort of yin-yang relationship between the first site (the natural) and the architecture (the man-made). If both coexist we can speak of good architecture.

**And you say that this coexistence implies a sort of tension.**

That's right. These relationships are not always calm. Harmony can be achieved only through conflict. At Braga Stadium, it was a drama to break down the mountain and make concrete from the stone. The concrete is the mountain, no longer in natural form, but in man-made form.

**Are local materials and construction methods important in your architecture?**

Yes, but there are many conditions that make this difficult: Building by hand costs more. A tailor-made suit is more expensive than one off the rack. There are rules for choosing trees: Landscape architects and gardeners always try to use local plants and trees because these are adapted to the local environment: the moisture conditions, type of soil, acidity, wind, etc. There are analogous rules for architecture. Then there is the problem of logistics. And the problem of know-how. In principle, local builders work better when they can use their knowledge of their traditional materials. Some local goods are more expensive than imported goods. In Portugal, imported Spanish oranges are cheaper than Portuguese oranges. I'm not saying that's bad. It's just the way things are. Stone from China is less expensive than stone from Oporto.



### Do you oppose globalization?

Yes, I do, because local tradition must be valued, so one must resist globalization. Globalization of course has advantages, like communication and speed, but when it comes to architecture I don't think globalization can play such an important role. In the film "Playtime," Jacques Tati visits a travel agency and on the walls hang posters of Sydney, New York, and so on – and the same building appears on every poster. It is incorrigible to build a glass skyscraper in Ecuador and the same building in Moscow. The climates are different, the customs are different. There's a word that is seldom used in architecture nowadays, one that is rather kitsch, and I believe it should be used more: appropriateness. Things have to be appropriate.

### Does the resistance to globalization hamper your work?

Yes, insofar that local materials find greater acceptance among the well-off than by society at large. It should be the other way around.

### Do you believe this situation can change?

I do, but it means that society must change – and that is not easy to achieve because we don't live in revolutionary times. We mustn't forget that we live in a capitalist society, and profit always comes first. Alternative energy industries have never flourished because there are such large economic interests supporting oil production.

### Will there be a great crisis before we can shift from modern consumerism to sustainable consumption standards?

There is already a crisis – the crisis of western society. People don't talk about it very often, but now they are beginning to mention it as new competition is emerging in the Asian countries, especially China, and in the former Soviet republics. And those are highly polluting nations.

### Give people something they can be proud of

To illustrate how he puts this idea into practice, Eduardo Souto de Moura points to Braga Stadium, a structure that lent architectural luster to the 2004 European championship soccer games in Portugal and one that incorporates many principles of sustainable construction.

In his presentation at the Forum he said that sustainability must not always mean renunciation, restraint, and modesty: "When aiming for sustainability one must also give people something they can be proud of."

The photos on these pages show Souto de Moura's Braga Stadium, described by *Architectural Review* magazine as a "radical reinvention of the sports amphitheatre, in which the manmade structure simultaneously becomes part of and emerges from the natural landscape."



### Labor is cheaper in those countries.

Yes. In former days, Portuguese industry was heavy in textiles and electronic components because labor was cheap and abundant. No longer so. Today Portugal imports labor. In the construction field the labor force is Ukrainian. The lower labor costs are not sustainable socially or economically, but this is a political problem of the society in which we live today, which itself is not sustainable.

I am critical, but I am not pessimistic. Architecture, for instance, hasn't changed very much, although it appears quite different nowadays. Since its infancy, in Mesopotamia, the concept of the house has evolved very little. You can change the materials, add or take away glass, but in the end the house is still a sort of second layer of clothing for the fundamental social unit – the family. The hierarchy and organization of the family hasn't changed that much over time and houses haven't either. There are things that have never changed and never will.

### Such as?

Such as the stone wall. Stone is one of the ancient and most modern building materials. The stone wall can be structural if it is thick enough; with its thermal mass it can insulate in both cold and hot weather; and it provides good physical protection. People don't build stone walls today only because stone walls are too expensive. Stone is expensive because it is so difficult to obtain. I don't know why people don't just go to the quarries and cut out slabs of stone. I don't see why people don't cut stone with lasers. Lasers are used for plastic surgery and for cutting steel. Maybe industry is not interested because the profit is too small.



