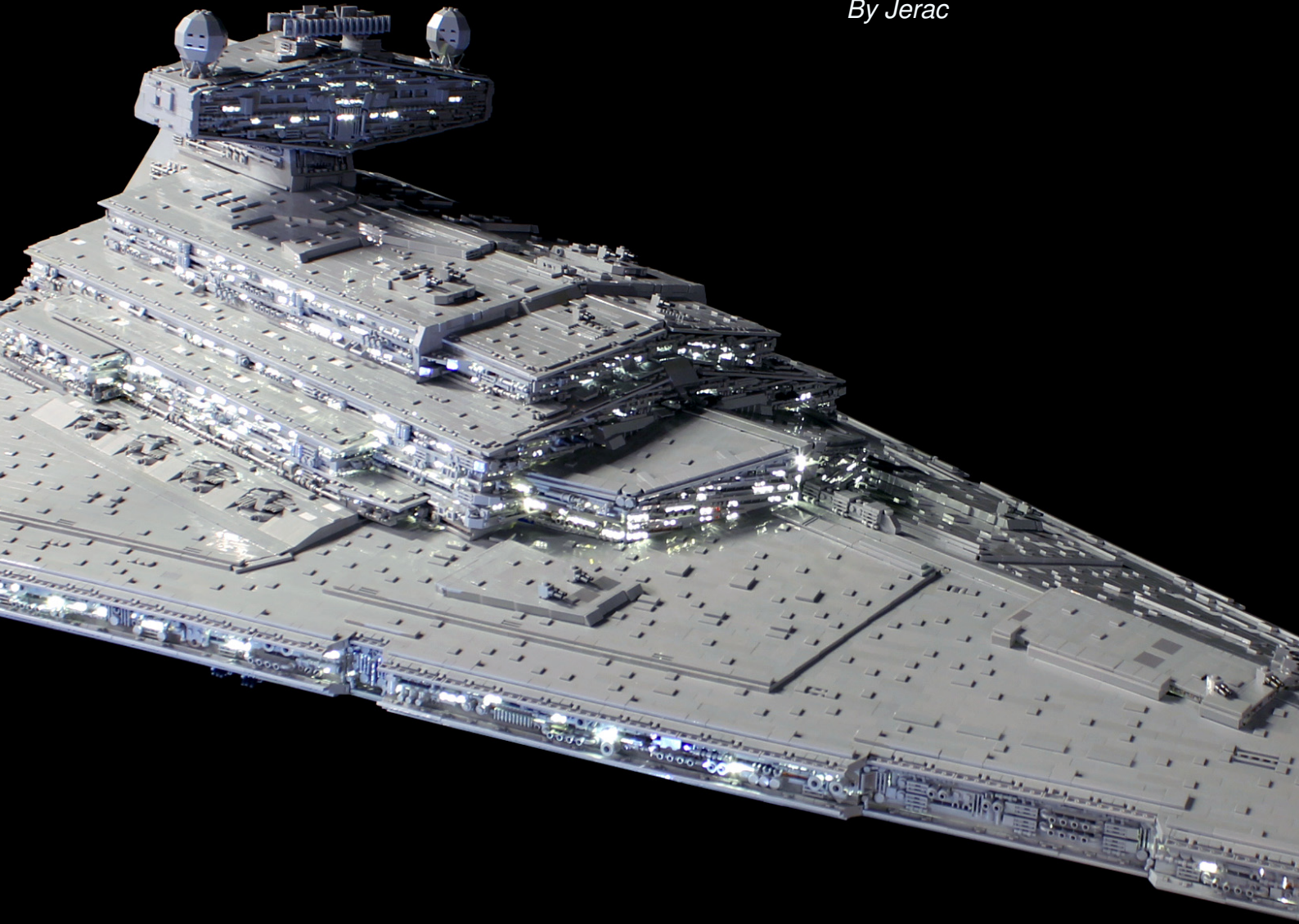


The story of a **STAR DESTROYER**

By Jerac



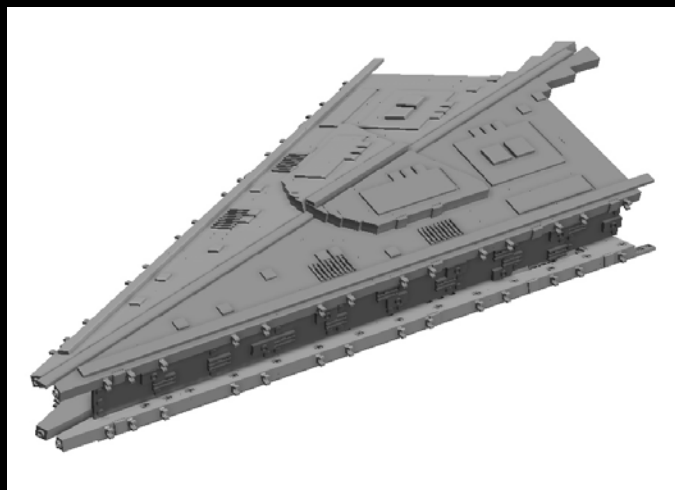
"I maintain that the effectiveness of the Star Destroyer stems from not only its massive firepower, but from its size. When citizens look at a Star Destroyer and then compare it to the craft which might be mustered to attack it, they have a tendency to dismiss such a notion as suicidal rather than approach the problem tactically."

- Grand Moff Wilhuff Tarkin -

This quote, originating from a Star Wars™ novel, describes idea behind Star Destroyers quite well. They are meant to be big to intimidate people. Not advanced, not powerful or anything – although that comes too – they were built specifically to be big. Being a Star Wars™ fan and a LEGO® fan, I dreamed about building a Star Destroyer since being a kid, and naturally I knew it had to be huge. Even the official LEGO set, the famous “10030”, was at the time the largest set made by our favorite toy company. The dream lay dormant in a far corner of my mind, somewhere between “being an astronaut” and “getting myself a Lamborghini”.

