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HiSPA BRiCK magazine

HISPA BRICK magazine

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Puedes contactarnos / You can contact us at
info@HispaBrickmagazine.com

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Frontcover by Jerac

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Editorial

By Legotron

HispaBrick Magazine® 021 is here! The December issue is a little later than usual as it coincides with our annual event and we need a couple of days to be able to include it in the magazine.

In the last 4 months we have seen many novelties and surprises LEGO® has in store for 2015. There will be new themes like Minecraft at minifig scale, Speed Champions and Elves. LEGO has also announced the return of other themes like Pirates and Bionicle. And of course all the news about the rest of the themes for 2015. Furthermore there are also 2 new projects on LEGO® Ideas that will be turned into sets: Birds and The Big Bang Theory.

In this issue we will show you some of the most spectacular creations that have been featured in this magazine, like the Star Wars™ Imperial Star Destroyer by Jarek, the RC Tiger tank by Sariel or the reproduction of a Volvo Ocean Race boat. We also have reviews, interviews and articles about parts and events, including one about our HispaBrick Magazine Event 2014. And of course there are the usual sections about MINDSTORMS and WeDO as well as the comic strip Desmontados.

We would like to thank all our collaborators and the HBM team for the tireless efforts without which this magazine could not exist, and which has stayed true to original spirit of creating a free magazine by and for AFOLs. Finally, and in view of the season, we would like to take this opportunity to wish all our readers

Merry Christmas and a Happy 2015!!!
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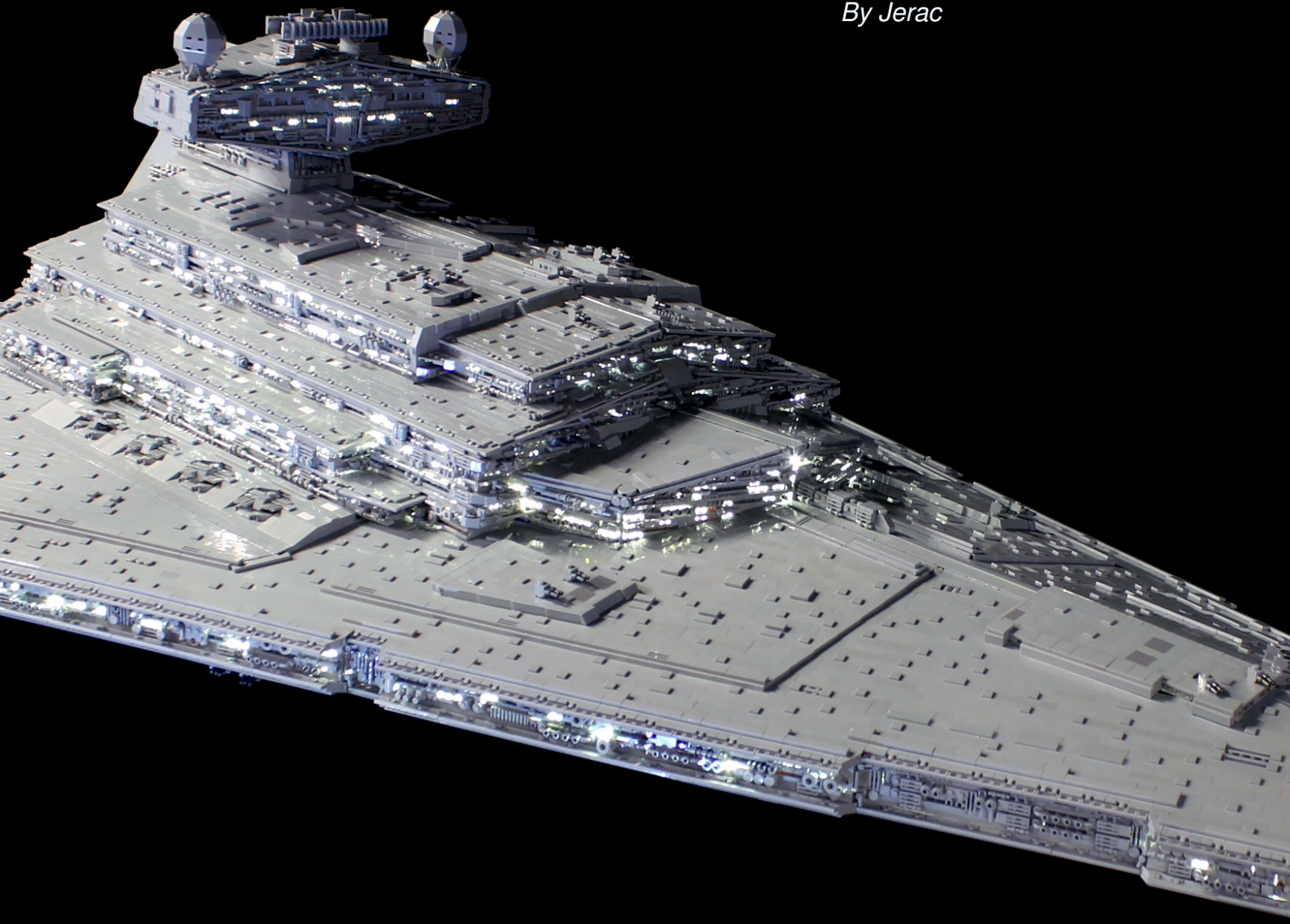
The story of a
STAR DESTROYER

By Jerac

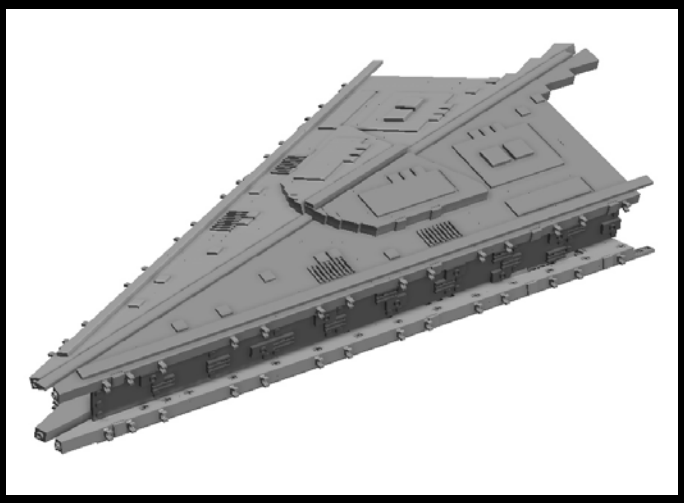


”I maintain that the effectiveness of the Star Destroyer stems from not only its massive firepower, but from its size. When citizens look at a Star Destroyer and then compare it to the craft which might be mustered to attack it, they have a tendency to dismiss such a notion as suicidal rather than approach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

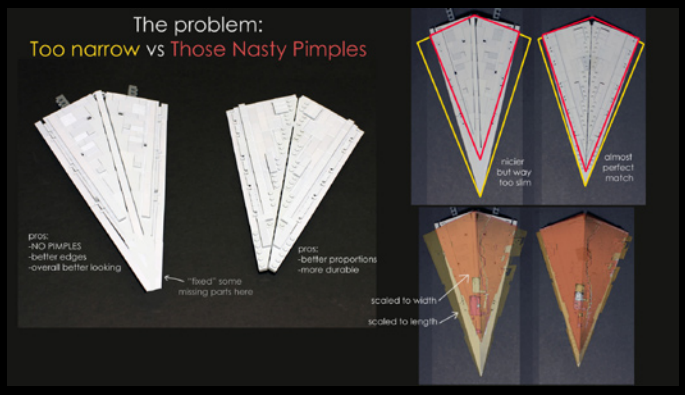
“So how does one start designing a two-meter long Star Destroyer?”, I pondered. Those two meters were basically a random number. I wanted the thing to be bigger than anything else I have built, and my largest build to-date was a Warhammer 40000 diorama which was about one and half meter wide. Two meters 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.

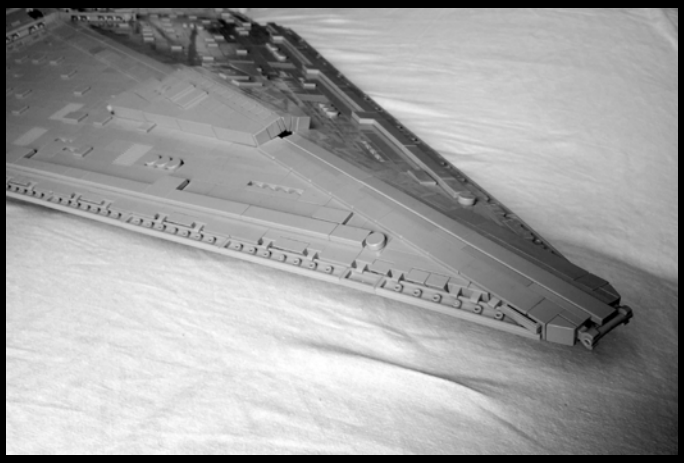
As shipments began to come in and I attempted to assemble the nose prototype as planned in LDD, problems began to surface. The prototype was not holding together at all, and that was while it was just a few percent of the total length. My solution to the gap in the middle proved to be wrong and something 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.



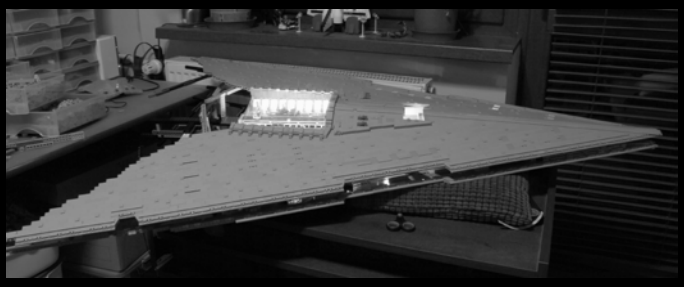
The feedback, however, proved to be troublesome. None of the two options was accepted as “perfect”, which was the only result I would accept. Most people preferred the studless, smoother prototype, even though it had worse proportions and was plagued with durability issues. I on the other hand was bent 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

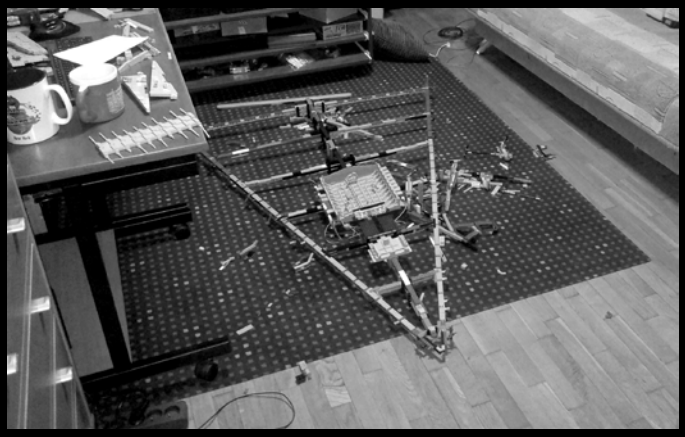
studs showing, the gap created or anything. The solution has even proven to be very durable, making a very tight bond between angled triangular pieces. Full success! By the time I solved all the troubles with the nose, it was 11th of January. Like all good projects, this one too had a deadline, and one 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.

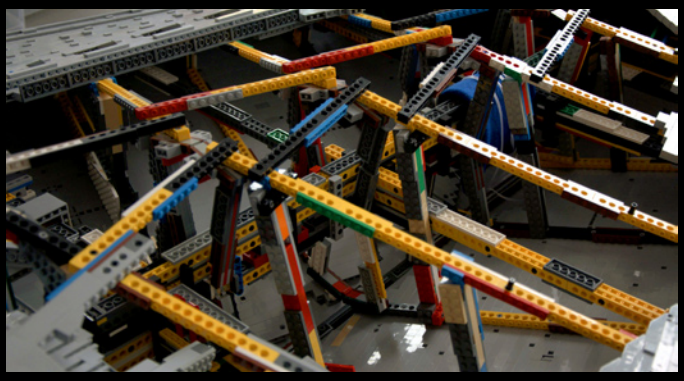
On the first of July I had no choice but to pack the unfinished ship into a rented van, take as many boxes with grey parts with me as possible and hope that I would be able to finish the ship on site – or at least make it seem finished. It was three consecutive fully sleepless night, I had a few days 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.

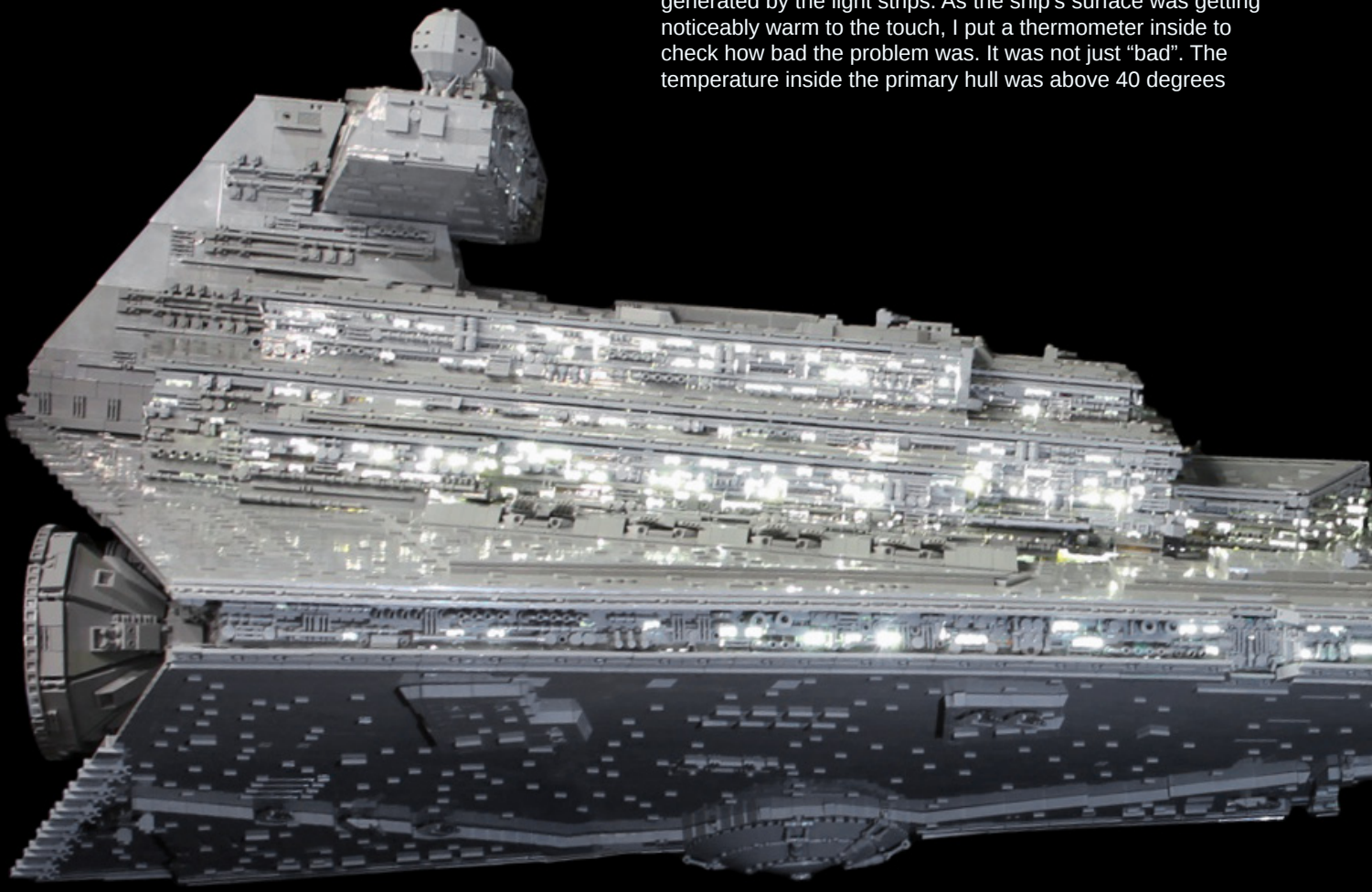
Let me write few words about the “finished” product. the dimensions are 202 by 125 by 60 centimeters. Weight – roughly fifty kilos, based on some estimates. It is no longer possible for a single person to lift the complete ship, unless that person is extremely strong and has three hands. A selection 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.

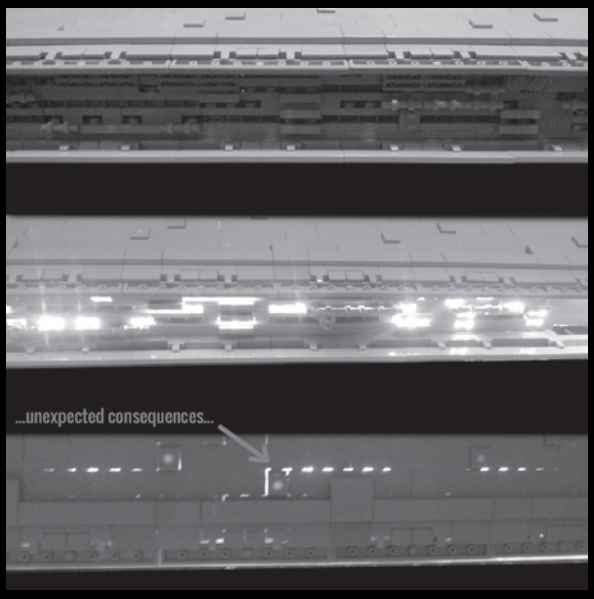
The next exhibition was planned in Łódź in early October, which was a good thing considering I live in the exact same



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”.

ALIENS

By HispaBrick Magazine®

Pictures by Andrew F. (Missing Brick)

In 1986 I was a bit young to go to the cinema to see the movie Aliens. So the first time I saw the movie was on VHS in my living room. I remember I saw it three times that weekend. In my opinion it is one of the best examples of movies that combine action and science fiction, and when I started to see scenes from the film recreated with LEGO® bricks on Flickr, I could not help but contact the authors and ask them to talk about their project.

HBM: Tell us a little about yourselves, your name, where you are from, what you do for a living, …

I'm **Andrew**, a product designer from the United Kingdom, I built the Aliens dioramas.
And I'm **Matthias** from Germany – I made the custom Aliens minifigures.

HBM: How did you come up with the idea of faithfully recreating scenes from the Aliens movie?

Andrew: I've been a huge fan of Aliens ever since I first saw it on VHS tape (I was too young to see it in the Cinema). After I came out of my LEGO® dark ages I started to notice some fantastic LEGO Aliens vehicles on flickr by great builders like Larry Lars and Babalas Shipyards. I find there are two types of great MOCs: the ones that make you think "hmm, that's clever" and the ones that make you go "I want one of those!". Larry's Aliens models were all in the latter category – so I started by making copies of his APC and Powerloader.

At that time no-one had attempted to recreate any Aliens movie scenes – mostly due to the lack of suitable minifigs that matched the costumes and characters from the films. That was when I came across a post by minifig customization expert, Matthias, on the Eurobricks forum. He'd hand crafted an amazing set of Aliens minifigs – all instantly recognisable as characters from the film.

Matthias: When I was a kid I built all kinds of stuff with my LEGO bricks: vehicles from Star Wars™, Masters of the universe, Ghostbusters, Teenage Mutant Ninja Turtles™ (didn't want to wait 20 years for the LEGO License), Robocop and Aliens. I always found it difficult to build realistic figures for these vehicles from standard LEGO parts - so I started experimenting with figure customization very early. I used Modelling Clay, Glue, paint and all kinds of weird stuff to create the characters I wanted. Later on I wasn't very proud of the terrible things I did to many of my LEGO figures, but it helped me getting my first modelling and sculpting practice. When I was about 15 I moved away from LEGO but stayed with figure customizsation with other toylines. When I got out of my dark ages and had fun building new MOCs again, I found some of my old LEGO minifigure experiments from my childhood in a box. Out of a nostalgic feeling I decided that I should try some of these characters again with today's modelling skills and materials. My first choice was the Colonial Marines from Aliens, because this is still one of my favorite movies and I felt I could do this so much better today.

HBM: How did you create the Aliens minifigs that give life to the characters of the movie?

Matthias: I used greenstuff for sculpting prototypes of all kinds of parts that connect to the LEGO Minifigures like helmets, chest armor etc. When I'm satisfied with the sculpt I usually create molds of these parts with silicone rubber to cast multiple copies with Epoxy Resin. I started with some generic Marines, moved on with the prominent Marines from the movie and later on came drop ship pilots and Smartgunners, which were the most difficult to build with their tiny headsets, targeting sights and Smartguns. I did a lot of different versions before I was satisfied with them. I offered some of these custom minifigures to fellow AFOLs because I realised there was a lot of interest

from other LEGO® and Aliens Fans out there. That's how I first got in touch with Andrew, who was building great dioramas and vehicles from Aliens. He asked me for some figures, I asked him for help with my first APC MOC. This way a great cooperation started and I'm very proud of the fact that some of my creations are a part of Andrew's amazing work today.

HBM: How did you decide which scenes to recreate?

Andrew: The movie's full of memorable characters, locations, vehicles and action – and all the scenes are on a relatively small, human scale – which makes them ideal for MOCing. You could pick just about any scene from the movie and turn it into a great MOC.

The scene where an Alien rears up out of the water behind Newt was one of the most visually memorable moments in the film, so that was high on my list of scenes to build. I started with the minifig posing – with Ripley and Hicks attempting to cut through the grate to rescue Newt from the flooded room below – then I built the room around the figures.

The scene where Bishop performs his famous knife trick on Hudson was another favourite to build - and a great opportunity to showcase Matthias' excellent Bishop and Vasquez figures.

HBM: One of the most important aspects is the lighting of the scenes, how do you plan it and what methods do you use?

Andrew: For most shots I build a roof with trans-clear bricks or grates where I want the lights to shine through, then I sit LED torches on top. For the shots in the alien hive I built a trans-clear floor, covered it with grille plates then stood LED torches underneath it to get an uplighting effect. To get coloured lighting I just shine the torches through trans-coloured plates. Whenever possible I like to include light sources in the scene

itself – so in the operations room I built powerfunctions LEDs into the table to recreate the table-top screen from the movie. And in the Newt rescue scene I used a powerfunctions LED as Hick's blowtorch. I use alot of torch batteries but it's worth it because the models really come to life when you add lighting.

HBM: Do you use post processing of the photos or do you try to get the effects just with lighting?

Andrew: I like to do everything in-camera. To me it kinda feels like cheating to add a lot of post processing effects. But I'm not averse to using tricks like mirrors to extend views into the distance. I used mirrors in the Sulaco Hangar and Hypersleep shots.

HBM: What is the scene that has cost you most effort to recreate?

Andrew: The dropship took me several months to complete and many bricklink orders. The folding missile pods were the trickiest part: I must have rebuilt them six times before I came up with a design I was happy with. Rather than just photographing the ship on a blank background I wanted to capture it with some cool backdrops - so I built the Sulaco Hangar scene which required almost as much work as the ship itself. I also wanted to recreate the scene where Bishop Rescues Ripley and Newt from the atmosphere processing station which is exploding around them. So I suspended the dropship 4 feet off the ground on invisible thread wrapped around a broomstick propped up by two clothes airers in front of a 60" LCD displaying the background explosion. Photoshop would have been a lot easier!

HBM: Have you given up recreating a scene you had in mind because of its complexity?

Andrew: Yes – the dustoff scene where the Dropship lands and the APC drives off the ramp. It's one of the most impressive effects shots in the movie – and was all done in real time with models! But I found the dropship was very difficult to manoeuvre on wires – especially with the APC sitting on the ramp – so I gave up after a few crash landings.

HBM: Do you keep the scenes built or do you disassemble them after photographing it?

Andrew: I usually disassemble them to reuse the parts. I still have the dropship on my desk – but I'm slowly pulling parts off it for other models – so it's looking rather sad at the moment.

HBM: What plans do you have for the future?

Matthias: Until now I've built every character from Aliens from Ripley to Bishop with the only exception of Newt. And it seems it's not the end of the road. Right now I'm in the process of sculpting my first Xeno prototype and have many ideas for future custom minifigures.

Andrew: There are still lots of scenes I'd like to build: The Hadley's Hope colony, Ripley battling the alien queen and the "Marines We Are Leaving" scene – although I may take a break from Sci-Fi and try my hand at some other genres in between Aliens MOCs
#

A new house

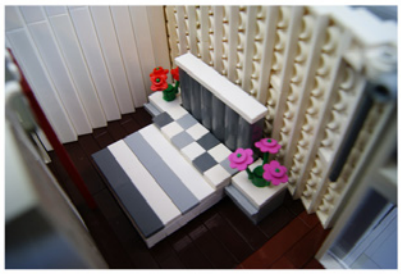
By Sebastian Zaberca

The phenomenon of modular buildings has spread like wildfire among AFOLs since LEGO® released the first set of the line in 2007 (Corner Cafe). The net is full of fantastic constructions made by AFOLs on this theme, however it is not so easy to find modern and avant-garde buildings. That´s why the creations of Sebastian caught my attention, so I contacted him to learn more about his history and his fantastic buildings, both modular and modern.

About six years ago, I found myself home alone, and quite bored. Going through some things in my room, I discovered some LEGO pieces (probably no more than 300) left over from my childhood. With nothing better to do, I put them together and built a hideous-looking pirate ship - I still have photos of it, but will not show them to anyone because it looks like it was built by a five-year old kid. Of course, at the time, I was not aware that this was going to become a huge hobby for me.

A few weeks later, I discovered some of the first modular Creator sets: Market Street, Café Corner, and the Green Grocer. I was impressed with the amount of details in the buildings, and surprised that LEGO produced these kinds of large, beautifully designed sets, oriented towards older, even adult, builders.

Having always been fascinated by architecture (particularly older styles, but also some modern and minimalist styles), I quickly began collecting LEGO bricks, through sets and bricklink orders, until I was able to build MOCs that looked much better than my early attempts. I quickly discovered that flickr had a strong Lego community in place, and began to post my creations on the site.



My approach to building is somewhat haphazard. I usually select a building from the real-world and attempt to re-create it, while at the same time adding my own touches. I do not usually plan my builds, which typically results in a good deal of frustrating reconstruction, but as long as the end result looks satisfactory, I feel that it's all worth it. I am also very much inspired by various LEGO® builders on flickr and mocpages, and I sometimes think that I will never quite reach their level of creativity and originality.

My goal now is to further perfect my builds, and make them much more detailed, and hopefully, more unique and interesting. My focus will likely stay within the town building/ modular line, but I am open to work on other themes as well, particularly medieval settings and film/literature-inspired vignettes.
#

Sailing the seas

Interview with Anders Gaasedal and Johan Sahlström

By HispaBrick Magazine®
Pictures by Anders Gaasedal, Johan Sahlström and Rick Tomlinson

In this issue we have interviewed Anders Gaasedal and Johan Sahlström, the architects of this fantastic project that has brought our beloved bricks to sea, but with style.
It doesn't exactly float, but we can sure imagine it doing so.

HBM: Tell us a little about yourselves, your name, where you are from, what you do for living...

Anders is from Denmark, is 34 years old and work for LEGO as a model coach. Johan is from Sweden, is 47 years old and work for Volvo Trucks.

HBM: How did the idea of this project come up?

Anders and Johan: Well, we've known each other for a few years now. Anders had previously built a 1:10 scale model of the Volvo Mean Green race truck, and together we had been instrumental in getting the Volvo L350F Technic Model project started. So we thought - what do we do now? We both enjoy sailing, and so we came up with the idea of a Volvo

Ocean Race boat. The idea for the project started in mid 2013.

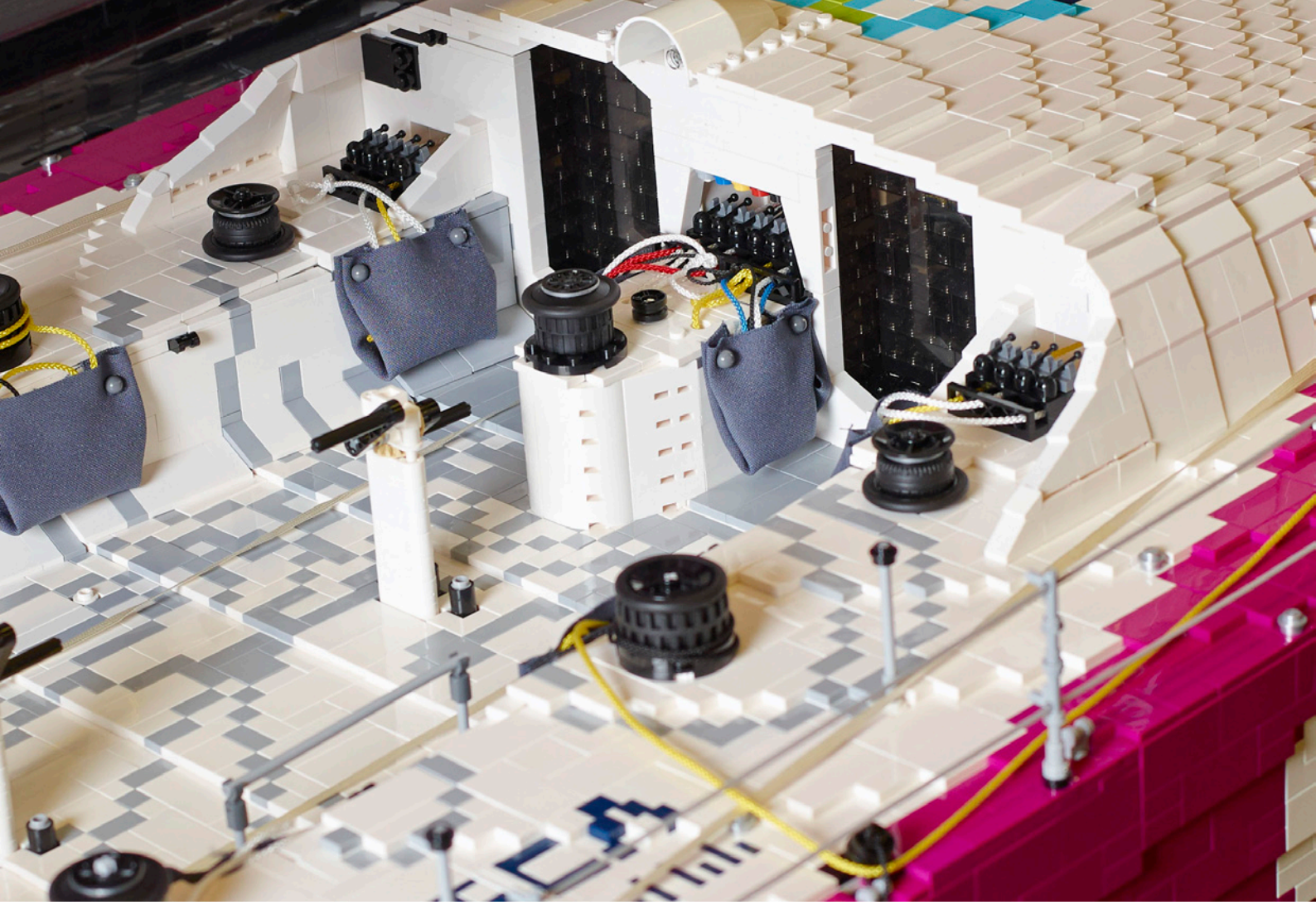
HBM: How did you choose the boat to build? And the scale?

Anders and Johan: When we started out, there were about 4 race teams that had officially applied to be in the Volvo Ocean Race and one of them was Team SCA. We chose that team because we think it was the best looking design and the rare color would give it a special touch.

About the scale, Johan actually had the idea to make it into a scale 1:20 Technic model at first – sort of a wire-frame style model so that you could see all the movements and technology inside the boat. But Anders said “no, no…. bigger is better….and we should do it in System”. And he was right. Bigger was better; at least when you want to make a statement and build something really challenging.

HBM: We know it does not float but, what functionalities have you introduced in the model?

Anders and Johan: Well, it does float….for 3 seconds or so. Seriously though – the entire hull and internal frame is modelled exactly like the real boat. We figured that at one time some clever boat engineer of the real boat had put



the frame sections in exactly the right places to achieve maximum stability. So we just copied that. Naturally everything became heavier and sturdier compared to the real boat which is all carbon fiber and titanium, but the basic structure is the same.

As for functions, one of the really cool things about the real boat is that it has a canting keel, that can be swung +/- 40 degrees to either side. And the keel is also put on a 5 degree incline, so when it's position in the side/up position it displaces its weight a bit backwards for stability, and it glides through the water with a 5 degree upwards lean, giving the boat a slight hydroplaning effect. So naturally we made this exact function in the LEGO® model. Besides that all other feature also work – dual steering rudders, grinders and winches, sails that can be hoisted etc.

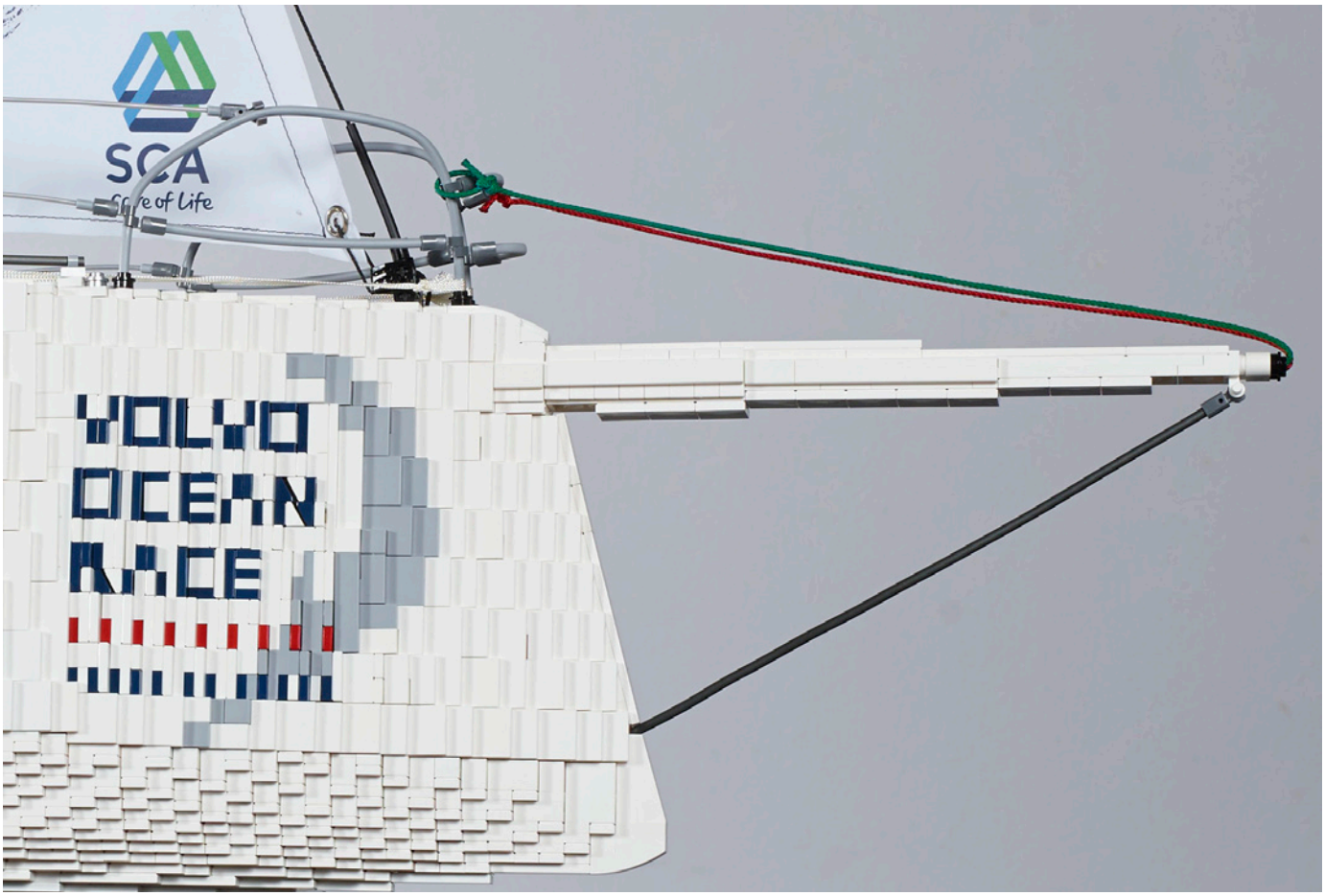
HBM: What are the main difficulties you have met?

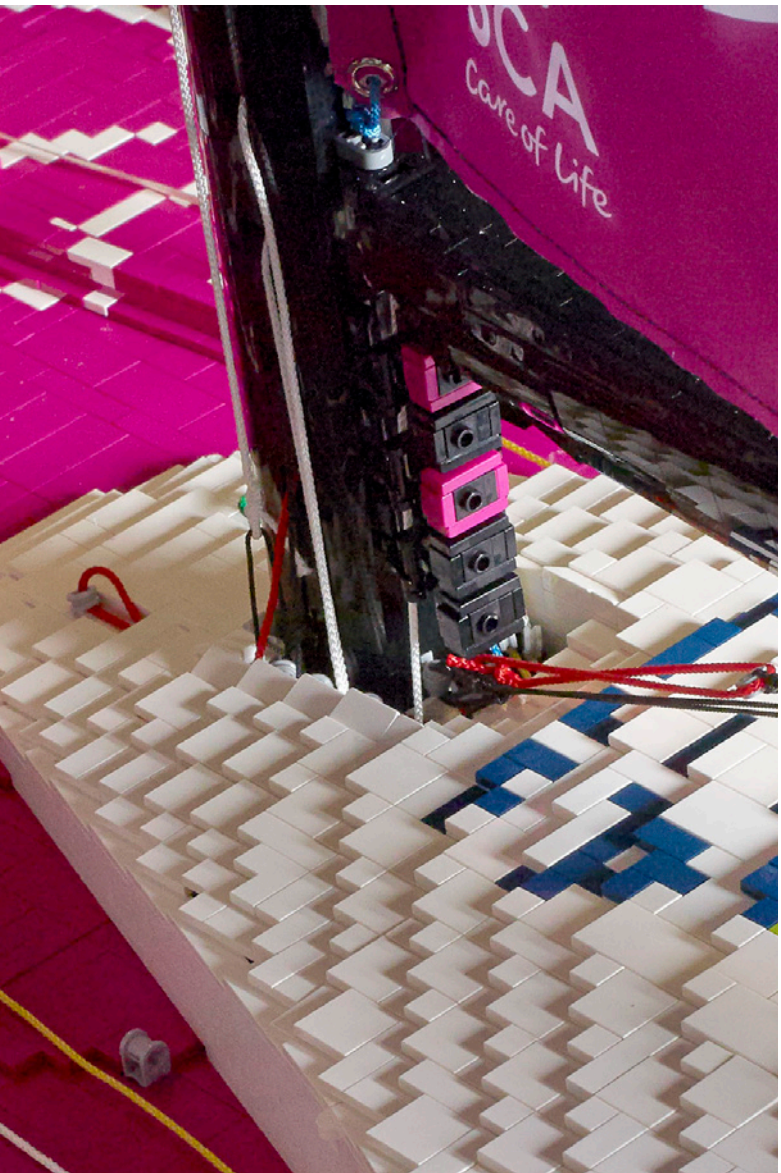
Anders and Johan: Making the sail was quite difficult. At the beginning we had an idea to get the sails made by North Sails in New Zeeland, and they were interested at first, but it ran out in the sand. And at the same time we thought that maybe it would look at bit odd with a real sail with "carbon fiber" look on a LEGO brick model. So after some time we decided to make the sail from normal cloth and we were fortunate enough to get some help from Anders colleagues at LEGO to print and sew the sail.

