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The Hidden Geometry of the Architecture of Herzog & de Meuron
Digital Tools and Design Practice

Alexandra Castro

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FACULDADE DE ARQUITECTURA

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The Hidden Geometry of the Architecture of Herzog & de Meuron

Digital Tools and Design Practice

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Nicholas Serota

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Nicholas Serota.
Director of Tate from 1988 to 2017 and client of both TM1 and TM2.

"Tate Modern 2 is a post-digital building."

Conversation with Nicholas Serota

Zoom meeting, Porto–Helston (Cornwall), June 25, 2020.

Alexandra Castro (AC): I am currently developing my PhD, which is concerned with the relationship between digital tools and design practice in the work of HdM. For several reasons, I decided to take the extension of Tate Modern as the main case study of my research. In particular, this project interests me for the role that scripting had as a fundamental supporting tool in the design of the brick facade.

So, I asked you to have this conversation because I know that you were a very special client, and I would like to have your insight into the project. I also met Harry Gugger, who suggested that I should speak to you, saying that if ever I should wish to write about the Tate, I would have to speak with Nicholas Serota, because he is the Tate.

Nicholas Serota (NS): That's not true, but anyway, I would like to thank Harry for saying this.

Obviously, we will talk about it in detail, but I should say, in general, I was only distantly aware of the degree to which they were using scripting in the development of the facade. We can certainly talk about that development, and about the way in which it appeared to us as the client.

AC: I would like to speak with you above all about Tate Modern 2. However, I think we should start with Tate Modern 1. So my first question is, why did you choose HdM to convert the Bankside power station?

NS: When we began the process of choosing an architect for Bankside, I was looking for an architect who would have a respect for what was there, but also an ability to think in a very fresh way about the relationship between the past and the present. This was a moment when there was a very strong inclination, particularly in England, to have too high a regard for heritage. And it is certainly true that some of the architects who came forward in the competition preserved almost every aspect of the building. There were also one or two who took away too much.

AC: There was Chipperfield, and also Koolhaas.

NS: In the final phase of the competition, David made a gesture to take away the chimney. Rem kept the form of the whole chimney, but only with its steel framework. That was an interesting idea in itself, because he was exposing the nature of the building and the way it was constructed on a steel frame with brick cladding. He took away the cladding.

We chose Herzog & de Meuron, partly for their ability to recognise what were the fundamental elements that should be retained and what could be dispensed with. We were also deeply impressed by the invention and singular quality of the small buildings that we saw in Switzerland and elsewhere. We were equally impressed by their engagement with artists. Jacques, in particular, had a close association with Joseph Beuys when Beuys made the "Feuerstätte" sculpture, which is now in the Kunstmuseum in Basel. There was a curator in Basel called Dieter Koepplin, who had worked with Beuys on drawing shows, so there was already an association between Beuys and Basel. In 1978, Jacques invited Beuys to be part of the Basel Carnival and to do a performance, which resulted in the sculpture.

If you look at the final shortlist of six, at the end there was a choice between three: Renzo Piano, Rem Koolhaas and Herzog & de Meuron. Some of the jury were very keen that we should take Piano. For me, the choice was between Rem Koolhaas and Herzog & de Meuron. I leaned, in the end, to Jacques and Pierre because I thought that they had greater respect for making spaces in which artists would want to show their work. I think Rem, especially at that time—maybe I would take a slightly different view now—was very much interested in the passage of visitors through space. So, his proposal was as much about the circulation as it was about the gallery spaces. The second factor was probably Jacques and Pierre's realisation that you could make the Turbine Hall even more powerful if you took out the deck at ground floor level to create a single volume. So, there would be no basement in this building. We would not have the conventional auditorium below ground level, dark galleries below ground level, and everything else in the light. It was this way of looking at space and volume that was so compelling.