That was until I stumbled upon the Tarkin quote which got me thinking. In fact, as it occurred to me, I never really considered building a Star Destroyer. I didn't know how large it should be nor what the cost would be. The only thing I knew is that it is “too big” and “I cannot handle it” and obviously, as I come from poor country – “I cannot afford it”. Having just completed a large diorama which was rented at the time making me money, and also just receiving some more from a client for whom I was doing some commissioned work, I knew that at least the last hurdle could be possibly overcome. With that realization, on one stormy November night in 2013, I sat in front of my PC and fired up the Lego Digital Designer.

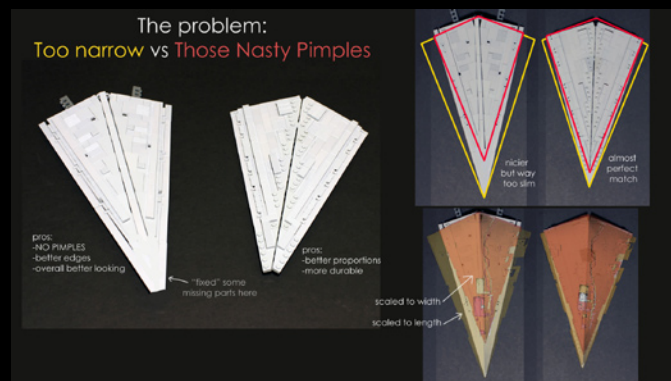
“So how does one start designing a two-meter long Star Destroyer?”, I pondered. Those two meters were basically a random number. I wanted the thing to be bigger than anything else I have built, and my largest build to-date was a Warhammer 40000 diorama which was about one and half meter wide. Two meters seemed to be big enough. With that in mind, I quickly put together a prototype of the nose. It had no structure planned or anything, just some detailing, and it was shaping up to be even better than I expected.