Another difficulty was creating the hull shape. We didn't have access to any 3D models of the boat, so everything had do be "hand built". We did have a few technical drawings of frame sections and hull views, but from there it was all interpolation and manual labor. It probably took us 200 hours just to design the shape of the hull…a huge amount of iterations and test builds. To be honest, at times it felt almost like we had taken water over our heads. Then, to add to the complexity, we decided to do the bottom of the hull studs down, the sides stud-out, and the deck studs-up.

Perhaps just as cumbersome was to get the graphics right. All the logos and text on the boat is brick built, and some of them took 40 hours to design and build. For each side. It was actually so fiddly that we'd almost like to forget about it now. (both Johan and Anders laugh).

And being a bit stubborn we decided to make the entire boat with standard bricks, in standard colors.





Finally, we have to mention the rig. It is also made with standard bricks; no metal rods or similar. The strength comes from the combination of interlocking plates within the mast and the rig lines. The rigs lines themselves are also standard black LEGO® lines (the kind that comes in longer lengths). The only problem we had with them is that they tend to stretch slightly after some time being under heavy load. So we had to re-tighten those several times to get them to “stretch out” fully. But they are surprisingly strong those thin lines.

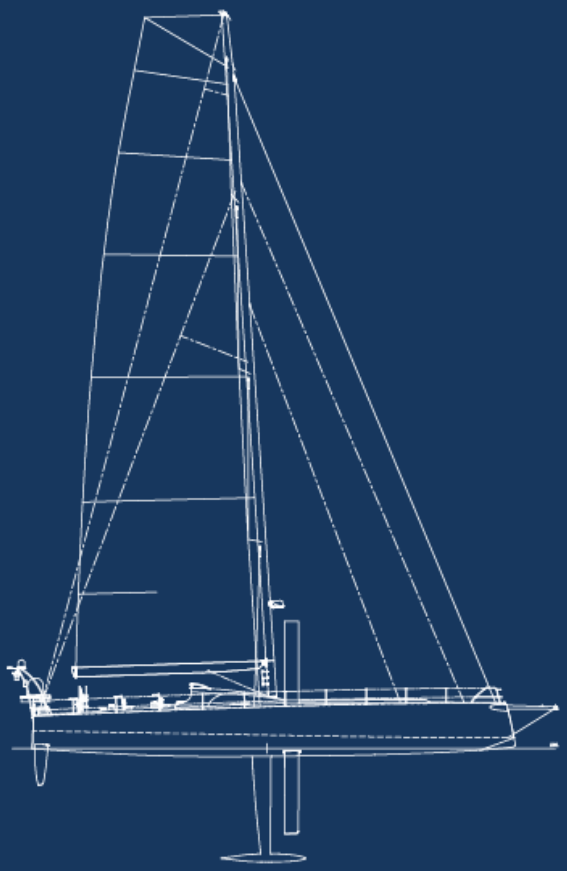
HBM: How have you divided the work?

Anders and Johan: Well, we divided it so that Johan did most of the design work in terms of hull shape and placement of the frame section, and getting all proportions right. All the work was done in LEGO Digital Designer, which is a great tool for cooperative constructions like this. Naturally it helped that Johan is a bit of an authority of LDD, says Anders, because we really stretched the capabilities of the tool to the max on this project.

LDD files were then sent (sometimes daily) to Anders who was building the boat with physical bricks in Billund. Anders also did most of the technical solutions around the working features in the boat so he should have most cred for that.

HBM: What are the main technical figures of the model?

Anders and Johan: Well, we actually made a small information sign, so the easiest would be to just copy that in here:



Volvo Ocean 65 in LEGO bricks

Model specifications

Scale	1:10
Length Waterline	2.00 m (6.5 ft)
Length Overall	2.32 m (7.5 ft)
Hull Beam	0.56 m (1.8 ft)
Max Draft (Keel on CL)	0.48 m (1.6 ft)
Weight	52 kg (125 lb)
Mainsail Area	1.63 m^2
Working Jib Area	1.33 m^2
Rig Height	3.03 m (9.9 ft)

Working Functions

Canting Keel	+/- 40 degree with 5 degree incline axis
Daggerboards	Twin forward daggerboards
Rudders	Twin rudders
Pedestals & Winches	Foot buttons, drive shafts and bevel boxes
Rig Arrangement	Twin topmast backstays and checkstays with deflectors
Running Rig	Main: Sheet, Halyard, Traveller, Cunningham, Outhaul, Kicker Jib: Sheet, Halyard, Twing, Inhaul

Project details

LEGO Bricks used	100.000
Work Hours	1200
Designed and Built by	Anders Gaasedal - Denmark Johan Sahlström - Sweden

HBM: Where we will be able to see the model?

Anders and Johan: The model will follow the race around the world. If you want to, you can come by the Team SCA pavilion and have a look at it. The ports and dates are as follows:

Alicante, Spain – Oct 2, 2014 to Oct 11, 2014
Cape Town, South Africa – Nov 1, 2014 to Nov 19, 2014
Abu Dhabi, UAE – Dec 12, 2014 to Jan 3 2015
Sanya, China – Jan 24, 2015 to Feb 8 2015
Auckland, New Zeeland – Feb 27, 2015 to March 15, 2015
Itajaí, Brazil – Apr 4, 2015 to Apr 19, 2015
Newport, USA – May 5, 2015 to May 17, 2015
Lisbon, Portugal – LEGO® boat not displayed
Lorient, France – Jun 9, 2015 to June 16 2015
The Hague, Holland – LEGO boat not displayed
Gothenburg, Sweden – Jun 21, 2015 to Jun 30, 2015

More about Volvo Ocean Race: http://www.volvooceanrace.com/
Small YouTube video about the project also: https://www.youtube.com/watch?v=4iGAvJU_7q0
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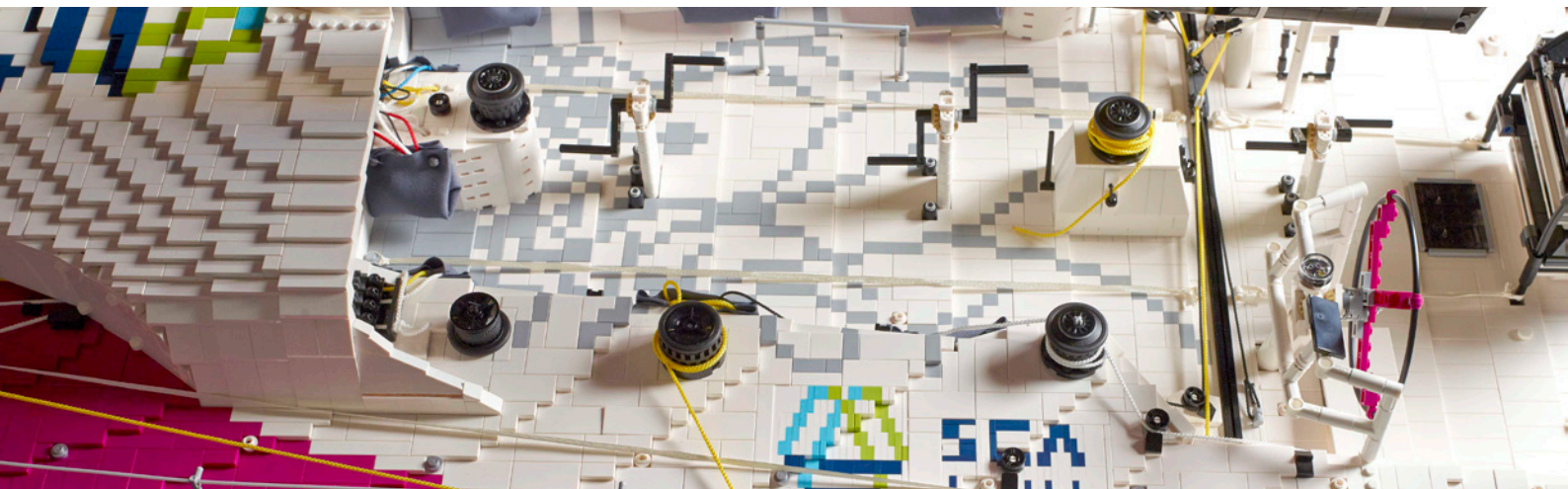
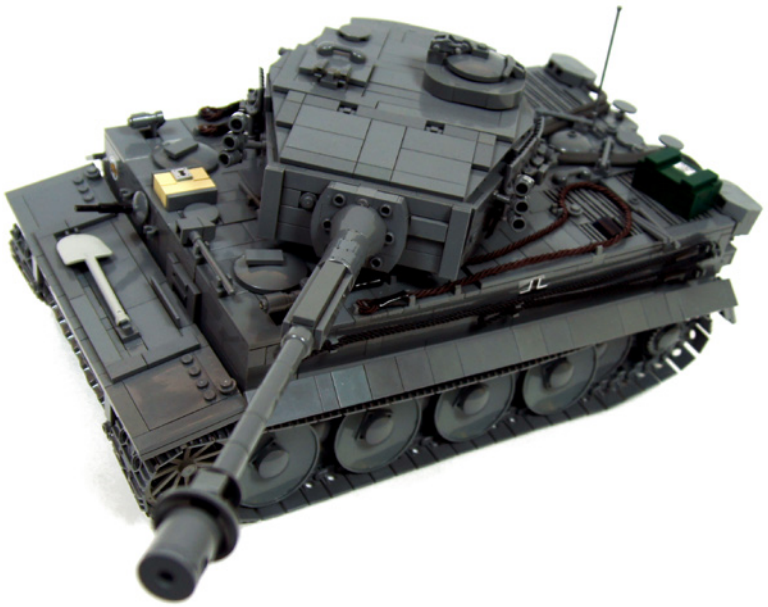


tiger

XL model of the famous WW2 tank

By Pawel “Sariel” Kmieć



Datasheet:

Completion date: 07/09/2014
Power: electric (PF 8878 battery)
Dimensions: length 44 studs (plus the barrel) / width 26 studs / height 22 studs
Weight: 2.238 kg
Suspension: oscillating bogies
Propulsion: 2 x PF L motor geared 2:78:1
Motors: 2 x PF L motor, 4 x PF M motor, 1 x 71427 motor, 2 x Micromotor

Features drive, steering, suspension, rotating turret, elevated main gun, panned and tilted front machine gun, V12 piston engine, openable hull, radiators with rotating fans, custom stickers and Lifelites LED kit.

It’s been a few years since I’ve built my little Tiger tank model, just to check how many functions I can squeeze into a minifig-scale tank, and I never expected to build a Tiger again. Being an immensely popular tank, it has been built time and time again at every possible scale and style. About a year ago it occurred to me that I can’t recall having ever seen a LEGO® Tiger with properly re-created road wheels, so I sat down and made a basic chassis utilizing 6×6 dishes. This started a long and tedious creation process: the chassis was initially equipped with NXT motors and NXT unit, because I felt like controlling the tank with my Xbox controller. Then I left it standing for months, and then I converted it to Power Functions system, because I felt like filming the tank outdoors – and that would be tricky with NXT control.

An important moment was when load tests proved that two PF L motors are perfectly capable of driving the model, in place of the usual XL motors. This was actually a drastic change: with

the L motors being narrower by nearly a half, I suddenly had enough space to connect the motors, the transmission and the 8878 battery into a single compact unit that left most of the hull unoccupied. So much for “what are the L motors good for, anyway?”

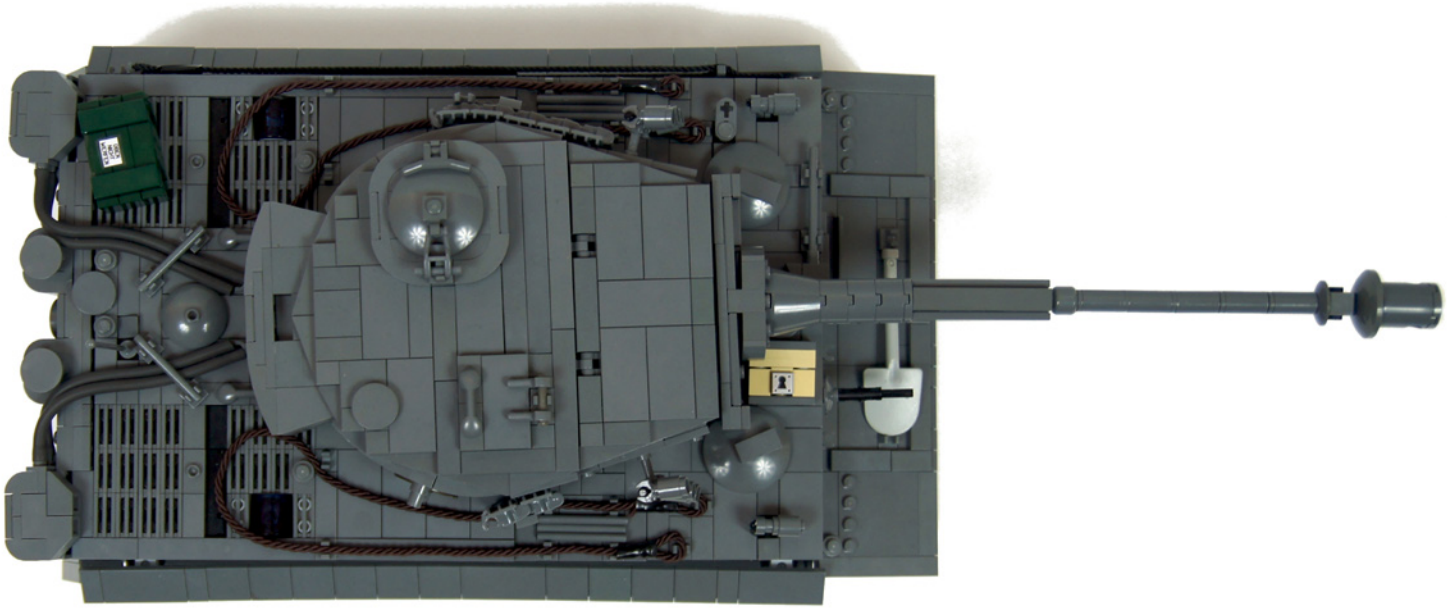
A few months followed and sometime around June I’ve seen some more LEGO® Tigers and felt determined to give this tank my best. Starting in early July, I set out to create a model that was supposed to look as accurate as possible and to utilize the extra available space in a creative way.

All told, the model took 3 months of work, over 30 Bricklink orders and one fried Micromotor (NEVER use your Micromotor without the gray pulley attachment). The ammo box alone took 4 orders, including one that had to be re-sent because the seller got the colors wrong, and one of the other orders got lost, which has never happened with Bricklink to me before. The road wheels took about 10 orders, because there was only one 6×6 dish in this particular color in one rare, expensive set from 2003. At one point I was considering using light gray dishes on one model’s side just to save some money, but decided against it – the result is, at the moment of writing this article there is maybe a dozen of the dark grey dishes left in entire European part of the Bricklink, and you would have to buy them one by one.

The original Tiger became an iconic tank, and perhaps the most recognizable tank in history, which should mean that everything about it is known, and everything about it was built. But it is not so. Upon closer inspection, one can discover that the seemingly simple tank is actually full of traps for an inattentive builder. For example the thin towing cable was only present on left side, not on both sides, the upper glacis plate is not vertical but slightly inclined, the side skirts are mounted lower in the back and higher in the front, the turret had a slot below its front part, and the spare tread links were only mounted on turret in five-on-left/two-on-right set-up. Then there’s the fact that the Tiger has changed a lot between early and late production version, with some elements moved (e.g. on turret’s top) and some gone altogether (e.g. air filters in the back), not to mention the Zimmerite covering the late Tigers’ armor.

A well-known and popular tank, the Tiger’s history is actually a complicated one, and filled with contradictions. It was monstrously effective in right (or rather wrong) hands, yet it was rushed into service in a way that wasted much of its combat potential. Designed as a heavy offensive breakthrough tank, it was mostly used as a mobile defensive artillery unit. Highly complex and requiring a great deal of resources to manufacture, yet initially lost mainly to mechanical failures rather than enemy fire. Heavily praised by Nazi propaganda and feared by Allies, yet – at this point of war – overengineered and incredibly resources-costly (average fuel consumption was 430 liters per 100 kilometers, with sometimes twice as much in rough terrain – all of it right when fuel was in short supply in Germany). Designed according to an already outdated concept, as a king of 1:1 skirmishes, with strong armor and a gun far superior to any non-German gun, yet losing battles to packs of Soviet medium tanks or lurking tank destroyers. First tank in the history to have automatic fire suppression system or anti-personnel mine launchers on the hull, yet fitted with box-like armor that would have been dramatically more efficient if set at angle. Initially equipped with state-of-the-art snorkeling system, yet facing difficulties mostly from snow and mud of the Soviet front.

It was a tank that triggered rushed response in Soviet army, with new guns and then new tanks being introduced, eventually leading to the development of the IS heavy tanks. And the same tank was being hunted by specialized elite



“beast-hunters” units of the same Soviet army just two years later. It was also a tank that triggered no real response with Allies, who have rightly assumed that constantly bombed German industry won’t be able to deliver a significant number of Tigers. All in all, a tank with many aspects and no simple summary.

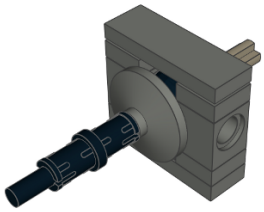
Even if its introduction to the battlefield was unfortunate, the Tiger proved its worth, especially when handled by a skilled commander. The Tigers’ death-to-kill ratio at the Soviet front averaged at 1:10, and in some areas was many times higher. It is estimated that top “tank ace” among Tiger commanders destroyed no less than 168 tanks, and a number of other commanders were credited with over 100 kills each. Among them was Michael Wittmann, know as the Black Baron, who among his several Tigers used one with 222 number – the one whose markings I’ve copied in my model. The 503rd heavy tank battalion, whose part 222 was, terrorized the Soviet front destroying 501 tanks, over 400 cannons and 8 planes (!) while losing only 10 Tigers.

At the same time, it was tank whose design simply did not meet the reality of modern tank combat, extremely costly to make and devouring enormous amounts of resources from the already crumbling Nazi war machine. It is difficult to determine where its legendary status comes from – is it the technical sophistication, the initial fear it caused, the echoes of Nazi propaganda, or maybe simply the distinctive silhouette that made it stand out among many similar-looking German tanks? The truth is, for all its status it had little impact on the war, especially next to the tanks such as Sherman or T-34.

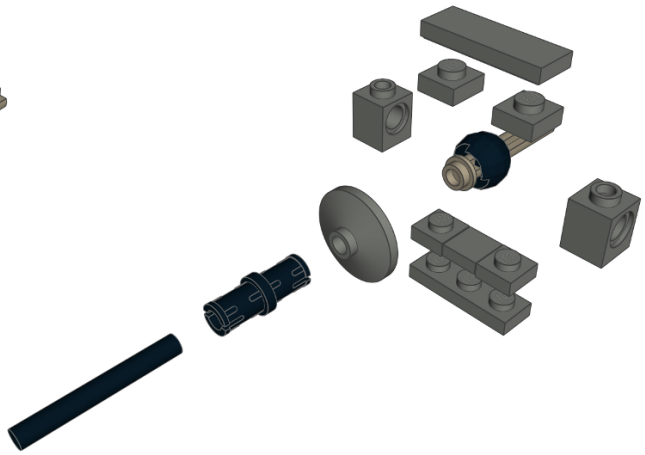
My model was based on early production version, with spare tracks on turret taken from later versions. It was built at almost exactly 1:18 scale, and it was imperfect and not fully acceptable by LEGO® purists. Long story short, I would say

MICRO BALL MOUNT

NORMAL VIEW



EXPLODED VIEW



it had 110% of the functionality and 90% of the aesthetics I was hoping for. As for LEGO® purism – it used Lifelites LEDs because LEGO LEDs did not fit inside pieces I wanted to use as headlamps, it had custom twisted strings used as towing cables, and it utilized some unusual LEGO pieces that were probably produced to test molds and were not included in any LEGO sets – for example dark grey half-pins and unpainted round minifig shields. Tired with failures to get results with combinations of LEGO pieces, I have re-created the towing catches with a single LEGO piece: the extreme link from a LEGO chain. That means that I cut off rest of the chain, but the extreme links were technically unmodified.

From the very start my goal was maximum accuracy, and to that end I've measured not only distances in the model, but angles too. Early in the building process I have dropped the idea of installing a firing mechanism in the turret, and focused on re-creating its shape faithfully instead. The functions followed a "what's the craziest thing I can do with so much space inside?" routine

As for aesthetics, there was a number of solutions I was happy with, such as the front machine gun's micro ball mount (below), but there was a number of shortcomings as well. Some of these resulted from the lack of some LEGO pieces available (e.g. gaps between plates that form turret's front, which would require a wedge plate with 1×6 slant), some resulted from the lack of LEGO pieces in specific colors (e.g. the muzzle brake would look much more accurate built around a trans-clear 1×1 brick with studs rather than around a black one), and others resulted from my running out of ideas (e.g. the lack of a crossbar holding the spare track on the lower front glacis plate).

I've spent some time trying to use stickers to mimic rubber bands on the road wheels, but the curvature of dishes made it extremely difficult, and I didn't want to resort to painting. And rightly so, because it turned out that shortages in materials forced using full-metal road wheels in later Tigers. Plenty of time was devoted to trying out various strings, because the towing cables on top and side of Tiger's hull have specific plait, color and thickness, while string manufacturers lack consistency in declaring colors and thicknesses. The thickness was especially crucial to making the string stay on the model at all. The final towing cables made me happy – they looked good, added some extra colors, and were functional: meaning it was possible to take them off, tow something and put them back on. For a time the model was fitted with black tracks to add some color diversity, but close inspection of the few color photos of the WW2 era revealed that the original tracks were anything but black. And I have very quickly decided to put a LEGO Duplo shovel on the hull's front, because shovels made with small LEGO pieces didn't look good enough to me. In the end, I tried to pick interesting details, while intentionally omitting others: for example, I have ignored a manual fire extinguisher on the right radiator and the aforementioned mine launchers because they made the hull's top look cluttered.

As for functionality, the road wheels idea that got the whole model started made suspension system not only possible, but in fact necessary – and that's because of the complex way of getting just the right spacing between adjacent wheels. It is a little known fact that there are not two but three rows of the road wheels in each track of the real Tiger – which is fortunate, as I have replaced one of them with the suspension. Since torsion bars suspension did not allow me to place the road wheels close enough to one another, I have used oscillating bogies which proved to work quite well.

The road wheels, other than being extremely difficult to come by, were also concave, difficult to mount and not exactly fitting the track. In the end, the outer wheels are a bit lower than the inner ones, with the suspension bogies tilted slightly forward, but the entire set-up worked better than expected and performed flawlessly during any maneuvers, even when driving on soft towel.

With the propulsion and suspension working just right, I have proceeded to utilize the remaining space creatively. I have installed a V12 piston engine in the back of the hull – as the

propulsion was in front, just like in the original Tiger. Eight of the engine's pistons showed when hull was opened, while the remaining four could be seen deeper, reaching deep under the turret. I have installed two Lifelites LEDs behind the engine hoping to make these four pistons more visible, but apparently it didn't help much. The V12 was driven by a 71427 motor, which was short and ran quietly, and beneath it was a PF M motor used to open up the back/top portion of the hull to display the piston engine. Since the hull's rear part was a fragile combination of plates and hinges, it was necessary to match the movement range of two small linear actuators opening it perfectly, so that clutches in the actuators stopped them from tearing the hull apart.

There was some space available on the inner "shelves" above the tracks, so it occurred to me that I could include radiators in my model. There are two radiators at the back of the real Tiger, each with two fans set at angle – I have re-created them carefully, with one fan in each radiator rotating permanently, and the other rotating occasionally, when the friction between fans was sufficient. The "fans" were actually Technic discs with fan-like stickers on them, coming from the old and rare 8269 set. Being rare pieces, they were difficult to buy, so I managed to buy the 8269's sticker sheet instead and placed the stickers on plain discs. Both radiators were driven by PF M motor located above the left track – it was not possible to drive them and the V12 by a single motor without removing either the turret's turntable or part of the V12.

Speaking of the turntable, it was rotated by another PF M motor, this time sitting above the right track. The mechanism was geared down to match the famously slow speed of Tiger's turret rotation – something that probably saved life of many Allied soldiers. There was just a single wire going through the turntable, connected to yet another PF M motor inside it. This particular motor powered a small linear actuator controlling main gun's angle. Even though the turret seemed large, I had a hard time fitting the motor and the actuator inside it, because most of the space was taken by a structure required to model the turret's outer shape.

The last mechanism was the motorized panning and tilting of the machine gun in the upper glacis plate, which was controlled by two Micromotors. Both motors were synchronized with the turret, they moved the gun using towball connections,

and their very low torque acted as a natural movement limiter. Unfortunately, this low torque also meant that the motor controlling elevation of the machine gun was getting stuck a lot – it worked fine with the gun aimed straight ahead, but not so well with the gun aimed to the side.

All in all, I was happy with the model – it was good enough to make me proud, but not good enough to make me stop trying to do better. It has also convinced me that even with over a dozen tank models already built, I can still come up with something new and innovative. On the downside, I really didn't like having two motors running all the time, especially the noisy M motor driving the radiators. It made playing with the model bothersome, it made me want to turn it off as soon as possible, and it drained the lone battery pretty quickly – which was ironically similar to the real Tiger's fuel consumption.
#

LEGO® Shipbuilding

World War II 1/350 scale replicas

By Paulo Castanho
Photos by Paulo Castanho and Lucilia Nunes

My name is Paulo Castanho, from Portugal, I´m 46 years old and one of the founders of PLUG – the Portuguese LEGO® User Group.

In my youth I build some scale models and I thought it was a good idea to build some models in LEGO at a specific scale. But I had really never tried this before. Normally my LEGO constructions are about imaginary vehicles, Adventurers Dioramas or Sci-Fi MOC´S. I had never ever built a ship with LEGO.

I choose the 1/350 scale because it is a scale used in naval models and it allows me to build big ships with some details. Ships are large, huge constructions and I wondered what they would look like using LEGO.

So, I started using LDD (LEGO Digital Designer), because it allowed me to see how to build the ships, what pieces I would need and, taking the results in consideration, it seems it was the best way to do it. And really worked out, taking an LDD project and turn it into a real object.

One of the challenges was to gather information regarding the ships. The Internet is full of data, but sometimes specific info is hard to find, especially specific dimensions.

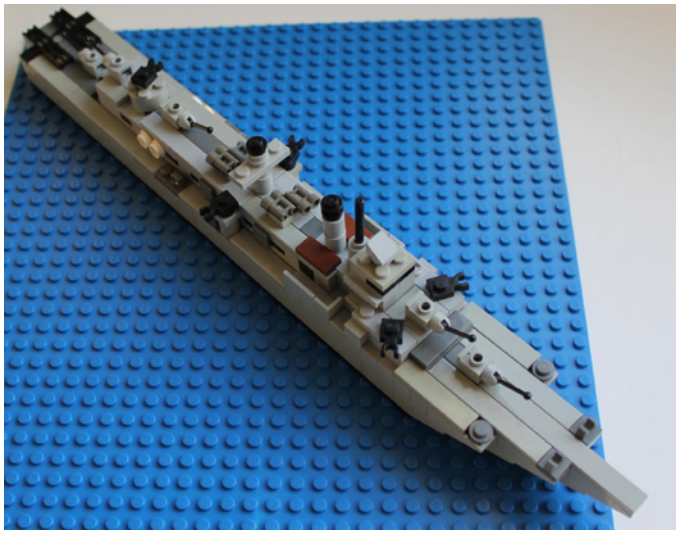
I started with overall dimensions and the general shape of the ship. After that I build the details with the help of photos. Since the ships are from the U.S. Navy, they have some elements in common, like guns, life boats, etc. so some elements are portrayed on all the ships.

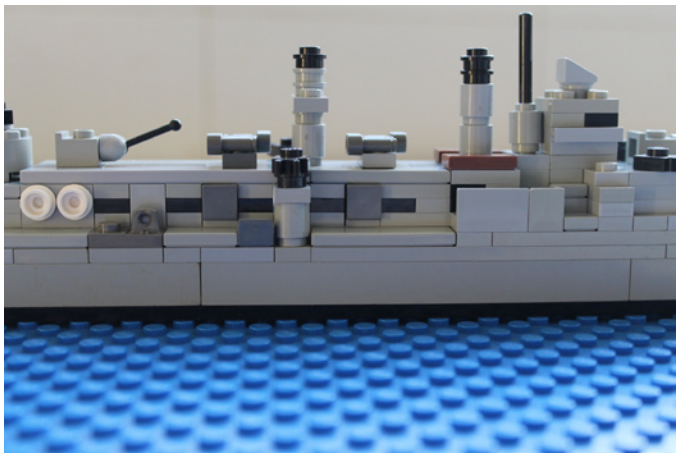
The 5 Inches guns, the 40mm Anti-aircraft guns and the 20 mm machine guns

Another challenge was to build airplanes that were in scale. In this case it wasn´t possible to build with too much detail or with a big difference between them, for example a carried airplane F4U Corsair has a length of 10,1 m and a wingspan of 12,5 m. This dimensions at 1/350 scale in LEGO represents 3,6 x 4,4 studs.

I will present them here, in the order I created them and then a diorama that honours the real ships, the human spirit that created them and a part of human history.

The first one was the destroyer. It is a Fletcher-class destroyer, the first generation of destroyers to be designed for the long range required in operations in the Pacific Ocean. Compared to earlier designs, the Fletchers were the largest class of destroyer and also one of the most popular, carrying a significant increase in anti-aircraft weapons and other weaponry. The project in LDD of this model took me about 2 to 3 week to finish. Since it was also the first time that I used LDD for a project of this magnitude I had to learn how to use it. The model have 42 x 5 studs and 300 pieces.

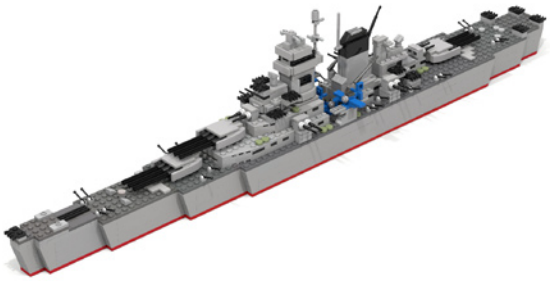


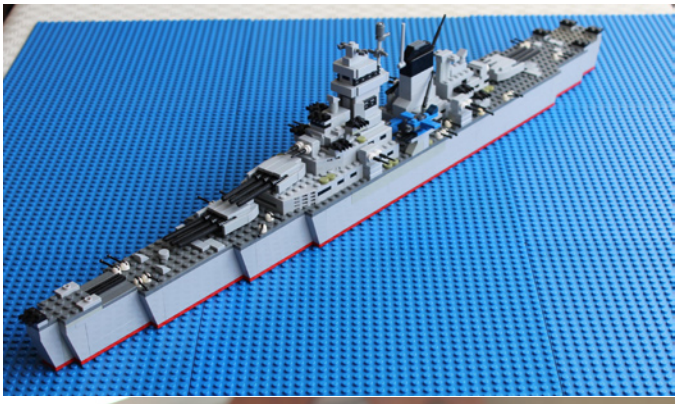


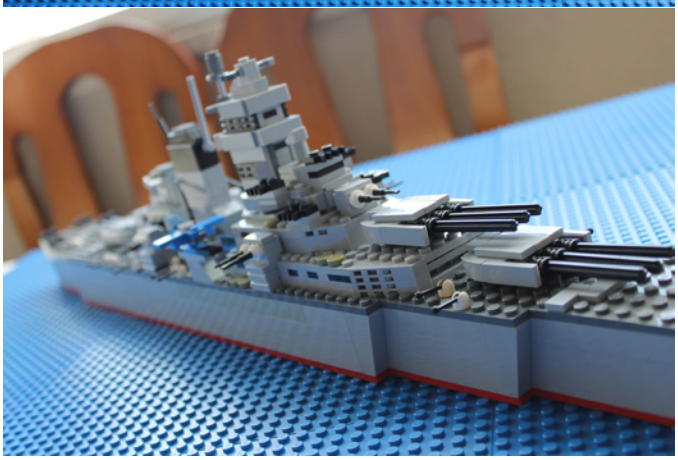
Next, I had to build a larger ship, so I decided to build the heavy cruiser Alaska. Alaska was the third vessel of the US Navy to be named, laid down on 17 December 1941, ten days after the outbreak of war, and launched in August 1943. Armed with a main battery of nine 12In (300 mm) guns in

three triple turrets. It took part in operations like Iwo Jima and Okinawa in 1945, also escorting the carriers Saratoga and Enterprise as they conducted night bombing missions against Tokyo. After the war, Alaska served in China and Korea, being decommissioned in February 1947 and placed in reserve, ending up being sold for scrapping in 1960.

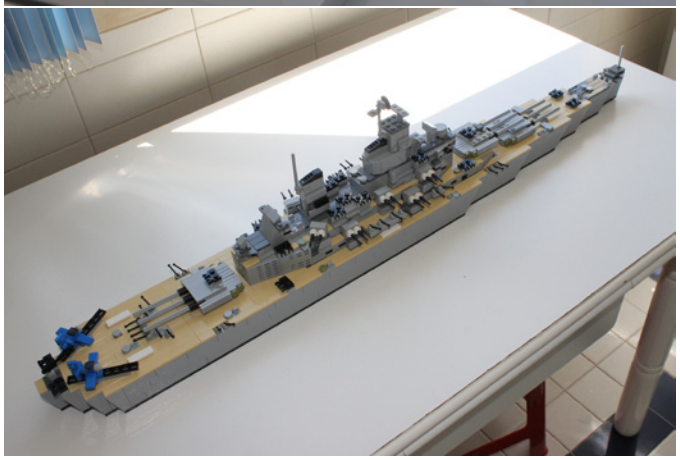
The Alaska model took me about one week, and it consists of 750 pieces with a size of 92 x 10 studs.



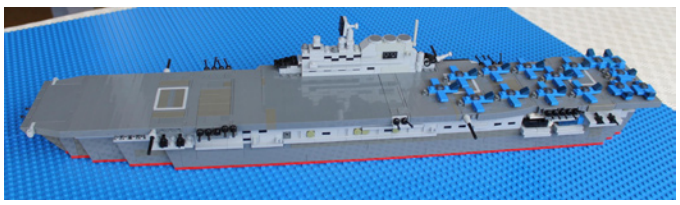




The major challenge was to replicate the small details and make them recognizable to those who look at the construction. The battleship USS Iowa, Iowa-class, really fulfilled these requirements, because when I exhibited it, most of the people recognized it as being the Iowa or its twin, the Missouri.
Built in 1940, it served for over 50 years, named as “World’s Greatest Naval Ship” due to her big guns, heavy armour, fast speed, longevity and modernization. No other battleship has been host to more U.S. Presidents than the IOWA. Launched to the sea in 27 of August 1942, it is now in a museum, since October, 1990, in the Los Angeles harbour docks.
The project of the Iowa took me about 1 to 2 weeks. The model is 100 x 12 studs and has 1300 pieces.

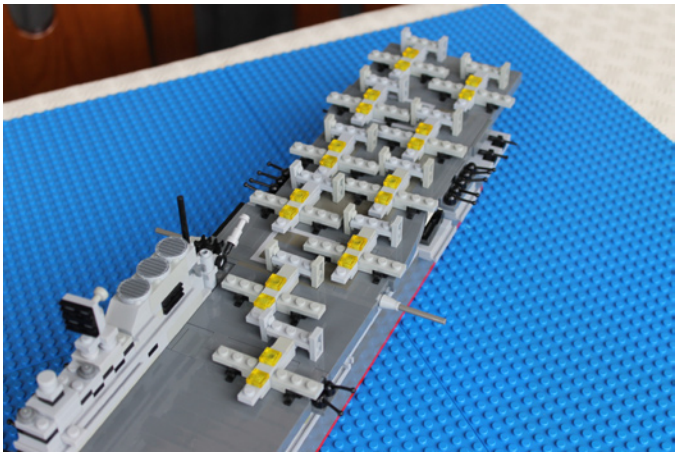


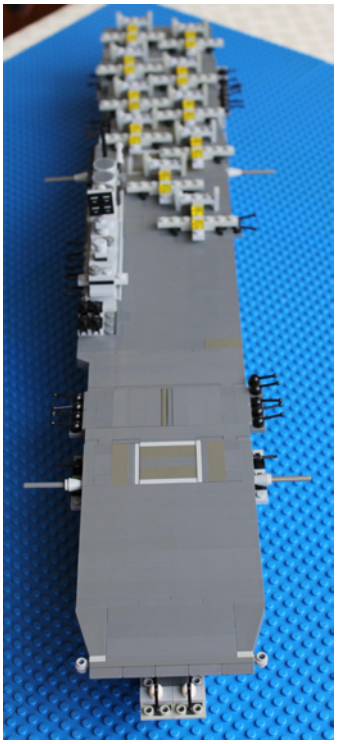
By this time, I was ready to face the challenge of building the Yorktown class aircraft carrier - the Enterprise and the Hornet. The Enterprise was assigned to the invasion of Guadalcanal and participated in the preliminary strikes. It was repaired from damage after the Battle of the Eastern Solomon’s in time to join the Hornet in the Battle of the Santa Cruz Islands. The Hornet was severely damaged and had to be abandoned, sunk there. The Enterprise was again damaged during the battle, but was repaired enough to participated in the Naval Battle of Guadalcanal. It was the sole survivor of its class, it became the ship to receive the most distinctions in the history of the U.S. Navy, and was scrapped in 1960.
Building the deck in snot, was the only way to represent the elevators that carry the plains from the hangar to the deck. The airplanes with their wings folded to occupy less space was another challenge.