AC: You also said in an interview that "one of the reasons we choose HdM is that they respond to the particular circumstances of an individual commission (...). You have this sense that the architects have looked at the building and tried to interpret, in a contemporary manner, a solution that might have been conceived fifty years ago. Not in a retro sense, but in some way, they create a bridge between the old and the new." You mentioned also some details that we may find in the Tate, like the grilles or the handrails. In your opinion, it seems that these elements belong to the original building, but when we look carefully, they are not "old" but rather a contemporary interpretation of the character of the building.

NS: Many architects develop a signature language quite early in their career. Of course, their vocabulary develops, but broadly speaking, one building is quite similar to the next. A remarkable thing about Herzog & de Meuron is that they always approach the project with a fresh view. Of course, you can see elements that carry forward from one project to another. So, the wooden floors that you see at Tate Modern were first tried out somewhere else on a smaller scale, but then they became the accepted

way in which Jacques and Pierre make wooden floors for museums, as seen later in the Schaulager. There is some continuity, but the freshness with which they approach each commission is very unusual.

AC: Answering this same question, Jacques said that you were pretty convinced that they would be able to come up with a kind of antidote to what was considered, at that time, an appropriate museum design. He said that you were looking for a radical departure—industrial, rough and basic galleries in an existing building—and that you were convinced that they would be able to make a different museum.

NS: I think it was one of the reasons why we chose them rather than, for instance, Renzo Piano, whose approach at that moment to making space and volumes was much more conventional. Very beautiful, very pure and very refined spaces, as you see in the Beyeler in Basel or de Menil in Houston, but with no relation to the raw industrial character of the power station.

Herzog & de Meuron had the ambition to make a museum that offered many different kinds of gallery space, because artists sometimes want space which is refined and pure, but they also want to respond to raw industrial space. We had the opportunity to give them both.

I also think that, although their architecture is quite refined, it is also quite muscular. There have been criticisms that the architecture of Jacques and Pierre is too 'masculine'. That's also probably a reaction to the way in which Jacques sometimes presents the work in lectures.

AC: Is it because sometimes he presents in a provocative way?

NS: Yes. He makes a proposition, but he often does it in a way in which it is deliberately provocative.

AC: I remember, last November, when Jacques was in Porto, he did a conference in Serralves, and he concluded his presentation with the Badaevskiy project, which is not consensual at all. I don't know if you heard already about this project. It is a residential building in Moscow made of a huge block raised up in the air on a "forest" of very tall columns. The conference had been very calm and quiet, but ending with a building like this was very...

NS: Controversial?

AC: Yes.

Tate, in the end, resulted in a very successful building. Even if, at the beginning, HdM were an unpredictable choice as a young and an upcoming practice, in the end everything went well. For the Tate itself, which was a huge success, becoming the most visited contemporary art museum in the world. For the museums and art galleries context in the UK. For the world of architecture, since it influenced the work of many architects. And about this, I remember that Harry Gugger mentioned that the generation of young English practices, like Caruso St. John or Sergison Bates, gained attention because this project indicated that there were other approaches to architecture than those which had dominated critical discourse in England. And

also for HdM, because Tate Modern 1 was an important stepping stone in their career, marking the passage from local to international recognition.

On TM2, I have the impression that the idea was always there. The intention of using the oil tanks as gallery spaces, or opening the museum to the south, was already planned in the first phase, but for some reasons, I suppose for budget cuts or even because EDF Energy was still using the Switch House, the idea wasn't implemented.

However, we can also say that the second phase was inevitable, because of the exponential growth of the surrounding buildings and your concern that you might lose rights of construction. So, at a certain point you decided to start developing a master plan, and, once again, you chose to work with Herzog & de Meuron. Was this a natural decision for you, to have the same architects designing the second phase?

NS: No! As you say, we always had the ambition to use the oil tanks and, as you can see from some of the drawings, there was a moment when it seemed as though we might incorporate the oil tanks in the first phase of the Tate Modern. I'm really pleased that we were unable to do it, because eventually we were able to do something much more significant.