The design progressed further, focused more on the frame. I knew I needed to go for a structure that was as empty as possible, with super-light technic-brick frame inside. Because of that, the most important thing to determine was how many (and how long) technic bricks I would need. For scaling and dimensions I have been using blueprints from “The Essential Guide to Vehicles and Vessels” book, so I knew that the ship would be about one meter wide. “Good”, I thought, “the trunk of my car is 105 centimeters wide. That will be a tight fit!”. Boy was I wrong...

Eventually I got bored with toying with LDD. I had finished most of the central spine and side beams, as well as quite a lot of the surface “skin”. With that done I could make some estimate of what parts I would need. The numbers were high, but manageable. Availability limited, but enough. I was planning to spend 5000 zł - which is about 1500\$ - on pieces, with up to 1000 zł of “over budget” quota if required. As my initial estimate was close to this number, I double, then triple-checked it and began putting pieces into Bricklink store virtual carts. Nine orders, each of them bigger than any I made before. Nine orders waiting for final confirmation. After a good few nights of thoughts like “what am I doing, this is crazy”, I opened nine tabs and clicked “submit” on all of them. “This is where the fun begins!”, I said trying to mimic Han's voice as well as I could. This was about the last time I thought it was going to be okay.

As shipments began to come in and I attempted to assemble the nose prototype as planned in LDD, problems began to surface. The prototype was not holding together at all, and that was while it was just a few percent of the total length. My solution to the gap in the middle proved to be wrong and something seemed off with the proportions. When I compared the drawings from the book with photos of the real model used for filming the movie, I realised that these drawings are completely wrong. According to the book, my SD should be about 100 centimeters wide if it is 200 centimeters long, while the real filming model suggested something different: 132 x 200 centimeters. The only reasonable thing to do was to scrap the LDD model and start from scratch with real bricks. Eventually I made two prototypes, each with some distinct advantages and flaws, but ultimately I could not decide which was the lesser evil. I asked flickr! and my LUG community for help.



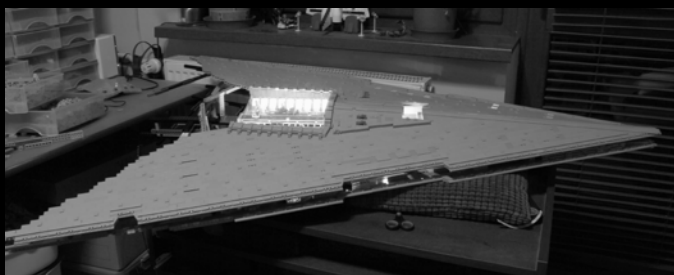
The feedback, however, proved to be troublesome. None of the two options was accepted as “perfect”, which was the only result I would accept. Most people preferred the studless, smoother prototype, even though it had worse proportions and was plagued with durability issues. I on the other hand was bent on perfecting overall dimensions first, because this is what makes or breaks a build which is based on anything. If there is even a slight difference, people will come and say “I like it, but something is off. I can't tell what, but something definitely is”. The effect is more pronounced on builds which are simpler and more angular than on rounded ones... and the Star Destroyer is nothing but angles.

A few nights later I have had a major breakthrough. Do not try to find a perfect slope, because there is none. Do not fight the gap in the middle. Instead... cover it! With that issue finally solved, I could pick any proportions without worrying about

studs showing, the gap created or anything. The solution has even proven to be very durable, making a very tight bond between angled triangular pieces. Full success! By the time I solved all the troubles with the nose, it was 11th of January. Like all good projects, this one too had a deadline, and one which could not be changed. On the first of June an exhibition of our LUG was to start in a museum. Because they needed to know the dimensions of each large exhibit to make display cases for them, whatever build was declared had to be done. As I still had about half a year I was not really too worried about the time, though.