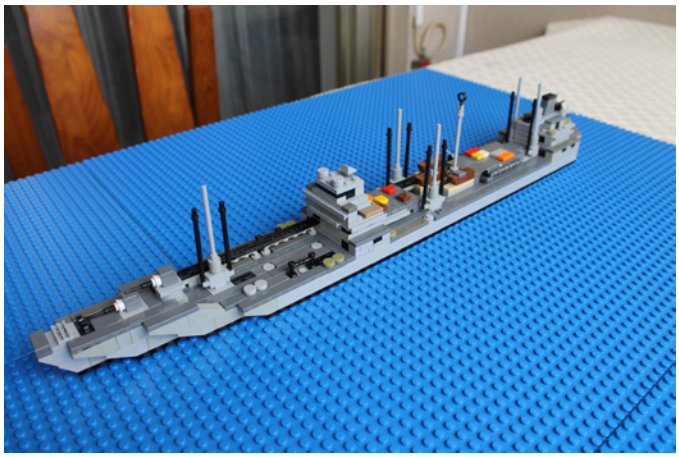
The difference between the aircraft carriers was the plains they carried on the model - the Hornet had B-25 medium bombers, used in the Doolittle Operation and the Enterprise a normal squad of carried airplanes.

The project of the model took me 2 week to complete and during the constructions some details were altered. It is 88 x 13 studs and uses 1060 pieces.





To make a diorama of a fleet, it is clear you need a fleet oil tanker – so I built the Cimarron, launched on 7 January 1939, and sold for scrap in 1969. Like the Enterprise and the Hornet, it participated in the Doolittle Operation.
This model took me about 10 hours of work, and measures 66x8 studs and contains 560 pieces.



It is quite amazing when you start with an idea - like “what if”... I build some WWII ships?. And then you go to LDD designs and look (and painfully wait) for the pieces, and, slowly, you can experience the metamorphosis of a thought into a diorama.

To give some extra detail to the diorama I placed some airplanes flying over the fleet.
#

LEGO® Therapy

By Ashley Green and Jenny Smart

Ashley Green has been running LEGO® Therapy sessions at Cruckton Hall School near Shrewsbury, England since 2008. Until recently, Jenny Smart was his teaching assistant. One of Ashley's students, 13-year-old Thomas Herbert-Jones (pictured above between Ashley and Jenny), is now acting as his assistant. Jenny is now a support worker in a college for young adults with disabilities, and is also studying for a BA (Honours) in Childhood and Youth Studies. Ashley has been a MINDSTORMS enthusiast since 1998 and served on the MINDSTORMS Developer Program for the NXT robotics system in 2006. He is a LEGO Education UK Ambassador and has been heavily involved in both FIRST LEGO League and RoboCupJunior for the past decade.

What is LEGO Therapy?

LEGO®-based Therapy[1] is a social development intervention for children with autism spectrum disorders (ASD)[2]. The goals of LEGO Therapy for such children are to:

· Improve their motivation to initiate social contact with peers
· Improve their ability to sustain interaction with peers for a period of time
· Overcome their autistic symptoms of aloofness and rigidity

LEGO Therapy was originated by Daniel LeGoff in the US and researched by Gina Gómez de la Cuesta, Simon Baron-Cohen and colleagues at the Autism Research Centre, University of Cambridge[3]. Daniel, Gina, Simon and G.W. Krauss have recently published a guide[1] to facilitate the implementation of LEGO Therapy. (G.W. Krauss and Daniel LeGoff have also recently established a LEGO Therapy website[4] for professional therapists.) LEGO Therapy encourages ASD children to communicate with one another and solve a problem by building in pairs or groups of three, according to set rules. When working together in pairs, the 'engineer' gives verbal descriptions of the pieces needed and directions for assembling them. The 'builder' follows directions, and collects and puts the pieces together. There is much checking back and forth between the plan and the creation. Roles are then switched so

they both have a chance to be 'engineer' and 'builder'. This division of labour with a common purpose allows students to practice joint attention, turn taking, sharing, joint problem solving, listening and social communication skills.

When working together in groups of three, the 'engineer' describes the instructions, the 'supplier' finds the correct pieces and the 'builder' puts the pieces together. After a time, they swap roles. Owing to his background in robotics education, Ashley favours the use of the LEGO MINDSTORMS NXT and EV3 systems, and LEGO Education WeDo (for younger children), so the three roles tend to be those of 'engineer', 'builder' and 'programmer'.

The therapist's role is not to point out specific social problems or give solutions to social difficulties, rather to highlight the presence of a problem and help children to come up with their own solutions. Solutions that children have come up with are practised until they can do them, and the therapist can remind children of strategies in the future if similar difficulties arise.

All LEGO Therapy sessions have these rules:

· Build things together!
· If you break it you have to fix it or ask for help to fix it.
· If someone else is using it, don't take it – ask first.
· Use indoor voices – no yelling.

· Keep your hands and feet to yourself.
· Use polite words.
· Clean up and put things back where they came from.
· Don't put LEGO® bricks in your mouth.

Cruckton Hall School[5] uses a "green/amber/red" behaviour reporting and reward system and the boys usually strive to deserve a green lesson report from Dr Green!

The 'LEGO® Club' Level System

The recently published "LEGO®-Based Therapy" guide[1] identifies the following skill levels:

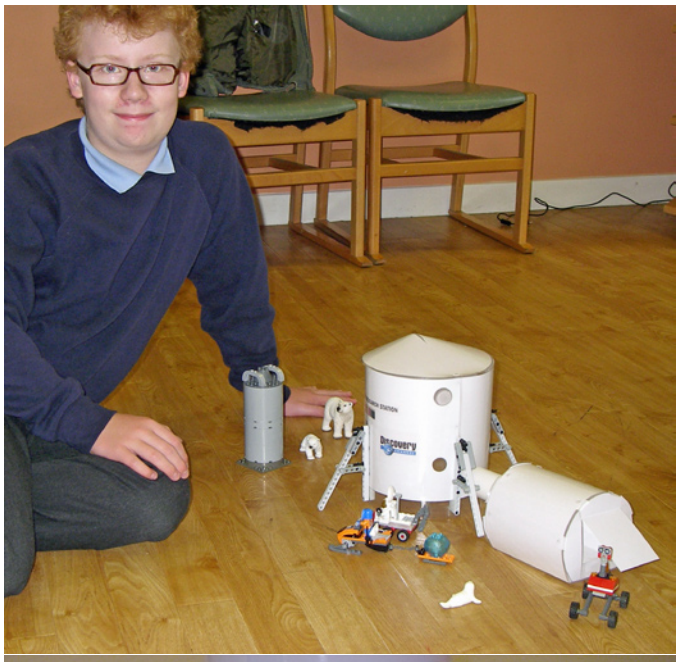
· A 'LEGO Helper' can find bricks and sort them into their correct colours.
· A 'LEGO Builder' can build models in a group and design freestyle models with adult help.
· A 'LEGO Creator' can build models in a group and design models without adult help.
· A 'LEGO Master' can direct a group project by assigning tasks and roles to group members, and enlisting support from outside the group.
· A 'LEGO Genius' can write a movie script or story and translate it into a LEGO stop-motion animated short film.

Once students can demonstrate skills at a particular level, they should be given a certificate to reward their achievement in front of all the students. If certificates are awarded on an individual rather than a group basis, students should be highly motivated to participate socially and build models together so that they can move up to the next level.

LEGO City Arctic Young Explorer

The recent LEGO City Arctic Young Explorer competition provided an opportunity, near the end of the school year, to try doing something different. The challenge was to design a brand new piece of Arctic equipment that would help an explorer survive an icy adventure. The boys were shown a video about the Flashline Mars Arctic Research Station (FMARS) on Devon Island in the Canadian Arctic, which inspired two of them to prepare entries. Only Thomas completed and submitted his. Thomas's idea was to add a 'garage' to FMARS, linked to it via a tunnel. The 'garage' could house one or more remotely-controlled robots for exploring nearby Haughton Crater, and could also serve as an alternative means of access to FMARS. Ashley helped him build a 1/40th scale model of FMARS and its 'garage'. Thomas arranged the FMARS and LEGO models for the photos which he submitted with his competition entry.

The competition winner was announced[6] in mid-September. His winning idea was for an ingenious 8-in-1 Arctic sled with built-in fishing rod, ice saw, snow shovel and ice axe. The Arctic sled can also be transformed into skis, a snowboard, or a towable sled!



Current and Future Activities

Ashley will be experimenting with the new LEGO Fusion Battle Towers[7] when it becomes available in the UK. He has supplied photographs and an Acquired Materials Release form to the producers of the film "BEYOND THE BRICK: A LEGO BRICKUMENTARY" due to be released next Spring, so you may glimpse a photo of Thomas in that documentary!

When we helped run the RoboCupJunior[8] UK Finals in Warwick last year, Jenny noted that competing in a robotics competition would be a good experience for some of the boys at Cruckton Hall School, so we proposed the formation of an after-school LEGO Club to provide the additional time needed to prepare for competitions. The new Club will start meeting on Tuesday afternoons in the New Year, and will provide an opportunity for some of the boys to build a long-planned 1/40th scale LEGO model of Cruckton Hall for display in the school's reception area.

Ashley is currently mentoring an FLL Team at his local primary school in Shrewsbury. They're collaborating (via Google Groups and email) with FLL teams at Wooranna

Park Primary School (WPPS)[9] in Victoria, Australia, on this year's FLL World Class challenge[10]. That school's principal, Ray Trotter, is pioneering the use of Stimulating Learning Platforms and Enigma Missions[11] in school teaching. Thomas and his music teacher are advising WPPS's "Team Failure" who are researching the FLL project question "How can music be used to help teach autistic children to perceive facial expressions?". Ashley's FLL Team are researching the FLL project question "How could we improve the way that someone in Year 6 learns physics concepts?". WPPS staff are advising him about the astronomical software they use in their Stimulating Learning Platforms and Enigma Missions.

Some of Ashley's LEGO® activities are detailed on LEGO Education UK's BrickByBrick website[12].

[1] "LEGO®-Based Therapy" by Daniel B. LeGoff, et al., Jessica Kingsley Publishers (2014).
[2] HispaBrick Magazine® 013, pp30-33.
[3] www.autismresearchcentre.com
[4] www.legotherapy.com
[5] www.cruckton.com
[6] www.lego.com/en-gb/campaigns/youngexplorer/arcticcity
[7] www.youtube.com/watch?v=A66cxeqkOpk
[8] http://rcj.robocup.org/
[9] http://woorannaparkps.com.au/?page_id=31
[10] www.firstlegoleague.org/challenge/2014fllworldclass
[11] https://fuse.education.vic.gov.au/pages/View.aspx?pin=P5NPCQ
[12] http://legoeducationuk.wordpress.com/tag/ashley-green/
#

Designing parts

Interview with Julian Charity

By HispaBrick Magazine®

Many times we have seen the machines and molds that manufacture our beloved bricks. LEGO® has given us a fantastic opportunity to speak with Julian Charity, CAE engineer, who tells us in more detail about all the technical effort behind the design of a new part.

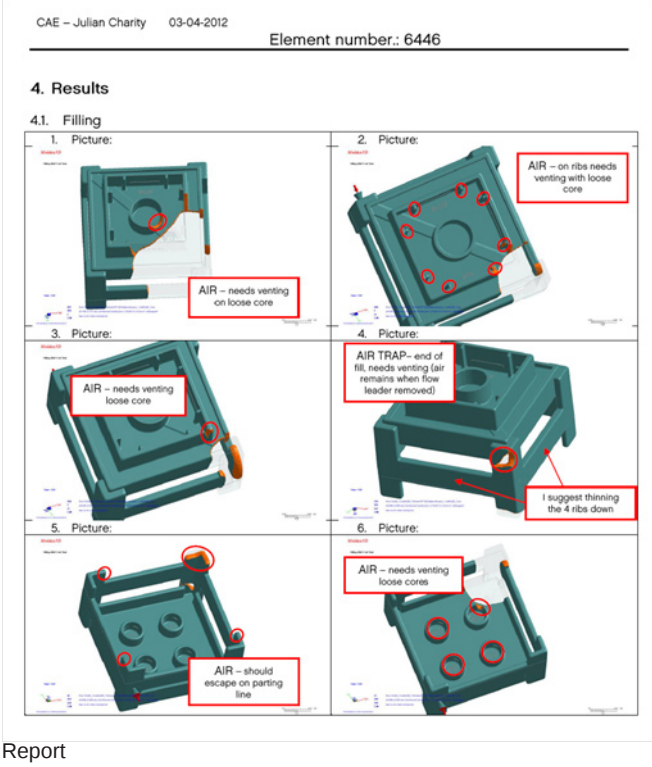
HBM: Which department is in charge of designing new parts?

JC: The department I'm in! Part Design – this department helps take the sketches and ideas from our LEGO designers from concept to reality.

HBM: How many people work in the department?

JC: Part Design as of right now has 80-100 (we are growing all the time!) I work in a specialist team of 6 people within Part Design called CAE, every new part design to be made in Billund has to go through a computer simulation by the CAE team.

HBM: What is your role in the department?

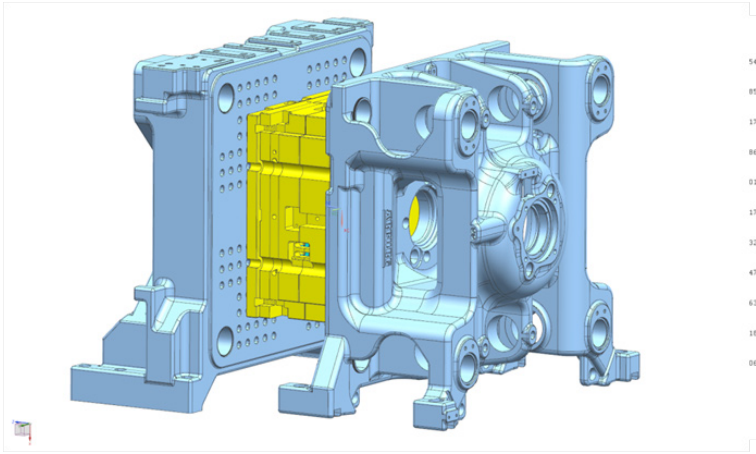


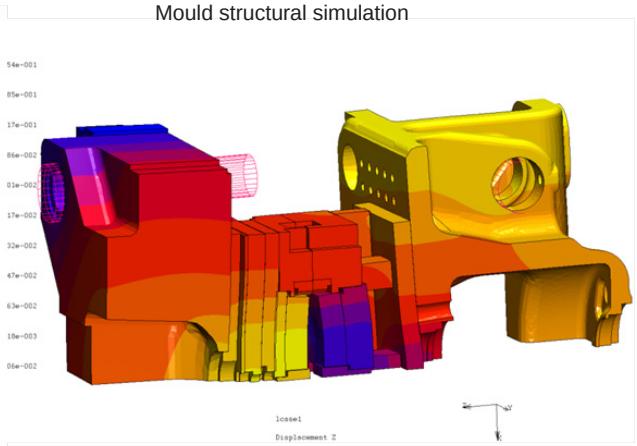
Report

JC: CAE- Computer Aided Engineering – once a part is designed by the Part Designers in our CAD program, I help to ensure that the part quality is ok before it goes to tooling and manufacture. I do this by conducting filling and structural simulations using our specialist computer software. This helps to ensure that the part is moulded correctly in manufacturing and that people using our bricks can't seriously injure themselves.

My role is to predict where the air needs to escape from the part cavity once the mould is shut and plastic starts filling the void, I also look at the pressure it takes to fill the mould with plastic, these predictions assist the toolmakers in the tool design. Moulds have cooling water running around them when manufacturing the bricks to maintain the correct temperature, just like a radiator passes water around your car engine block. I often help with the cooling system layout and predict how the part cools when going from liquid to solid plastic.

Of course a single mould can make a lot of bricks every time it opens and shuts. I help with the runner system layout to ensure that all those bricks finish filling in the mould at the same time so they shrink and cool at the same time and are therefore same shape.





Mould structural simulation

I also conduct structural analysis on new part proposals, we can use this program for a lot of things, originally it helped NASA in the early space program, but here at LEGO® today it helps me predict the forces with which new parts will shoot, clip together, including how, when and where parts could break. Importantly it helps ensure that we exceed the Toy Safety Standard legally required. There is of course no point spending a lot of money on a mould, making some parts and then finding out that they break during regular play. Likewise, if there is a problem with the part design the mould maker would have to correct the shape of the cavity that makes the brick anything from not just once but let's just say many times in certain moulds! That can cost more time and money to fix than the mould is worth and you end up with a very expensive paperweight. ;-)

HBM: Who proposes the idea/need for new parts?

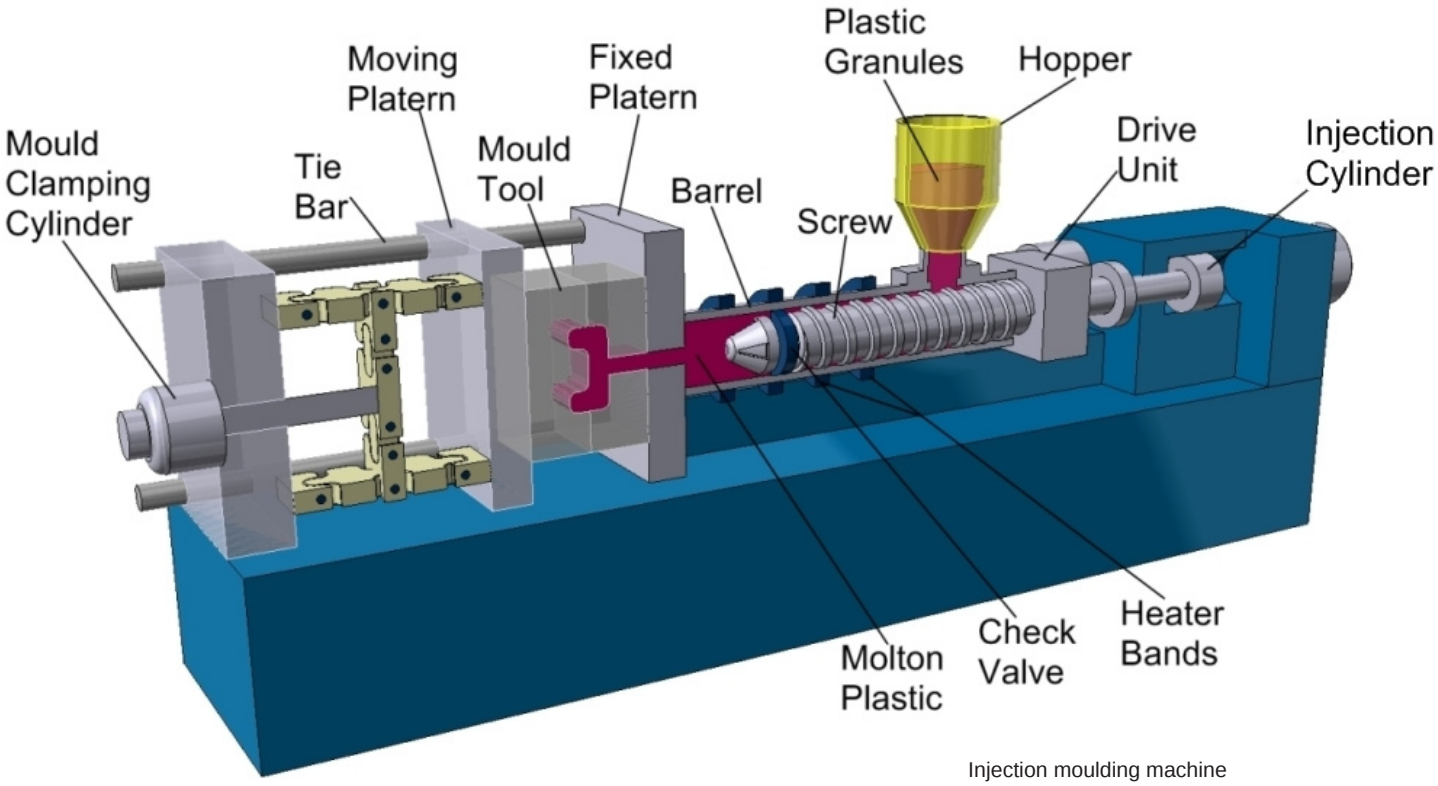
JC: The designers. We have a lot of bricks to chose from in the LEGO system. However sometimes a designer will struggle to make a new LEGO set or function without a new type of brick. The designers will propose which new bricks to put in the LEGO system each year. Of course we have to ensure a similar brick doesn't already exist in the system. We also work a lot with what we call novelty parts, these are items that add detail to the play/building experience.

HBM: What steps do you follow from the initial idea to the final part?

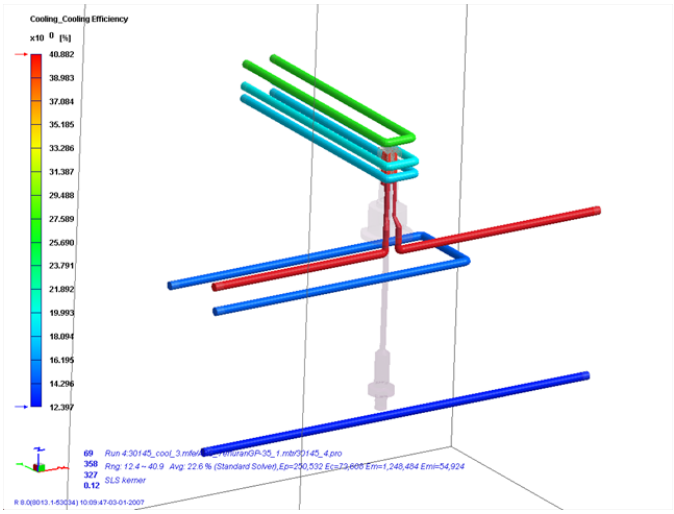
JC: An idea, a sketch, some basic CAD and rapid prototyped models, part design CAD, CAE simulation, a prototype mould, product safety and quality checks, ending in a full production mould. We are quite thorough!

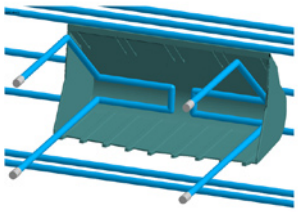
HBM: How long does this process usually take?

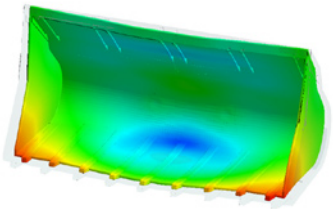
JC: It depends on the part! Some simple parts could go from a sketch to being in the box in stores in 6 months. Some projects involving new clips or shooting mechanisms can go through several stages and redesigns and take well over a year. Sounds like a long



Injection moulding machine







time doesn't it? But we can sometimes manufacture the mould that makes the part in just a few weeks… so there are a lot of processes either side.

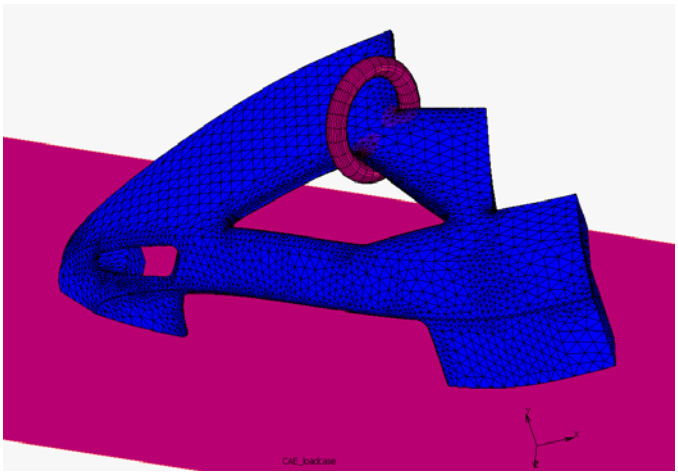
HBM: What kínd of tools do you have for the design of the parts?

JC: As you can imagine, a company the size of LEGO® has some pretty amazing tech. SLA & SLS rapid prototyping, including DMLS (rapid prototyping in metal), 3D scanning, we even looked at buying a CT scanner! The moulds that make the bricks are made using high speed milling and spark erosion which involves passing electric current through copper in a bath of oil to slowly erode away the metal to the shape you want. We also use MIM (metal injection moulding) to internally manufacture some common parts in steel for use in our steel mould construction, not many companies have this technology right now.

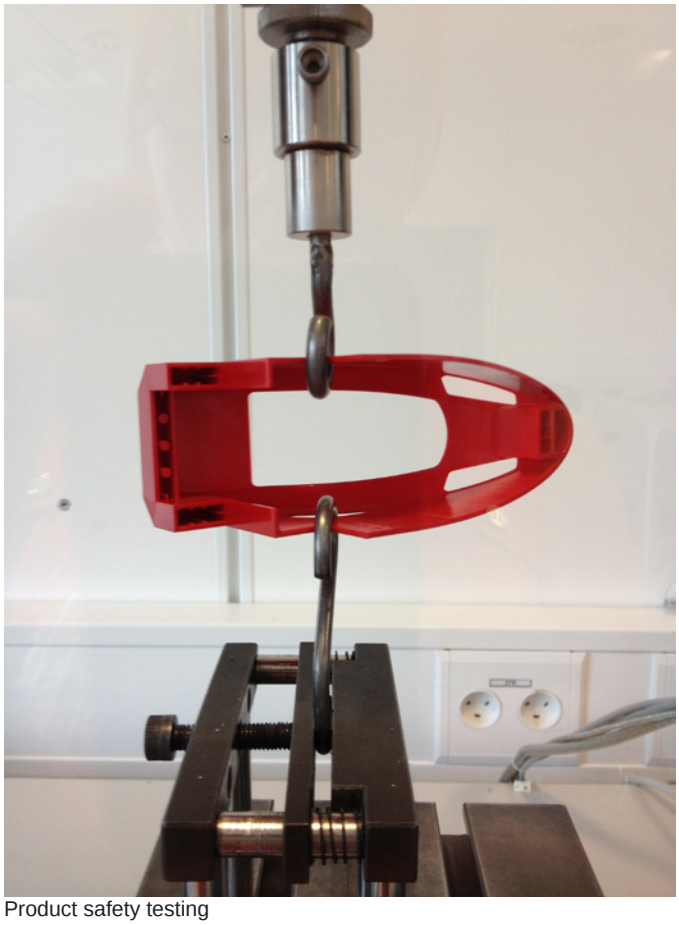
Specifically in CAE we currently have 3 computer servers each with 8 CPU's running simulations 24/7, this allows us to run well over 1000 simulations a year. My job relies on simulating on computer what will happen in reality. Predicting the future if you like. Of course we are constantly looking back and benchmarking our simulations against what actually happened in real life. I was recently involved in a project where we made a mould with a glass window in it so we could actually see inside the mould as the plastic ran around it, we filmed it with a high speed camera and compared it to our computer simulation. There are a lot of exciting engineering projects here at LEGO.

HBM: What are the main factors you take into account to decide if a new part is necessary?

JC: The designer and marketing teams have to try and predict how many boxes the proposed new part could



Product safety simulation



Product safety testing

be used in and how many of those boxes might be sold. Sometimes we will slightly redesign an old part when the mould has reached the end of its life.

HBM: How many new parts are designed each year?

JC: This of course changes year to year but this year around 300-350 new parts.

HBM: Is there a different design process for transparent parts?

JC: Not so much. We use several different types of plastic at LEGO® and each type has different filling properties. Most of our transparent parts are made in PC or HVPC plastic which has its own specific handling characteristics, there are limitations to the part thickness and size in this material. It's quite a hot plastic when liquid, it goes in to the mould at 320 degrees C! Usually our transparent parts are very opaque and have a nice polished finish to them, in order to achieve this the mould also has to be polished to a near mirror finish.
HBM: And for Technic parts?

JC: Nope, all LEGO plastic bricks whether is it Technic, Duplo, Mindstorms etc are manufactured using injection moulding. Some of our more interesting parts are made using techniques like overmoulding and co-injection.

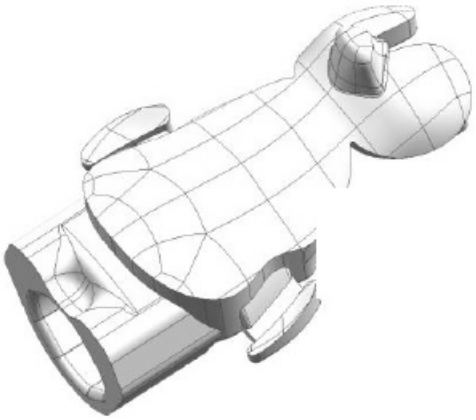
HBM: What factors influence the substitution of an existing part with a new part?

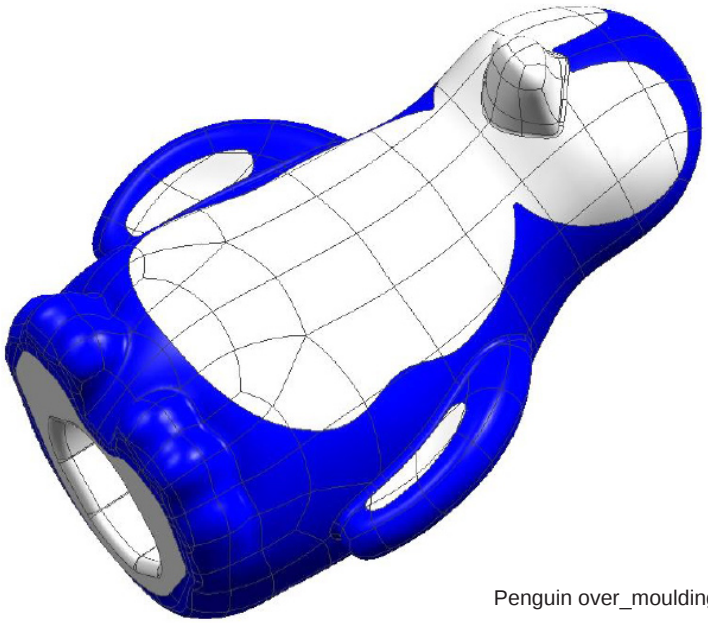
JC: For our most common mass produced parts we kind of have a one in one out policy if you like. The same with new colours. This prevents things from getting too complex in mass manufacturing.

However for a new movie IP such as TMNT or a newly developed line like LEGO Friends we will create a lot of new part designs, wigs, animals, heads etc these are called "novelty parts" internally at LEGO.

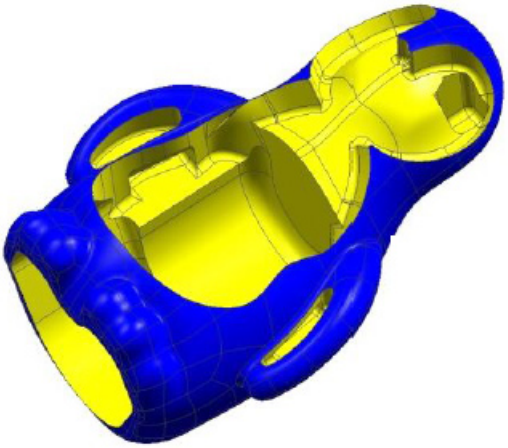
HBM: Do you bear in mind the suggestions you receive from AFOLS? Do you have anything to say about the much desired plate with studs on both sides?

JC: Well we have a lot of AFOLs working at LEGO of course! Technically a part with studs on both sides would be easy to make. I'm sure if enough people keep requesting it LEGO will look in to it. AFOL power! New parts have to be compatible with all our other LEGO parts. That's why LEGO is so great of course. We have a department called Design Lab here in Billund, a lot of LEGO employees call them the LEGO police because they enforce and ensure that the LEGO system is upheld. That way all our parts remain compatible and can continue to be combined in so many different ways. #





Penguin over_moulding

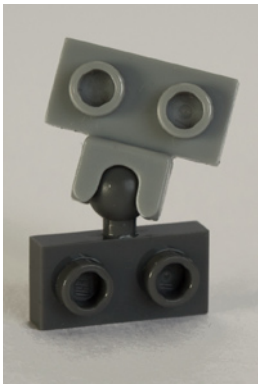


2014: a year in parts

By Tim Johnson (New Elementary)

This year, TLG have once again introduced lots of interesting, useful and downright strange new parts. I'll ignore the strange ones… mostly… and tell you which I think are the most interesting and useful ones to have in your collection.

14418, 14419 & 14704



The most 'gamechanging' new parts of 2014 were the family of cup connectors, which bring poseable joints to far smaller models - like the first sets these appeared in, the Chima Legend Beasts. TLG had been fiddling with these designs for years, and what a great final result. Surprisingly (but usefully) the studs are hollow; something TLG have avoided wherever possible in recent years.

My favourite aspect to them is that the corresponding ball size is the same size that TLG have been using for decades, so all older ball parts can be used with the new cups to achieve friction. Bring out your maxifig hands!
Next year I would love to see these same parts with the cups rotated by 90°, in case you require joints to move in the other direction.

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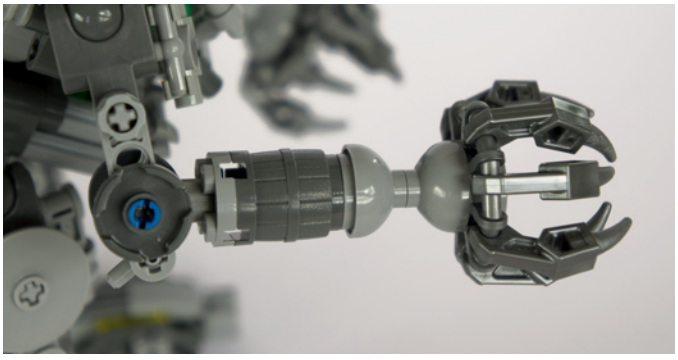
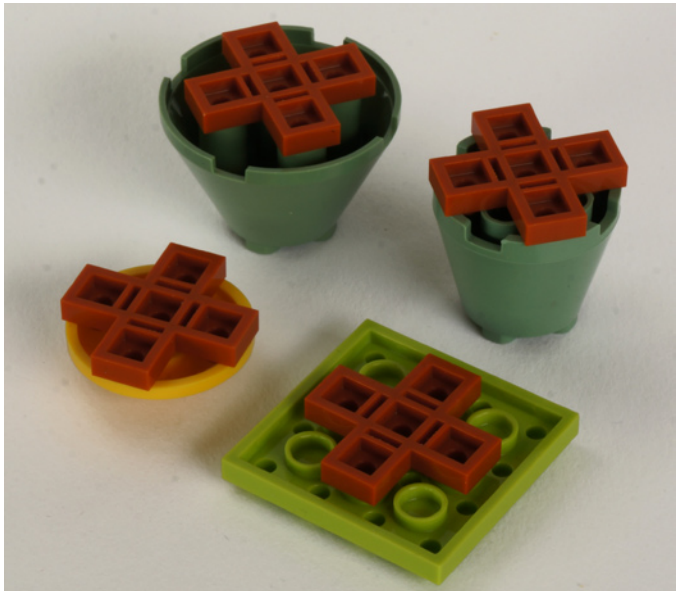


An inverted dome! It's an unusual shape in LEGO and I can't wait for more colours than the four we have so far. I've found all sorts of uses for it already – as have TLG: a flowerpot, a bomb, a fountain bowl, a stool, a method of keeping removable rooves in place, a giant toilet plunger, the part of an Exo Suit arm that isn't a barrel and,as ever thanks to Friends, a toilet bowl.

15397

The symmetry of the new 'cross plate' is enough to make me love it, but at first I did wonder as to how useful it was. TLG use it exclusively in Friends sets at the moment and almost always for trees: it's perfect for locking down all those unsteady half-arches that make up trunks. So why TLG chose Dark Orange over Reddish Brown is mysterious– I hope we see more colours at some stage. It also fits nicely in the underside holes of certain parts, pictured here - the 3x3 dish being my favourite.



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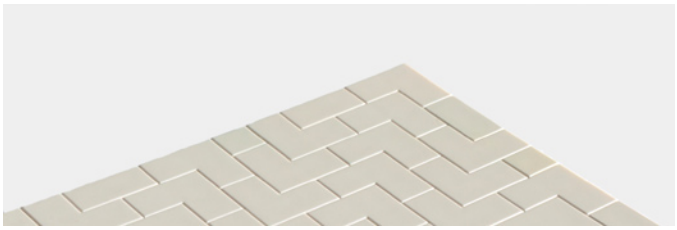
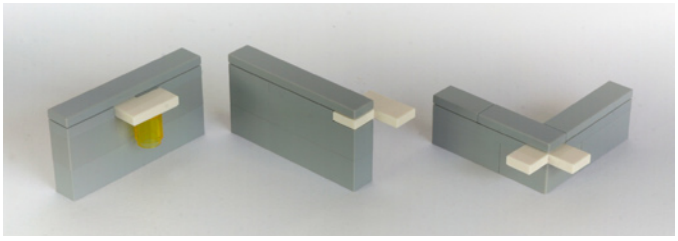


Again, many AFOLs commented that a corner tile is a wholly unnecessary part, but I disagree. If you're topping a wall that is one stud wide with tiles, this adds a lot more strength to the corners. Purely visually, it's a lovely piece to use in a model (but currently only comes in White and Light Bluish Gray). Or if for some reason you wanted a tile to project outwards from a wall, the corner tile offers some unique options.



