



Tanya de Hoog

IStructE President-elect **Tanya de Hoog** is determined to change the face of structural engineering, and passionate about highlighting the contribution engineers can make to a safer, more sustainable and better world. She tells Helena Russell about her plans.

When Tanya de Hoog takes over the reins as president of the Institution of Structural Engineers next January – only the fourth woman to do so in the Institution’s 114-year history – she will put ‘people and planet’ front and centre of her presidential priorities.

Until recently, this might have been an unconventional move for the figurehead of an organisation traditionally focused on technical excellence. But as de Hoog points out, there is a need for both and the evolution in the sector over the past few years has placed her priorities at the heart of the zeitgeist.

She sees this not just in the way the IStructE is moving, but in her role as principal of Thornton Tomasetti. ‘Legislation is coming, and many clients are developing their own guidelines for sustainability/environmental performance on their projects ahead of this,’ she points out.

Presidential responsibilities may still be some time away, but de Hoog is keen to communicate aspirations for her tenure in good time. While technical competence has always been a central priority, and something she worked hard to develop in her early career, she wants to put a spotlight on the way such expertise can be harnessed to create a better world.

A more representative profession

‘My priorities are built on the need for all members to further develop their competence and technical rigour, to respond to the environmental and social challenges in front of us. It’s about broadening the understanding of the impact we can have as engineers, and I’m also passionate that the profession inspires and retains people. To do that, there are some things that need to evolve and change.’

‘As far as ‘planet’ is concerned, it’s about asking our members to increase their knowledge, develop their skills, provide support and advocate for change to move us closer to meeting net-zero targets,’ she says.

Emphasising the role of engineers in addressing climate change has an impact on de Hoog’s ‘people’ priority, especially the younger generation. ‘Why would you choose engineering over something that is just as technically challenging, and potentially more lucrative? That’s why it’s important to put out the message – if you are really serious about changing the world, engineering is a great way to do it.’

One strand will focus on equality, diversity and inclusion, which she sees as leading the growth of the profession. With true engineering zeal, de Hoog is committed to identifying barriers that under-represented groups might face in reaching fellowship.

‘I don’t think fellowship adequately represents our membership, and I think it can – we just need to accelerate it.’

Mapping out a career

Although in the minority gender in her chosen profession, de Hoog acknowledges that she did not face the entry barriers that others come up against. Raised in Australia by an applied mathematician father and a creative mother, she had never been steered towards a particular career or told that something was not suitable.

Ironically, she fell into engineering by chance, initially planning to study sports physiotherapy. On the last day of school, her chemistry teacher mentioned an engineering scholarship; she didn’t even know what engineering was.

‘Somebody saw something in me that even I didn’t know existed – and that’s one of the reasons I’m passionate about paying it forward. It’s these little moments that can change the course of things.’

‘I studied a broad-based civil engineering course, and found myself drawn to buildings because they were more tangible. I could understand them and apply my natural analytical and mathematical skills.’ Although the course at University of Wollongong in Australia had around 10% women at the start, she was one of just two by graduation.

By now, de Hoog had clear goals. She had always planned to come to London, and to travel, ‘because that’s what many Australians do’, but wanted to become

▼ FIGURE 1:
New stadium for Benfica FC in Portugal was delivery milestone for de Hoog



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chartered first. While fellow students were sending out letters of application to 20 or 30 companies, she meticulously studied the options, created a matrix of pros and cons, and narrowed it down to just five.

'I rated them all in a matrix; where they were based, whether it was a place I wanted to live, the type of work they did, and how many awards they had won. BG&E consulting engineers had a great reputation and an interesting portfolio of work, but wasn't so large that I felt I would get lost.' She cut her teeth on a range of structural engineering projects, from bridge refurbishments to large-scale structures, including working on her first tall building project in Dubai. After three-and-a-half years, she became chartered with Engineers Australia, at the age of just 25.

Building competence

De Hoog moved to the UK in 2000, taking up a job with Australian firm SKM (now Jacobs); the first time she came up against the barriers that she is now so passionate about tackling. 'I thought being chartered, and working in the UK where there's reciprocity, would be easy. But I found that I had to defend myself – people questioned whether I had a 'real' degree, and whether I would be capable of passing the IStructE exam.'

It motivated her to achieve chartered status with the IStructE; a process that increased her confidence, as well as her competence, and is one of the reasons she is such a strong advocate for technical competence through routes to membership.

Working at SKM, she gained experience on world-class stadia projects, starting on small sections of Ascot Racecourse and Wembley Stadium, then moving to Lisbon's Benfica Football Club (**Figure 1**); on the latter working from non-linear and dynamic analysis right through to construction. 'This was the first time I felt I had delivered something completely,' she says.

For the 2004 Olympics in Greece, SKM worked for the contractor on the design of a new 300m-span roof over the existing stadium bowl, a concept by Santiago Calatrava. 'I started with the initial structural analysis for the contractor bid, and worked with the team to determine how the new roof could be built and moved into position under very challenging design and construction constraints.'