We were unable to do it largely because we didn't raise enough money. However, we were also determined to get the building opened in 2000, and it became clear that there wasn't going to be time to do the Tanks, so we stood back.

We took the decision to try to move forward again in 2003. However, I'm absolutely certain that if we had known how difficult it was going to be, we would not have started on the second phase, but, fortunately, we didn't. We didn't know there was going to be a recession in 2008 and I completely underestimated the reluctance of people to support a second project. Because the first had been so successful, I made the mistake of believing that the people would naturally want to support the second.

AC: So, it was difficult to find supporters.

NS: It was difficult because many people said, "But you have already done enough, why do you need to do more?" When we came to choose an architect, we ran a competition for the second phase. It was a competition that was limited, because only a small number of architects put themselves forward. Most people thought that we would naturally choose Herzog & de Meuron. But we ran a competition, and we had four or five in the final shortlist. We had independent advisors who had not been involved in the first competition, and we tried to treat it as a new competition. And it was very, very difficult for HdM. They came forward with some ideas, knowing exactly what the limitations of the building were and the constraints in planning on the site. Some of the others came forward with grand visions of what could be done with the building.

AC: But when was this competition done? Was it before or after the master plan?

NS: The master plan was done first.

AC: So, you were saying that HdM knew a lot of the site constraints.

NS: The other competitors presented grand visions, which were extremely attractive to some of the trustees. Herzog & de Meuron knew too much and were very restrained, and the form of their building hadn't yet crystallised. So, they were talking more about potential than they were about design. In the end they were selected because the potential that they described seemed to offer more than the others. But it was quite difficult in terms of the relationship with Jacques and Pierre, because they were our friends and collaborators and suddenly they were back in a competition. They felt they should have just been given the job.

You mentioned the Tate Modern had brought them success and had advanced their reputation. It didn't happen immediately, but once the success of the building was evident, by 2002, 2003, 2004, they had begun to receive invitations, and they were working on many other projects between 2002 and 2006. It took them quite a long time to arrive at the final shape of what should be done on the Tate Modern site. As you know, we got planning permission for a building which was very different from the brick building that we see today. When you look back now, it all looks inevitable, but it felt actually much more uncertain at the time.

AC: I saw the mention of that competition in 2005. However, when I prepared the chronology of the project, it was hard for me to understand when and how that competition fitted into the sequence, as there was already a lot of work done before. For me, it always seemed like a continuous sequence in which they did the master plan and then started developing the project.

NS: There was a recognition by the Tate in 2002 and 2003 that we should try and do the second phase, and therefore that we needed a master plan. Some of the reasons were positive. We saw the possibility of developing new kinds of space, and because Tate Modern was being visited by such a large number of visitors, we wanted to spread the visitors and to give them a better experience. There were also negative reasons. As you mentioned, development beginning to take place immediately in the vicinity of the Tate. I could see that if we were not careful, these developments would be realised and the owners of those new sites would then object to us constructing a large building on the south side of Tate Modern. So, I felt a certain urgency to get a scheme into the public domain and to show the planners that we had intentions that could be frustrated if they gave planning permission to other buildings.

The best people to develop a master plan that would explore the potential of the site seemed to be Herzog & de Meuron, rather than bringing in someone completely different. When you look at the 1994 competition entries, their first sketches showed how the building would appear from the south side. They were always thinking about the building in the context, or the urban situation. So, they seemed like the right people. The master plan was also intended to ensure that we were really thinking about the potential of the site in the long term. There are still some elements of the master plan that have not been yet realised.

AC: Like the TM3?

NS: TM3, yes. There was a brief moment when there was talk about the possibility of the Design Museum, which was then near Tower Bridge and has now moved to High Street, Kensington, occupying the building that is shown as TM3 on the master plan. In the end, that didn't happen, for a number of reasons. However, we were determined to explore the full potential of the site and not to make a mistake of building something that then precluded doing something else.