15070

TLG have gone crazy for teeth and claws in 2014. I'm not a big fan of such parts but have to admit new releases like 15208 and 15209 are interesting, however the one that's made my list is 15070, which so far comes in White and Yellow. Shaped like a bracket, it lays a vertical tooth over the front of a brick, which can produce several interesting effects. The shape of its top side is very unusual too.

11214

We all have those frustrating moments during builds when we find ourselves saying "why don't TLG make the exact part I need for this situation?!" Well this is definitely one of those parts; a double-length Technic pin with axle at the other end. Clearly TLG often find themselves in that situation too, as it's already used in 23 sets… even a Friends one!

15100

More lovely Technic, and even simpler: a pin with a hole at right angles…not much to say about this except: why wasn't it introduced a long time ago?!

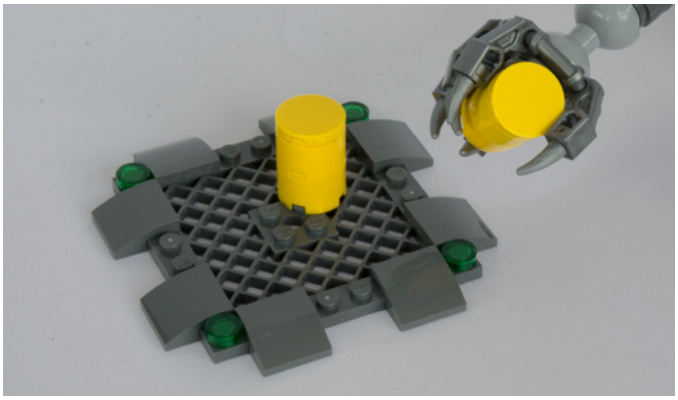
15279

New plant parts don't come along very often, so whilst the unusual shape of this one wasn't to everyone's taste, it was certainly welcomed nevertheless. These already come in three shades of green. I love its decorative shape which reminds me of the Art Nouveau style. TLG made the part infinitely more useful by including a hole that fits a bar, created by the curl of the tip.

15470

Although small and merely decorative, this swirly part has many uses. In Bright Pink or Reddish Brown it's a yummy cupcake and in Pearl Gold, a grand architectural finial. But TLG's nicest piece usage yet was the Flat Silver one in the citrus press from Heartlake Juice Bar!

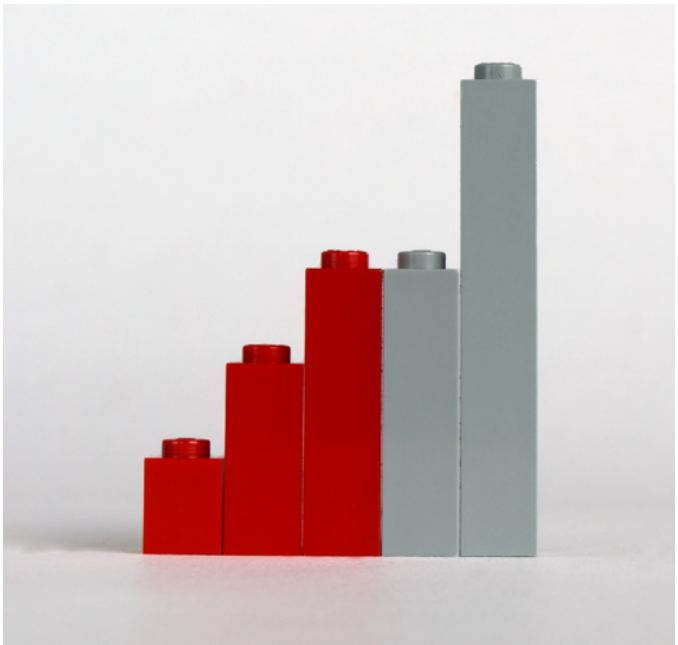
15068



A big sister to the baby bow appeared this year! In 2013 the 1x2 curved slope proved to be an extremely popular new part, and so the extra stability of the new 2-wide version is very welcome. It is both beautiful – as evidenced here by the grille platform in Exo Suit – and functional, being a quick and discreet way of fixing a plate to one below. No surprise that it's already included in 45 sets, in 9 colours!

14716

No doubt there are some that complain that parts like this 1x1x3 brick are responsible for the "dumbing-down" of LEGO®, since you can make one of these out of three 1x1 bricks. Personally I find aligning a stack of 1x1 bricks about the most tedious LEGO task around and so I love these handy little fellows, and the finished effect looks much cleaner which is especially good for microscale. At time of writing, there are already six colours available, of which you see Red and Light Bluish Gray pictured here alongside 1x1 bricks of other heights.



15444

Also shown in the above picture is a Red 1x1x2 brick, known as the 'Piece of Resistance' from The LEGO Movie – or simply the 'Emmet brick'. It comes in Flat Silver too. I feel confident in claiming that this part would never have been designed had it not been needed for the movie. What makes it so very odd is the anti-stud hole on one side; LEGO parts rarely have these – the Erling brick and the inverted 75° slope being two notable exceptions. But what's even stranger about this hole is its alignment: the hole sits one plate lower than you'd expect.

It was designed this way so that it looked right when attached to Emmet's back and somehow I enjoy the quirkiness of the design, but you're unlikely to find many build scenarios where you specifically need this brick. However, ignoring the hole, a 1x1x2 brick is very nice to have, for the same reasons as the 1x1x3.

15706

The "A-plate" nearly didn't make my list. Surely we can just use hinge plates? And it's ugly. But I've relented and included it because I recognise I'm being a bit grumpy. It's certainly an interesting piece and rapidly creates strong support for 45° constructions. The cross supports are cleverly designed to avoid the possible presence of studs on plates attached below and can be made a decorative feature of, such as Black wings on little Ninjago craft… or even this Medium Lavender sign from Heartlake Mall!
#

LUGs of the world: LUG-Perú

By HispaBrick Magazine®
Pictures by Alvaro Obregón Candela

The LEGO® fan user groups phenomenon is very recent, mainly when we talk about adults fans of LEGO (AFOLs). Some, very few, LEGO user groups have been active for 15 or 20 years, but the rest of the LUGs are very young. Internet was the main course to gather hundreds, and then thousands of AFOLs that began to create a great number of LUG all across the world. Many AFOLS realized that they not were alone with their love for these small plastic pieces, and they began to contact other AFOLs, and so many of the LUGs of the World were created.

This is not a local phenomenon, although there are some very well known LUGs due to their size or activities, the main part of these LUGs are small or not known to the rest of the community. Each LUG has its own history, and its members have faced many different situations before getting the status of LUG. But all of them have one thing in common, their love for LEGO constructions. The LUGs had become the gathering point of countless AFOLs who want to share their constructions with other builders. We looked at one of these LUGs on the other part of the world, and we found LUG Perú[1], a small and young LUG whose members were able to gather and create a LUG that within a couple of years has organized its own event and has become involved in many activities. We contacted Álvaro Obregón Candela, the LEGO ambassador of LUG Perú and asked him to tell us a little about the origins of LUG Perú.

HispaBrick Magazine®: When did LUG Perú get started?

Álvaro Obregón Candela: LUG Perú is the first LEGO User Group of Perú. It is mainly focused on adult fans of LEGO (AFOLs) and it was founded on march 21st, 2011, when we created our first web page on Facebook.

HBM: How did LUG Perú get started?

AOC: In the beginning, the club was called LEGO Perú, because the idea was born when several clubs related to different themes were created with this kind of name (Marvel Perú, DeviantArt Perú, etc.). The absence of a LEGO club in Perú trigger the creation of the LUG. Our web page began to be known and we were joined by many collaborators, those were the first members of LUG Perú. We were lucky to contact with many other AFOLs, both inside and outside Perú. So we met our friends of LUG Brazil in 2012 who were kind enough to help us in many aspects related to the LUGs and their activity. Then we were contacted by Chile LUG in 2013 and we have a very good relationship with them.

HBM: How many members does LUG Perú have?

AOC: Now we are 45 registered members in our virtual group, but only 20 of them are regular collaborators in our events or in our meetings.

HBM: Are there any other LUGs in your country? Do you have contact with them?

AOC: There are several LEGO® clubs in Perú, but they are mainly focused on educational robotic contests with LEGO® and they are restricted to school and university students. When we began our LUG and became known, we were contacted in order to take part in the FLL (First LEGO League) and the WRO (World Robot Olimpiad), because they believed that we were another unregistered club related to robotics, so I called them to explain that we were a club of a different nature.

HBM: Do you organize events or exhibitions?

AOC: Our first public exhibition took place in the Lima Comics store. It was a LEGO Star Wars™ exhibition within the JediFest 2012 event. Then, we organized our first event. This took place on April 13th, 2013. There were 12 attendees of our LUG who worked together in order to carry out all the elements of the exhibition. That year we held another event in June and we took part in the Lima Brick Fest in August 2013. This year 2014 we have done 3 different events, 2 of them were Star Wars™ related exhibitions, and the other one is our main LEGO event, called Expo LUG. The Expo LUG 2014 was held in May of this year.

HBM: Do you have contact with TLC (The LEGO Company)?

AOC: We are now an official LUG, the third to be acknowledged by the LEGO CEE TEAM in Latin America. We are already active in The LEGO Ambassador program since November 2013.

HBM: Which is your role in LUG Perú?

AOC: I've played different roles. My first task was to manage our web page. Then things changed. I began to attend events and with the help of other members of the LUG we began our own events planning, so we needed to promote our LUG in order to grow and increase the members of our LUG. Now I'm the LEGO ambassador of LUG Peru in The LEGO Ambassador program and I'm also deputizing for the LUG with the different institutions we are in contact with and TLC. I have also taken part in the working team in charge to elaborate a list of the companies and services involved in the LEGO Ecosystem Business & Services Project and I was responsible for coordinating our LUG involvement in the Mr. Rebrick Challenge.

Referentes: [1]: https://es-es.facebook.com/LugPeru
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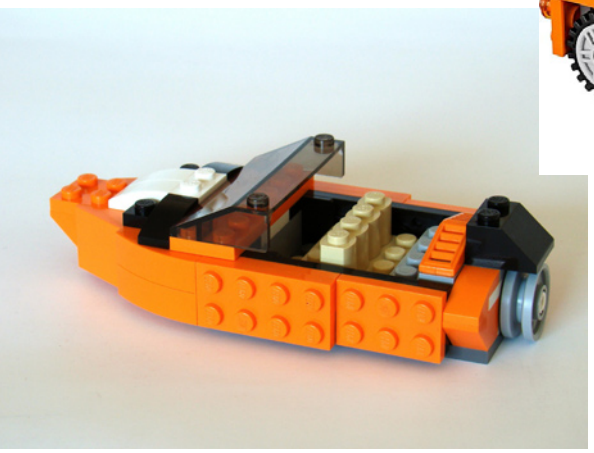

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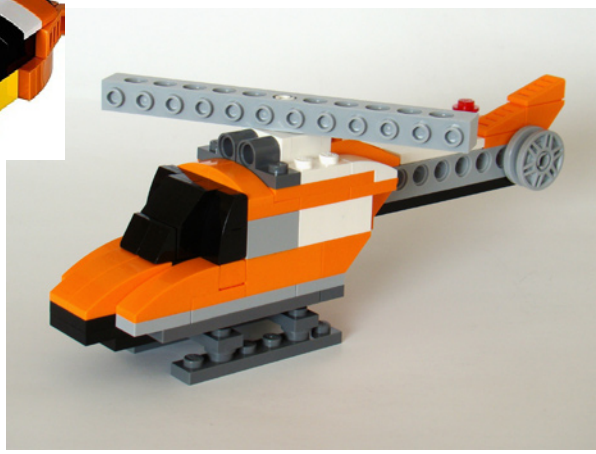


How to Build an Alternative Model out of LEGO® Creator Set

By Tomik (Tomáš VIT)

What is an alternative model? Alternative models are models that are built out of bricks from just one LEGO® set. I've been dealing with building alternative models for five years. I began with it because I owned just a few sets and I didn't want to mix them together. So building alternative models was both a challenge and an answer to my lack of LEGO. If you buy a LEGO set you don't get just one, two or three models that you can build following the included building instructions. With each LEGO set you get countless models that you can build with the help of your imagination. Let's check on how to do it!

Choosing the Set

At the beginning I recommend you to start with a set containing about 200 pieces. The choice of the exact set depends on what you want to build. If you like animals I recommend you to take set 31021 or 31004. If you prefer cars I recommend you to choose for example set 31006 or 31017. If you want a real all-purpose set then you should choose set 31007 or 31024. I don't recommend you to begin with smaller or bigger sets. A small set with less than 100 pieces gives you a very narrow selection of bricks and you can get lost in the large amount of various parts from big sets. It's also better to have a set with more small parts than big parts because you can always substitute big bricks with smaller ones but you can't make small parts out of big ones.

Preparation

If you think that preparation is boring and useless then believe me I've thought the same. However, I've found out it is worth taking time for preparation. Before building my own alternative

model I build the main model with the help of instructions. It gives me a great overview of the parts used in the set, the size of the finished model and sometimes I even find interesting details or techniques that I'll use in my model. Sorting bricks is another step of preparation. It is more effective to sort bricks according to their type than according to their color. The most important categories of brick are parts for SNOT, various hinges and joints and Technic parts. At the end I check the proportional representation of colors.

What Do You Want to Build?

What you want to build is a very important question and you should know the answer before you begin building. It's possible that your "WHAT" will change during building. Sometimes it happens to me too. Anyway, a clear idea about the result leads to success. What should an alternative model be like?

1) Original – build something different than the designers from LEGO® Company have built out of those bricks.
2) Recognizable – build the model in such a way that others recognize what you've built easily.
3) Using as many parts as possible – if you use at least half of the parts in the set you'll get an alternative model comparable with the main model.
4) Solid and stable enough – each model should be solid enough for moving from one place to another without breaking and stable enough for standing in a natural position without any support structure.

And where do I get inspiration for alternative models? The easiest way is to build something thematically close to the main model. For example you can build a truck or formula out of a car. Another way is to choose the subject of your model according to the type of bricks. For example if there are long plates in the set you can use them for building wings. If there are wheels or other round pieces like round plates you can build a car. And joints and slopes are necessary for building animals. Finally you can decide what you're going to build according to dominant colors.

When you know what you're going to build your next step is to find pictures of it. The goal is to get a clear idea of what your model looks like and what its main features are. Main features are often most obvious from a caricatures and pictures in books for children. Here are few examples: the main feature of most animals is their head, it can be the number of legs for insects, a long nose for American trucks, the uncovered engine for hot rods, horizontal rotor blades for helicopters and so on.

Beginning Building

I always begin building the main feature or the most complex detail so that others will recognize what I've built easily. If you start with this detail you'll be able to use any set parts for it and you'll verify quickly that you are able to build it. If you can't build the main feature of your model out of the available bricks I recommend you to build something else.

In this phase you should consider the size of the finished model. I recommend choosing a size comparable to main model. By doing so you'll avoid one of following two situations. If you choose too big a size, probably you'll be missing bricks to finish the model. If you choose too small a size, probably you'll get too many left over parts. What to do when you are in such a situation I'll tell you later. Choosing a suitable size for your model helps you to use an optimal amount of bricks from the set.

Now when you've built the main feature you can start building the rest of model. Again I recommend building the rest of model from the most important and the most complex parts to those less important and simpler. For example when I was building the killer whale I did it in this order: I began with the head (main feature). Then I built the fin on the back and developed a way of attaching it to the rest of the model (a very complex detail due to the unsuitable parts in the set). Building front flippers and tail were the next step (other important details which need special parts). When I finished those details I began building the body out of the remaining bricks (the biggest part of the model with no need for special parts). It's not necessary to make everything perfect now. The goal is to prove that you've chosen the right proportions and you have enough bricks to finish the model. At this moment you've got the first prototype which we're going to improve in the next step.

Improving the Prototype

Improving the prototype in order to get finished alternative model is usually the longest phase. I focus on making the model stronger, bringing parts of model into line with the original object and tuning the color scheme and size of model. Probably each of you will struggle with lack of bricks while building the model. If you miss just one part or several parts you can try to replace them with other similar parts. You can also check if you used a needed brick somewhere else in the prototype and replace it there to be able to use it where you can't replace it. If you miss a big amount of parts you probably chose too big a scale and you have to make the model smaller. Sometimes it is sufficient to simply adjust the proportions (make it slimmer or shorter) and at other times you'll have to rebuild the whole model or even change the subject. For example, I began building a rabbit out of set 31019 but later I had to change my mind due to a lack of useful parts and I built a tyrannosaur instead. Limitations in the type and number of bricks force you to use each brick as efficiently as possible. It's crucial to work with a parts list (you can find it at the end of building instructions). It helps you to keep an overview of the bricks that are available in set.

Sometimes the opposite situation happens. You've almost finished your model and there are still many parts left over. You can solve this problem in two ways. You either expand the whole model or a part or add something to the model. For example, you can add some accessories, new details that will become part of the model or a separate model relating to main one. For example when I was building a penguin I used left over parts for building a fish.

Tyrannosaur and duck built out of set 31019

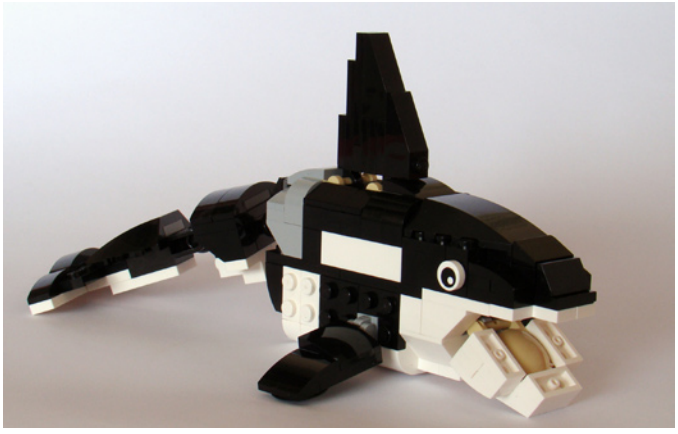
Penguin and fish built out of set 31021

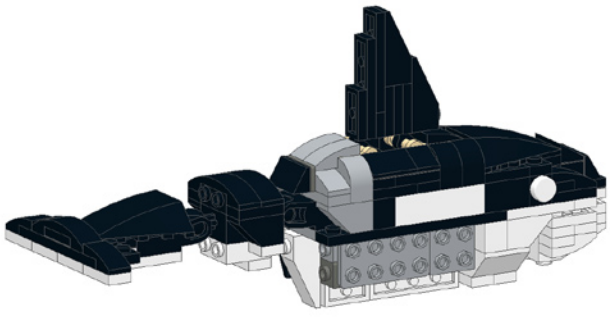
SNOT

SNOT means “Studs Not On Top.” You’re using this technique each time you place a brick in a different way than with the studs facing up. It is very useful especially when you are working with slopes and round parts to get inverted ones.
If you want to use SNOT techniques you need some bricks or plates with studs on one, two or all four sides. You can also substitute them for Technic bricks with half pins in holes or various hinges. The best example of the use of SNOT technique is my killer whale.

Hiding Inappropriate Colors

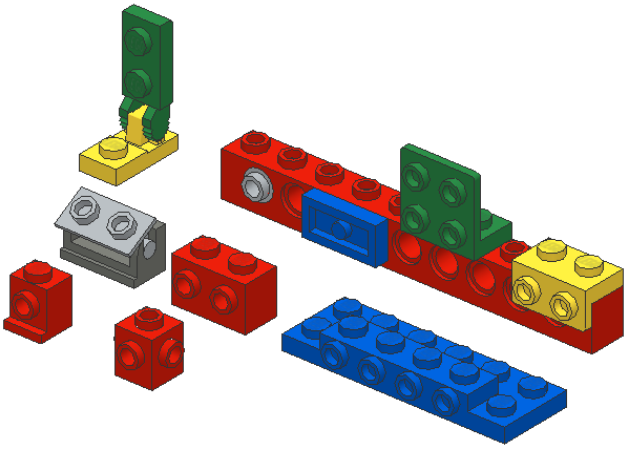
If you plan to make your alternative model in a particular color scheme you’ll probably be short of bricks in proper colors. I often get in this situation when I’m building animals so I’ve developed few techniques how to manage it. At first it’s useful to get an overview over the number and types of bricks in “usable” colors. Then I build in this way: I place parts





Use of SNOT technique – killer whale built out of set 31021 and view under its skin

Various part usable for SNOT technique



with proper color on surface of model and use those with inappropriate colors as filling. Sometimes this technique can’t solve the whole problem and you need to cover wrong colored bricks on the surface with something. The best covers are large plates in the proper color. Great examples of covering by plates are my mammoth and boar.

Conclusion

This article has showed you a step by step procedure for how I build alternative models out of LEGO® Creator sets. I hope the techniques and hints described above will help you with building your own models. If you want to know more about my creations or even build them, visit web site http://buildinst.sweb.cz. You’ll find my alternative models and building instructions for them there.
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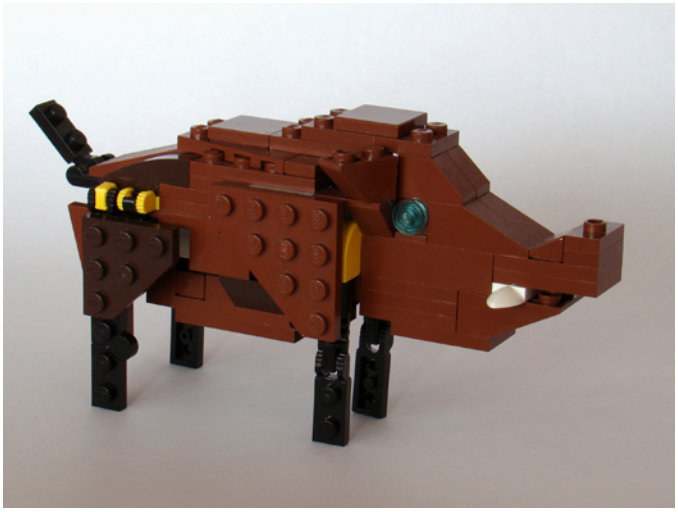
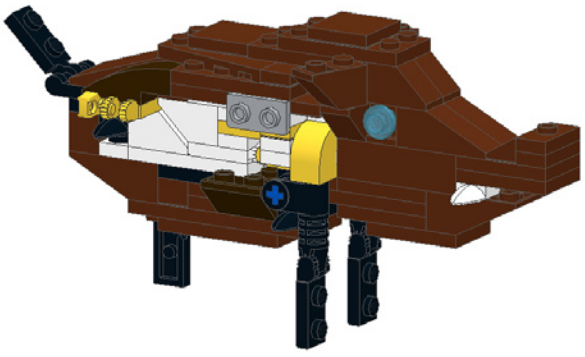
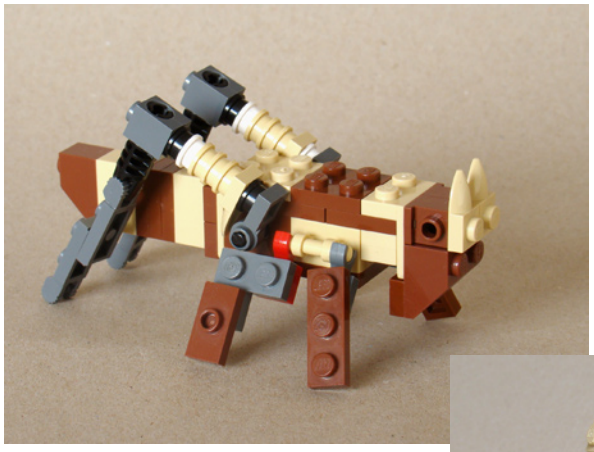




Hiding inappropriate colors – boar built out of set 31021 and view under its skin



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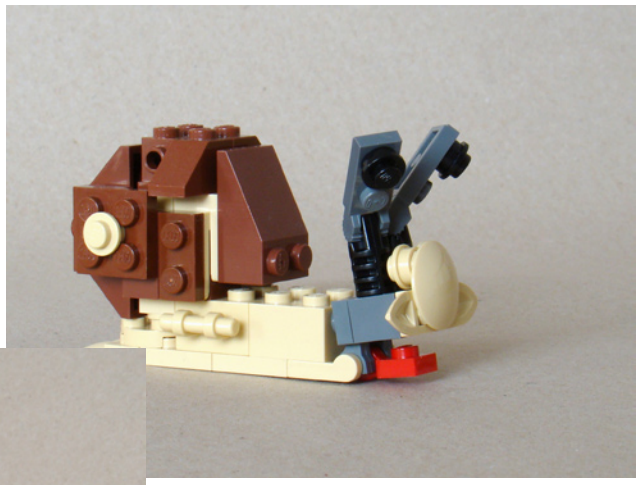

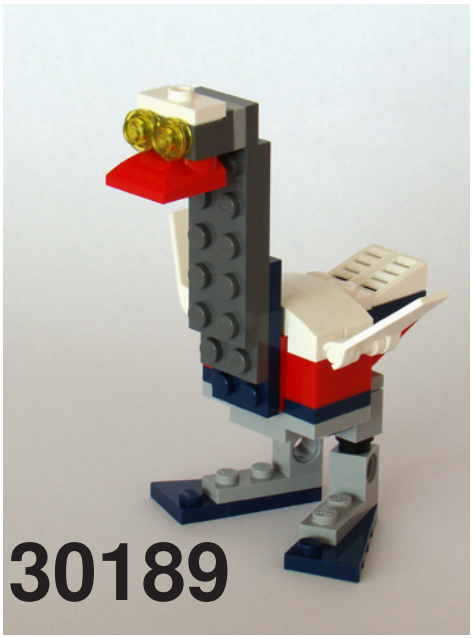

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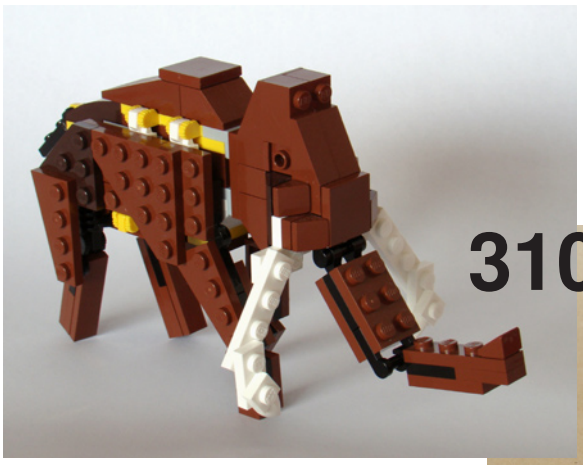

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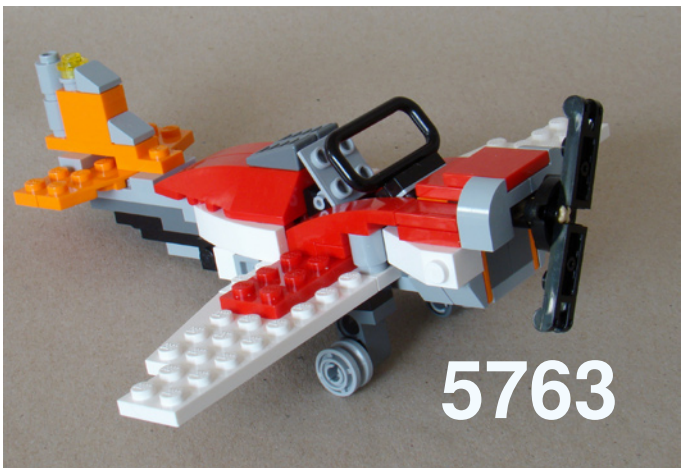

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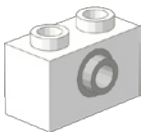
Miniland Building: MINILAND Character Build

Extended GuideLines
Part IV - The arms

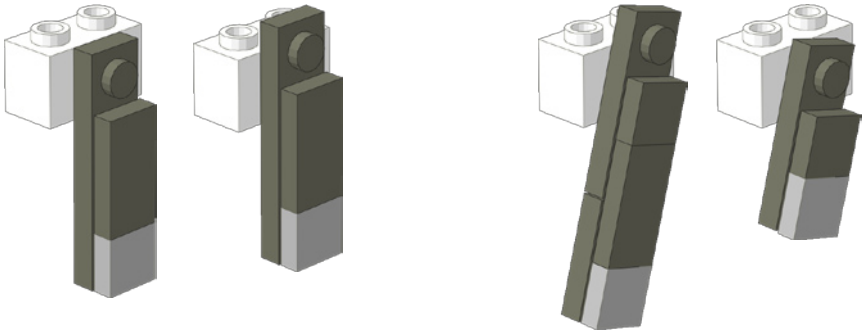
By Didier Enjary



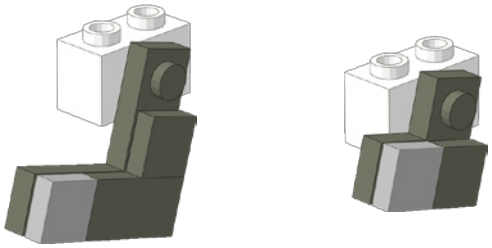
Before discussing the arms themselves, we need to talk about the shoulders that are connecting them with the torso. Basically, we can consider three types of connections, the same that are used in the designs of headgear (see chapter III on head).

The first connection is very common in the MINILAND world. A half Technic pin is placed in a Technic brick hole (usually 1x1 or 1x2 brick) making possible to attach on the side any kind of plates combination that form the arms. This connection has the advantage of allowing a rotation of any angle, but it is not possible to maintain large angles with the vertical axis due to lack of friction. The models are glued MINILAND which solves the problem. But you certainly do not want your LEGO® pieces to be glued. Rather than gluing, just insert a small piece of paper between the brick and the half pin before introducing it. The additional friction generated is sufficient for the arm to take any angle.

To represent teenagers arms, 4-studs long plates fit well. It takes a smooth plate to give some thickness and another to represent the hand. Depending on the model, you may need to move the arms slightly upward. It is possible to make a slight shift by setting the plate on the pin between two studs rather than on the stud directly. It is usual to create 5-studs long arms for adults and 3-studs long (short) for kids.



The arms, straight, slightly pointing forward or backward, make the characters as being in motion. This is a common standing but not the only one. The arms also can be represented bent at the elbow, fixed, at 90°. To that extent use a combination of tiles stacked on 1x2 and/or 1x3 plates or even 2x2 corner plate for kids.



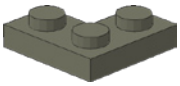
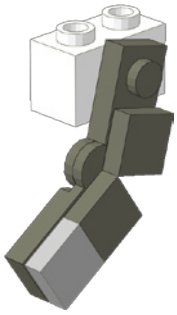
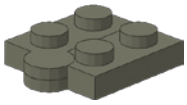


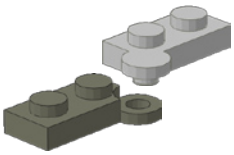
Plate 2x2 corner

The flexed arm can be hinged, with an angle ranging from 0 to 180 degrees. This is done using hinge plates. Be careful that the hinge is actually composed of two parts and that you can combine parts of different colors to create two tones hinges.

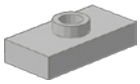




Hinge

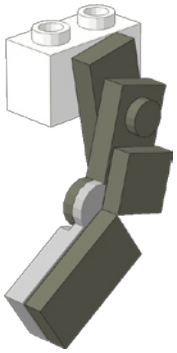


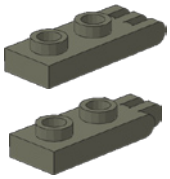
Hinge plates



Jumper plate

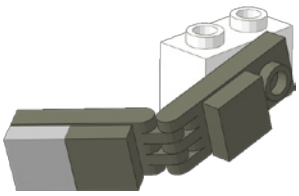
We can insert a jumper plate between the shoulder and the arm. This has many advantages: It makes the arm slightly longer, it creates a space between the arm and the torso and it gives a better impression of smoothness to the curvature.

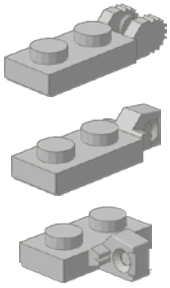




Hinge plates with fingers

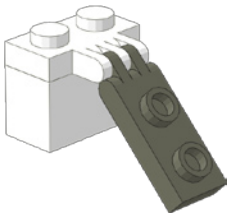
The arm can be flexed in another way with help of hinge plates with fingers. Then, more attitude can be achieved (arms folded across the chest for instance) but the arm being longer made this build usefull mainly for grown-up characters.These hinge plates with fingers are now discontinued and are replaced by click hinges.

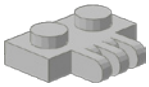




Click hinges

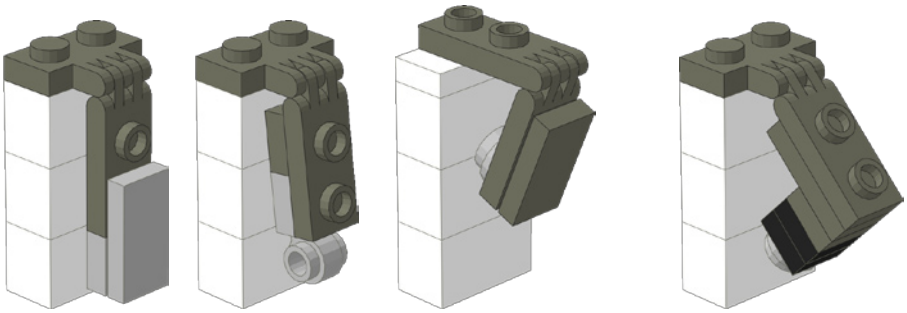
Another kind of shoulder connection make use of hinge plates with fingers, noticeably the hinge plate with fingers on side.



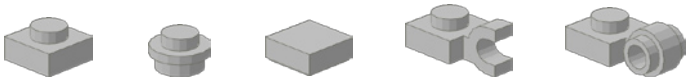


Hinge plate with fingers on side

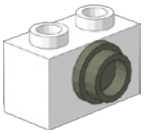
This kind of connection is used to make characters with hand on hip.

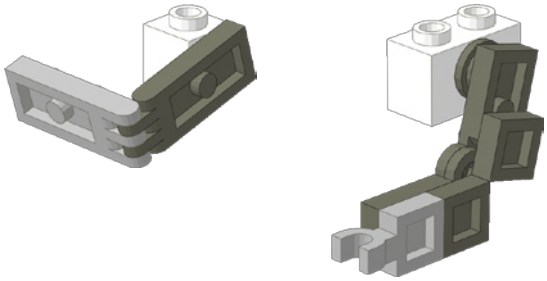


The parts which are the most commonly used to feature hands are the various 1x1 plate (round, with clip, modified...) and 1x1 tile.

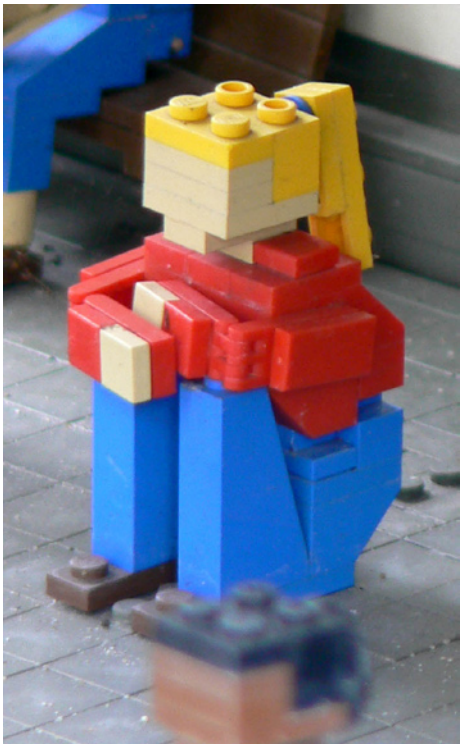


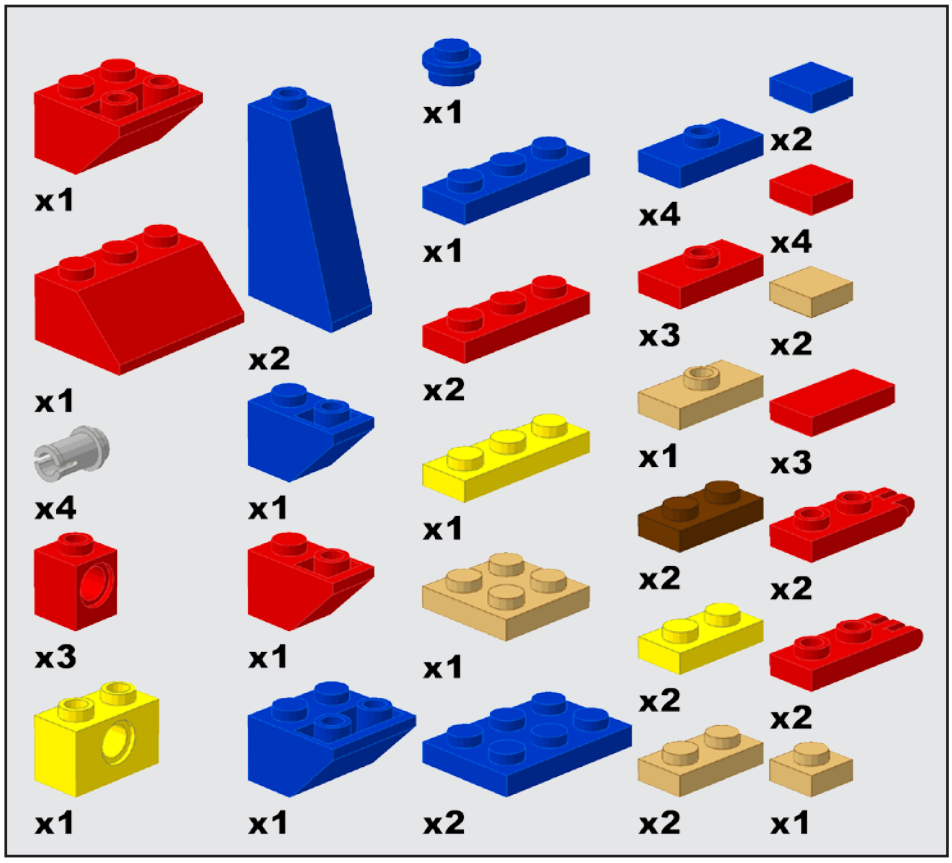
The last shoulder connection consist in stacking the stud, backwards, directly into the hole of a Technic brick, possibly through a 1x1 round plate. This build is very sturdy but it has the disadvantage of presenting the underside of the plates. It is not unattractive in itself, but this represents a breakdown of traditional pattern (smooth or stud).





