

'FAT GLASS IS OUR BABY'

PhD candidates Faidra Oikonomopoulou and Telesilla Bristogianni received the Innovation Award from the Society of Façade Engineering for the Crystal Houses in Amsterdam.

MRVDV Architects designed the glass façade for a shop in the classy Amsterdam P.C. Hoofstraat. The Crystal Houses façade was commissioned by Ashendene-Leeuwenstein. Glass innovator Professor Rob Nijse (Faculties of Civil Engineering and Architecture) and associate Professor Dr Fred Veer took care of the structural design. Two Greek PhD candidates made it real and won international recognition for it.

Back to December 1 2016. You were in the Gibson Hall in London with the honourable Society of Façade Engineering. Then you were called to the stage because you had won the Innovation Award. Tell us about that moment.

FO: "We couldn't really believe it. You know, I'm always optimistic and Telesilla is always a bit pessimistic. So, I was thinking we would win..."

TB: "...and I was keeping her down to earth. We happened to be sitting at the table with the jury and they started talking about how not always the shiniest projects win."

FO: "It was a bit like the Oscars. You know that there are twelve nominees, including some very big names in façade engineering. There were big projects like government buildings or libraries from all over the world. But at the time they announced the big prize my stomach had left the building. The presenter accidentally had pressed the button and I recognised my own photo from a glass structural test that we had sent. He quickly put it back but I said: 'Tele, we have won, Tele!'"

TB: "We needed a minute to take it easy."

FO: "To find back our stomach and make our legs walk. So we had one minute before we had to get up to the stage."

TB: "I don't remember this. I was in the scene and they took some pictures. That's all I know."

FO: "There was a lot of cheering. Many people were happy because they liked the project so much."

TB: "And it was the only time in the history of the prize that the jury was unanimous. The hall was filled with middle-aged men and the fact that we as young women won was an encouragement to other women. They realised they too can survive in this world."

FO: "For us, the project was really personal because the group was so small. There was only Rob Nijse, Fred Veer and our amazing technician Kees Baardolf in the research group. Because we were such a small group, we did all stages ourselves."

Let's go back to the beginning. How did you get involved in the project?

FO: "We started our master's here in 2010. I did my master thesis on a glass shelter for a temple with Fred while Telesilla was working with plastics. After a 6 month contract as a researcher here, I had returned to Greece and was working on a small office specialized in structural glass applications. Meanwhile MRVDV came to TU Delft with the design for the Crystal Houses. So, while in Greece, I received an email from Fred asking: when can you come back? I came after three weeks and started the research on the glass brick system. Telesilla was at that

point working at an architectural office in Rotterdam. After 8 months, another research position opened up. I hurried straight home and said to her: why don't you apply? Before being colleagues, we were already best friends and flatmates. She went through all the interviews and got the job. She's very good."

TB: "Thank you."

FO: "You are. That's how we both got into this project."

And then there was this enormous task of 7,000 glass bricks that had to be inspected one by one by hand.

FO: "Oh God. I had forgotten that."

TB: "I remember how dreadful this was. We were in a big cold storage in Hillegom for eight hours once per week. We were all the time wearing our coats to keep warm and we had our backs destroyed from lifting all these bricks."

FO: "We were lifting more than a ton per day. The measurements were done in Hillegom because we didn't have the space here."

And then you rejected 70% of the bricks.

FO: "That was in the beginning. There was a lot of bargaining with the Italians regarding the precision of the bricks. In the beginning Poesia made glass bricks within half a millimetre of accuracy by polishing by hand. Which itself is really impressive, but still was not good enough. We required 0.25-millimetre accuracy for the gluing. So at the beginning we sent back 70%. In the end they did the finishing with automated polishing machine. So in the last orders we had less than 10% rejects."

Did you ever have doubts about the project?

FO: "Not me."

TB: "Of course."

Both laughing.

TB: "For us, this was a very big prototype. In the seven months that we built it, we learned so much and we solved so many problems."