AC: Harry Gugger placed a lot of importance on the master plan, saying that it was the first given of the project. The master plan determined the volumetric features that would be common to all the design proposals; a pyramid rising adjacent to the southwest corner of the Switch House.

NS: That's correct!

AC: When we look at the design process of TM2, we notice that the "Schematic Design" stage was spread over about three years. It was a prolonged phase, with a lot of detours, in which strategic issues, like the spatial organisation and, above all, the outer appearance of the building, were intensely discussed. One of the most unusual aspects of this three year period is that HdM developed three different projects for the same client, with the same program and in the same location.

In the beginning, around 2004-2005, what did you, as client, ask of HdM? What were your intentions regarding the building?

NS: There was a fairly fundamental discussion about how to bring visitors through and vertically up the building in a way that did not rely either on escalators or on elevators. Coupled with that, there was an ambition to create different kinds of gallery space, different kinds of volumes, with different sizes and heights that would provide galleries with very different characters.

The limitations of TM1, the Boiler House, were to do with the enfilade system of circulation. To do with the fact that the ceiling heights were uniform. To do with the fact that the light came from the windows on the north side, etc. So, there were three or four givens in TM1 that gave the museum its character, and in TM2 we wanted to break out of those. A great deal of the discussion was about how to arrange a circulation system within the pyramid. Jacques described this movement up the building as a "promenade", because it was intended to give a sense of ease, the sense of being out. To walk slowly up the building; not to see a great flight of stairs ahead of you but to have a perambulation, to move from one side of the building to the other, to look at one point towards Waterloo, at others towards Tower Bridge, or Westminster Bridge and the Houses of Parliament. At the same time, they wanted to explore the potential for having these different kinds and shapes of galleries and boxes. They were working with model makers, using styrofoam boxes that they would put together in many different ways. It was a very visceral and a very tactile way of approaching design and thinking about design.

AC: You are referring to the version of the project that they called "Primary Form & Boxes". But previously there was another version of the project, a glazed volume with a steel frame on the facade. It was also a twisting pyramid but with weathering steel panels on the facade.

NS: Yes, and then there was the version also with glass boxes.

AC: That was the second one.

NS: The first one, it didn't survive for very long. I have a feeling that it disappeared because, although the client was interested, Jacques lost confidence in it.

There was, for a long time, a reluctance to consider using brick.

AC: In the beginning?

NS: In the beginning, yes. There was a feeling that if you used brick, there would just be too much brick. There was an idea that we needed to make a statement on the south side that was different from the north, and that the new building should have its own integrity, somewhat separate from the power station. I remember being very insistent on the idea that when you crossed the bridge from St. Paul's you should see the new building rising above the horizontal 'light beam'.

The new building had to have its own personality, and in discussions about using brick the architects kept saying, "We don't know whether it would just to be too much brick; the whole building is brick, and we don't want to look as though we were copying what is there."

So, there was, as you say, this weathering steel and glass combination. Then there was the glass building, for which we did get planning permission. However, there was a pause, partly because we couldn't raise enough money in the recession, and we found ourselves thinking more and more about the glass and feeling less and less comfortable with it. Jacques became concerned that a glass building would look 'commercial' in a landscape of surrounding glass office facades. As a result, we started to contemplate the idea of the brick. I think Harry was still working with us at that time.

AC: Yes, I really think so. He left in 2009, and the brick was already there.

NS: We thought that maybe we should think about a different way of using brick. Then came the idea of a 'double' brick, and it all started to open up in a very interesting way.

AC: I read that you said that "There was a certain amount of self-imposed pressure to answer some of the criticisms that had been made a decade earlier when we took on the power station, principally that we didn't have the conviction to do a totally new building." Did this feeling influence, somehow, the way in which HdM approached the design? From your statement, it seems that maybe you were reluctant to use brick because it could be too conservative, so you decided to go for a distinct building with a clear contemporary appearance.

NS: I think it did, and it probably delayed us. We went through stages, and we spent money that probably we didn't need to have spent, but we wouldn't have come to the result that we finally achieved if we had not been on that path.