And, as usual, we conclude this chapter with the building instruction for a MINILAND character, here a crouched girl with arms folded across the chest, as seen at LEGOLAND® Billund.
#




x1
x1
x2
x1
x4
x1
x3
x1
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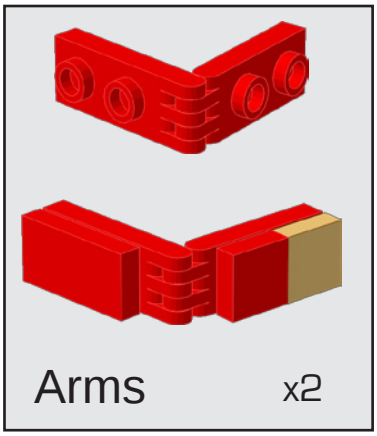
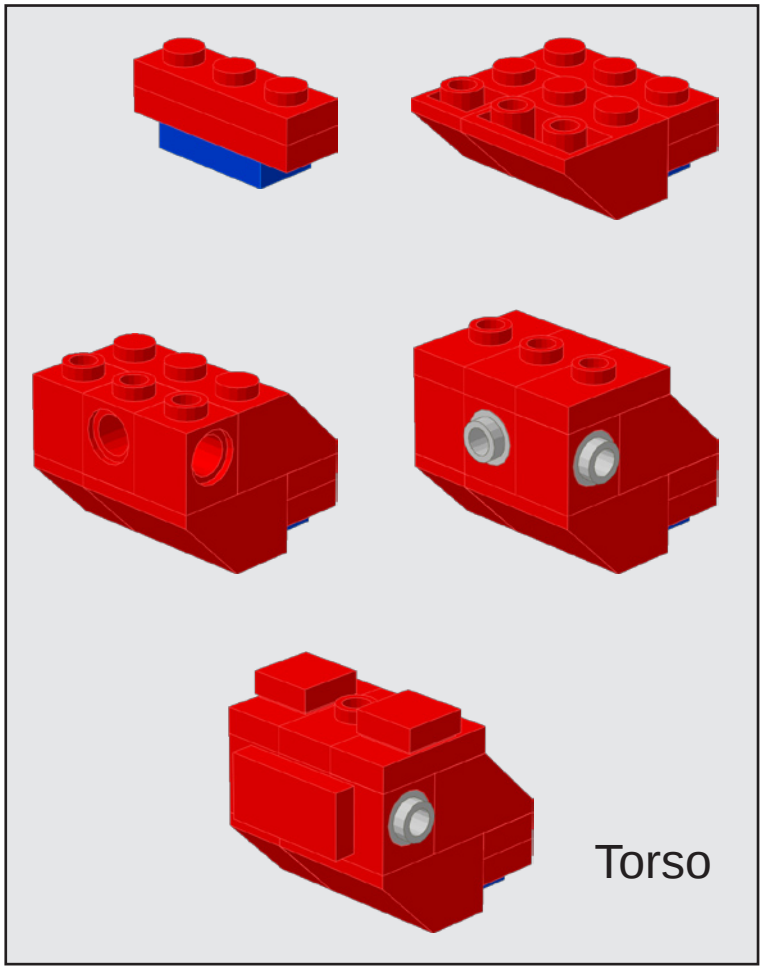
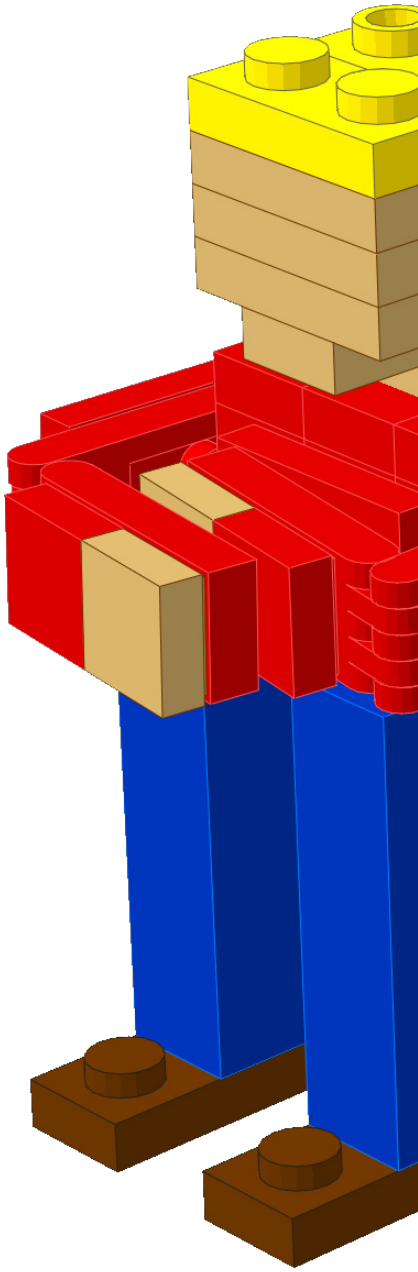
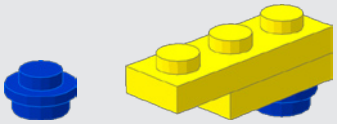

Arms
x2

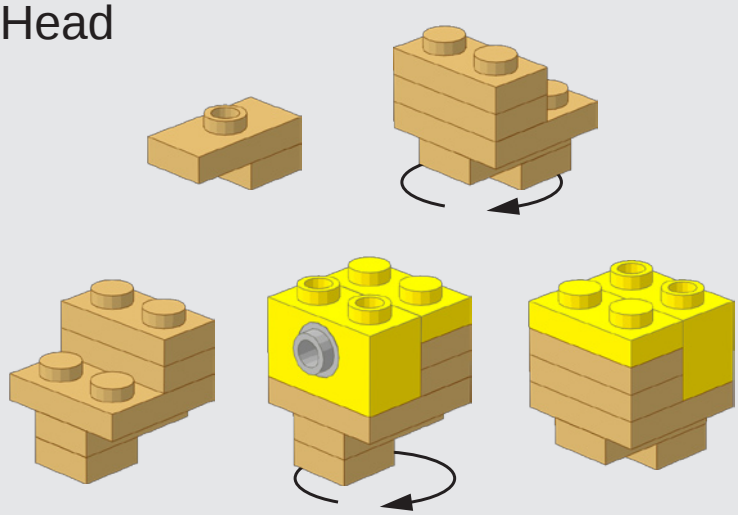

Torso

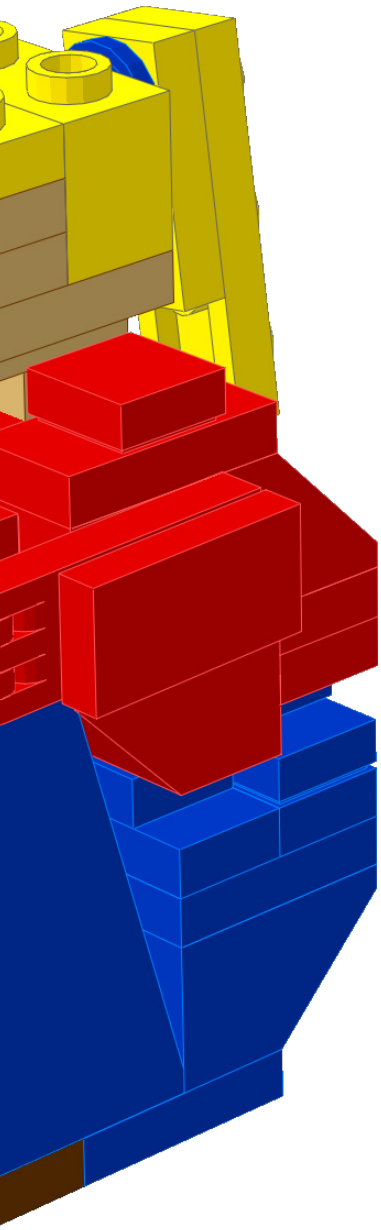


Pony tail

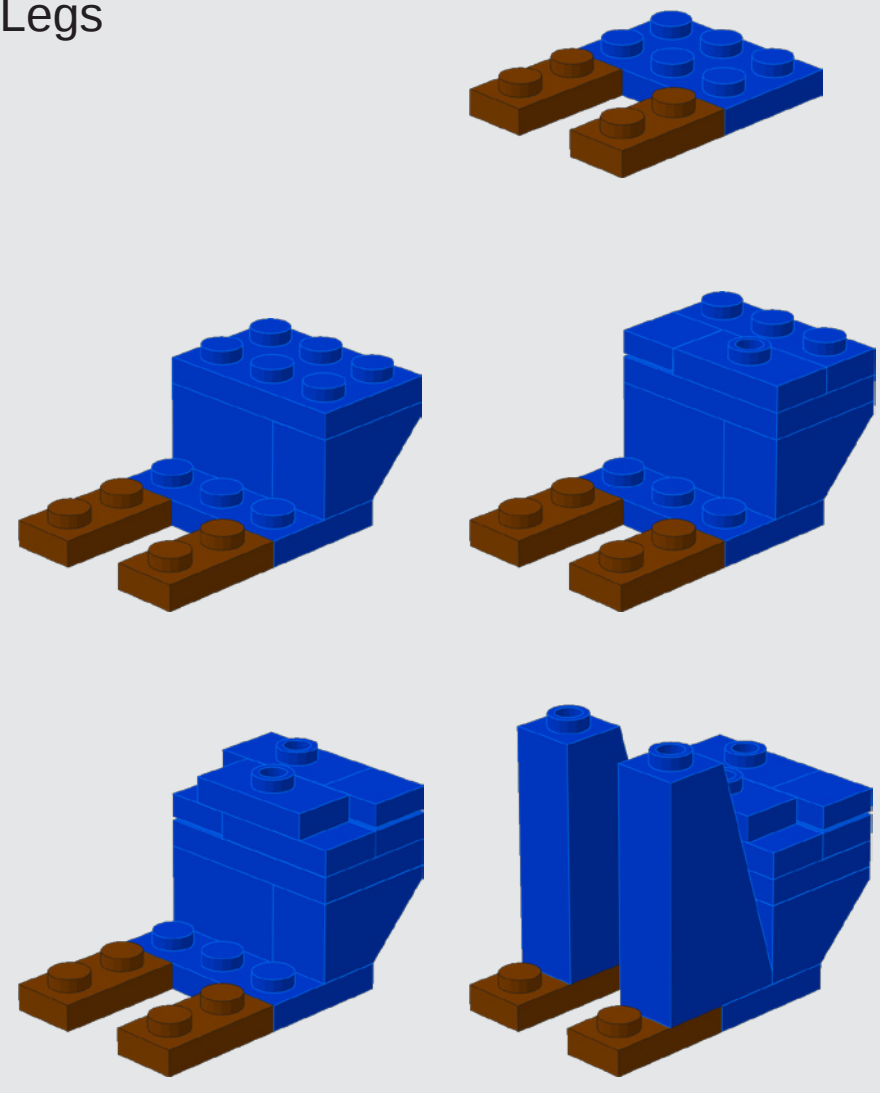


Head





Legs



Robotics with LEGO® WeDo (VI)

An introduction to robotics for the young with LEGO® WeDo

By Diego Gálvez

In this part we will have a closer look at the blocks for sending and receiving messages.

The WeDo programming software contains two blocks that allow us to create much more advanced programs.

Send Message

Start on message

How does it work?

Try the following program:

You will see the following on the screen:

Breaking linearity

What has happened now is that the program is no longer linear, that is to say, it doesn't follow a single series of blocks, but it has been split in two. This allows us to create much more complex programs
Let's analyse the previous example:

In this first part of the program the message "a" is sent.

Here the message "a" is received, and screen background 1 is shown.

So then what is the difference between this and doing it without sending a message. Like for example:

If you run the above program you will notice it does exactly the same as the one using the message blocks. But the example doesn't show the real power of the message blocks.

Running programs simultaneously

One of the functions of the Send message and Start on message blocks is that it allows for simultaneous programs.

Starter program

This is the program that will send the order for the execution of several other programs. In this example our starting program will be as follows:

Simultaneous programs

Using the Start on message block we can create as many programs as we like that will be executed simultaneously. Following the example, we will make three programs that will run at the same time.

Note that the name of the message that is sent must be identical to the one received, including the use of capitals - it must be copied perfectly on both sides.

If you run the starting program you will see how all three other programs are executed simultaneously.

Sending and receiving over a local network

One of the most important characteristics of the send and receive blocks is that they can be used over a local network. Take a look at the following example:
We have two computers connected to the same local network. On one we write a program using a send message block and on the other we create a program using the Start on message block. For example:

Computer A

Computer B

If you run the program on Computer A, you will see how it send the message “a”, which is received by Computer B which will play sound 1.

As you can see, the Send message and Start on Message blocks also serve to interact between computers on the same local network.

In the next part of this tutorial we will see some more examples of the use of send and receive blocks and I will show you some more advanced programs that use these blocks.

At notjustbricks.blogspot.com you can find multimedia materials (images, videos) of the creations of the author, some of which come with building instructions.

#

LEGO® WeDo (V)

*Programming in Scratch**

By Edwar Romero
Cover image by Osvaldo Romero

We continue here with our plan to dominate the world! One LEGO® brick at a time. The best part is that we can start doing it with programmable WeDo™ bricks the best we can. We continue here our programming quest in Scratch as the software for our battles. In previous issues of this magazine, we have covered the WeDo software basics and the equivalent commands used in the open platform Scratch.

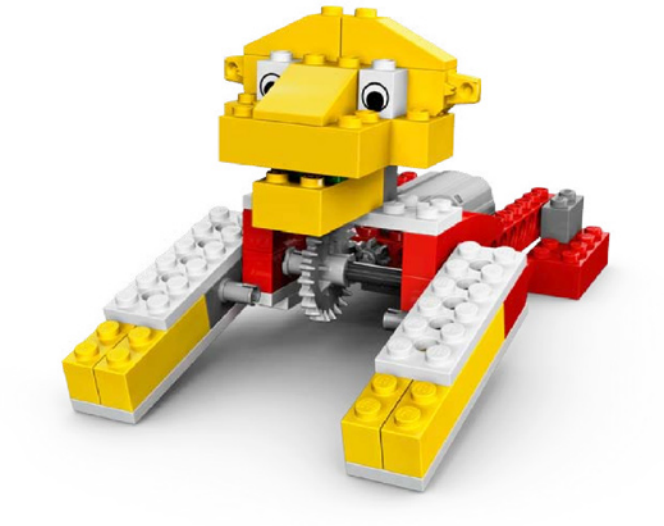
We have talked before about how to program a few basic things, like the fundamentals for the motor and the different alternatives to turn it on and off. Last time we started talking about different options for programming the Amazing Mechanisms included with the WeDo software: Dancing Birds, the Smart Spinner and the Drumming Monkey, and how to do it using Scratch. This time we continue with the next set of 3 mechanisms: the Hungry Alligator, the Roaring Lion and the Flapping Bird (designs 4, 5 and 6 from the figure below).

Let's start with the Hungry Alligator. The WeDo software program begins when hitting the letter "A" on the keyboard to turn the motor one way to open the powerful jaws of this alligator. After that, it will make a scary bite sound and immediately turn the motor the other way to close the jaws and bite everything that gets close enough. It will chomp for a few seconds before the next bite. The next image shows this sequence programmed in WeDo.

You can program it in Scratch in a similar fashion. You need to look for the Control tab to find the "when __ key pressed" and selected a letter on the drop down menu. The letter "a" was selected for this example.

You can select the space bar since you don't have to look at the keyboard constantly to find it. You need to use the "motor direction" to open the alligator jaws, after that the option "motor on for" 1 second under the Motion menu. Next, you need to select the option "play sound". By default the meow sound appears, you may want to change it since it doesn't sound ferocious enough for a hungry alligator. So, you need to import a new sound for this task. You need to go to the zone where you are programming, look for the Sounds tab, hit the Import button, and look around for a suitable sound. I used the one called Slurp in the Human folder. You may choose a different one, download it from the Internet or even record your own version. Don't forget to choose the sound from the drop down menu, otherwise your alligator will sound like a kitten. Once done, you need to select the motor direction in the opposite way to see the jaws closing for chomping down whatever the fangs caught.

We can start thinking about having our own robotic security system using LEGO® bricks. What if you have a wolf or huge bear as a guardian for your home, built completely with LEGO and programmed to behave as you like? It seems like world domination is one step closer!



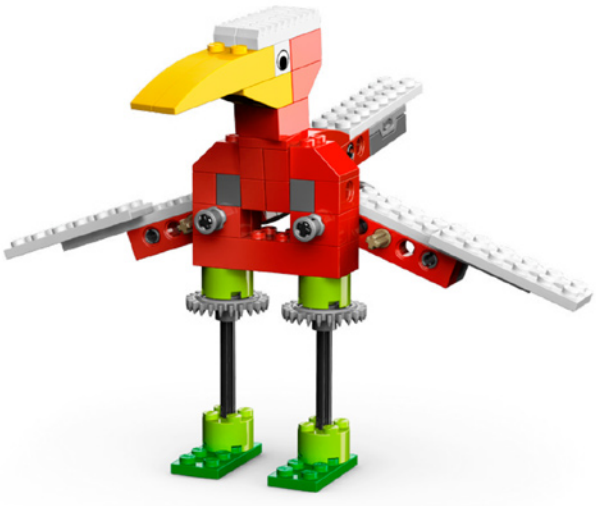
Next is the Roaring Lion design. The programming in WeDo is as shown below. One key is used to get it up and roaring and another to send it to sleep. When the big cat is up and roaring like a fierce beast, you need to configure the power level of the motor and check the motor is turning the right way. Don't forget to add a ferocious sound for this feline.

When our big cat is tired of roaring, it needs to go for a good night's sleep. For that, you need to program the motor power and check if the motor is turning in the right direction for the lion to go to rest. You also need to find a sleepy sound to show this cat is quite friendly when it is tired, so we can get close without getting into trouble.

Performing the programming in Scratch shouldn't be difficult for this task after all we have learned with the previous design. You need to verify and test several motor power levels for the lion to behave like the king of the jungle it is. We don't want our robotic friend to fall apart while performing, do we? The most difficult part for the Roaring Lion programming is finding a hungry lion sound. You can try your best impersonation to record this sound. You can be the voice of your own creation! You can also resort to a sound file of your liking from the Internet if the ones in Scratch are not fierce enough.

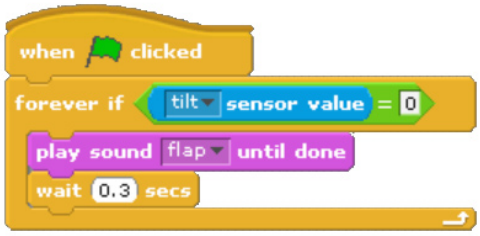
For going to sleep, our feline friend can be programmed in Scratch as shown below. You need to be really creative when choosing a sleeping sound. You can try between the ones available in the Scratch folder to see if there is something you like or you can try to record the best impersonation you can for this sleepy cat.

In order to complete the three designs from the Wild Animals set, we still need to work with the Flapping Bird. The Flapping Bird is a lot less complicated than previous designs. It only uses the tilt sensor to activate the wing flapping sound.



The basic WeDo program should look like the image below. We have a loop that allows the cycle to repeat as many times as needed. There is also the wait command connected with the tilt sensor. The tilt sensor is on the horizontal position (no tilt), so when is moved to another position it will activate the wind flapping sound for this huge bird. You can imagine this bird moving its powerful wings through the air. Is quite terrorific, isn't it?

Working in Scratch, the program should look similar to the one found below. The "forever if" loop can be found under the Control menu. If you look under the Operators menu, you'll find the equal to block "_=_". You can play with the value to find other interesting configurations. Going through the Sensing menu, close to the end you'll find the "sensor value" block. On that drop down menu, you will discover the tilt sensor like the one on the image.



Finding the right sound for the flapping of the wings for our big bird is a complete challenge for this creation too. You can try and record the sound effects for this design as well. You can also search on the Internet for the sound of your preference.

That's all for now folks, stay tuned for the advanced programming of these creations in the next issues of HispaBrick Magazine®.

You can find more information, and building and programming instructions for the designs presented here and many more at:

www.wedobots.com
www.facebook.com/wedorobots

* This tutorial uses Scratch version 1.4 - The use of LEGO® WeDo in Scratch 2.0 is still experimental.
#

wedobots
The unofficial blog for LEGO® WeDo designs

Building Technic cradles for non-LEGO® devices

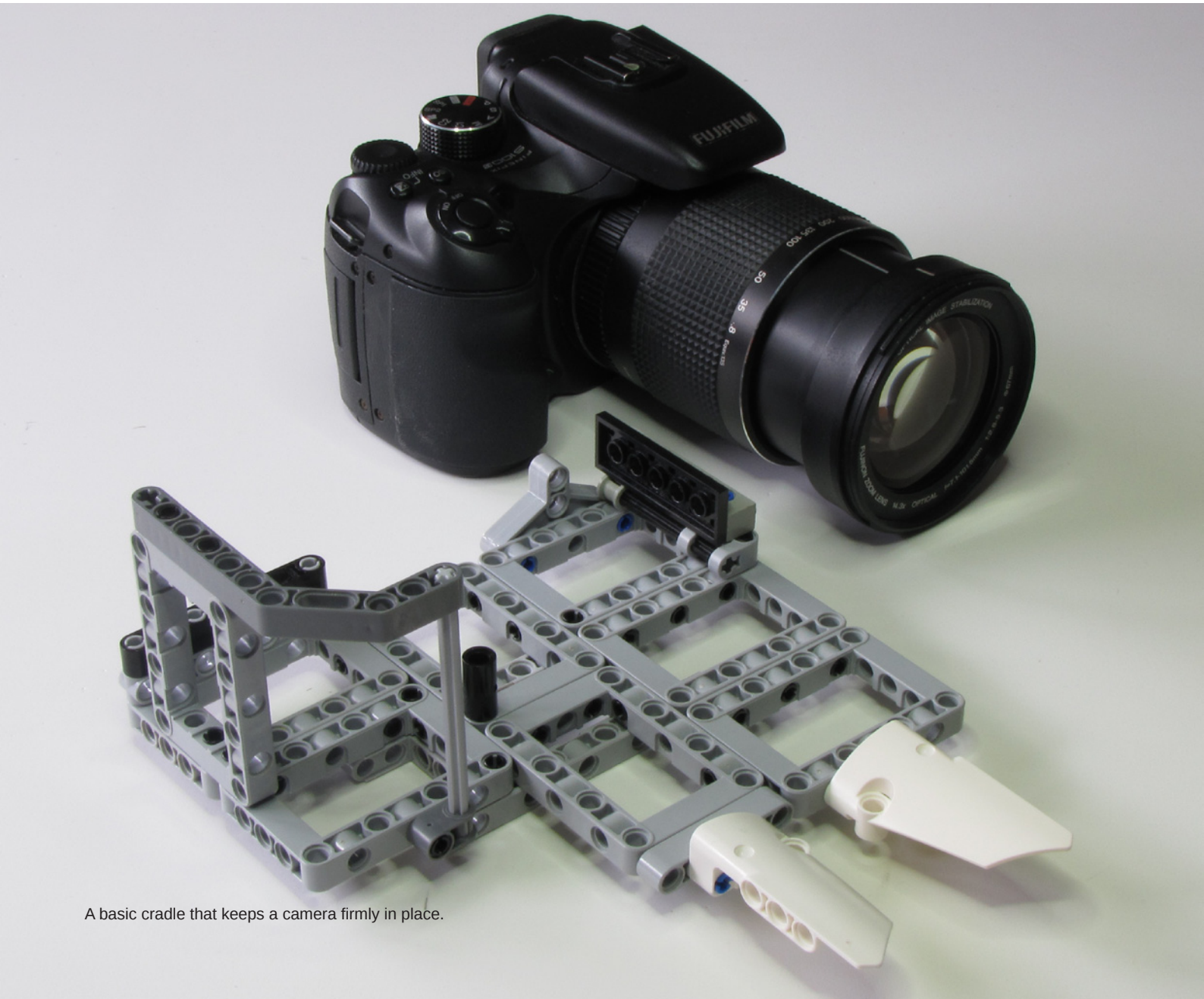
By Oton Ribic

For LEGO® Technic and MINDSTORMS builders, integrating some sort of a consumer device into a model is not uncommon. Usually it is a camera or a mobile phone, although sometimes other devices such as flashlights or loudspeakers are used. In order to have these devices fastened to their surrounding LEGO, one needs to build a dedicated cradle — and these cradles are exactly what we will be having a look at in this article.

Unless you are extremely lucky, dimensions of a chosen non-LEGO device will not match LEGO stud metrics, i.e. they will not be divisible by 8 mm. Therefore, for a device to fit snugly and securely, its cradle usually needs to resort to some tricks. Let us focus primarily on what is possibly the most difficult type of a device, yet a frequent one: cameras, particularly large ones, whereas the principles used for their cradles can be similarly applied to most other devices. The main challenge with heavy cameras is their curvy shape intentionally designed for a comfortable manual use, but inconvenient for being held by bricks with fixed-size units.

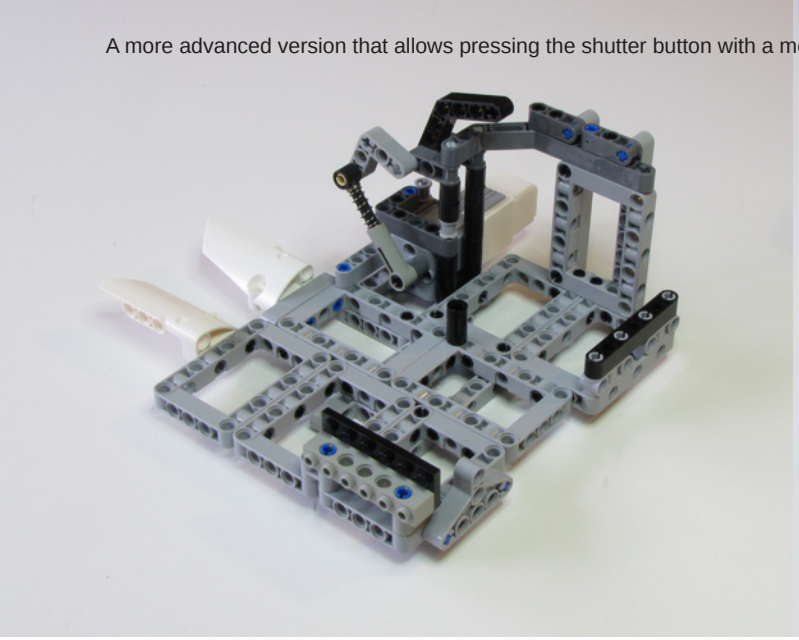
Among many techniques you can go for, I suggest starting with a cradle floor built as a grid of sturdily connected Technic frames roughly matching the footprint of a camera, and slightly overlapping it. Frames are strong, very common and easily obtainable, and offer many convenient connection points.

Once the floor is “tiled” in this manner, the second step



A basic cradle that keeps a camera firmly in place.

A more advanced version that allows pressing the shutter button with a motor, through a crank and a shock absorber.



involves building small walls and various vertical structures atop it that will keep the camera in place. Note that it is not necessary to surround the camera's entire outline, but just a couple of opposing corners. Again, Technic frames positioned vertically can be of use, but the main task of this step is to identify points where curvy parts can be placed to exactly match the shape of the camera.

Wheels and gears, bent liftarms, panel fairings, round pin connectors, studded Technic bricks and plates, Bionicle teeth, slopes and many other rounded, curvy parts can be used for this purpose, and some of those can be seen applied in this role on the example photo. Note that it is not necessary to strive for absolute accuracy, even if it was possible every time: matching the shape down to about one millimeter should be more than enough, as the underlying frames will imperceptibly bend to compensate (this does not damage them in any way).

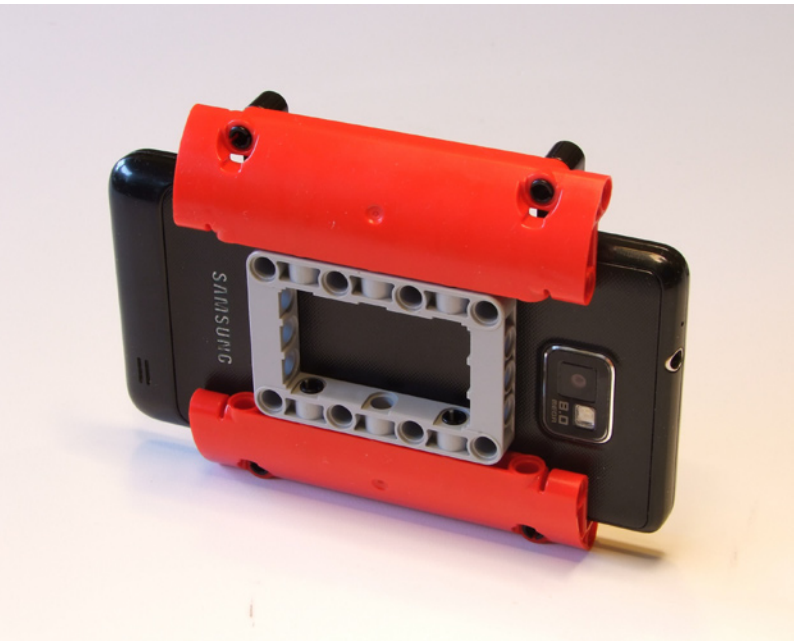
Of course, how high and how elaborate these structures need to be mostly depends on what movements the entire structure will be subjected to. Keeping camera in place for a simple panorama-shooting robot will require no more than just a dozen parts. However, keeping a camera steady on a, for example, rotating platform atop an off-road car asks for much more.

In addition, pay attention to the camera controls: if some of them are obscured by the cradle, not only may they be inaccessible to you when needed, but even pressed unintentionally, possibly ruining your shooting. Furthermore, cameras typically change their dimensions as they are zoomed in or out, and a good cradle should accomodate the camera tightly regardless of the zoom magnification. This can be done using parallel "rails" made from Technic panel fairings over which the lens can slide freely.

A cradle alone will suffice if manually starting video recording or shooting photos is all you need. However, more advanced constructions may ask for cradle that allows a LEGO-controlled way to press a shutter button or operate some other control. In this case, the cradle structure can often conveniently serve as a scaffolding for a pusher mechanism. Typically, a well-judged liftarm is all one needs, aligned and hinged in a way to press the desired control as flat as possible. The other side of the liftarm is attached to a motor or some other actuator part.

As shown on the photo, it is a good idea to add a shock absorber in the pusher mechanism, for multiple reasons. It will let the button be pushed with a well-controlled force, and should bear any extra force itself, rather than putting strain on its surrounding parts or, even worse, the camera itself. It also allows the pusher to be manually pulled back, often required for the camera to be simply removed from the cradle without any disassembly.

Instead of linear actuators or racks and pinions as mechanisms that transfer the motor motion to the pusher, for the camera shutter buttons it is often very practical to go for a simple beam attached off-center (i.e. "cranked") from the output motor axle. This allows the motor to spin constantly in a single



Smartphones can be easily secured using Technic panels and frames.

direction and repeatedly shoot photos, with the rotation speed controlling the shooting frequency. Of course, as shown in the example, one can take advantage of a MINDSTORMS motor that performs an accurately controlled single turn, shooting exactly one photo each time.

If a force required to push a button is large, pressing it repeatedly with a LEGO® liftarm may produce wear marks. This can be avoided by using a rubber wheel, or even a flexible rubber connector (part no. 45590), as a final part that pushes the button. Even more advanced manipulation can be done, e.g. operating a zoom lever or dials. If the cradle is, however, a part of the larger automation system, sometimes these camera controls can be operated remotely through a USB cable connected to a computer and synchronized to the rest of the system — probably MINDSTORMS bricks. However, this may require some advanced programming.

Whereas the cradle for a large SLR-style camera may just be among the most complex, sometimes the opposite is possible. For example, if the only requirement is to keep a mobile phone in place, the cradle may be absurdly simple, consisting from only a few parts. A couple of Technic frames and flaps that hold the phone using friction can suffice. Conveniently, many modern smartphones tend to be around one stud thick, therefore allowing relatively simple cradles. Note that keeping their rubber protection covers on may actually help the cradle, as it produces additional friction against the LEGO parts around.
#

A very simple approach with just a few parts, that works with smartphones approximately one stud thick.

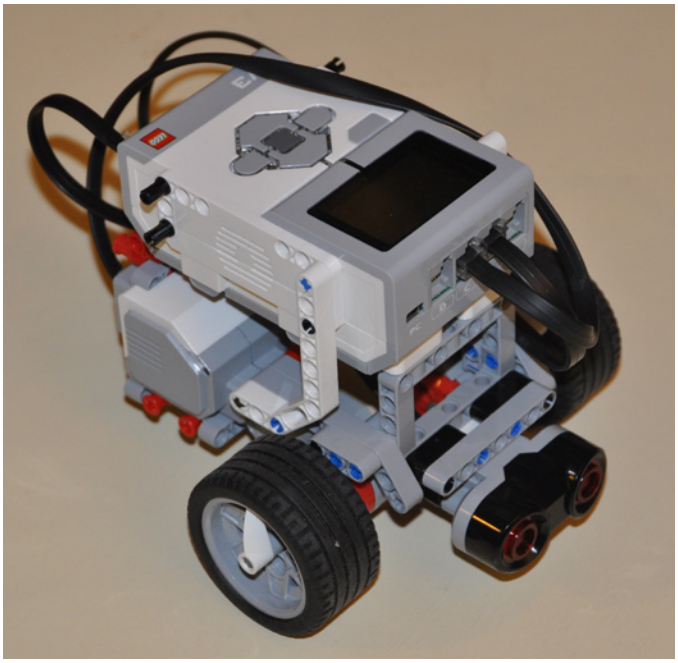
An introduction to Robotics with LEGO® MINDSTORMS (XVII)

Alternative Programming Languages for the EV3: RobotC

By Koldo Olaskoaga

Thanks to the contributions of the user community and commercial initiatives, the LEGO® MINDSTORMS NXT and EV3 can be programmed using many different programming languages, both graphical and text based. While the LMS EV3 ecosystem isn't on par with that of previous versions yet, there are several options available aside from the official EV3-G environment. This article will be about RobotC and future editions of HispaBrick Magazine® will talk about others.

I will use the basic robot of the Education version of the EV3 for the examples, but other robots with a differential drive will offer a similar behaviour.



RobotC

RobotC is a programming environment that is based on C and designed to be used in education and educational competitions. It offers a friendly environment for those who use C for the first time.

After a number of beta versions that were made available for testing, the first official version of the new RobotC 4.x for LEGO MINDSTORMS EV3 was made available at the end of August, after having been made available for other platforms as well.

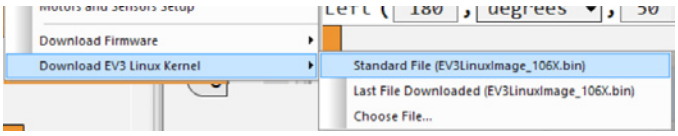
This new version not only supports the NXT as well as the EV3, but includes an important novelty: a graphical programming language that facilitates the transition from other graphical languages to text based C.

The RobotC Firmware

In order to be able to execute the programs that are downloaded to it, the EV3 needs to have a small firmware program installed. This way the EV3 can understand and execute the programs it receives. Updates to this firmware are published periodically.

Since RobotC is not compatible with the original LEGO firmware, the RobotC firmware needs to be on the Ev3. However, the incompatibility doesn't exist in the opposite direction, meaning that the RobotC firmware can execute programs created in both RobotC and EV3-G.

For this reason, the first thing you will need to do is install the RobotC firmware. To do so you need to go to the EV3 Linux Kernel from the Robot menu, and start the firmware download. After this the EV3 will be ready to start working with RobotC.



The Graphical Programming Environment

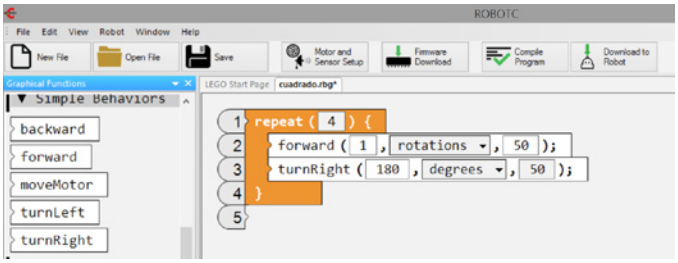
This new programming environment is reminiscent of Scratch, basically due to the control structures, which are orange and open up to contain the instructions they need to execute. The instructions are places easily using drag and drop.

This graphical mode uses a functions pallet based on what is called Natural Language. This is a high level language, meaning a language similar to what people use to communicate. Between the groups of functions the simple behaviours stand out: functions for going forward and backwards, turning left or right and turning a motor. These functions make it easier to learn and require a specific configuration of the motors and sensors to work as expected: left motor on port B, right on port C and the ultrasound sensor on port 4.

My First RobotC Program

Lest try to program a simple task: letting the robot travel in a square and stop at the starting point. The necessary steps can be summed up as follows: repeat 4 times forwards and turn right.

Let's see how to create this program in RobotC. Remember we need to use the default motor configuration, namely left motor on B, right motor on C.