FO: "The stressful part was that our previous prototypes were a metre and a half up. Then we had to scale up to ten by twelve metres. And we knew we had to keep this tolerance of 0.25 millimetres. But I thought: Greeks built the Parthenon with an extreme accuracy 2,500 years ago. We can do this!"

TB: "But it was stressful. If we would exceed the deviations in height, the big frames for the windows would not fit and they just had to fit there. And what do we do when we reach the top and the upper bricks don't fit in? Because the second floor was already in place. That kept me preoccupied."

FO: "We have a saying in Greece that says that once you're at the dance, you have to dance. So I thought: now that we're here, we're going to make it."

You lived there for seven months during the construction and you had to explain to the builders how to work. How did they react?

TB: "Oh, they were sweet. We even introduced healthy Monday, a salad day."

‘We have discovered a fresh field in the glass world’



Faidra Oikonomopoulou (left) and Telesilla Bristogianni.

FO: “Because they were only eating pizza or Kapsalon. And we had sushi-Wednesday. We made them eat sushi. All of them were very nice and very smart people.”

TB: “Actually, I was a bit afraid at first. I had not worked in a construction site before. And in Greece a construction site is rough. But at our first visit here they said: Hi girls, come in. They were very polite and they had even cleaned the toilet. So we felt very comfortable there to work.”

FO: “They were listening to us, but we were also listening to them. Because they have all this practical knowledge that we don’t have as researchers. We consulted them also, so there was a mutual agreement on solutions instead of us giving out orders.”

TB: “We basically worked in a laboratory on the construction site. How to put the glue, how much light you need to harden the glue, how much time you have for that. It was a very precise job and they understood that.”

FO: “There were times that we had difficulties with the client. Once, they came in, took one look and said: we’re going to have to put this down.”

TB: “By that time we were ready to chain ourselves to the glass wall to prevent that.”

CV

Telesilla Bristogianni (TB) and Faidra Oikonomopoulou (FO) followed remarkably similar paths in life. They were both born in Athens in 1984, less than a month apart. They met when they were 18, when they both started studying Architecture at the National Technical University in Athens (NTUA) in 2002.

They both did double masters (Architecture in NTUA and Building Technology at the TU Delft in 2010-12). In 2014 Faidra returned to Delft as a researcher on the Crystal Houses’ glass brick system. Telesilla followed her eight months later.

Why did they want to put it down?

TB: “They thought the building was too slow. We had built a metre and a half in two months. And they wanted to finish in two months. But that was just the beginning with a very small group, only the two of us and the two main builders, the Poppe brothers. It went quicker later on when the building crew increased. We were working every day from 7 to 7. Afterward, we went upstairs and worked on our emails.”

FO: “But the atmosphere was great. We learned all the Victoria Radio songs. The only tension was in group meetings with architects, clients, contractors and us.”

TB: “Everyone was playing it hard with the budget and the time schedule.”

FO: “And we were in the middle sometimes. We took it personally because we wanted the project to be good. We were prepared to fight for it.”

With the Crystal Houses standing and all shapes of glass around us, what’s next?

TB: “With the Crystal Houses we proved that we can use cast glass in structures, which you don’t see very often. Usually glass is used as a flat material.”

FO: “Most engineers and architects use glass in 2D, we work in 3D glass. We’re working on cast columns and on more sustainable glass bricks. In the Crystal Houses the bricks are glued together for ever.”

TB: “Glass is very durable. So it’s a shame when you cannot retrieve your components to re-use them. That’s why we’re developing a kind of glass Lego bricks that have a dry interconnection and doesn’t need to be glued.”

How do you see your own future in glass?

FO: “Our first priority now is finishing our PhDs. One option is to stay on as an assistant professor here or somewhere else afterwards. Or we could start a company. In Greece, that would be nice.”

TB: “No, I want to stay here. We have discovered a fresh field in the glass world. It’s our thing now. Other research labs in Europe or the US are mainly focusing on thin glass.”

FO: “And we have the fat glass.”

TB: “Yeah, that’s our baby.” <<