**Framed between the two sides of Braga Stadium is a stretch of granite mountainside. What are you expressing with that?**

This juxtaposition of the natural and the man-made expresses the essence of the stadium. The playing field is covered by a suspended roof. The suspension cables are 220 meters long and carry great tensile loads. The cables are tied to a battery of concrete pillars in the structure on either side of the field. These pillars lean outward against the pull of the cables. But that's not enough. To counteract the thrust, the pillars are anchored to the stone they rest upon. So the roof is linked to the pillars which are linked to the stone. Ultimately it is the mountain that supports the roof. It is this encounter, this meeting point between the natural and the manmade that I find interesting to deal with. You can see the cables pulling and you can see the concrete working against the forces to transfer the load to the stone. The manmade structure is dependent on the natural rock for its stability and its make-up. Thus having the stone wall of the mountain terminate the southeast end of the stadium instead of the usual seating is a fitting reminder that the stadium owes its existence to the mountain.



**Throughout the twentieth century, architects and engineers have been designing concrete structures that seem to float – defying the law of gravity. Do you believe that modern architecture seeks to challenge the laws of nature?**

Yes, we are challenging gravity. The aesthetics of modern architecture begins with imitation of the machine. And machines imitate nature. Man invents machines to perform tasks nature cannot easily do: to make things easier, to move water faster, to have better light. So during the Industrial Revolution modern architecture emerged, led by Le Corbusier's concept of the house as a "machine for living." Materials and mechanisms were then developed that seemingly liberated buildings from the force of gravity. Hence the option of floating.



Philosopher and writer Italo Calvino wrote some essays published in his book titled “Six Memos for the Next Millennium,” and one of them is called Lightness. Calvino predicted that things will become lighter in the future.

### **And buildings should become lighter too?**

Sure. There’s a rule in architecture that has to do with freedom from materials. At first, stone walls were two to three meters thick. Later on, house walls were half a meter thick. Later still, with concrete and unit masonry, walls became cavity walls, with two layers of masonry. Then came double-glazed curtain walls. Now they are saying something I find doubtful, that this type of glass wall can be equipped to reproduce all the characteristics of a stone wall: insulation, opacity, etc. Nowadays glass can be made transparent or opaque at the flick of a switch.



### **Although glass is widely used today, many architects seek to express the weight and massiveness of materials.**

Well, there’s the trend toward lightness and there’s another trend in the opposite direction. I think post-modernism marked a crisis in the modern movement from which two tendencies have emerged: one leading architecture toward more modernity and high technology, which involves reducing material; and the other that goes in the opposite direction, toward a revival of tectonic architecture. So you have those who use technology to push the limits of thinness, and you have those who celebrate the revival of the massive wall. We must recognize both. We have Norman Foster and the whole English high-tech school, Grimshaw, Renzo Piano, and so on. And we have the other school represented by Siza and Moneo, who build solid walls with single openings for windows and doors, in different proportions, accenting the wall.



### Do you prefer Siza's trend?

I like both trends. They both have pluses and minuses. Lightness is an interesting aspect of freedom from materials, and so is transparency. There's also a trend in architecture of increasing openness. It is already possible to build entirely transparent buildings – man living at one with nature, that sort of thing. On the other hand, using nothing but glass as a building material seems to me artificial, unnatural. There must be a rationale. My architecture fluctuates considerably between the full and the empty, the open and the closed. My early work was far more open and transparent; my current work has become increasingly closed.



### Do you feel restless when you are designing?

Yes, it's very intense. I wouldn't say architects are unbalanced, but they are obstinate. When I design a building, I have to work out ten different designs just to choose one, weighing the advantages and disadvantages of each.

### Do you try to push materials to the extreme?

No. I mean, consider the inflatable membrane structure as a building type. Just two millimeters thick, it looks beautiful – pure white space. But it doesn't look normal, it feels weird. As an architect I feel apprehensive because I know it's all held up by a motor. If the motor that pumps air into the building fails, the structure collapses. This building depends totally on the machine. Architecture cannot depend on machines. But look how many buildings have non-operable windows and depend on air conditioning. The indoor comfort depends on a machine. If the electricity fails, we will be either very cold or very hot.