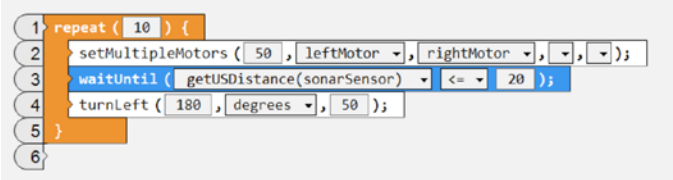
In the image you can see the program, with the function pallet to the left. In this example we use the repeat structure as well as two programming blocks: forward and turnRight. The third parameters in each of these functions is the power level, in this case 50. Because the functions in this group use similar behaviours, programming becomes relatively simple.

If the robot were to have been built with WeDo, we would be able to control it with Scratch using the following program or something similar. You can observe the similarities in the graphical design, although in this case the program is simpler in RobotC.

This is because in WeDo we use Technic motors which, when used side by side, need to be programmed to turn in opposite directions to move forwards.

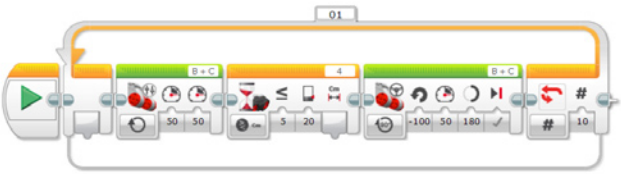
Robot with Ultrasound Sensor that Avoids Obstacles

In this new program we are going to combine the use of motors and a sensor. The objective is to make the robot go forwards in a straight line until the distance to the obstacle is equal to or less than 20cm. Then it needs to turn and repeat the previous step so that after detecting an obstacle 10 times it will stop. The sequence of steps is quite simple; repeat 10 the following: times start the robot to move in a straight line, wait for an obstacle and turn.



The program is simple and easy to understand In this case the forward block that was used in the previous case can't be used since that block only allows you to program a specific distance or time. What we need here is a block that starts the motors and allows the program to continue with the next step. To this end we will use the setMultipleMotors block that allows the motors to be started simultaneously.

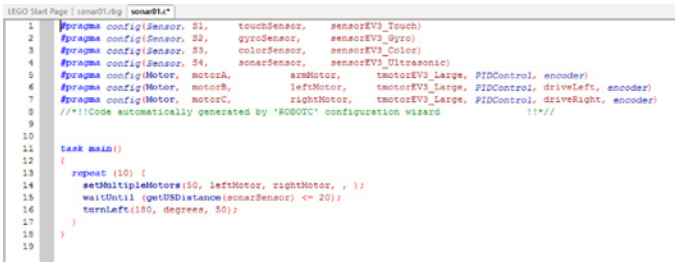
After starting the robot the next instruction, in blue, tells it to wait until the US sensor indicates a distance less than or equal to 20cm. Next it turns and we start again.
The corresponding program in EV3-G would be as follows:



As you can see, taking into account the difference in graphical design, you can establish parallelisms between the programs.

Converting a Graphical Program into Text

One of the interesting characteristics of the new graphical interface of RobotC is the help it provides in transitioning from a graphical to a text based language. It includes a tool that allows you to convert the graphical program into a RobotC text program. For example, using the tool Convert Graphical File to text in the View menu, the previous program turns into this:

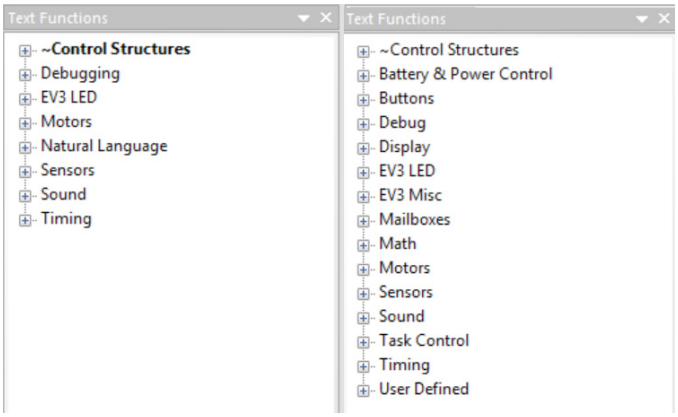


The top part of the code is generated automatically by RobotC depending on the motor and sensor configuration. The program itself corresponds to the code between the lines 11-18. In this case, due to the combination of a simple program and the use of Natural Language, both programs are quite similar, but in text based programming syntax is essential and forgetting to close a line with a ";" generates errors.

The Text Based Environment

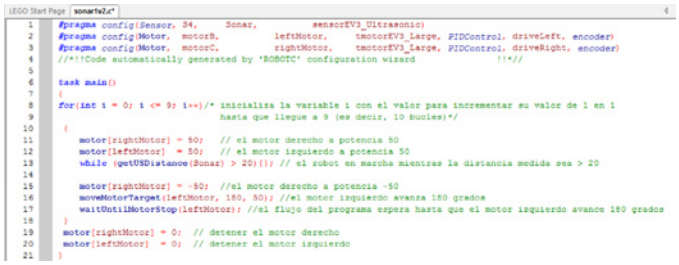
Once you are familiar with the graphical environment it is time to transition to text based programming. Here also there are two different programming options, natural language, which is also used for graphical programming, and text based RobotC. In the second mode there are three levels, basic, expert and super user. Basic mode limits the available functions as well as the available options and preferences. Expert mode gives you access to the full functions palette, while super user mode opens up all possible RobotC functions.

The following image shows the functions that each mode offers: natural language at the left and text based expert mode at the right.

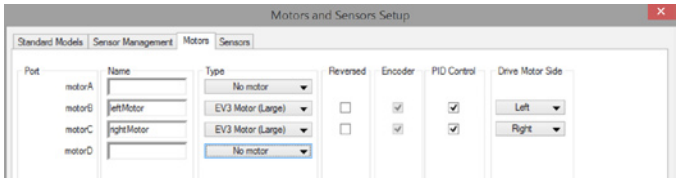


You can see the differences between the two function pallets; if you use natural language it is going to be easier to create a program, but access to all the functions in RobotC allows you to create more sophisticated programs.

The following is the previous example in RobotC text mode. You can see the motors are controlled individually and that instead of the structure repeat for a number of times, the For structure is used, which is the standard structure in many programming languages.

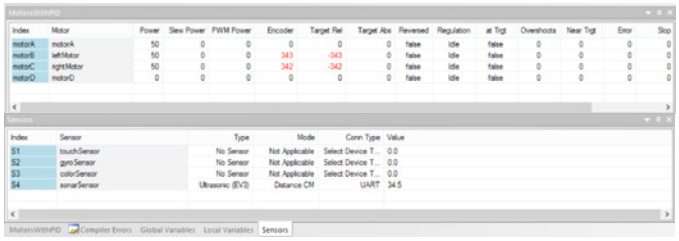


When programming in text mode, motors and sensors need to be configured before you start. The following image shows a configuration window for the motors with different options.



The Debugger

If things don't work the way you expected, RobotC has a debugger that allows you to observe how the motor and sensor values, variables, timers etc. change in real-time, so you can easily identify problems. Add to this the possibility of running the program step after step, either with the robot connected by USB cable or wirelessly.
In the following image you can see the state of the motors and sensors during the execution of the previous program.



To summarise, RobotC is a commercial programming environment with a graphical interface that provides an easy introduction and a text based programming language that allows you to use the full potential of the EV3. It is used in several robotics competitions, like FTC and VEX Robotics. There is an official forum that provides user support, mainly in English. Updates are published periodically.
#

HispaBrick Magazine® Event 2014

By Satanspoet
Pictures by Gèrman Tankisherman

From HispaBrick Magazine® we would like to thank the nearly 9.000 people who came to the 3rd edition of our event, the HispaBrick Magazine Event 2014, held at the mNACTEC in Terrassa (Barcelona).

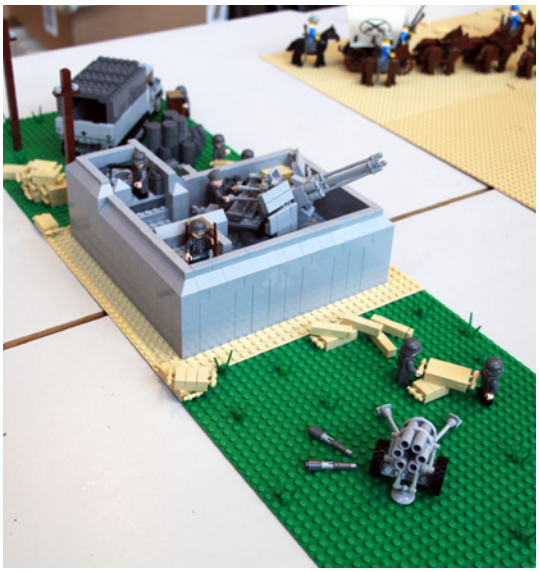
Even having less space than at other editions, we are pleased with the result. It was an exhibition mainly focused on dioramas and original constructions because, with the exception of Technic and MINDSTORMS models, no sets were placed outside a diorama.

Our medieval diorama based on the MILS system keeps growing. The same can be said about our MILS diorama of the Battle of Hoth, which we hope in a few years will grow enough to host the UCS Millennium Falcon.

We had our space for CITY, both vintage and current, Space Classic, western, military constructions and sculptures representing classic TV series and movie characters.

In the Technic and MINDSTORMS section we could see a bit of the history of this LEGO® line and we managed to start a GBC. In this section there were continuous live demonstrations of the different models brought to the event.

See you next year!!
#

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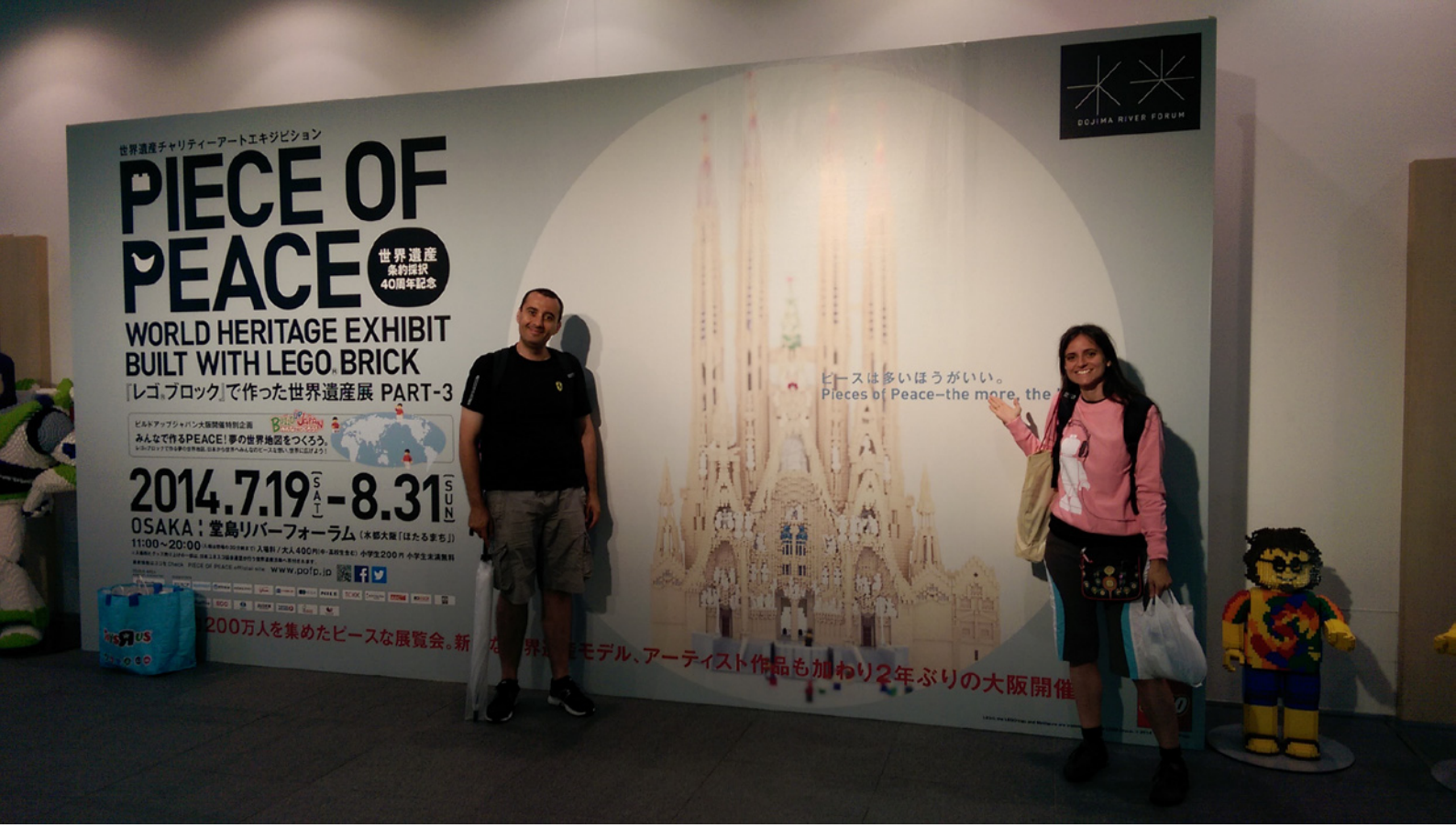
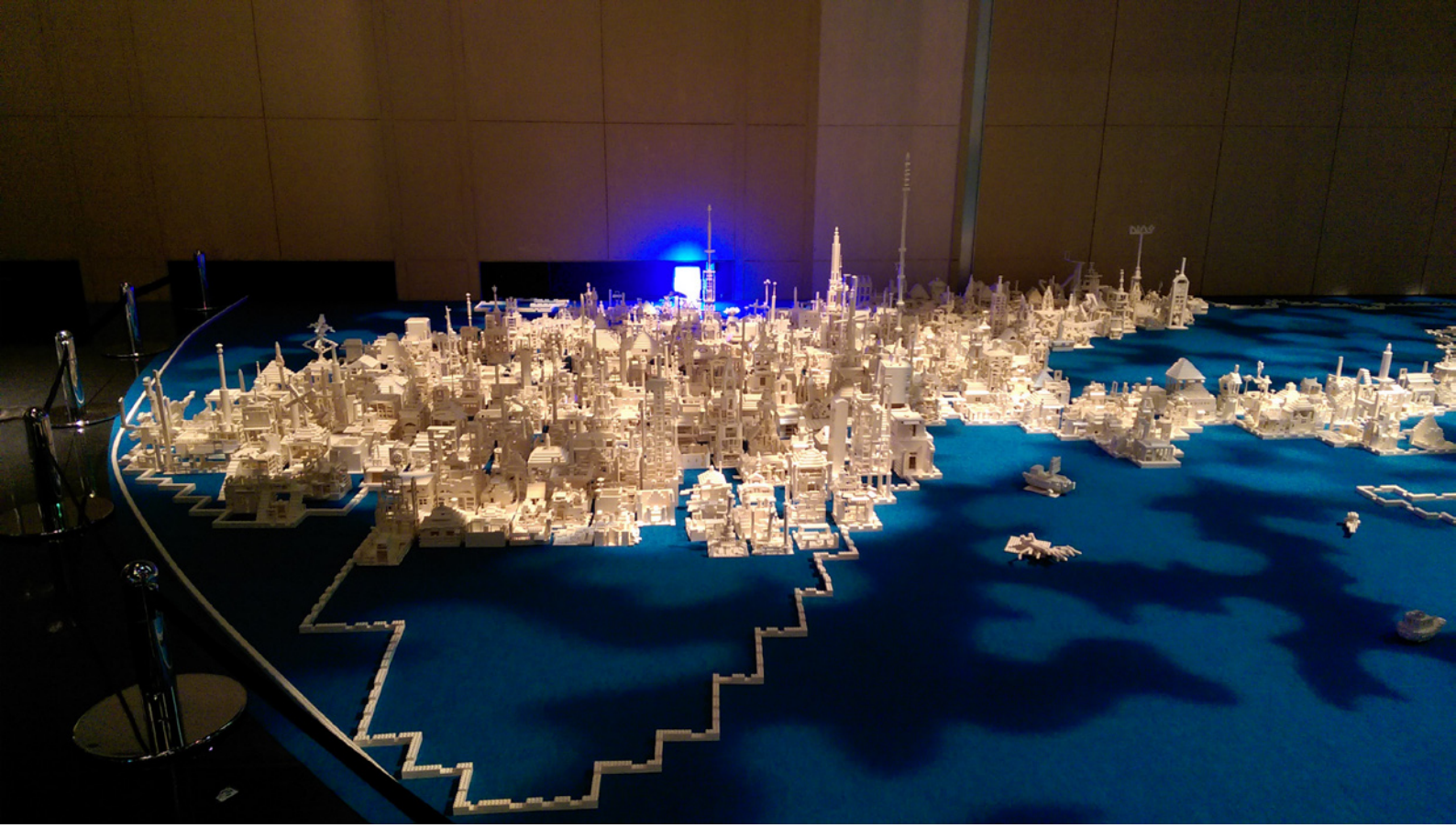


Piece of Peace

By Iluisgib
Pictures by Delia Balsells



One of the nice things about having friends around the world is that they can inform you about the events taking place during your stay in their cities. Last August, the Exhibition “Piece of Peace” was taking place in Osaka, coinciding by chance with our stay in that Japanese city.

Megümi Nakashima, a friend who lives in Osaka and with whom I spoke in the article “The Land of the Rising Brick” (HBM 019 and 020), let me know about this exhibition some weeks before landing in Japan. She knows that I like LEGO®, so she did not only provide me with the necessary information, but also accompanied Delia and me to the exhibi.

“This exhibition originated in Japan to support the UNESCO’s World Heritage activities and to promote peace through bringing the awareness of the World Heritage to the general public in all ages. From 2003, the exhibition has made more than 40 appearances throughout Japan during the nationwide tour and around 2 million people have visited.
The exhibition will primarily feature a collections of World Cultural and Natural Heritage replicas made by LEGO® bricks built by a renown Asian LEGO ® builder. These include Angkor, Mont-Saint-Michel and its Bay, Historic Monuments of Ancient Kyoto, Sagrada Familia, Historic Center of Vienna, Sydney Opera House and the Nikko Tosho-gu, etc. In addition, there will be newly build Fujisan replica.”

The atmosphere was very welcoming. A large dark room with spotlights illuminating the LEGO® models clearly indicated who were the stars of the show. The exhibition was not crowded so it was very pleasant to walk between the tables and observe different models from all angles.

To complement the exhibition, there was an activity in which children had to build a building with white pieces and place it on a large world map. A small LEGO shop at the exit was the perfect complement to the exhibition.

In addition to Piece of Peace, this year I have also seen a train exhibit in Osaka, commemorating the anniversary of the Hankyu line (Private Railway Company). Among several models and railway-related activities, there was a LEGO display with reproductions of several Japanese trains.

We had the opportunity to see Nathan Bryan again in Kobe. He was our “LEGO” cicerone last year. We also had a delicious meal (in every way) in Tokyo with Hac Shac and Yoshihito Isogawa. I’m very thankful for the warm welcome given by everybody during our stay. We hope to see them all again soon.
#

10th LEGO® Fan Weekend Skærbæk

By lluisgib
Pictures by Kevin Hinkle

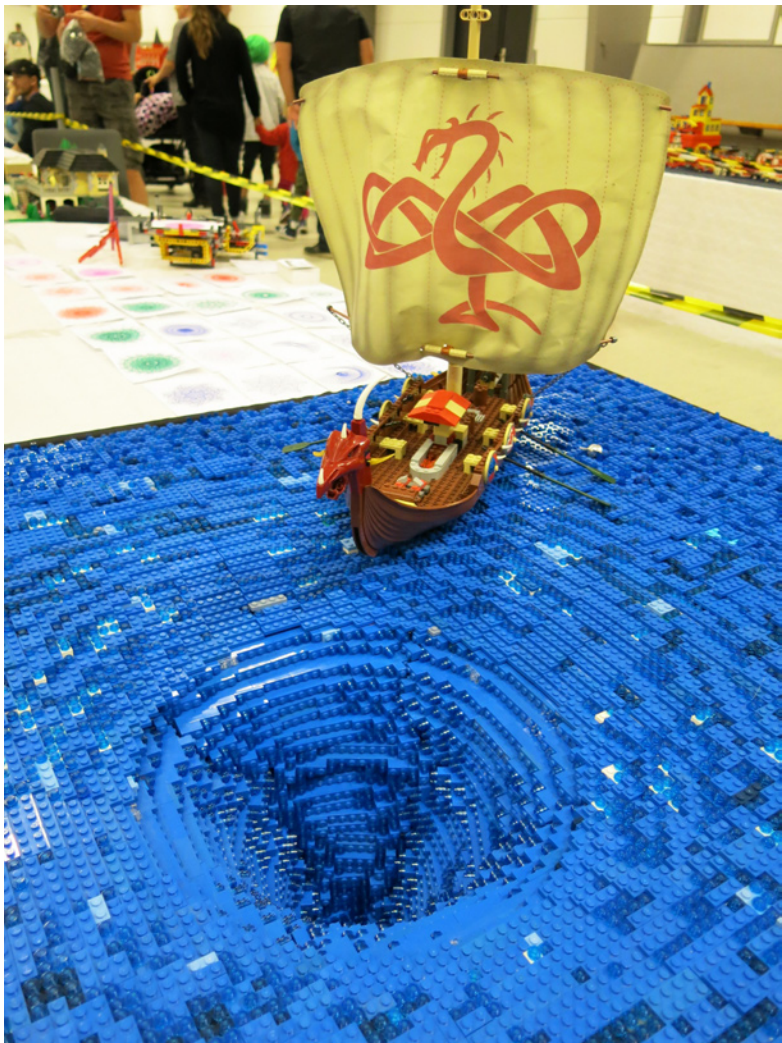
The last weekend of September marked the 10th edition of the LEGO® FanWeekend. It promised to be a most interesting weekend. 360 fans from 24 countries and representatives from a total of 39 LUGs.

This year, in order to commemorate the 10th anniversary, a large number of activities had been planned, like a Speed Building contest, conferences, workshops, an auction like never before, a visit by Mr. Kristiansen (Owner and grandson of the founder of LEGO) and Mr. Knudstorp (CEO of LEGO)... But the atmosphere was soured when, a few days before the event, it was announced that this would be the last edition.

The exhibition of models was, as always, the star of the event. This year there were some models I would like to highlight, like an airport with reproductions of all the Airbus models that took up 20m2, another airport at minifig scale that was completely illuminated, the Nyhavn (Copenhaguen) bridge brought from Hong Kong, or some impressive sculptures by Schneider Cheung.

This year the LUG Lounge was full of activities, like a building challenge, a library with many books and magazines about LEGO (including HispaBrick Magazine®) and an internal market where you I could buy some interesting parts for my collection.

During dinner there was a small speech by Mr. Knudstorp, a



talk by Steen Sig Andersen about the design process of a set (incidentally, Mr Anderen was the designer of my first ever LEGO® house), and a delicious and unexpected desert: each participant received an exclusive set, a reproduction of the train in LEGOLAND Billund with reference number 4000014. The same model had previously been given to the participants in the LEGO Inside Tour, although with a different packaging. The one we received had “LEGO Fan Weekend” printed on the box. It just so happened that Steen Sig Andersen had explained the design process of this set in his talk...

On Monday there was a visit to the P-Shop (the shop for employees). It was a unique experience to see 300 people in such a small space “fighting” for sets that didn’t even make it to the shelves…

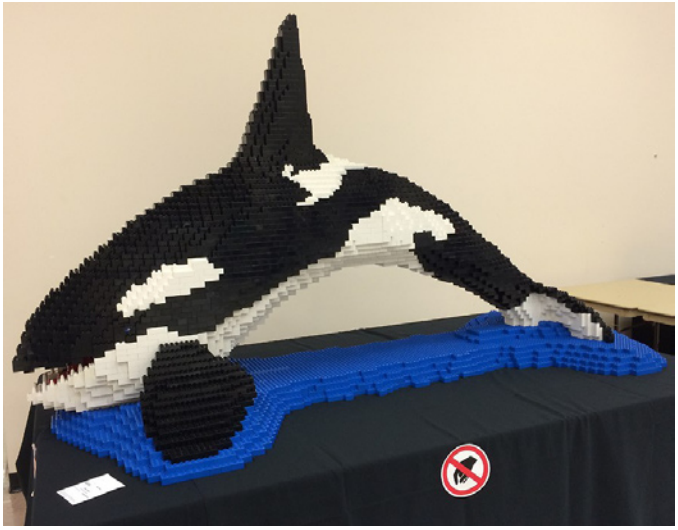
The subject of conversations everywhere was the cancellation of the event. There were many conjectures and suppositions. In this edition of HispaBrick Magazine®, Keith Severson explains the reasons for this decision. Some actions were taken before and during the event,but it looks like the decision is firm.

This year I left the event feeling sad, as from now on it will be more difficult to meet up some of the fans I used to see at the Fan Weekend. Some members of the organisation are trying to keep the event alive without the collaboration of LEGO®. I wish them all the best luck and I hope that, with the effort of all, the best LEGO Fan event in the world won't die. "Save Fan Weekend. Save Skærbæk"
#

BrickCon 2014

By Katie Walker

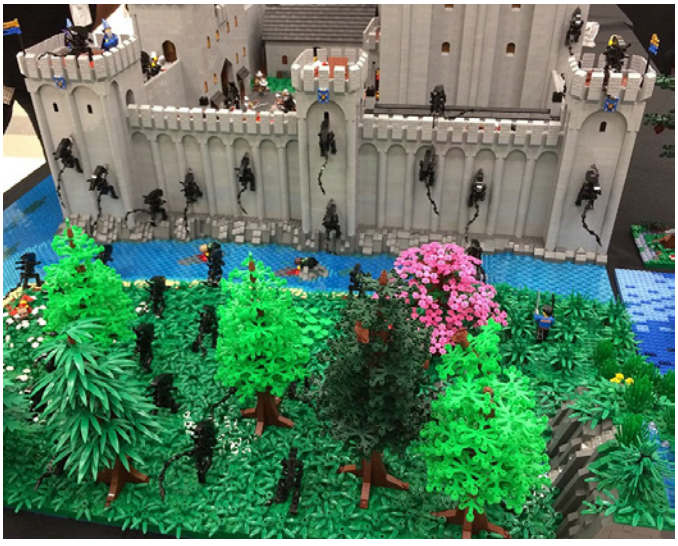
BrickCon 2014 returned to the Seattle Center in Seattle, Washington, for its 13th year. This year 470 convention attendees showed up with their models of all different shapes and sizes, from giant space needles and DUPLO orcas, to teeny-tiny replicas of actual models for the micro-BrickCon display.



Blackberry, the giant LEGO orca, by Robin Sather

"Micro BrickCon", by assorted builders

The theme of this year's convention was "Invasion!" Many of the models on display featured some kind of invasion, from the straight-forward to the rather inventive and clever. Some of the invasions featured a strange mix of different themes, such as in an alien invasion of a medieval castle, creepily portrayed by Andrew Schultz. There was also an invasion of zombies into the Star Wars™ world of Geonosia, as portrayed by Rich Maes. And in the model "Sandbox", by the Vancouver LEGO® Club (http://vlc.ca/), a child's play area is turned into a raging battle between the toy soldiers and the invading insect hordes.

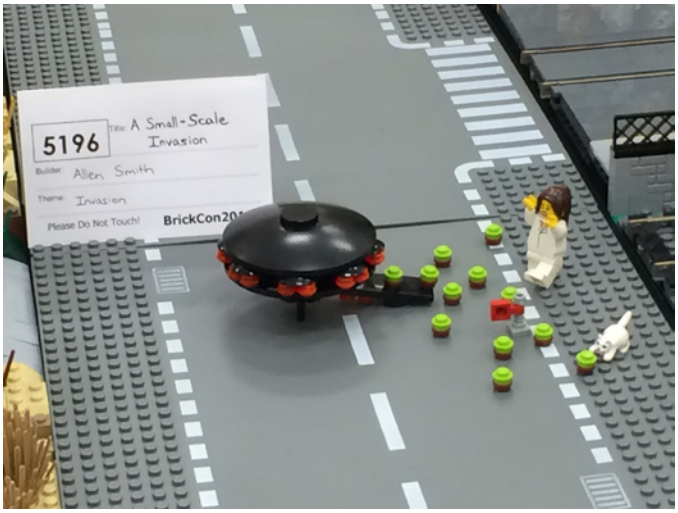


Alien Invasion!: "Last Day of King Ulrich's Reign", by Andrew Schultz

"Zombie Apocalypse on Geonosia", by Rich Maes

“Sandbox”, by the Vancouver LEGO Club

In contrast to the large-scale battles waged throughout the exhibition hall, there were quite a few small invasions too. In “A Small-Scale Invasion” by Allen Smith, the invaders are no larger than mice, much to the delight of the neighborhood cat. And sometimes, the invading force might be something as cute and cuddly as a sheep going for a joyride on someone else’s model, as was the case with Thorin Finch’s sheep popping up in all sorts of different places, such as on the “Sun Salamander” by Sean and Steph Mayo.



“A Small-Scale Invasion”, by Allen Smith

“Sun Salamander”, by Sean and Steph Mayo, invaded by a sheep

Some of the Invasions were quite creative in their reach and scope. The fearsome Space Vikings (along with their respective builders) invaded more than one theme over the course of the convention. Wearing Viking hats and playing battle music, the group of builders grabbed their Space Viking ships to go on a conquest of the Model Team car display.

Space Vikings prepare to invade the Model Team theme table.

The Space Vikings celebrate their conquest of the Model Team theme table.

There were many other models that moved beyond the Invasion theme. Anu Pehrson won the People's Choice award with her rendition of the Tiger's Nest Monastery. It is a gorgeous, incredibly detailed rendition of the original. Since its first display at BrickCon 2013, Anu has spent time adding more details, such as a waterfall and more landscaping with a wooden bridge. She rebuilt most of the backdrop cliffs, made them 6 inches higher, and added rock work to both the sides/ends as well. For more information about this model, see the article in HispaBrick Magazine®'s Issue 19.

Paul Hetherington continued to add to his impressive collection of BrickCon Best-in-Show awards with his Mouseguard title sculpture. ArchLUG (http://www.archlug.com/), an architecture- and castle-based LUG from Seattle, is planning a cooperative build illustrating David Peterson's Mouseguard series of comic books (http://www.mouseguard.net/). ArchLUG is working directly with the author to try to bring the world of Mouseguard to life. Paul's title model gave us a hint of what is to come. Look for a debut of the entire collaboration at Emerald City ComicCon in Seattle next spring.

Anu Pehrson and her Tiger's Nest Monastery

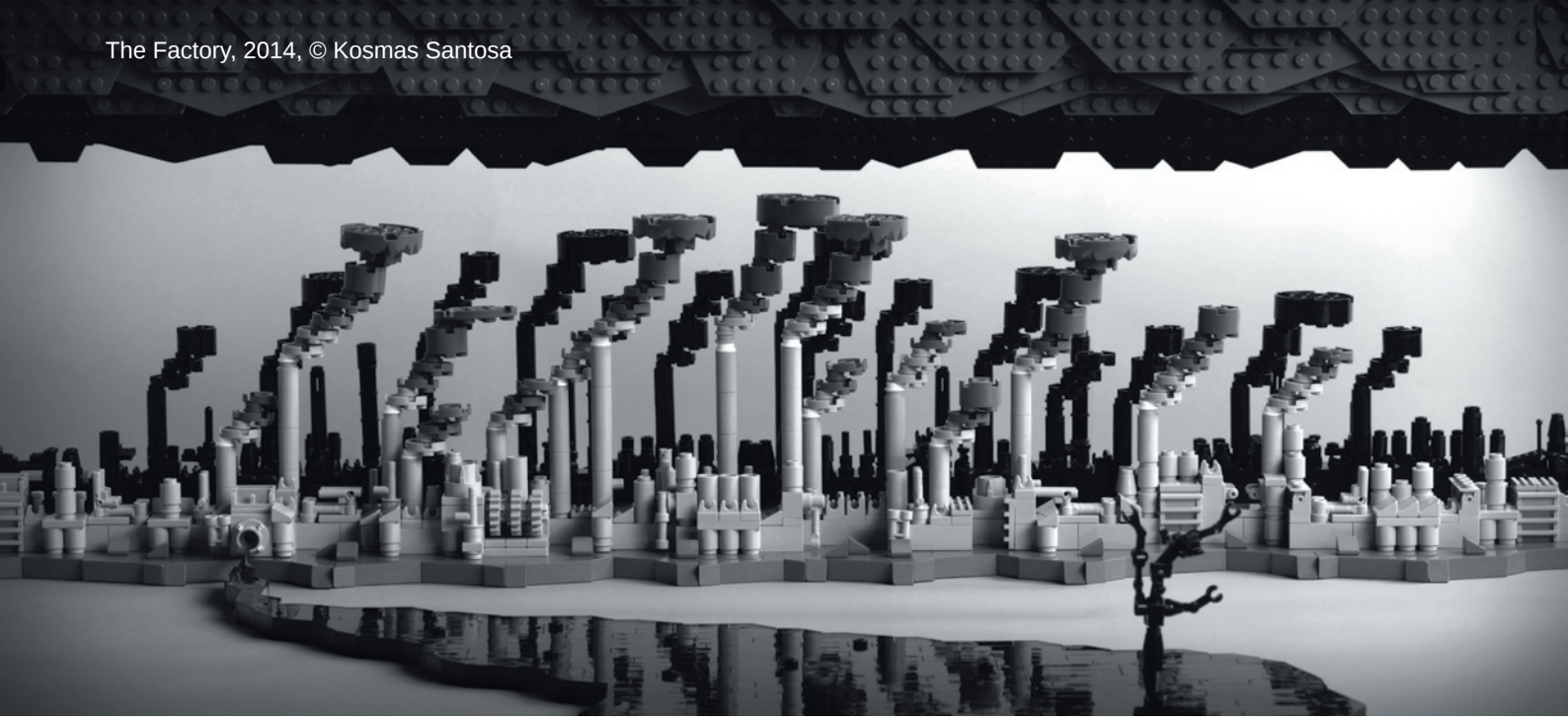
Mouseguard by Paul Hetherington

Of course it would be remiss to speak of the abundance of invasions at BrickCon this year and then leave out the greatest one of all: the 13,200 public attendees that came through on the two public days (a new record!). There were visitors who come every year, buying their tickets well in advance, and others who made it for the first time. Many of them left inspired to go and build something of their own. My two nephews visited for their first time this year. Five-year old Jameson was enraptured by what he saw and went home and got right to work, creating a model of a tornado-damaged park, complete with a teeny-tiny remote-controlled helicopter lost in a tree. It won't be long before these little ones come back to future editions of BrickCon, bringing their own models with them to share and inspire.
#

Brogan and Jameson at their first BrickCon
The next generation of builders!

BEAUTIFUL LEGO® 2
DARK

MIKE DOYLE



The Factory, 2014, © Kosmas Santosa

Review: Beautiful LEGO® 2: Dark

By car_mp

Pictures: Reproduced from Beautiful LEGO®, with the permission of No Starch Press. © 2014 by Mike Doyle

Título: Beautiful LEGO 2: Dark
Author: Mike Doyle
Editorial: No Starch Press

This is not the first time we talk about Mike Doyle in our magazine. In previous issues we talked about his creations and also about the first volume of this book. No Starch Press has been kind enough to send us a copy of the second volume of Beautiful LEGO®.

This book is a little different from the usual books published about the world of LEGO bricks. It is not about building techniques, it doesn´t include instructions, nor is an illustrated guide of minifigs or any of the LEGO lines, it is primarily a book of inspiration.

This carefully bound book has 325 pages, divided into chapters according to the theme of the photographs. At the end there is a complete index of the photos and their authors. Under the broad umbrella of the word “Dark”, the author makes a journey through a fantastic collection of creations made with LEGO bricks that for sure will be attractive for both AFOLs and the uninitiated in this world, who will be attracted by the beauty of the images and the art they contain. The variety of creations is much greater than its title might lead to believe, and some chapters are memorable for their quality and originality.

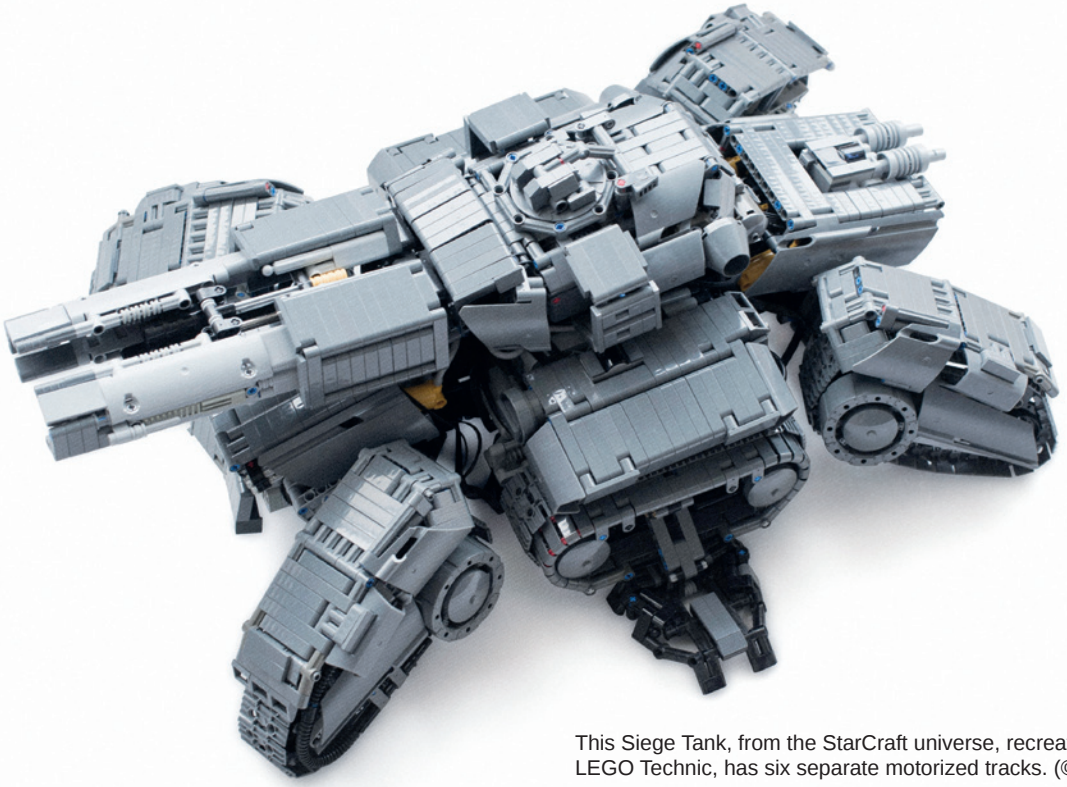
Not much text, there are just some testimonies about their creations and hobby by some of the creators included in the book. You don’t need more, the goal of the book is clear and the words are not necessary to admire its interior.