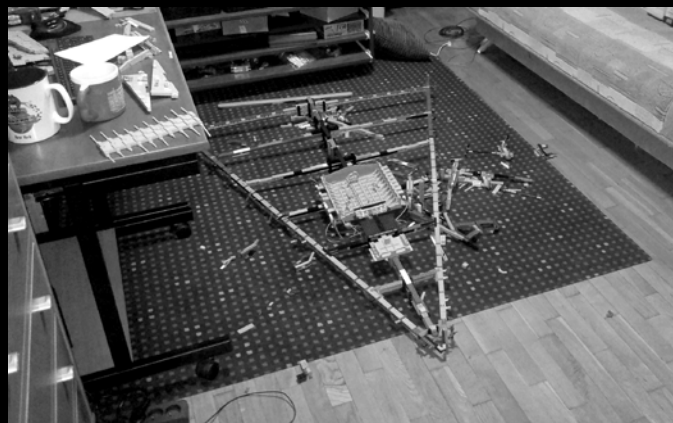


About a month later, the ship's frame had reached more than half of the total length of the ship, and its armor plating was generally about halfway done as well.. at least lengthwise. Because of the geometry, having the front half of a triangle means that what you really have is only 1/4 of the total surface. Still, things were looking quite okay, even though the structural issues I was facing were growing really fast. By that time, the model already weighed a good six kilos or so and was getting more and more difficult to pick up. My workspace was also limited in length, but I conveniently chose not to worry about it yet.



One month later, 9th of March, I had both hangars done and lit up, for which I used some LED strips powered by a custom power source. Making the greebled texture of the hangar surface was a nice break from the monotonous structure of the Star Destroyer's armor plating. Except the lighting system, everything I was doing with the ship was lengthening the frame, adding new lateral beams, placing a new patch of plating on it and working like that ad infinitum. This was the first time in my life where building a LEGO® model became boring and tiresome. An observant reader might have realized that at the time I had just three months left and still hadn't

progress too far with the overall length, which meant that in three months I had built 25% of what was to be done. If only I had been so observant back then, and this is before the catastrophe began...



27th of March. That messy ruin in the middle of the room is all that is left of the mighty Star Destroyer. Eventually I got to the point where the ship's frame was no longer holding together and began to give up. Not only that, because it was built on an uneven surface, the frame was also bent in multiple places, which quickly led to unfixable errors. To add insult to injury, I realized that some of my calculations were wrong – the ship was going to be a few centimeters too wide. Because it all piled up into a really tragic situation, I stripped the ship down to the bare "core" frame, leaving only the hangars attached. From now on, the ship was built on the floor, which was the only large flat building space I had available. It also meant that I no longer had any space to live, and it was going to be like that for the next two months.

What initially seemed to be crazy – destroying literally three months of work in a mere few minutes – ended up being a very good decision. Just four days later I had not only rebuilt the bottom section to the point where it was before "That Day", but also fixed the bent frame and actually finished the entire bottom armor plating! For once, the situation seemed back under control. Two months left and still plenty of work, but finally I was seeing the end, and so far no lingering issues left.

The rebuilt model had massively increased structural strength, as seen here. Only its left part is supported by the couch, while the right hangs in mid-air. This is about five kilos of LEGO hanging on LEGO and nothing else. To make things harder, I put two of my favourite large mugs on it to add weight and stress the frame and plating even more. Thankfully – nothing happened, although it was quite noisy with all the creaking and crunching noises.



Unfortunately, during all this I forgot about one minor detail. Remember that part about the width of the opening of the trunk of my car? It was 105 centimeters. And the original project of the Star Destroyer, based on the sketches from the book, was 100 centimeters wide. What was lying in my room, however, was... 125 centimeters wide. Since I could not afford any more time to rebuild the ship once again to make it narrower, nor could I afford a new, bigger car, I dragged the entire thing outside to check how badly it would not fit the trunk opening and what I could do with it. "Maybe I can get rid of corners", I thought. "Or maybe it could be put there at an angle". Of course I could just measure it and try with just the dimension, but for some reason I thought it would be better to try it out with real model.