I think that what you are identifying is correct. There was definitely a feeling that we had made a very successful museum, with some very beautiful spaces for art, that we had recovered a historic building and brought it back into the city, that we had changed the urban fabric. However, there was also a feeling that maybe we had not managed to do what is often the most difficult thing, which is to conceive something totally new, which feels very much of the present, but which will have an enduring quality for the future. So, there was a certain unfulfilled ambition. That was probably the reason why we were not satisfied with the first version and became unsatisfied with the second version. The second version, with the glass, was designed and developed very quickly, partly in order to try and make sure that we secured the planning permission before applications were made for the neighbouring development that was eventually designed by Richard Rogers. But I remember, when we went back to get planning permission for the brick building, the first question the committee asked me was, "Well, you came to us eighteen months ago, and told us about the importance of light, and the importance of glass. Now you want to use brick. Why should we believe you?" It was a difficult question to answer, and I was not fully prepared, but I did manage to persuade them. The whole route to the brick was slow and tortuous.

AC: About the two first versions of the project, Harry told me that when HdM developed the first project, the one with the weathering steel and glass, and showed it to the trustees, the trustees said, "Ok it is all very rational, but with this project we cannot raise money. We have to have a 'wow' effect! You have to do something which has a 'wow' effect!" According to Harry, this was the reason to reconsider the form and work with the stacked glass boxes, which was a theme that they were exploring in other projects, like Actelion, or the Vitrahaus, which had originated in the Qingdao project in China.

NS: He is probably right. This would have been about 2006–2007, and if we were going to raise the money the building had to be rather striking, and strikingly different. And he is also correct in saying that the boxes were to do with taking those elements of the building that were galleries and putting a skin around those elements. That coincided with work in China, and also Vitra, where they had houses that were stacked one on another. It all somehow came together.

AC: Harry said that when they delivered the glass boxes project, he was not convinced about the solution, because it didn't create a unitary whole. In his opinion, Tate should be one thing, and for this, it should have used the same material as the first Tate.

NS: Yes. The principal reason why we abandoned glass was Jacques' feeling that a number of buildings being built close to Tate Modern were commercial buildings with glass facades. Adding another glass building, or a building that was largely glass, would mean that there was no real distinction between commercial and public buildings. Harry's observation about connecting the building back to the original brick building is perceptive. I used the word enduring a few minutes ago. Maybe there was a sense that a glass building was almost too much '2005', rather than a building that would really last.

AC: I found a composite image from 2004 of the west facade, where you can see the volume of the new Tate, which has the same height as the Turbine Hall and is covered with the same material. Everything is in brick and you have this perforated skin based on a pixelation effect, similar to the one they developed in TEA, in Tenerife, or Caixa Forum, in Madrid. In this initial drawing, they were thinking about the brick as a possibility. I didn't show this drawing to Harry, so I don't know who did it or why it was done. I don't even know if it was a significant drawing in the process, or if it was just done by a collaborator experimenting with some ideas.

But the question was, do you know if they ever considered, in the beginning, using brick as the cladding material?

NS: Well, I said a moment ago that I think that in 2003, 2004 we all thought that to continue with brick would be too solid, too heavy, too much. I also think that, as you describe that drawing, it feels as though the building is not sufficiently differentiated from the original building, it doesn't have its own character, it doesn't have some of the desirable qualities that I was describing, of being independent but connected, having its own identity, having its own presence. Therefore, whenever that drawing was done, it may have been just put aside for those reasons.

AC: And it was not a high building as you mentioned before.

What do you think about the way in which they used the brick? They decided to use the brick, to return to the brick, to establish a dialogue with the masonry walls of the Bankside power station; however, they decided to use it in an unexpecetd and innovative system.

