Dear Sir,

Hereby I would like to explain briefly the notorious aspects of my passing through the dual degree Computational Architecture and Fabrication Technologies, and in particular during the graduation project.

When Dr.ir. M. Bittermann joined the program I noticed many improvements. At last, after 2 disappointing semesters, I found someone reliable and hard worker to bring out the best of me. Although missing credits issues and different knowledge of the tools among the students slowed down my progress, the overall experience of the third semester was more than satisfactory. The contrast between the tutors (the mentioned Dr.ir. M.S.Bittermann and Ir.Huib Plomp) surprised some students, but I think it was a very pedagogical strategy, besides some funny moments.

So that semester we were introduced into computational methods for the first time in the program. True that there were some interesting readings back in Turkey, but till this moment I didn’t feel the program was worth. To be more explicit, we were introduced into concepts as complexity, and means to face it. In particular, a scientific approach that architects as designers can take when facing a design. The educational effort and excellence of the tutor on these topics lead to an easy understanding and rose my interest in them. From the topics discussed, the “fuzzy logic”, the “neural trees” (and its combination) and the optimization were the ones I found more interesting and usable in a short term. Perception was, probably, the one that generated the most interesting discussions, but I didn’t feel it would open me new job opportunities. Besides, the trouble of computing a few trees in front of a building to calculate the perception disappointed me. As a starting point they were used in the group research on the site. I myself didn’t like to be grouped to target the urban analysis. Indeed, what I didn’t like was the lack of choice in theme and site. The previous years, the students were free to choose the topics for graduation. In my case, I would have rather focus on smaller scale project, like the other years, but with more emphasis on fabrication (as the title of the dual degree). But truth to be said, by working in group we all learnt from each other and faced weekly meetings with the constant challenge of bringing something new to the class.
Anyway, I was excited about these advanced methods and started to include them into my graduation project approach. The first thing, beyond the group part, was to use the optimization and fuzzy logic for a layout research. For me, as graduated architect from Spain, these were the topics why I join an international master program I don’t mean these in particular, but anything that extended my capabilities as an architect, and in particular, the computation part. I felt happy that the changes in direction brought me these topics in particular (by the tutor, of course), that otherwise wouldn’t have been included, and were a big gap in the overall dual degree master program. So the same I got disappointed of the previous explained issues, I have to admit that almost only this made the program worth for me.

So, coming to the graduation project, I started a layout research with the methods explained. At the same time, due to my personal interest (the started thesis back in Turkey), I had in mind the structural research to be combined with the layout study. And this was actually merged but not as successfully as I would have desired. I regret I wouldn’t have focus more on it. And I have to blame only me. We were told many times about the TUDelft submission standards, and I knew that a worth research might surpass those rigid requirements. But due to the change in direction, and the worry that the program wouldn’t continue, I thought those requirements would be more strict this year, so I deviated from that line of research and started to develop the plans and sections for the P4 presentation. It was also a result of the slow feedback that the computer was bringing. With a few goals the computer took a whole weekend to come up with 3000 generations (and for an optimization problem usually 20,000 is a good number). And for the structural part, every iteration took too a few minutes, so I didn’t think that spending more time on that part would help me on the overall.

Now, looking back, I think I shouldn’t have included in a graduation project topics that I hadn’t earlier mastered. And for this I mean the layout research because I was always waiting for a better outcome of the research to start drawing the project. So even after P3 I was redoing the layout. That was my biggest mistake of the year. I should have tried the optimization in a little project (or should have been happy with fewer goals), then Finite element analysis on another project, and once both were learnt try to merge. But I tried everything together and the computation was too expensive for the machines and software I used. Then, it was difficult to do the building and include the other goals. And besides, as long as I really started drawing the building, other goals emerged that were not included in the layout research. So even the outcome I had when I stopped wouldn’t fit my needs now. The choice of free form geometry was an early decision to include the project in the gridshell research that I started with the thesis. That pre-established decision would have been very difficult to defend to a jury, or to the professors, but they understood my will to include the project as a case study for my thesis, and they never questioned that topic (although they could, so I thank them for it). My troubles creating the free forms slowed down the architectural development of the project, and therefore, the structural analysis that I wanted to do.
Then, after talking to the structure professor, I came with the conclusion that optimization should be done in manufacturing rather than in structure itself. A bit more or less material, in structure, is not usually a big thing. Normally, the biggest costs come from manufacturing. And due to the complex geometry I was proposing, trying to optimize the roof for the structural stresses was not as clever as doing it for manufacturability. So I switched again, partially, my target, and tried to apply the topics that Paul de Ruiter introduced in his lessons during the fourth semester, and the ones learnt at the robotic workshop that we were invited (another nice thing the faculty did for us). These manufacturing lectures also inspired me to explore the technology of 3d printing. A friend from other studio and I proposed to the faculty the construction of a 3d printer. They decided to sponsor this task and in return, the faculty would keep the machine. If this had happened earlier, I would have oriented the graduation project to plastic composites and the design possibilities of this materials and techniques. But I am very thankful to Dr. Martijn C. Stellingwerff and Peter Koorstra professors from Form Studies Department for this opportunity.

So, I got a big lesson, besides the other topics I learned: don’t include several topics you don’t master into the same project. I am lucky I learnt this during these months and not when facing a real project. And, a bit late too, I learnt how to get the best of TUDelft departments.

For P4 I will bring the plans, sections and facades of the building. And for P5, I will focus on the structural analysis of the proposed roof, mainly to create plank lines for the manufacturability and to complete or improve what on P4 will be suggested.

Yours Faithfully,

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