It didn't fit. At all. Not only that – since it weighed about 20 kilos and was really unwieldy, I could not drag it back to my room on the second floor, which forced me to open a secondary workshop in the living room. Needless to say, the rest of my family didn't really enjoy the idea but they were generally quite supportive. With that issue solved, I could finally start working on the top section. Thankfully the "terraces", by which I mean the entire "building" on top of the Star Destroyer are much more interesting than the triangle itself. There was more to think about, more to experiment with, while being also much less dependent on structural durability.



27th of May. About three days to go, and there was still an awful lot to do. I didn't even touch the lighting of terraces, there were no greebles in the trenches, no bridge, nothing in the back of the "neck" tower, an engine missing due to parts shortage and plenty of holes here and there. Generally from about 20th of May literally all my free time was spent on building the ship. It was no longer fun at the moment, it was exhausting overtime served under a very demanding, merciless boss: me.

On the first of July I had no choice but to pack the unfinished ship into a rented van, take as many boxes with grey parts with me as possible and hope that I would be able to finish the ship on site – or at least make it seem finished. It was three consecutive fully sleepless night, I had a few days off work, so I had done about 70 hours of work on the Star Destroyer without any real break. With that in mind, a "short", 350-kilometer drive in a noisy diesel-powered van was a true opportunity to relax and regenerate.

The final stages of construction happened on site in Swarzewo. I arrived at about 15:00 on Friday and the opening event was to start at 11:00 AM on Saturday. The build was declared

provisionally "finish" at about 3:00 AM. The lightning was incomplete, detailing was rough, the reactor bulb consisted of 8 curved pieces cobbled together without any thought, and several holes were patched up with nothing but textured 1x4 bricks. Still, for someone who did not know how it should look, the ship was completed. The reception from the fans from our LUG community was fantastic, even though some complained that it was one huge triangle made out of light grey pieces which makes it boring. Kids were sometimes humming the Imperial March, even though they were spoiled by The Clone Wars™ series and mostly confused an Imperial-Class with Venator-Class, but I guess this is just a sign of the times. For the first time after six months of work, I could sleep knowing that next day won't be a building day. Did I regret that drudgery I got myself into? A bit. Did the final result compensate that? HELL YEAH.