NS: Well, I think it is a characteristic of their architecture that they have a sense, or they have an ambition, of how a surface should both read, look and feel. They are highly sensitive to the notion of surface in terms of the skin of a building, and I think they had an idea about what they wanted to achieve. I would say they have a remarkable sensitivity to material and very good judgment about scale. They are able to go beyond the mechanics of what the computer, the digital image, can generate. One of the strengths of their work, is an ability to move beyond conventional use of materials to achieve a physical form which cannot be quite defined or predicted. At Tate Modern they wanted to achieve certain effects on the facade that they had no idea how to realise in practical terms. All the fixing mechanisms, all the structural concrete framework, had to be developed. And I believe that we suffered at that point from the departure of Harry. Frankly, and this isn't a criticism of others, if Harry had stayed with the project, I think the building would have been finished earlier and would have cost less. Harry is such a good engineer. He is very practical, I mean, he is driven by an ambition that includes vision, but he is very, very good at realising a way of doing something in a very practical fashion.

I think that we missed him in the next phase of the design development because we ended up with a building that was extremely difficult to build. Just to give one example: we ended up with fifty-seven different types of windows. Maybe if Harry had been there, it would have been thirty. There would have been a compromise. The windows might not have fitted within the envelope in such a beautiful way, but somehow the building would have got built, and we would have accepted it.

AC: I know that, at some point, there was also the idea of the colour gradation of the brick, and someone told me that this came from Harry. I know that this topic had many, many versions, and it went through an optimisation process, but in the end it didn't happen. From bottom to top the bricks are all the same colour. You said that some things were lost because he left. I don't know, but maybe this was one of them.

NS: I can't quite remember why that happened. It's difficult to tell now whether it would have been better in that form or not. It's a speculation. It certainly had some attractive qualities to it. I don't think it was taken out for cost reasons. It would have cost more, but I don't think it was taken out for that reason.

AC: The geometric shape of the building is not simple, because it is a twisting shape made of vertical and inclined faces that intersect each other along oblique lines. This shape, together with the perforated brickwork system, brought out some very complex geometric problems which are, for instance, particularly visible in the corner.

What do you think about how the corner was solved? In my opinion, this is not a consensual detail, and I see it almost like those architectonic 'mistakes' that you sometimes find in buildings and that are crucial for the understanding of the whole project.

NS: Well, if you look carefully, you can see imperfections. But I think then it comes back to what I was saying earlier about Jacques and Pierre's understanding of how a whole building reads, as well as the details. So, I think you could argue the detail is not one hundred percent consistent. You, with your interest in geometry, would probably see more than most people, but I think that Jacques would say that, in the end, it's the overall impact of the building which needs to register.

AC: In a conference, he said that "how we use the edge, where the two sides come together, to create this kind of porosity which defines or also reveals the construction behind, it is a simple but important detail for how we use construction as part of the idea of the whole building."

NS: Yes, I think that one of the biggest transformations in their approach to architecture—which occured after Tate Modern 1 and before they got to the second phase of the building—has to do with the way that the structure of their buildings became visible, rather than relying entirely on a skin or a surface. These changes in their architectural language were taking place during the period when TM2 was being designed. In my mind, at least, it began with those buildings, where they started to elevate off the ground, as in the Caixa Forum in Madrid or in the Barcelona building, where somehow the structural skeleton of the building becomes more visible. The nature of the building changes and, rather than being a block, it becomes a block that you can cut into. These changes were quite fundamental to the way in which we read their buildings. They had not lost their interest in surface, but they were beginning to create an edge where planes come together in different ways, rather than simply at right angles, as they do at the corner of a conventional rectilinear building. It feels like the moment when they broke away from Aldo Rossi, who had been so fundamental to the way in which they had conceived form.

AC: At the beginning, when I explained to you that I was interested in the brick facade of the Tate Modern 2 because of the 'scripting' process, you told me that you don't know too much about that, but that you could explain some things.

NS: I think what I was trying to suggest was that, obviously, the development of the detailed specifications of the brickwork and the calculation of the number of bricks that had to be made in each different configuration was something that they could never have managed if they had not been able to use scripting. This a post-digital building. It couldn't have been done by arithmetic calculation.