I must say that I was surprised that a few pages only include a photo in a very small size for the book format, leaving much blank on that page. I don’t quite understand the reason and I think it’s the only “but” I can put to the book. Including computer rendered creations can also be a questionable decision, but that I leave to the taste of the reader, personally it does not bother me in the least.

Therefore I find it very easy to recommend this book to all those who like to see true works of art made with LEGO bricks, or for those seeking inspiration for their own creations. It is a book beautifully crafted book with outstanding content.

Thanks to No Starch Press for the book and graphic material.
#

Stranger on the Road (from Shadow Play), 2013, © David Alexander Smith



This Siege Tank, from the StarCraft universe, recreated entirely in LEGO Technic, has six separate motorized tracks. (© Antti Hakala)

Review: Incredible LEGO® Technic

By Jetro

Pictures: Reproduced from Incredible LEGO Technic, with the permission of No Starch Press. © 2014 by Paweł "Sariel" Kmieć.

Título: Incredible LEGO Technic – Cars, Trucks, Robots & More
Author: Paweł "Sariel" Kmieć
Editorial: No Starch Press

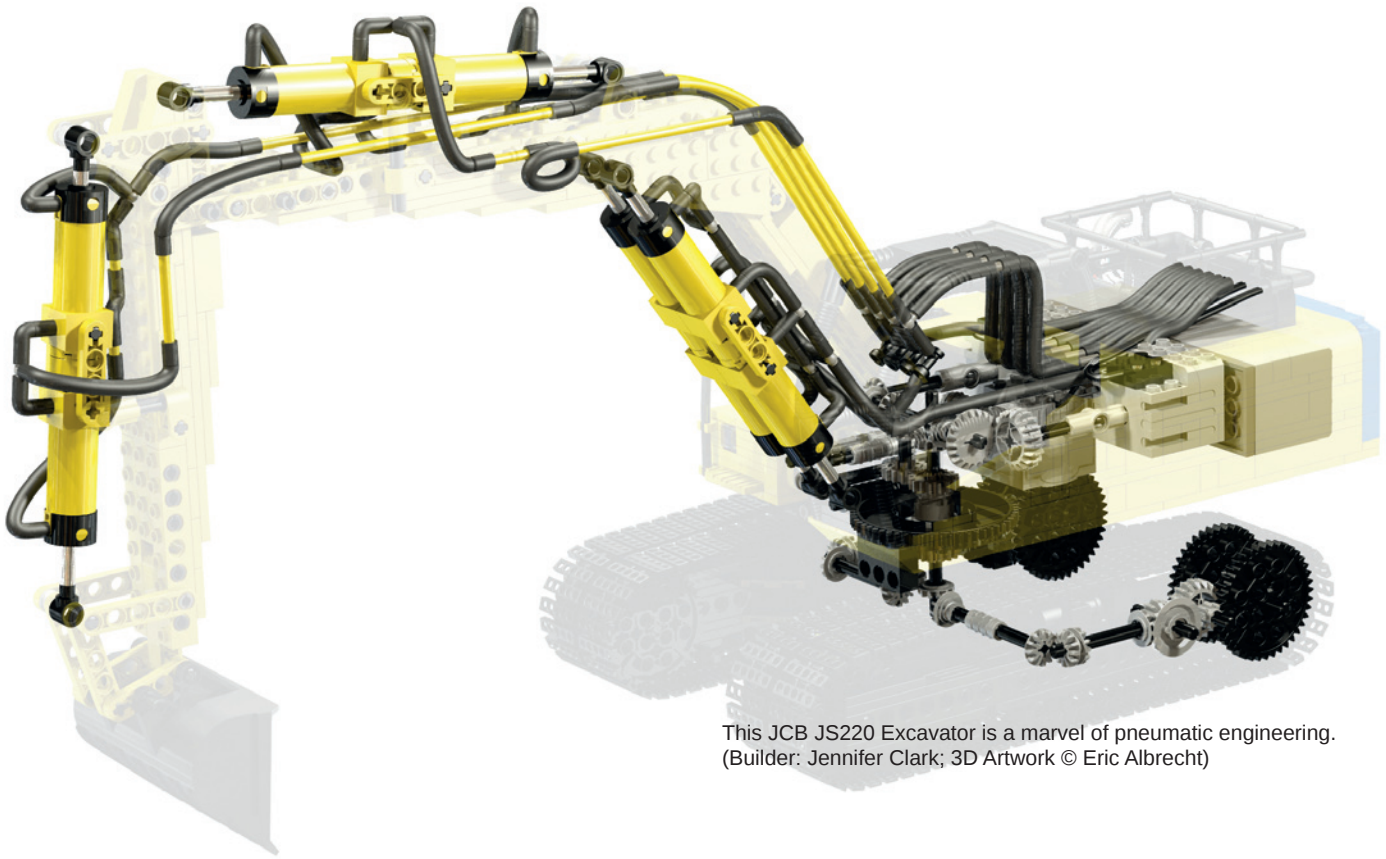
To anyone with the slightest knowledge about or interest in LEGO® Technic, "Sariel" is a household name; a prolific builder of beautifully detailed, working Technic MOCs and writer of many tutorials, including The Unofficial LEGO® Technic Builder's Guide. His latest offering, Incredible LEGO Technic – Cars, Trucks, Robots & More, however, is not about HOW to build fully functional models, but WHAT stunningly beautiful models can be built using many of the techniques outlined in his first book.

Although the book has been compiled by a master builder, the models displayed are not solely his own. Sariel has reached out to a considerable number of great Technic builders who have all contributed one or more models to turn this book into a catalogue of Incredible LEGO Technic.

But what good is a catalogue if you can't buy any of the models? Well, let me try to explain that in stages. First of all, the book has a clean and attractive design and features high quality images of the models displayed. Each model is shown from various angles, some backstory about the original model is provided as well as interesting facts about the build, including dimensions, part count and functions. The models are organised into categories and include not only cars and trucks, but a wide range of subjects from aircrafts to watercrafts, including a very interesting "Miscellaneous" category that includes a braiding machine and the Tachikoma robot from Ghost in the Shell. [1]

A good technic model is not defined by its well-designed "shell" – which is of course a must to qualify for this book – but requires incredible internals as well. Showing clear images of the mechanics isn't always an easy task, but in this book Sariel has had the inestimable help or Eric "Blakbird" Kingsley, who has created digital models, creating renders that literally allow you to look inside the models.

Still not satisfied? So far I have refrained from naming any of the builders who collaborate in the book because naming only a few would be unjust to the rest. Two sections at the end of the book merit some attention in this regard. First there is a complete list of the 37 builders who have participated in the book, including a small bio and links to their websites and or



This JCB JS220 Excavator is a marvel of pneumatic engineering. (Builder: Jennifer Clark; 3D Artwork © Eric Albrecht)

YouTube/Flickr/etc channels [2]. The second section are the credits for the individual models, providing specific links to videos, building instructions and additional information where available.

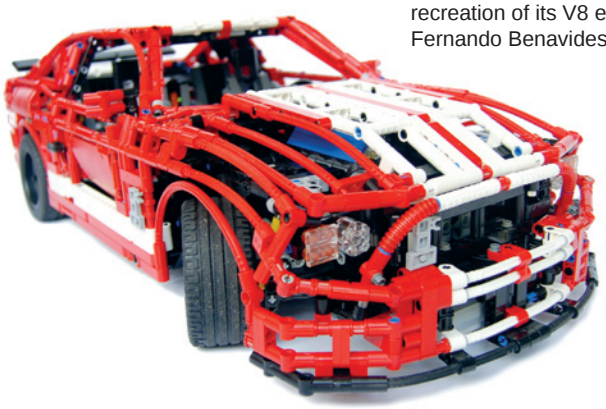
But wait, there is more! I did say I didn't want to single out any of the builders, but I must make an exception for Jennifer Clark, as this book includes a model she built in 2003 and that had not previously been published. An attractive bonus for an already very attractive book.

Incredible LEGO® Technic will be available in digital format later on (possibly in January). The official story is that this is done to curb piracy and allow the book to sell better initially. I have my doubts… not about the piracy issue, mind you, but about the convenience of a digital edition. It is true that while browsing the book I occasionally had the urge to make the well-known gesture that on a tablet would zoom in on an image to see it in more detail. True, the links to the online images and videos that are provided in the back of the book could serve precisely that need, but they are less immediate, instantaneous, and require switching over to a different medium and finding the images. In that regard I would have welcomed a QR code with each model that links directly to online information about it. However, the physical space a book takes up and the feeling of idly turning page after page, or simply opening it at a random location still makes me prefer the physical format of this high quality book. The timing of the publishing date is also important: just in time for the holiday season. Incredible LEGO Technic is a great gift, something to enjoy on a cold winter day while planning your next Technic MOC, or to inspire a friend, partner or child.

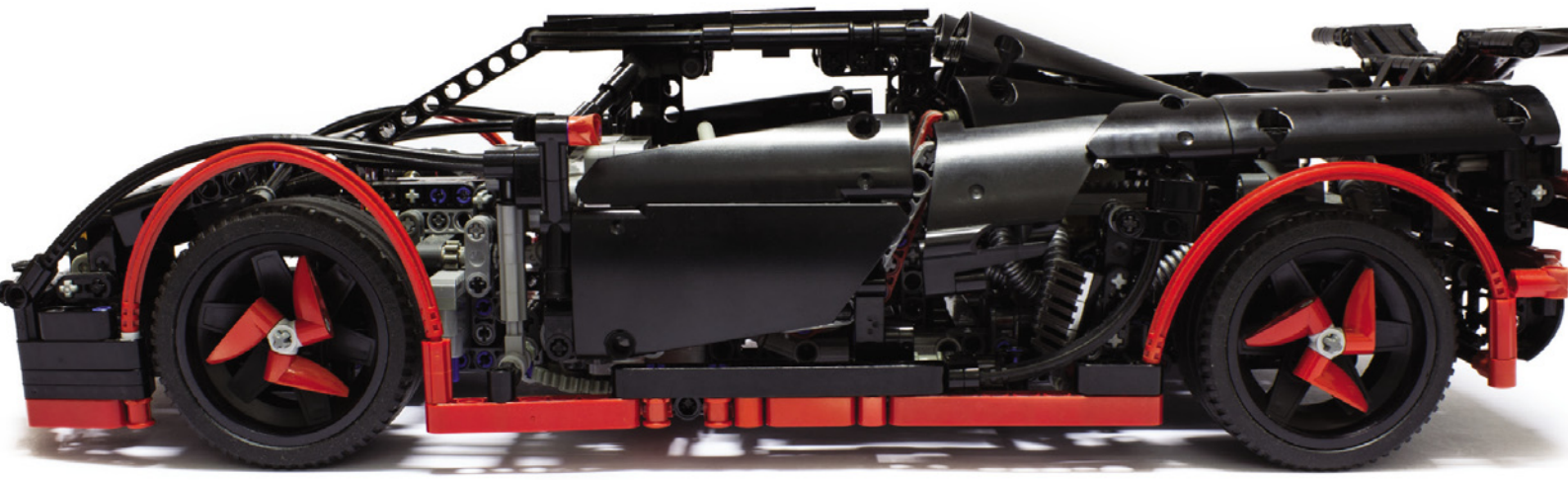
[1] http://www.nostarch.com/download/Technic_toc.pdf
[2] http://www.nostarch.com/download/Technic_builders.pdf
http://sariel.pl/book2

Thanks to No Starch Press for the book and graphic material.
#

This Kawasaki Vulcan has a full suspension, disk brakes, and even a folding stand. (© Marat Andreev)



This Ford Mustang Shelby GT500 was painstakingly built at 1:8 scale, including a recreation of its V8 engine. (© Fernando Benavides de Carlos)



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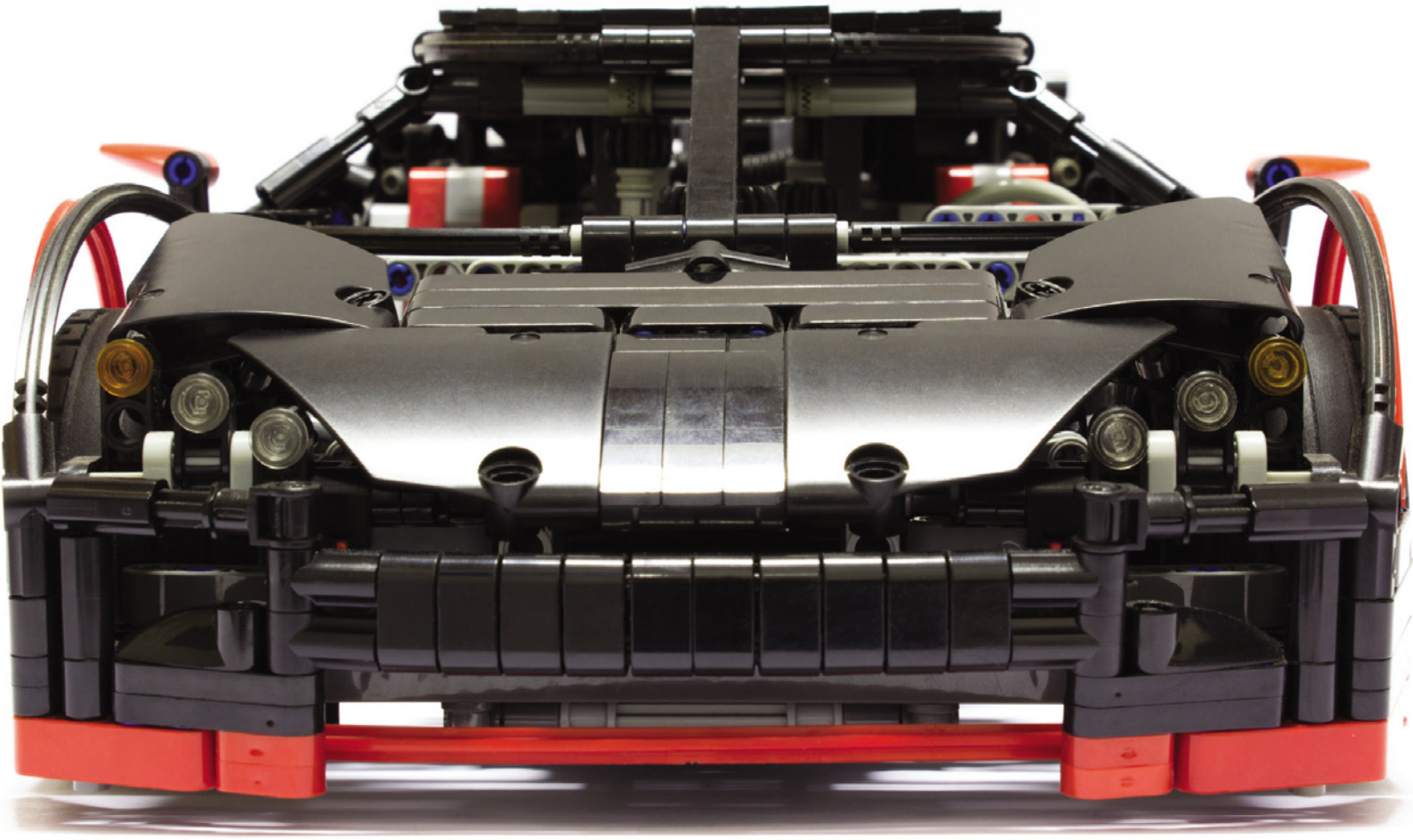


Paweł “Sariel” Kmieć

Review: 75060 Slave 1

Texto: car_mp
Fotos: LEGO® System A/S

Set: 75060 Slave 1
Number of parts: 1996
Minifigs: 4

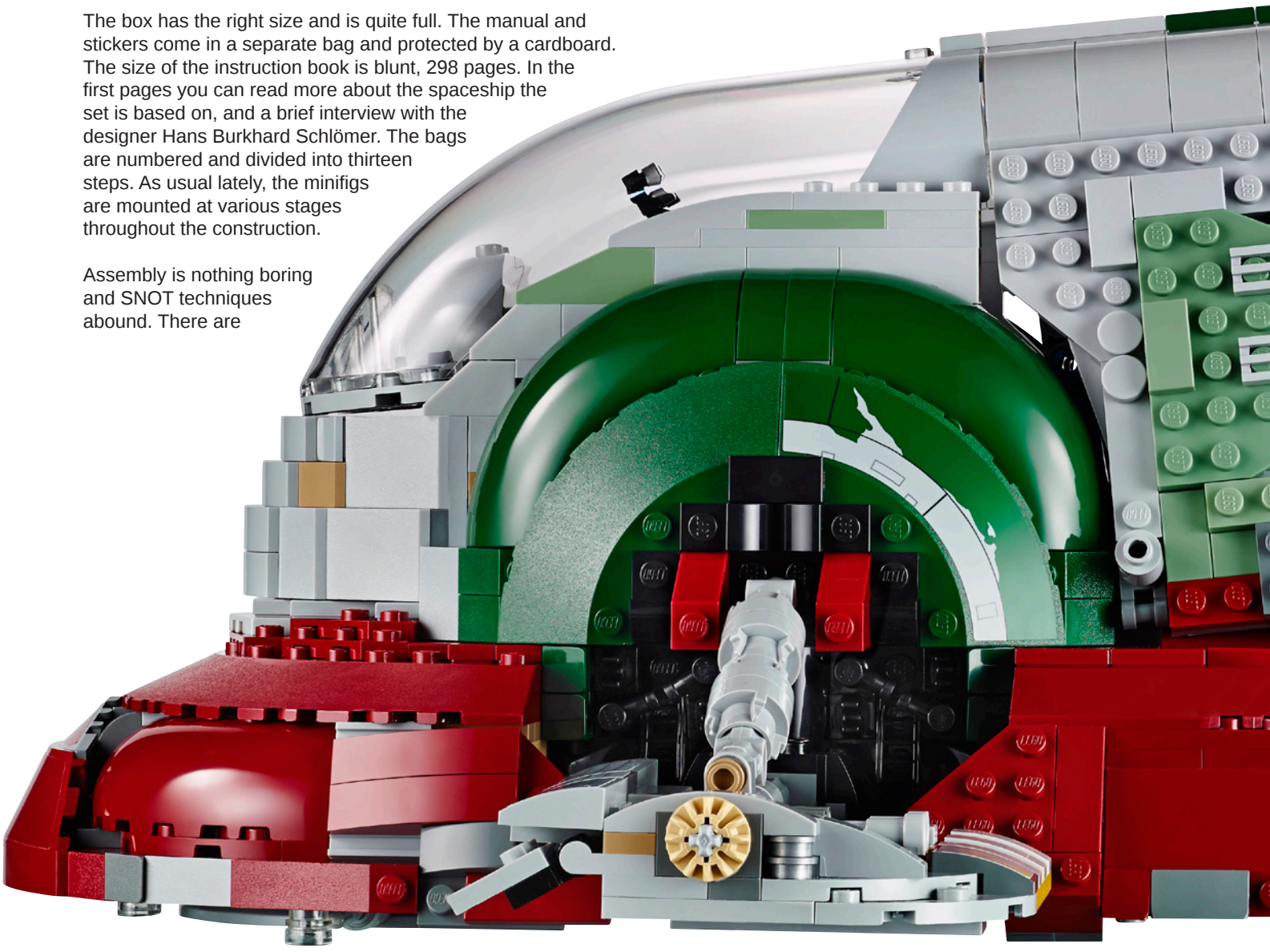
Many versions of the famous spaceship Slave 1 have appeared on the market since 1999 when LEGO® Star Wars™ began. Many versions at different scales. But at last we may be looking at the definitive one.

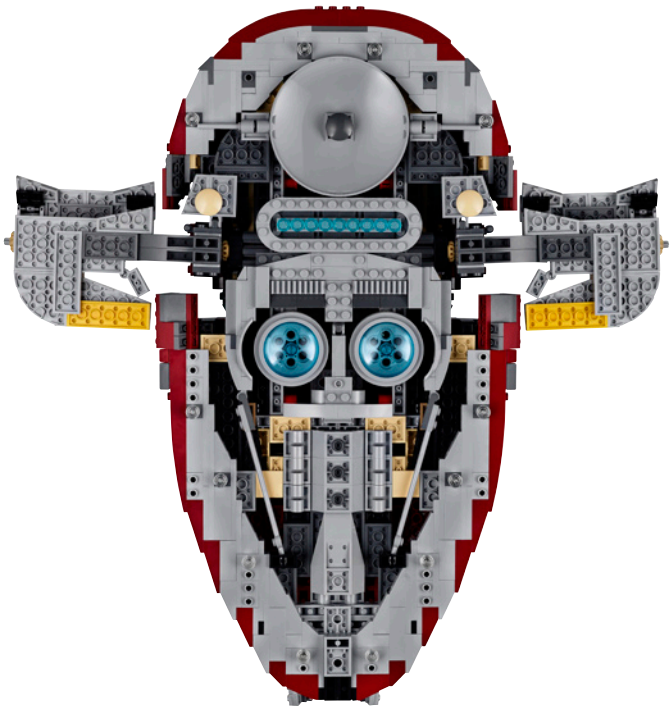
The next January 1st will be on sale the new set 75060 Slave 1, with 1996 pieces and 4 minifigs we are facing a full-blown UCS. Thanks to TLC we had the opportunity to build it a few weeks before it is available to the general public.

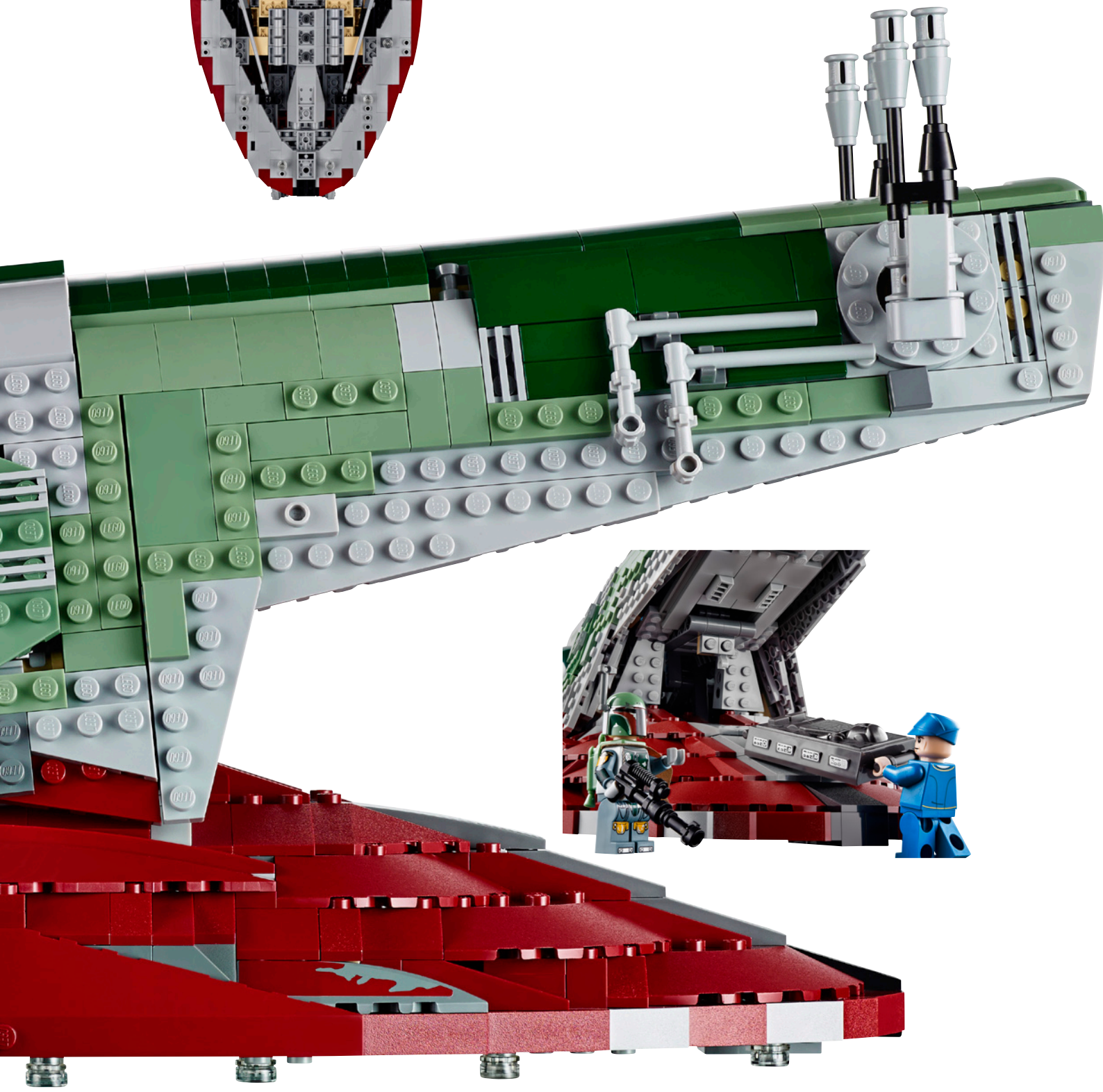
The box has the right size and is quite full. The manual and stickers come in a separate bag and protected by a cardboard. The size of the instruction book is blunt, 298 pages. In the first pages you can read more about the spaceship the set is based on, and a brief interview with the designer Hans Burkhard Schlömer. The bags are numbered and divided into thirteen steps. As usual lately, the minifigs are mounted at various stages throughout the construction.

Assembly is nothing boring and SNOT techniques abound. There are some anchors that may be a bit complicated but nothing insurmountable. It has good Technic structure inside to give strength to the model.

The range of parts is very good, with unusual colors like dark green, sand green and dark red. Highlights the new 8 studs wide windscreen, revealing the interior of the cabin without difficulty. See Bobba Fett sitting on the ship gives a very accurate sense of the scale of the ship.







The minifigs are interesting, Bobba Fett, a Bespin guard, a Stormtrooper and Han Solo with clothing with which he is frozen in carbonite at the end of The Empire Strikes Back. It also includes the part that simulates Han Solo frozen.

The ship includes many features. The pilot's seat and wings rotate into position for landing or flying. The lower canons rotate and you can also open two side doors that hide missiles. Han Solo in carbonite can be fixed inside the cargo hold and be removed from the bottom of the ship.

I must say that this is one of my favorite ships, probably because of its originality, and the final result after building the set is amazing. The first surprise is its size, honestly I have not imagined it could be so huge, but then, the final result is what makes you fall in love. For me it's definitely one of the best sets of Star Wars™ in recent seasons. Given the difficult curves of the model is to appreciate the design effort made by TLC. A must for any collection.

Acknowledgements: To LEGO® SYSTEM A/S for this set.
#

Review: 21118 The Mine

Build your own Minecraft structures with LEGO® bricks.

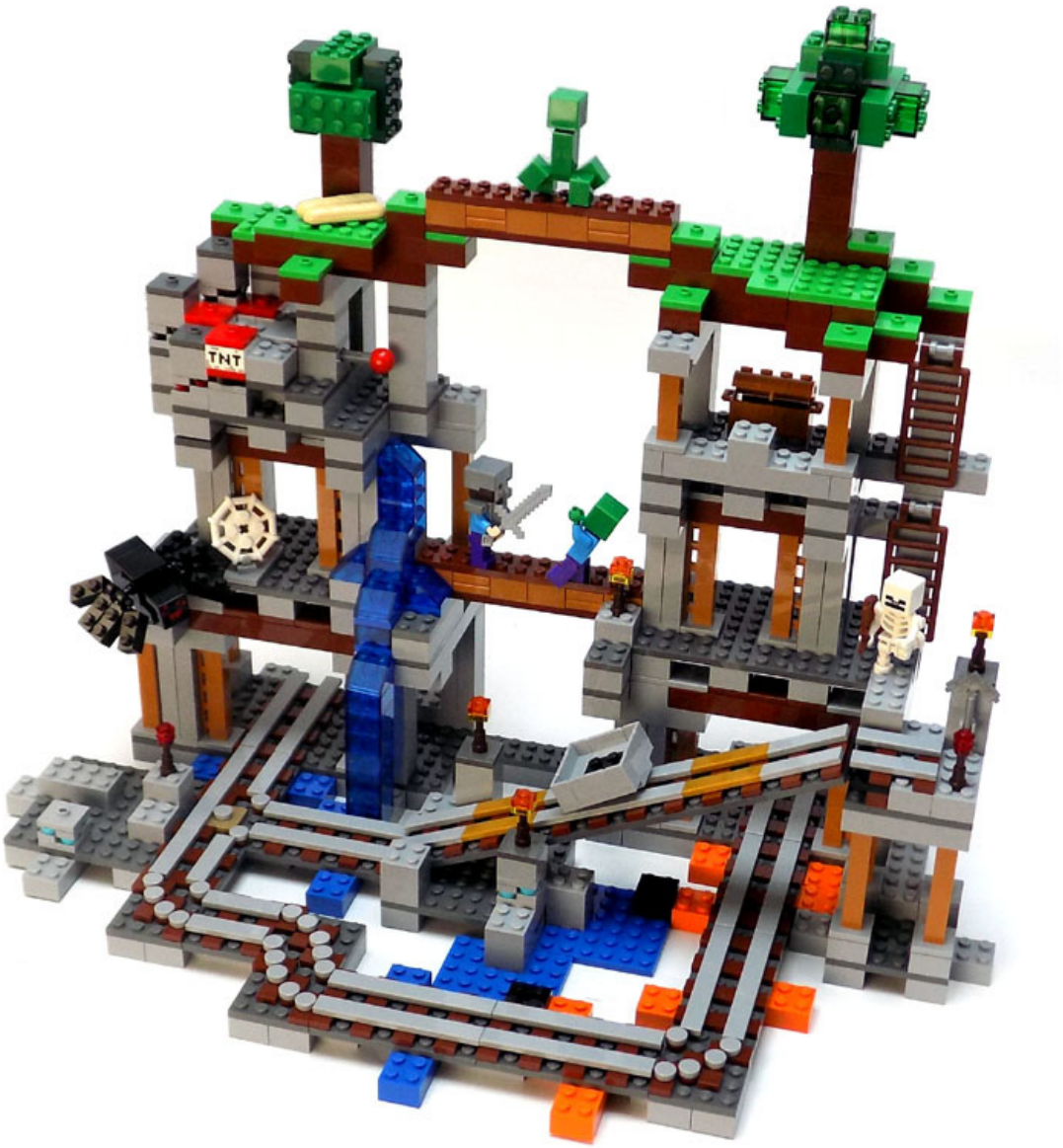
By Legotron (A. Bellón)

Set: 21118 THE MINE
Number of parts: 922
Minifigs: 5

After the unveiling of the “21102 Minecraft Micro World – The Forest” set in 2012 we have seen several new sets related to Minecraft. All of them show different scenes of the Minecraft world from a micro scale perspective. But, things have changed with the latest Minecraft related sets that were put on the market in November. They are designed to be compatible with the minifig scale. The 21118 The Mine is the biggest set of this new wave about the well known Minecraft game. A game that consists on surviving in an imaginary world by building and destroying structures with blocks of different materials.

I think the new scale of these sets is a great idea. The first sets that were made in micro scale did not allow to represent the specific characteristics shown in the Minecraft words. Details were impossible to built at this scale and were lost. The minifig scale is perfect to show the main characters and their features as well as their tools and weapons. In the Minecraft style, of course! The main elements of the game, the blocks, are clearly identified. Now you can see the different resource blocks, and this adds new interesting features to these Minecraft sets.

For those who don’t know Minecraft, it can be said that Minecrafts is like a gigantic construction full of 1x1x1 bricks. These “bricks” are called blocks and represent different resources that can be used to create new materials or to build other structures. They are collected and used in the game



like we use our beloved bricks. I was new to Minecraft, but I had heard about it many times. So, I decided to play and see for myself what Minecraft is before the review of this set. And I must say that the work done by the LEGO® designers is awesome. I know that the Minecraft world is very close to LEGO® constructions as they share many common features, but the way this set has been designed shows them perfectly and allows you to play with the LEGO® bricks like in a game of Minecraft.

Let's talk about the set. It depicts an abandoned mine, like the ones that can be found in the deepest caves of the Minecraft worlds. It is a big box, with a large amount of pieces, in order to build several levels of a small Minecraft scene. We have several levels, the top one the surface, built with grass elements and trees, as common elements of the Minecraft worlds. The other levels are part of the mine, with many resource blocks, mine structures and a rail system with a mine car and other elements of the underground world of Minecraft.

Furthermore, there are 5 minifigs in the set: Steve, a skeleton, a zombie, a creeper and a spider. They come with some weapons and tools, like the iron sword, iron pickaxe and a bow. Steve wears the iron helmet and iron armour. They are awesome, and very close to the game characters. These minifigs include some new elements. The creeper body is made with a new specific piece. The heads of the rest of minifigs have a cubic shape, like the original ones in the game. And they are printed with the same pattern as the game. The weapons and minifigs tools are new, with a grid pattern shape, in the same way they are shown in the game.

The building process is fun. The whole scene is divided into different spaces that are combined to form the mine. This structure is not full of blocks like the game, it has many clear areas that allow you to play in all the different rooms of the scene without removing any bricks. There are two parts, the surface at the top and the mine in the bottom. The surface has many grass blocks and 2 trees built in the blocky style of Minecraft. You have stairs to go down into the mine. This part of the construction is made up of three levels. The first level is full of Blocks, some of them labeled with the letters "TNT". They are placed with other blocks in a mechanism that simulates an explosion that blows off a small section of the level. If you place the blocks correctly this feature works very well. In the other side we have a chest and another set of stairs.
The next level contains a railway system for the mine wagon. I tried to slide the mine wagon and it worked very well, including the curved segments. In this level there is also a small waterfall that ends in the bottom level. The railway is placed on a ramp that goes down to the last level. This level is intended to be the base of the mine, and the part with the most valuable resource blocks: diamond. The mine structure is decorated with many elements, like wooden poles, very similar to the ones shown in the game. Many areas of the mine are full of blocks. They are placed over "Plate Modified 2x2 with Groove and 1 Stud in Center", so they can be change very easily. You can change the locations of the resource blocks to hide them or change the overall appearance of the mine with little effort. The same can be applied to the elements of the mine, they can be combined in many ways to create countless different mine scenes.

This feature of "building yourself" is the most interesting characteristic of this set. It is designed to encourage the builder to build more things that the ones shown in the instructions. Furthermore, this set can be combined with the rest of the Minecraft sets, so you can build large scenes or structures with many different combinations. Every landscape or structure built in Minecraft can be assembled in real life with LEGO® bricks, and this sets adds the characters available in the game.

There is an interesting element that amazed me: the blocks. They are recreated with elements that measure 2x2 studs by 4 or 5 plates. This set comes with some grass and gravel blocks. But there are some resource blocks also, like diamond, coal and redstone blocks. They are built with very common parts, so it is very easy to build new blocks to add to your Minecraft scene. I would use blocks of 5 plates tall, so you can build pure LEGO® structures of 5 bricks tall to use as supports to your Minecraft structures. The structures would provide strong connections. In this way you would be able to move, remove and change your blocks inside your structure without dismounting the whole structure, so that you could play Minecraft with the LEGO® bricks.

If you are not fan of Minecraft, this set can be a great opportunity to get a very interesting assortment of parts, with many bricks, plates and tiles that can be used in countless constructions. In short, I think this set is great, regardless of whether you are a Minecraft fan or not.

I hope LEGO ® will add some small sets to increase the number of blocks we can use in our customized Minecraft worlds built with LEGO bricks.

Acknowledgements: To LEGO® SYSTEM A/S for this set.
#

Review: 79117 Turtle Lair Invasion

By Otum
Pictures by The LEGO Group, courtesy of Brickset

Set: 79117 Turtle Lair Invasion
Number of parts: 888
Minifigs: 6

They are four, they are green, they are teenagers and they are mutants, they are The Ninja Turtles!!

In the nineties these creatures emerged from the sewers of New York City to get into our hearts. A few years ago, our beloved green critters and their teacher have been reinvented by the Nickelodeon touch, resulting in one of the funniest animated series in recent times, and to make things better, this year they have given us an action movie with the turtles as main characters. One of the most important scenes in the movie is when the Foot Clan invades the secret lair of our heroes, well, this is the set which this article is about.

The set is one in a collection of three sets based on the movie, of the three, this is the largest one, and the only one which is a building, since the other two are focused on scenes with vehicles.

The box is medium sized, decorated in green, but a bit darker to differentiate it from the animated series sets. It includes seven parts bags, a bag of special parts, two building instructions books and... a sticker sheet, but don't worry!! the outcome resulting from using the stickers makes them tremendously useful.

From the first bag a small training platform is built with a rotating target to practice strikes, also includes a motorbike, a Foot Clan soldier minifig and the Leonardo minifig, as it can be seen, it is a simple and fast building, no secrets.

Bag number two includes parts to assemble the fan structure, which incorporates a mechanism that causes the fan itself to be ejected, very useful against Shredder's attack, a minifig is included in this bag along with a blue skateboard. Again, very

simple and quick to build, and it is attached to the training platform built before.

Going with the third bag, the following is built on top of the fan structure. The construction is a kind of vault, or retaining door, it's not very clear, and very rightly it includes a mechanism that closes and if in case it is opened a small catapult throws a barrel to the invader. It also incorporates another Foot Clan soldier.