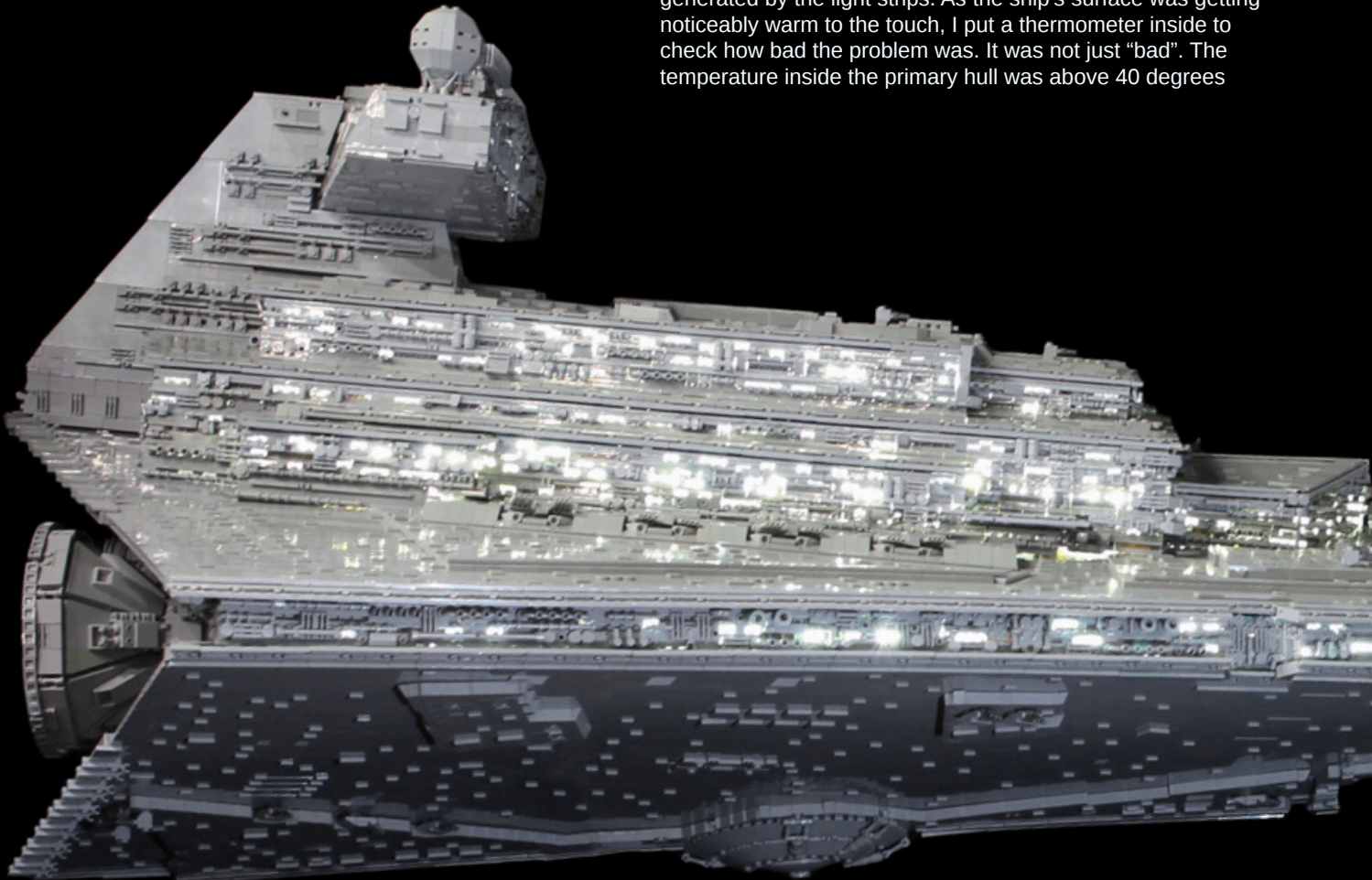
Let me write few words about the "finished" product. the dimensions are 202 by 125 by 60 centimeters. Weight – roughly fifty kilos, based on some estimates. It is no longer possible for a single person to lift the complete ship, unless that person is extremely strong and has three hands. A selection of tentacles would be useful as well, if I was to recommend something. It took six months to build, 19 bricklink orders out of which 9 were made before the actual building started, and the original budget has increased threefold. There are about 40.000 elements inside and the most common one is a standard, 1 x 2 grey plate which makes up for about 10% of the total piece count. The frame consists of more than 1000 technic bricks of varying lengths. Not much was left from the original planned modularity – the ship separates into only three modules: the main triangular hull, terraces and bridge.

Fast forward to September, when the exhibition ended. The ship was still standing on its steel base, but its nose and corners at the rear were noticeably dropping. Cracks developed on the dorsal plating and the model gathered a layer of dust, although this might be the first case when the dust is not causing any discoloration... say "proper choice of colours" now! I packed the ship for transport with the help of guys from the LUG and their rented van – as my car still wasn't big enough – and moved it back home. There, upon closer inspection of the inner structure I discovered that the frame did not suffer any damage, but some of huge ball joints used for holding engines in place have snapped out of their brackets. I guess this is what one gets for building such a massive, hollow ship without any steel supports inside, like other people do.

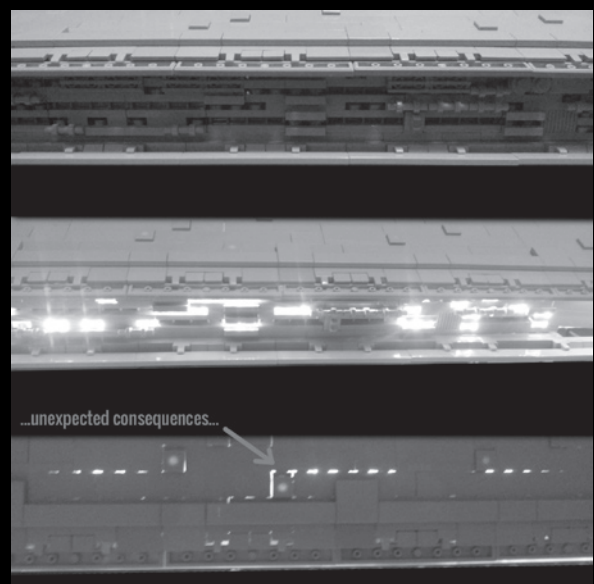
The next exhibition was planned in Łódź in early October, which was a good thing considering I live in the exact same