### **OK, but most buildings depend on mechanical systems.**

As the wall became thinner and lighter we were forced to replace mass with something else. We used machines. Some years ago, when high-tech enthusiasts transformed buildings into machines, they called them intelligent buildings and coined the phrase “intelligent architecture,” as if buildings without such systems are stupid. It’s like saying the Pantheon, which has no equipment, is stupid architecture. So I’m quite critical when it comes to such slogans and labels attached to buildings. That’s why I’m wary of those slogans of sustainable architecture.

### **Have any of your projects been affected by machines?**

I once designed a hotel from an old monastery with walls one-and-a-half meters thick. I recommended installing a heating system but no air conditioning. Those massive walls had enough thermal mass and thermal lag to keep the rooms cool. But there is a standard in Portugal that requires every five-star hotel to have air conditioning. So I was forced to cut open the walls and install air conditioning units. Not only was the exercise costly and needless, historic fabric of the building was destroyed in the process.

### **You mean no air conditioning is better than air conditioning?**

Stone in old buildings undergoes chemical change; it becomes more porous. Air conditioning dries out the indoor air, so when it’s damp outside, moisture will travel through the stone from the wet environment outside toward the dry environment inside. People wonder why their stone walls are moist or discolored on the interior side. Turn off the air conditioning and those problems will end.

### Does legislation support energy-saving measures?

Legislation is doing quite poorly. I used to tell the ministers who came to see the hotel that when they got back in parliament they should discuss this law which is destroying historic buildings. The laws are not necessarily bad, but the way they're applied is poor. I think five-star buildings in general should have air conditioning, but when it comes to the renovation of an old monastery, reasonable exceptions should be allowed. Fire protection laws present similar challenges. The installation of fire doors is compulsory to prevent fire from spreading from one area of a building to the next. But you can't just install standard fire doors with panic bars in the middle of a historic building. You have to find other solutions.

**You are interested in nature as a laboratory in which you can manipulate forms and materials. This idea has been central to scientific thought over the last three centuries, and indeed tremendous technological advancement has been achieved, but at great cost to the environment. Do you believe it is possible to manipulate nature without harming the environment?**

I think nature was born to be manipulated, but the manipulation should not be indiscriminate. Nature can be altered in the service of man and community, but there are limits. I'm not against dams for producing electricity. It's part of progress. Changing the course of a river, temporarily interrupting the flow and restoring it later is one thing, but it is quite another thing to relocate a river and thereby change the microclimate, the topography, the local environment. That's what I'm against. A professor of mine used to warn us: "Watch out what you do to nature, otherwise it will take revenge." And it really does.



The 30,000-seat stadium is more than just the home of the local soccer team; it is the focus of a new urban park planned along the northern slopes of Monte Castro and the banks of the Cávado River. A million cubic meters of granite were blasted from the slope and crushed into aggregate to make concrete for the stadium – the structure literally evolved from its site. A series of precise blasts created the 30-meter-high granite face that terminates the southeast end of the stadium. Only meters from the stadium, this rock wall creates a dramatic juxtaposition of the natural and the man-made.



### **Are we taking nature for granted, ignoring the limits?**

Yes, we are. If we have limited energy resources, why do we burn lights in buildings all night long? For the building to look beautiful? Of course it is beautiful to see New York lit up at night, but those are not maintenance or safety lights. Whole buildings are floodlit for dramatic effect. I believe this light could be useful to people somewhere else. There are two ways to bring about change: by violence such as war, or by cultural change over generations. That takes longer but it is the sustainable way.

### **Societies must become more sustainable, but what can you do when the gap between rich and poor is growing wider?**

This is a great concern. There are increasingly fewer rich people who are becoming increasingly rich and there are increasingly more poor people who are becoming increasingly poor. This is occurring throughout the world. Europe seems to be going through a crisis, and the United States and Asian countries look increasingly richer. Europe's driving force is Germany, and Germany is in a recession. Because Europe has no raw materials and labor is expensive, Europe will rebound economically only when Russia becomes a member of the European Union.