Now we go to bag number 4, which includes the master Splinter minifig, and parts required to assemble the weapons room, which is closed after a huge gate is activated by a mechanism. This is an independent structure from the other construction built before, but can be joined by a small bridge located at the first level of both sets.

Bags 5 and 6 are used to build the most important thing for all heroes, the supercomputer, and the most important thing for our green heroes, pizzas!! Without wishing to be repetitive, simple construction, but with patience, since most of the stickers are used at this time. This construction is completed with the content of the seventh bag, which allows you to build the top level representing a stretch of road and the secret entrance as well as a trap cell where the invaders get caught. This last bag includes the Donatello minifig.

This is a set with lot of gameplay, full of mechanisms that allow recreating many different situations. The minifigs are very accurate to the movie characters, so they are different from those that come in the animated series sets, the only bad thing is that not all four turtles come in this set.

Honestly, the stickers give much color and realism to the set, a curious remark is that the stickers are numbered on the stickers' sheet, the building instructions not only indicate that you have to use a sticker, it also tells you which must be used, no more forcing the eyes to find out what you have to use ... hehehehe

Definitely, if you are a new fan or a romantic of these four green brothers and their teacher you can not miss this set.

Construction: 5 (easy, the essence is in the minifigs)
Gameplay: 9 (full gameplay, lots of mechanism and traps)
Parts: 6 (curved slides, minifigs)
Price: 6 (a bit high for its simplicity and parts)
Final Mark: 7.5 (Who is not a Ninja Turtle fan?)
#

Review: 4000014 The LEGOLAND® Train

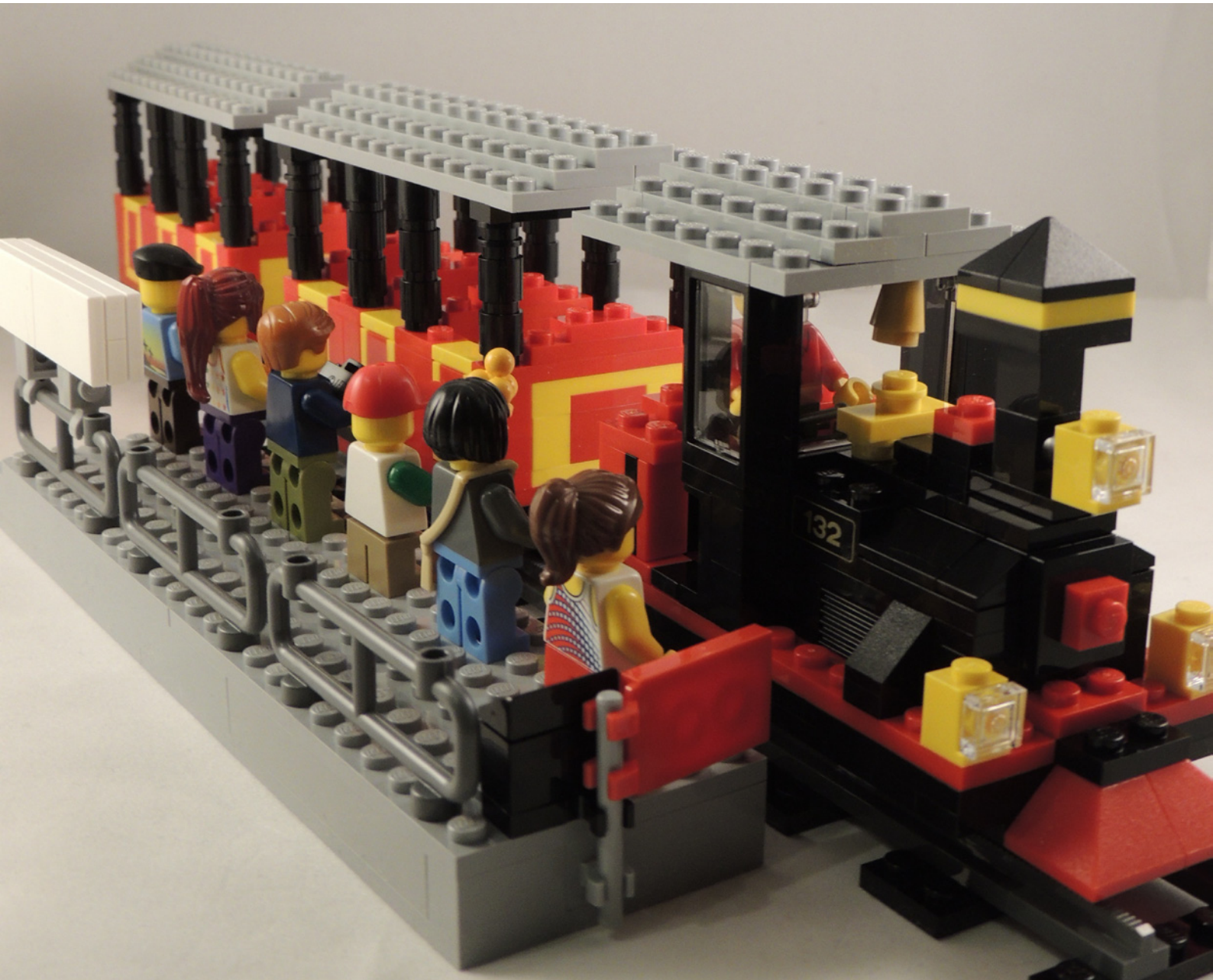
By lluisgib

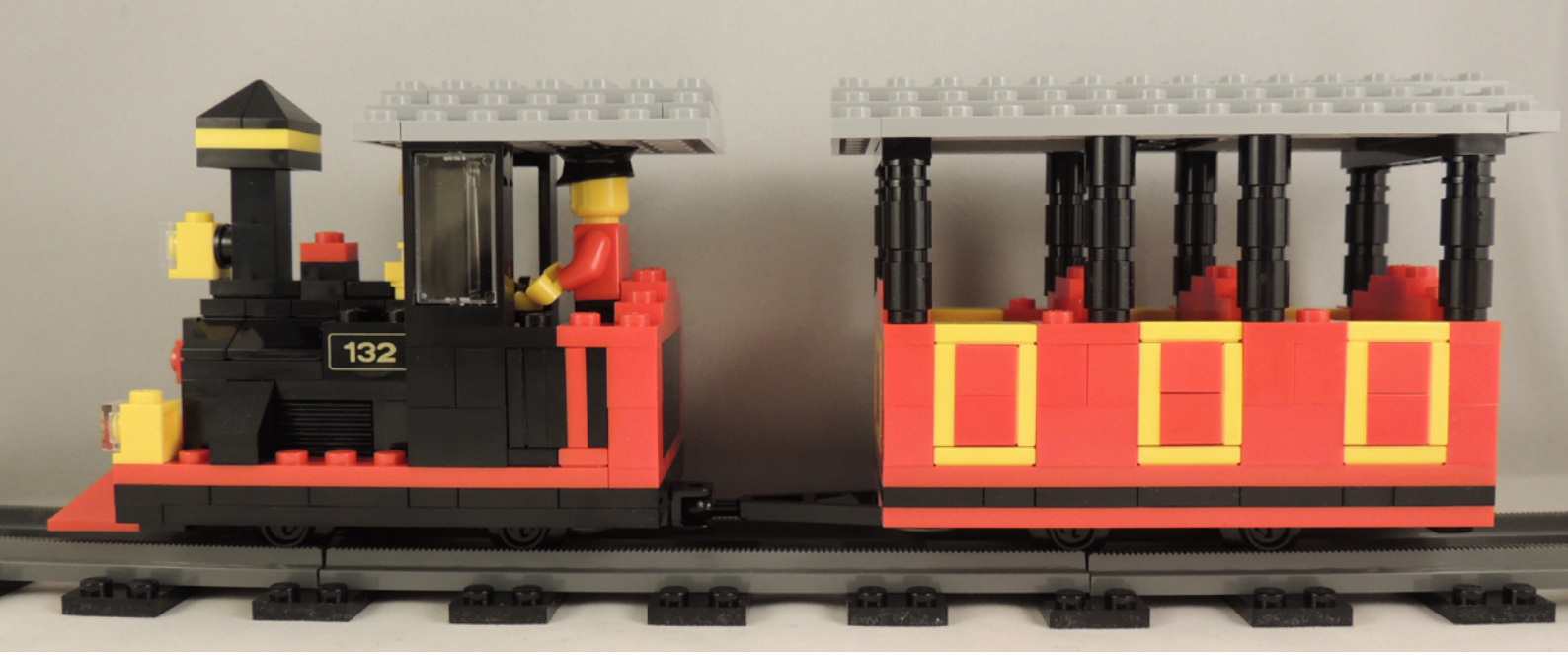
Set: 4000014 The LEGOLAND® Train
Number of parts: 548
Minifigs: 7

This year I attended the 10th LEGO® Fan Weekend in Skærbæk on September, 27th and 28th. It was my 6th visit to the "best LEGO fan event of the world" and, due that it was the 10th Anniversary of the event, I expected some surprises.

I was somehow surprised because when I registered to the event, on Friday afternoon, I didn't receive the usual set given as a gift to all exhibitors. During all Saturday no news about it, but after closing the exhibition, I was helping to transport all the boxes of the auction to the dining room, and I saw two pallets full of big boxes without any label.

The dinner started and everything was like other years. Jørgen Vig Knudstorp, CEO of LEGO made a short speech, together with Tormod Askildsen. After the main course, the two pallets were placed in the center of the room and Steen Stig Andersen, LEGO designer, made a speech about how a set is designed. He did a tour on his career and then he explained how he designed the LEGO Inside Tour set of this year: The LEGOLAND® Train. In my mind I thought that he was "bad" because he was talking about a set that almost nobody could have access to. After his speech, the boxes were open and the





CEE team showed us this year's gift: "The LEGOLAND® Train, Fan Weekend Edition". There was a 5-minutes applause of all the people, amazed about the set. I was helping to distribute it, and I saw the face of the AFOLs when they received the set. I couldn't see my face, but I imagine myself with a big smile. There are 360 units of this version of the set.

The set reproduces the train of LEGOLAND® Billund. Anyone who has been to the park knows the train. It makes a trip around the park and it looks like it is built with giant LEGO® bricks. In LEGOLAND® Billund there are three trains. The one reproduced in this set is number "132". This reference is printed on a 1x2 black brick and is one of the two exclusive parts of this set, together with the torso of the train driver.

The train is 6 studs wide, and uses a 4-stud wide track, and there is an engine and two cars, together with a small platform, with a board with the logo of "LEGOLAND® Billund". As Steen Stig explained, one of the tasks that took him more time to design, was the roof of the cars, to allow it to open and put the minifigs inside. The set has 10+ age indication and that is because there are some interesting building techniques, mainly to reproduce the pattern of the cars. It took me around 45 minutes to build it and it has been a fun build.

There is a good selection of minifigures, with 4 adults, 2 kids and the train driver, with some nice accessories like a handbag, an ice cream or a photo camera.

The train is very detailed and it looks almost exactly like the real one is. The set comes in a white box, and there is a cover for the box with the image of the set oin a white background and the words "LEGO Fan Weekend" to differentiate it from the "LEGO Inside Tour" version, which has a black background and the picture of the attendants of that LIT.

It's sad that this kind of sets are so limited, because there is a big number of fans who would like to have one. They represent the mythic things of LEGO, like this LEGOLAND® Train, the Ole Kirk's House or the Billund Airport. At least this year LEGO made 350 AFOLs from all over the world happy, giving them the best Christmas-Birthday-Hanukkah-whatever present.
I think only people without heart could think about selling it (sadly there were some). I will treasure it and it will bring me good memories of the LEGO Fan Weekend, the AFOLs from 29 countries, and my first visit to LEGOLAND® Billund, when I turned from an adult playing with toys to an AFOL.
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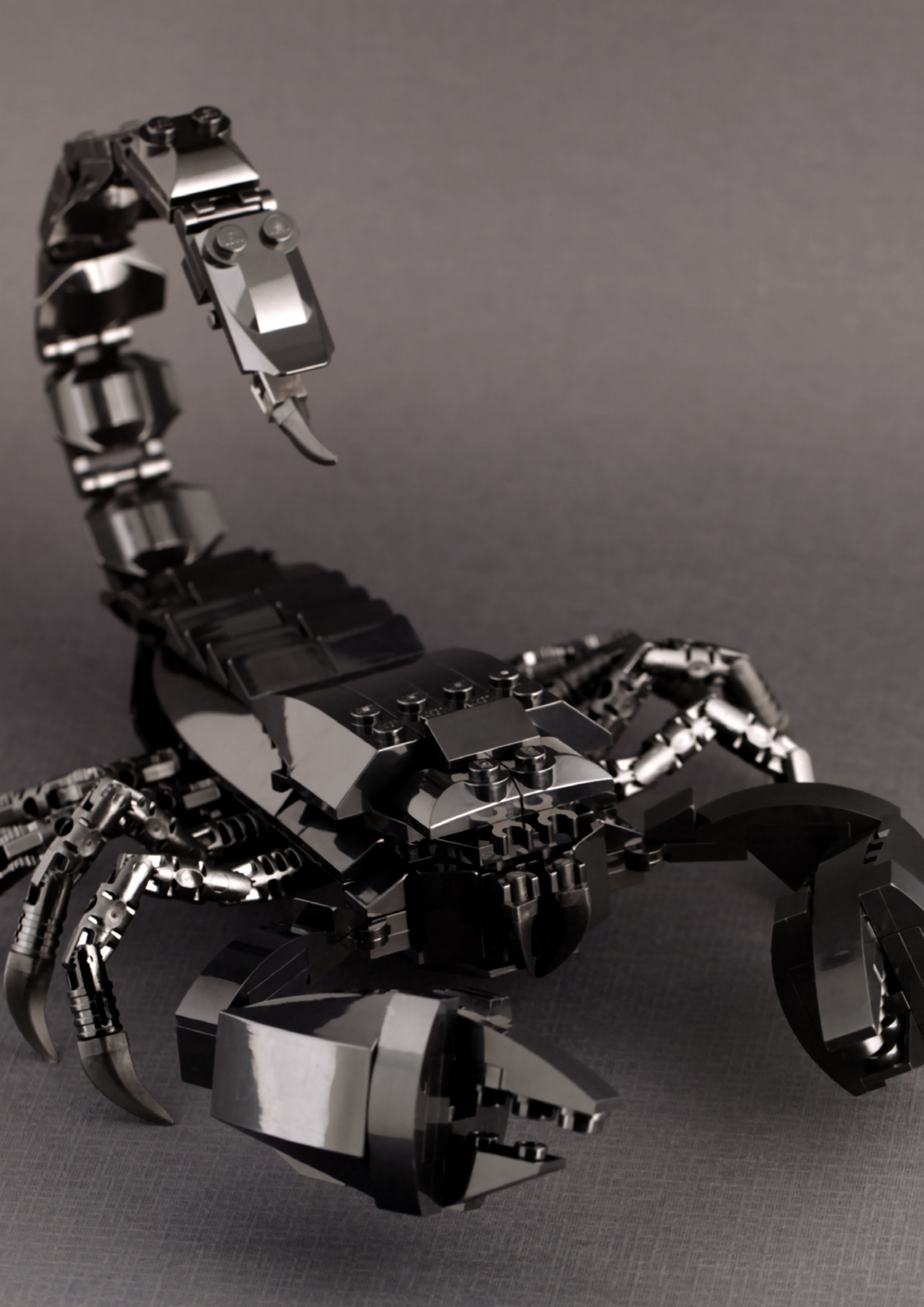


Great creators of the world: Kosmas Santosa

By HispaBrick Magazine®

Pictures by Kosmas Santosa

Sometimes a builder achieves fame based on years of work, by improving his/her technique, presentation, being increasingly involved in the community ..., other builders have a special talent and in no time their models are featured on major blogs and their name resonates throughout the community. Kosmas is a clear example of the latter. In just over a year, his quality and strong involvement in the community has given him a place among the great.

HispaBrick Magazine®: Name?

Kosmas Santosa: Kosmas Santosa, people call me Kos. https://www.flickr.com/photos/kosmassantosa/

HBM: Age?

KS: 35.

HBM: Nationality?

KS: Indonesia.

HBM: What do you do normally?

KS: Graphic Designer at LeeLaaLoo.com.

HBM: When did you first start building with LEGO®?

KS: Early 2013, but I start frequently building MOC around mid 2013.

HBM: When did you start posting your models online?

KS: August 2013.

HBM: What is the last set you have purchased?

KS: Technic 9398 - 4x4 Crawler. I bought it in late August and it's my first Technic set. I really love the set and I hope someday I can build a technic MOC :)

HBM: What is your favorite commercial LEGO building theme?

KS: City and Star Wars™, I collect Modular Buildings, UCS Star Wars, and all walker vehicle set in Star Wars™, but I don't have enough space in my house, so now I only collect Modular Buildings and I have sold some of my Star Wars collection… hahaha

HBM: What is your favorite theme for building?

KS: Anything, mostly themes that I haven't tried to build yet. Since I'm still new in this LEGO building hobby, I have many themes that I want to build and haven't tried yet, so I still can't pick one that is my most favorite at this time :D

HBM: What do you find most difficult to recreate, everyday objects or scenes with minifigs?

KS: If I have the part materials needed, I feel that any theme has each difficulties, tricks, etc. But as far as I build, I feel that the bigger the build, the harder to build and that goes for any theme :)

HBM: What is your favorite LEGO element and why?

KS: Anything curved, like curved slopes or curved bricks, because I feel that those particular parts can make a LEGO build look like it isn't LEGO, and I'm happy if people said "I thought it wasn't LEGO", it's a compliment for me and for LEGO itself…hahaha :)

HBM: Which part would you like LEGO® to produce?

KS: Plates with stud on top and bottom, so we can easily make a thin reversal stud that is a legal build within the official LEGO guideline :)

HBM: How many hours do you spend building with LEGO?

KS: Mostly days, and with several sessions. Each session would be 2-3 hours, but again depending on how big the build is, the bigger the build, the more sessions I need…hahahaha

HBM: What do your family/friends think about this hobby?

KS: Luckily my wife and kids also love LEGO, and I got back from my dark ages when I bought a basic brick set for my son's birthday…hahahaha :D

My extended family and non-AFOL friends think it's weird, so all I can say to them is you can buy particular LEGO sets and sell them again next year with a higher price, sometimes much, much higher. So it's kind like a mix up between hobby, playing, and investing at the same time, well they get the investing part, but the rest they still think it's weird for a man to play with kids toys…hahahaha :D

HBM: Do you draw or pre-designs before you start building?

KS: Nop I don't draw or make sketches before I build, but I do look and save many pictures for my references before I build something, and the rest is all in my head. But I believe someday for sure I'll have to draw it when I don't have enough reference for the things I want to build, but for the time being I still haven't met the needs for that :)

HBM: If you had to choose one among all your creations, which one would you choose and why?

KS: Hmmm…"The Titanfall WW2" is the hardest I've build so far and I'm very satisfied and proud of the result, but the "Office Desk Photo Frame" is the build I love the most since that is my first build, and that's what made me start building again in the first place, to make a photo frame for my family, so it kind of has a sentimental reason for me and well it's my first MOC as an AFOL :) I have included the first version of that photo frame, it's so ridiculous simple and bad, and I only shot it with a cellphone, but well everything always has a start somewhere… hahahaha

HBM: What do you think about the use of non-official parts (stickers, modified parts, non-LEGO elements ...)?

KS: I don't use bootleg brands in my builds, and I don't often buy clone brand because of the quality and the second market prices is not good over here. But for me I like to see that LEGO is just a clay for my creation or a medium to make my imagination become reality which I can hold and touch with my own hands :)

Though I haven't had the chance to try it myself, I don't mind using an original part design (that LEGO® don't produce) from another brand that is compatible with LEGO. For sure I often design my own stickers, and often cut flexitube and I also have an ongoing custom minifig project that really does involve extreme cut jobs, paint, and the use of epoxy clay for the hair piece :)

I like to think of myself not as a LEGO user or customer, but as a LEGO designer, I'm sure LEGO makes their unrelease sets, new themes, new minifigures, by making their own new shapes, new parts, new hairpieces, new stickers, and using new colors. I believe that's what LEGO do and that's why we love it, which is always trying to improve and making new things, and that's the essence of the LEGO brand itself in my opinion. So I like to put myself in the same situation, which is creating new things without boundaries :)

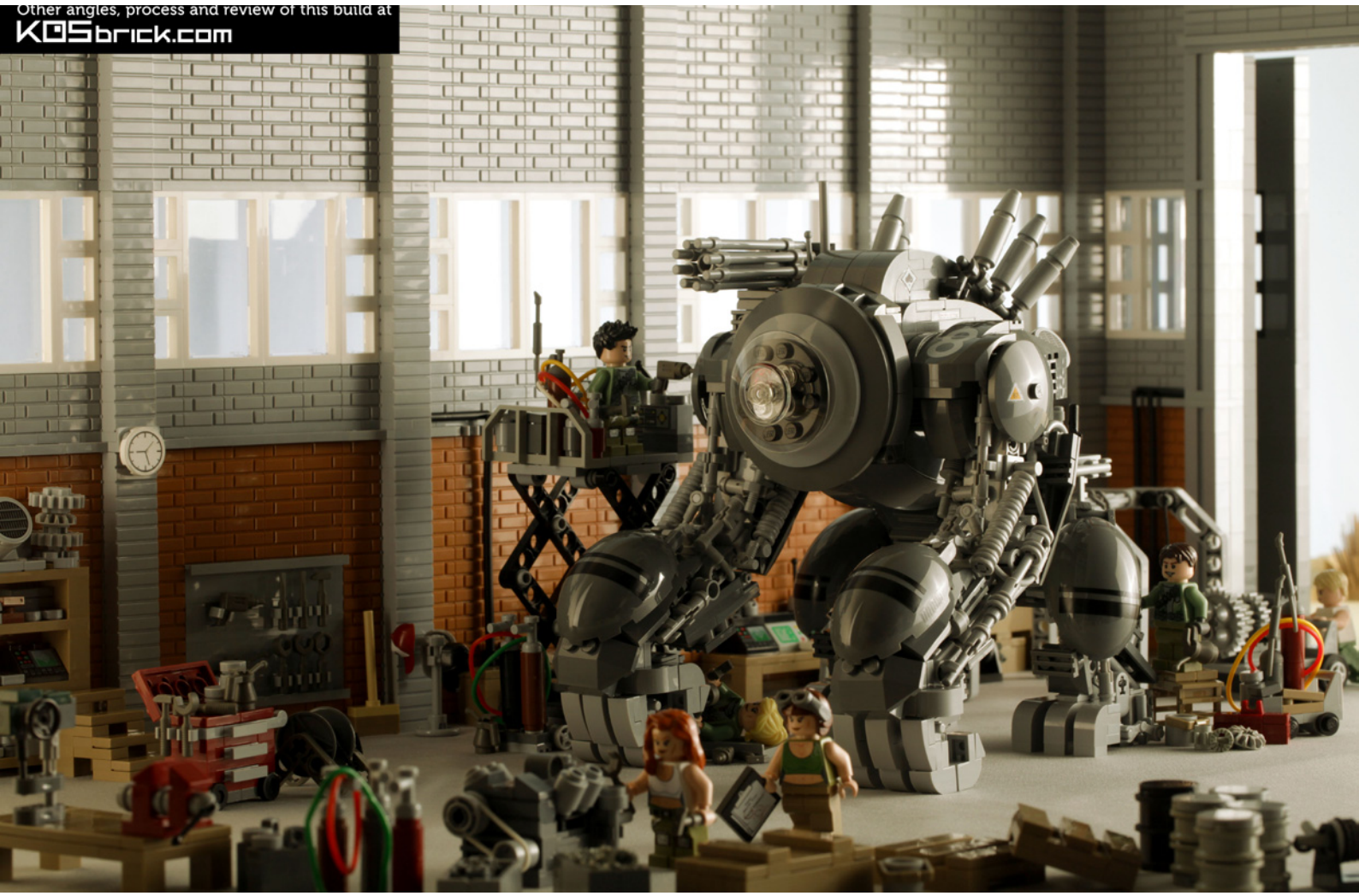
But don't get me wrong, on the other hand I really respect the purist builder, which I think in many things they need to think harder since they don't use 'shortcuts' like their friends, the custom builders :)

HBM: A few months ago you started several projects focused on the community, like a YouTube channel with tips, tutorials, etc ... (kosbrick.com), a Facebook group focused on creating MOCS (bricksMOCcorner.com) and monthly building challenge. Why did you started these initiatives for the community? How do you see the AFOL community in your country?

KS: Back when I started playing with LEGO again last year, the majority of FOLs here are collectors and seller, though I don't have anything against that, since I'm also a collector and seller besides a builder, but back then the culture and habit here in Indonesia was more towards competing who has the most sets, the most minifig armies, the rarest set, the most loot and the most expensive set, so the bar is money not creativity, and it turns out it's a classic problem that happens in many countries, specially in Asia.

On the other hand, I believe for my country to thrive in the international LEGO community, we need to start paying attention and caring for builders and promoting creativity, since all LEGO competition both official and unofficial are about creativity, and I haven't seen a LEGO competition (yet) about who has the most sets or minifigs, or who has the rarest sets, or a competition about who have the most expensive set, but that's just my two cents :)

So that's one of the reason why me and some of my friends initiated something that can help promote creation and creativity with LEGO, especially for FOL (Fans of LEGO) in my country Indonesia. We started the Facebook group www.bricksMOCcorner.com in December 2013, not to be a LUG of some sort, but to function as a melting pot for anyone anywhere who loves building MOCs. The main objective is to promote creation with LEGO without any quality standard, with a positive attitude, encouraging and supporting each other, and simply just for sharing, having fun, and making new friends, both locally or internationally, since the group itself is a bilingual group (Indonesian-English). In short, we made this


Other angles, process and review of this build at
KOSbrick.com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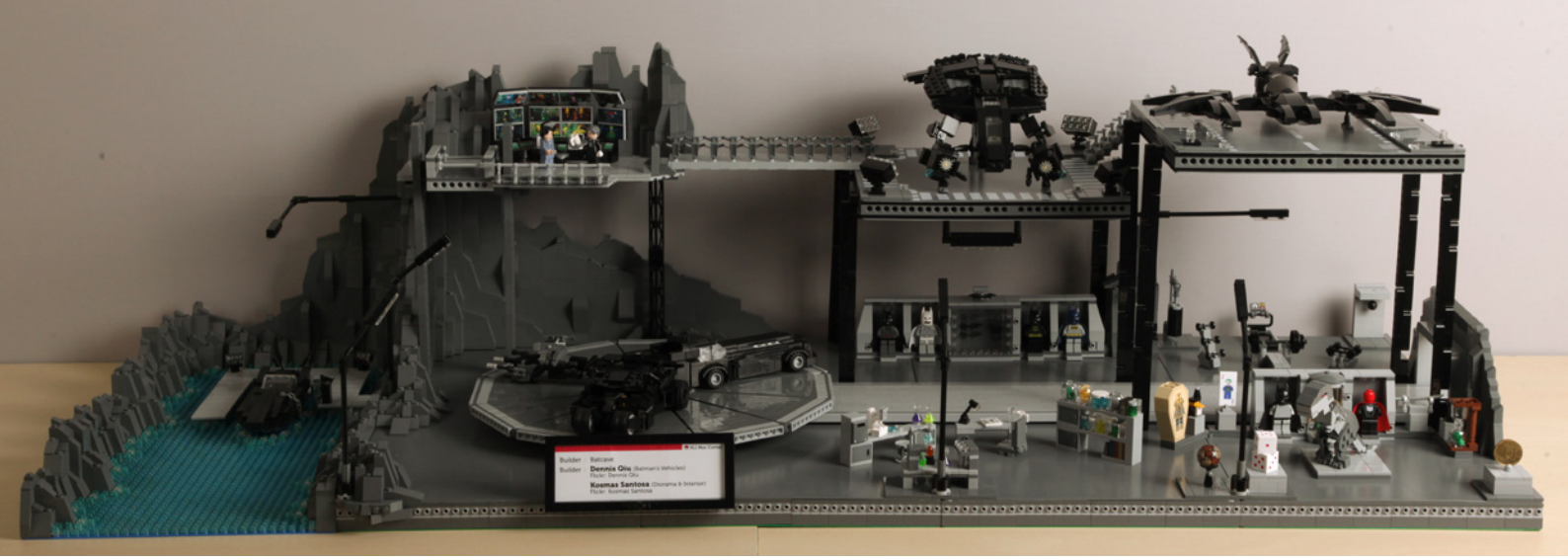

FB group for new and beginner builders like us, so we can support and encourage each other :) Btw you (readers) are very welcome to join too if you want :)

The result is an encouraging surprise even to myself that even though we're not even a year old, many Indonesian silent builders and new builders have come up and we're really happy about that. Though slowly, the number of builders rises and LEGO® creations become a culture and habit in my country by regularly building and sharing our MOC builds there.

That's why we're really happy with the established monthly building challenge such are M.A.K.toberfest and NnoVVember, in which me and some of my fellow builders have participated and it really inspired us to build regularly. That's where the idea comes from to keep the momentum by continuing to make the monthly building challenge that already existed in the Flickr LEGO community, to keep us busy throughout the year. So we make FOODcember, HARDnuary, FlonApril, MAYnifigure, JuneBot, VehiJuly, and Aughitecture, but we also try to participate in more established monthly building challenge such as Febrovery, Marchikoma, SHIPtember, Ma.Ktoberfest, and NnoVVember :)

Well for www.KOSbrick.com itself, it's my personal project, it's also to promote creation and creativity with LEGO for everyone and everywhere, specially for FOL in Indonesia :) I think it can be really useful and helpful for people, especially those who have never made their own creation besides sets, to try and start building something that is not a set. At least they will feel the excitement of hunting the parts needed, and experience the fun of making a bit of modification here and there. Maybe because of the part limitation or maybe because they feel they could make it better, and I hope it can open up their creativity by seeing and experiencing LEGO :)
#

Interview: Keith David Severson

By HispaBrick Magazine®
Picture by Keith David Severson

HBM: Which were your main objectives when you joined the CEE Team?

KDS: When I joined the CEE team with Jan, Kim, and Kevin, the first thing I focused on was to understand what they do day-to-day. They have a very complicated job in working with both internal LEGO® teams and the entire AFOL community around the world. My First objectives, was to explore opportunities to create some standardisation and simplify things, both for the team and the AFOLs. Realizing there has been a clear trend the community steadily growing at a faster pace than the team is capable of; this became a theme for all of 2014. The programs and systems, which we made a couple years ago, worked fantastically! But to our surprise, the AFOL community grew so fast that we needed to re-think everything we do. The Team dedicated 2014 to a "Year of Change" with the goal to make sure we have programs and systems set up that can handle the growth, not just today or tomorrow, but many years in the future! It has been a difficult process but very exciting at the same time.

HBM: Working with the community, what is your opinion about the AFOLs and the status of the community itself?

KDS: What I believe is that LEGO wants to be better at connecting with the community. What we are excited to see is LUGs are hosting more events and utilizing the support programs to a much higher degree. For example, in 2013 CEE provided support to 275 events, in 2014 we have already provided support to 480 events! In addition, this year the "LUGBULK" program had a record year of having 125 LUG's participate which resulted in over 5,000, AFOLs getting access to loose elements in bulk. Clearly, the community is thriving and with this strong pulse we need to make sure that we are prepared for the future!

HBM: Which expectations do you have about the new Ambassadors Network?

KDS: One of the most important things I hope the ambassadors can feel is not simply a new way to engage with the LEGO group, but that the ambassadors see it as a great opportunity to better connect with LUG's around them. We see an amazing amount of effort and energy coming from individual LUGs, but we firmly believe the community will become even stronger if we can help connect LUG's and encourage partnerships in activities.

HBM: Will the new relationship structure between LEGO and the Communities speed up processe like the LUGBULK program or event support? Does the new program mean LEGO might increase the amount of sets/products for AFOLs and collectors?

KDS: We have just completed a re-writing every community support program we offer. This is now available on the new LAN site in the F.A.Q. section. (https://lan.lego.com/faq). Our goal with this has been to simplify the programs for both LUGs and CEE. We want to make sure support is deployed to Recognized LUGs as fast as possible. Additionally, there is a great public side of the site. This means that LAN is not just for LUG Ambassadors but it is a resource for any AFOL. For example, our F.A.Q. with all the programs and documentation is public. Then we also migrated our community team blog to the site. We also have all the LUG events listed so people can be aware of an upcoming event. Finally, we are excited to have a global map that shows the location of every LUG that is a part of the LAN. This means that if a person wants to join a LUG they can find their nearest one as well as contact information.

HBM: Finally, we were shocked about the cancellation of the LEGO Fan Weekend. Can you explain why this decision was taken?

KDS: Unfortunately, this was the last year of LEGO Fan Weekend. We had to take a hard look at how much effort we put into every activity that we do with the community. With the community growing so rapidly around the world and we really truly believe in providing equal opportunity, it resulted in focussing and prioritizing our activities that could achieve this. When reviewing the LEGO Fan Weekend, it became clear that while this was a truly amazing event it did not fully live up to our new goals of ensuring a global equal opportunity and being effective with the resources we have within our department. What I mean by that is the LEGO Fan Weekend attracts an audience of a few hundred AFOLs, but with the same amount of energy applied elsewhere, i.e. LAN, we can now engage with thousands of AFOLs. It was a difficult process but we are committed to focusing on few programs that can deliver a high quality level of engagement and services to the global AFOL community.
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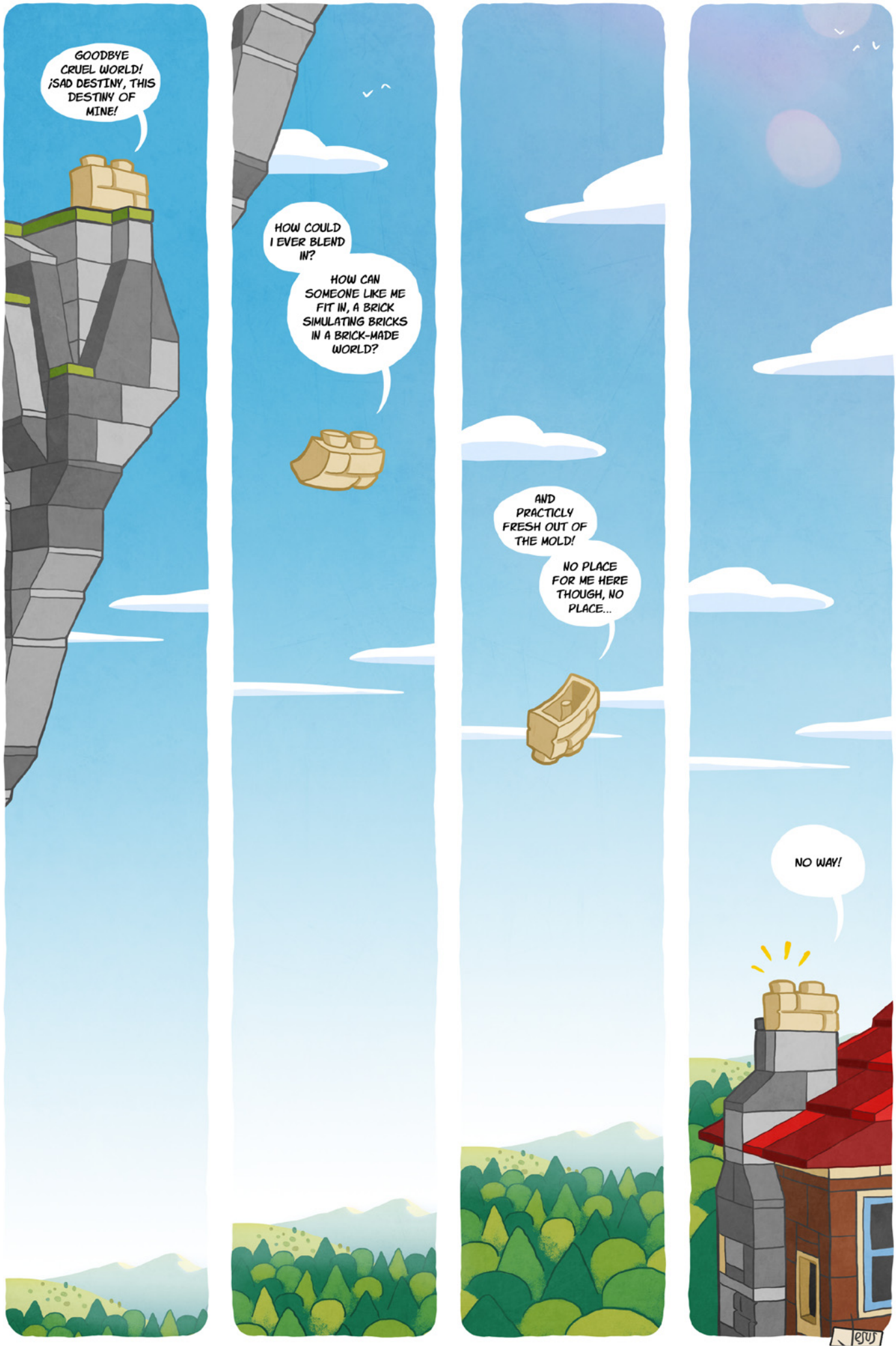
LEGO® AMBASSADOR NETWORK


GOODBYE CRUEL WORLD! ¡SAD DESTINY, THIS DESTINY OF MINE!
HOW COULD I EVER BLEND IN?
HOW CAN SOMEONE LIKE ME FIT IN, A BRICK SIMULATING BRICKS IN A BRICK-MADE WORLD?
AND PRACTICLY FRESH OUT OF THE MOLD!
NO PLACE FOR ME HERE THOUGH, NO PLACE...
NO WAY!

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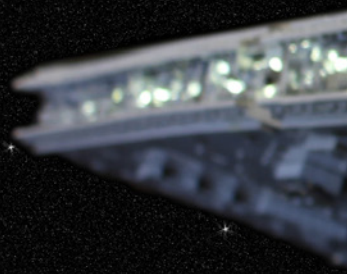

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