The full month had quickly shortened to a week and I still did not even touch the lighting. Fearing that once again I would show an incomplete model at the exhibition in my home city, I took another batch of work-free days just to work on the ship. This was a good decision, as the build was, again, plagued with issues. Seemingly minor spaces between pieces proved to be large enough to allow “bleed light” to escape and form very ugly dotted lines along the surface, something I feared would happen with the central bulb, but not LED strips. What I did not expect is that the directional light coming from the strips would reflect that much from inner surfaces of the ship and make it about as bright as if there was a desk lamp inside. Not only was there a problem with bleed light, but also with heat generated by the light strips. As the ship’s surface was getting noticeably warm to the touch, I put a thermometer inside to check how bad the problem was. It was not just “bad”. The temperature inside the primary hull was above 40 degrees



city. I had full month of time to finish up the detailing and lighting system, and to fix those few issues with the internal frame. As I was looking at the complete ship standing on a table, I had had a nasty feeling that something was off. I was too tired to see it before when I was building it in late May, and didn’t see it at the initial exhibition either. Now, however, I could just sit, watch and think. Eventually I found out that for some reason the entire terrace section was too short in every single way. Too short, too narrow, too low. The bridge itself, on the other hand, was way too long, but its sensor globes were too small. This all contributed to the malformed general look of the ship, although I am quite sure 99,9% of people didn’t see it. My inner perfectionist did, however, which made me initiate a full rebuild of the entire top section – which also meant a serious modifications in the triangular primary hull as well, because the cut-out on its top was now too small to house the new, larger secondary hull.



Celsius, and in the secondary hull with terraces – almost 50 degrees. With such heat on a cool, Autumn day, I was now fearing severe weakening of the frame and ultimately, bending and deformation.

This is where my dad helped me again big time. With help from his co-workers he created an AC converter with built-in power regulator, which allowed me to reduce the power output of the LED strips. It was still perfect enough to achieve the “skyscraper-at-night” effect I desired, but temperatures dropped by about 15 degrees. I still had an issue with light bleeding through microscopic cracks in the surface plating, though. There was not much to be done about this. Now I know that the ship should have a second layer of bricks or a layer of plates on the inner side, but doing that would make it much heavier, not to mention I did not have time or resources – that is, money – to buy all that and dismantle the entire hull plating. Instead I opted for an solution which will not make me popular in LEGO purists’ society... I used masking tape and black paper to create a sort of “lining” preventing the light from

bleeding out. And, uh, that was not a piece here and there. Three rolls of black masking tape were used and three very large A1 sheets of black thick paper. And this is still covering only about 30% of the internal surface of the ship.

I had a ship with correct proportions, a fixed frame and most of the lighting system complete. The only thing missing were the bulbs for engines, but I quickly discovered that even the weakest ones were too bright to look at and detracted from all that detailing I had painstakingly recreated around engines. For now I decided that the ship would not have lighted engines, at least until I managed to find a solution which works.

3rd of October. Second exhibition at which the Star Destroyer is presented, Łódź. I stand proud, having completed the ship in time, just before a tour around Poland starts. This is where the story of building the Star Destroyer ends. It was hell of a job, to put it together and make it stay put together. I learnt more about logistics, engineering and managing a large project than I did in my professional career as a Software Engineer in years. More importantly, the list of my dreams is now shorter by one.

“Build a two-meter long LEGO® Star Destroyer, check”.