### **Do you work with suppliers of certified wood?**

I do, and I avoid using endangered or protected species like pau santo<sup>1</sup>, which I love. I think we should use wood in moderation and replant our forests. In Europe, there are lists of wood species approved for use and species that are banned. Each year a given number of approved trees are felled, but I don't know how many are replanted. They say the balance is positive, but I really don't know. We have to use wood because it is one of the finest materials available.

<sup>1</sup>Pau santo is the common name in Portuguese for *guajacum sanctum*, one of the species known in English as *lignum vitae*, the other being *guajacum officinalis*.

**Have you ever been faced with a shortage of building materials?**

Yes, wood and some types of stone. There's an extremely beautiful sort of marble I used some time ago, black with white striations, which was eventually used up.

**Do you believe we should lower our standards of comfort in support of sustainable development?**

That's a cultural question. I do think there is too much consumerism.

**The next generations will have to face growing ecological crisis. How would you approach this topic in the classroom, with young architects?**

As I've always done over my twenty years of teaching. When I review a project I go through a mental checklist. One item is aesthetics, another is ethics, and these have much in common.

**What is the difference between ethics and aesthetics?**

Plato asked: "Are beautiful eyes those which are beautiful to gaze upon or those which provide beautiful vision?" Nothing should be so beautiful that it becomes nonfunctional. In a project for the Algarve, where the average temperature in the summer reaches 40°C, you cannot put a glass wall on the south facade without shading because it would be scorched in the sun. The proportioning of windows is not just a question of framing a view; it is a question of hierarchy. There is a hierarchy of rules, which I call good sense, and this makes a project well balanced. There are also projects which, by being good, become works of art. The difference is that these projects turn the rules of good sense upside down. But these projects are exceptions. No one has ever lived in many of the great houses of modern architecture. Villa Savoie is one example. There are several houses that are true manifestos. You just don't sleep inside history. I can't sleep in a house that changed the course of twentieth century history.





**Isn't that a contradiction – houses that turn the rules upside down yet count as masterpieces of architecture?**

I'm not saying that all works of architecture should be manifestos. Architects don't have to leave their mark on the whole cityscape. I think the city needs both monuments and anonymous buildings. There are monuments that stand out, they're exceptions to the rule, and because they are landmarks they are entitled to consume more energy. They are allowed to go a step further in this direction or that.

**Doesn't this create a danger since architects, especially young architects, endeavor to emulate architectural masterpieces?**

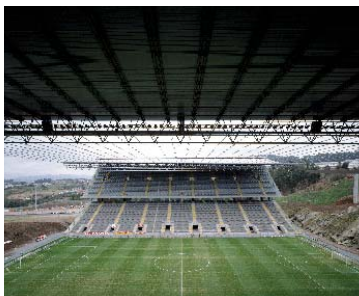
The problem is that everyone wants to build a monument and create a work of art. But the intention of producing a work of art can never be a conscious one. A writer sits down and says, "I'm going to write." He doesn't say "Now I'm going to write a classic novel." Then he writes like a volcano. It comes from the inside. If it is good, his work can become a work of art.

**And the same goes for architecture?**

Yes. When you design a house, you say, "I have this problem to solve." If you begin by saying, "I'm going to change history," nothing will result because things work the other way around. In architecture, every voluntary act has a reverse effect.

**Do you tell that to your students?**

Yes, and that's what my teachers used to tell me too. I had good teachers. They always said, "try to solve your own problems. If society accepts it, it means they value your work."



The general public today seems to value the exterior image of a building more than the quality of the architecture.

Capitalism transforms objects into saleable icons. So a building must not only fulfill its functional role but must radiate the desired status and make the desired statement. I once designed a stone building, actually a tower, but the client vetoed the design, saying the building had to look modern, had to be made of glass. A glass tower here in Porto would be ridiculous. One of the clients said the building should be stone to give it the proper look of solidity as a bank. Another said it should be done in steel for a contemporary image. They weren't considering the technical properties of stone, steel, or glass as building materials.

Architecture requires censorship from the architect and the client. It can't be a linear process whereby the client or the architect does everything he wishes, otherwise the result would be disastrous. There must be discussion, confrontation. Only through hard work do we create architecture that is good and enduring.

Interview by Lara Braun