AC: The scripting was essential because there was a huge amount of data, a lot of bricks and a lot of different types of bricks. It was very helpful because it allowed them, in a relatively easy way, to generate 3D models, 2D drawings, such as plans or elevations, and prepare lists and schedules for the production and construction process. However, the design and the geometric issues were mainly solved with physical models, sketches and small 3D models done manually. So, the script was not a tool that guided the creative process in itself, because this was pretty much done manually, but it was a controlling tool. And I know that it was a big fight, it was very complex, to solve the corner; it was not simple. When you look at the four inclined facades, the bricks look all the same; however, they have holes inside, and these holes are positioned differently because of the angle of each facade. So, I'm pretty sure that it was really complicated, and I find it interesting how they decided to solve the corner. In the beginning, not knowing all these issues, it seemed a strange detail. But when you start to understand all these geometrical constraints, you understand the corner—which is the result of the combination of a specific architectonic appearance and the need to rationalise the construction—to have fewer different types of bricks, and in this sense to optimise the system.

NS: And it almost leaves the building feeling as if it was built by the hand of a traditional craftsman.

AC: When I questioned Harry about the corner, he made a sketch of the Signal Box. He used a pencil to draw the copper bands, and then he erased them with rubber and explained that the corner of Tate Modern 2 is the same as the windows of the Signal Box. It is something which is not defined, and it is imprecise.

NS: I think that if the building was perfect, it would feel very different because it would feel mechanical. That sounds negative, but it would feel smooth and mechanical in a way that would probably not be right next to the brickwork of the original power station. So, I think that the fact they couldn't achieve absolute precision was maybe helpful in the end. I think that they understood that there's a limit to perfection. There were challenges arising from the loading of the building and the calculation of how much distortion there would be on the frame. You could design the perfect brick, but if the frame slightly distorts then the brick doesn't fit.

AC: How was your working relationship with Jacques and Pierre? I read that they see you almost like a collaborator. They said that you became a partner and that they learned a lot from you. So, from what I've understood, you had an important role also in the design process.

NS: Well, I think I was a critical friend. I had a huge admiration for their work as architects. I also had an ambition that Tate would achieve a really magnificent building, so I was quite insistent on understanding what they were doing and why they were doing it. I would ask a lot of questions and sometimes I would make suggestions. That's probably what being a collaborator means. Sometimes there were real difficulties, but we overcame those. It has been a long relationship, and you can't live with someone for fifteen years and not occasionally have an argument. But then, if you survive those arguments, the bonds are very deep.

AC: After all these years working with them, what do you see as one of their biggest qualities as architects?

NS: I think it's an ability to rethink a problem from first principles, and to come up with unexpected solutions, exploring both volume and surface, coupled with their very strong commitment to finding new ways of using familiar materials. So, in Tate Modern 2 we have the example of the brick, or in Tate Modern 1 the floors, or the handrail. They are always finding material and using it in new ways. It's why each building has its own character, but there is nevertheless a development one from the other and you can see the line. Every now or then I see a new building or a new project, and I am astonished by how far they have moved forward, and I think to myself that if I was building now I would want to use them as architects.

AC: When I started studying the Tate I made a diagram with references that were coming from other of their works. So, even if the buildings are very different from each other, you can retrieve this line that comes even from as far back as the eighties, when they founded the basis of their architecture. Some of their initial research interests are still present in the way they develop their work nowadays, even if they are a big office with a lot of partners.

NS: Yes, I think that's another point I would make, which is they have managed to grow the practice to a size which is as large as many big commercial offices without losing their principles and ability to innovate. Obviously, Christine is still there, but they have other new partners, and they managed to continue to develop their language. They are never frightened of engaging someone who is very strong and has her or his own ideas. Their skill in taking those ideas and using them to develop the language of the practice is deeply impressive.

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