Good design, good practices

A Master's at Cambridge University on interdisciplinary design for the built environment was a defining moment

↑FIGURE 2: Collaboration and teamwork made design of new roof for No. 1 Court at Wimbledon a memorable experience

CAREER MILESTONES

- 1996** Graduated from University of Wollongong, Australia
- 1997** Joined BG&E consulting engineers, Perth
- 2000** Attained chartered status with Engineers Australia
- 2000** Joined SKM in London
- 2003** Elected Member of IStructE
- 2006** Founded Postawa de Hoog consultancy
- 2007** Became director of Thornton Tomasetti Postawa de Hoog
- 2008** Master's degree, University of Cambridge
- 2014** Elected Fellow of IStructE
- 2016** First elected board member of IStructE
- 2019** Moved to New York and established new business initiative at Thornton Tomasetti focused on social impact

in the development of her professional confidence. 'The outcome was an invitation to think more broadly; it was exciting and inspiring,' she says, 'and, in the middle of that, I decided to start my own firm.'

She and a colleague from SKM established Postawa de Hoog in 2006 with a focus on good design. 'That doesn't just mean competent engineering, the quality of design, the integration of architecture and engineering, and building to a consistent quality within the economic constraints that exist,' she explains. Creating a positive working environment was just as important.

'Engineering can be very stressful and overwhelming at times, particularly for young people. We are seen as problem solvers, and for those who go from being the cleverest in their class, to find themselves up against something that they can't solve on their own, can be isolating. When I started to work with mentors who helped me realise that engineering requires a team – it shouldn't be a solo endeavour – I felt a lot less stressed, empowered, and more productive.'

Within a few months of setting up the practice, its directors began discussions about merging with Thornton Tomasetti to create a London office for the US-



STUDIO GANG / (R) THOMAS J. O'HALLORAN / LIBRARY OF CONGRESS



based structural engineering firm with which they had already formed joint ventures for specific projects. Although the new business had been successful in winning work, bids for larger schemes were possible with the backing of a more established company.

But soon after Thornton Tomasetti Postawa de Hoog was formed, the global recession hit, and shelved projects created enforced breathing space for the new venture. It worked to strengthen relationships with partners such as architect Grimshaw, while establishing the internal culture and working practices to which de Hoog aspired.

'We supported people to identify and pursue the things they were passionate about. At one point, we had a really high proportion of women – about 40% – in the office. Although we didn't actively go out to recruit them, in hindsight I would advocate being proactive about representation. It's vital to create a culture that is inclusive, with positive leadership. Whatever you do at your desk radiates out to your team,' she says.

Ultimately, the focus on developing the technical competence of her office, nurturing relationships and delivery of two other major stadia as Thornton Tomasetti's London office, enabled them to bid for – and win – what de Hoog identifies as the high point of her career so far: the design of a new roof over Wimbledon No 1 Court for the All England Lawn Tennis Club (Figure 2). This was a highlight, as much from a teamwork point of view as the technical challenge.

'With stadia you have a deadline, and there's no compromise because it usually relates to a big, public, high-profile event. Everybody tends to just get on board; you problem-solve together and have to put everything aside except best-in-class technical expertise and collaboration for a common purpose.' Having a client with very clear objectives and standards was central, she says.

Social impact

As the project drew to a close, however, de Hoog started to question her long-term goals. 'I love buildings that are uplifting and bring people together, and sporting venues do this. But I was seeking to contribute to communities in other ways – our London office had taken part in a project in Rwanda for the non-profit Bridges to Prosperity – and I thought there must be something between working for private-sector clients, and doing pro bono volunteer projects.

'So I pitched it to the company CEO at the time – what if we looked for ways to grow our business by doing more work focused on people as well as planet? We had a strong foundation with volunteerism, but what if we did it as paid work as well? Ultimately, I moved to our New York HQ, to emphasise that it was something for the whole company, not just one office in Europe.'

De Hoog recalls her relocation as 'exciting, challenging and terrifying at the same time'. 'It was hard to leave the London office, but it felt like the right time to try to do more for others with my engineering and leadership experience.'

FIGURE 3: Shirley Chisholm Recreation Center in Brooklyn is community project commemorating first black woman elected to US Congress

The company's *Doing Good Business* initiative is unapologetically named to emphasise the business aspect. 'There's a lot of debate over the suggestion that if you are doing good, you shouldn't be making money out of it,' de Hoog explains. 'But we can do more good if we do it *in* business – otherwise it can be limited to what is possible when you have time.'

Initially, the focus was on bringing existing expertise and innovation to underserved communities – adding earthquake, flood or fire resilience to buildings, for example, or exploiting 3D concrete printing or digital processes to deliver affordable housing more efficiently.

A live project is the design-and-build contract for the new Shirley Chisholm Recreation Center in Brooklyn (Figure 3), commissioned by NYC Parks and NYC Department of Design and Construction. Thornton Tomasetti is working with architect Jeanne Gang of Studio Gang and Lendlease Construction.

'Shirley Chisholm was the first black woman to be elected to the US Congress. She was an advocate for racial equality and feminism, so the project is about serving the community, with a design quality that everyone should be entitled to. It's really exciting to be working with someone like Jeanne Gang, who is an advocate for social and sustainable architecture, and it meets my goal of doing work that uplifts more people, while working with people who are invested in the same outcomes,' says de Hoog.



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