

Völ. 3 #1/ 2012



ENGLISH EDITION

014



magazine



014



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Nuestro agradecimiento a / Thanks to

LEGO® System A/S
LEGO® Iberia S.A.
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ISSN 1989-3698



Cover by Garry King

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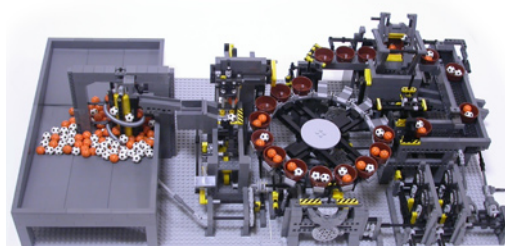
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Editorial

By car_mp

Summer again and here we are, providing our dear readers with a light reading to cope with the heat of the summer in the northern hemisphere, or the rigors of winter in the south. We are at number 014, thirteen more than I dreamed I would publish. It is becoming harder to find new themes that are able to maintain your interest in our magazine. We are reluctant to include gossip news, we don't think anyone is interested in the love story between the minifig of Legolas and some Friends fig, or why Superman dates Wonder Woman and not Superwoman. Each minifig will have to wash their clothes in his/her corresponding modular building. Let's go back to our roots, to find interesting people, interesting builds, ..., interesting stories.

I need to mention some news surrounding our magazine:

- First of all I must tell you that our community has allowed me to be the ambassador of HBM within The LEGO® Ambassador program.

- Next December we will celebrate our first HispaBrick Magazine® Event, which you are all invited to attend. Of course on our website all the available information will be kept up to date.

- The Modular Integrated Landscaping System (MILS) that we present in the previous issue continues to evolve, and in this issue and in the next one, we will continue providing information. Also in this issue you will see the first event where a diorama built under these specifications has been shown.

Regarding this issue, I have little to say, it's another great number thanks to the AFOLS who have dedicated part of their precious time to it. This time we have collaborators from different continents and even hemispheres, and we cannot be more pleased with how the interest in the magazine is slowly growing. So we keep asking for ideas, tips, reviews, ... everything to help us improve. I will not say goodbye without thanking all the blogs and websites that echo our publication issue after issue, without which our project would be lost among hundreds of lines of code like a green waterfall rushing on our screens. Thanks to everyone, from the almost anonymous blogs to our big friends, Brickset, Eurobricks, From Bricks to Bothans, TechnicBricks or The Brothers Brick.

I hope to see you all in number 015, next December. Take care.

#

HISPABRICK MAGAZINE® EVENT 2012

**Meeting of fans of LEGO constructions at the
Museu Nacional de Ciència i de la Tècnica de
Catalunya (mNACTEC) on 7 and 8 December
2012.**

**Exhibition of LEGO constructions
- Friday, December 7 (10 to 7)
- Saturday, December 8 (10 to 7)**

ORGANIZED BY



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LEGO® Battlestar Galactica

By Garry King

Welcome to the wonderful world of an obsessed Battlestar Galactica fan from the 1978 series through to the 2003 series. Well the models are the main reason. Sadly they only play a very small part of the story line.

For the past four years I have been back into the world of LEGO® in a big way. I started building again and followed my heart and passion for the Battlestar models. Never thinking that it could be done in the manner in which I have now achieved.

My LEGO collection began when I was 6 years old. My mother was the first to purchase me a small car set and then it grew as my appetite for the brick grew. I built and built cars, houses, and helicopters then came along the space series. That was it. Space was my niche. Mum bought me the model LL-924, it took her months to save the money to purchase it.



I was in heaven then I opened my birthday present. I still have it intact sitting on the ledge, "No not for all that time" it had become so many different builds. Mum could not afford to keep feeding my addiction so I went out to do the odd jobs around the street for pocket money to get more space LEGO. The collection still grew steadily.

In 1979 my LEGO almost became another tragedy of the rubbish bin when the family moved to another suburb... The 10th move by that time. Mum's partner deemed the LEGO block to be a waste of time that could be spent working ... I was nearly 12 by then... I saved my collection by taking it up to Nan and Pops, like I did with a lot of my favourite toys. When the dust settled, mum brought my collection back home to me. "BANG" along came Battlestar Galactica..... Yes it was slow coming to Australia 1980 for the 1978 series.... I saw it on the television for the first time and after seeing Star Wars™ which had a "WOW" factor only for the space ships. Nothing compared to seeing the Giant Battlestar (Salamander say Star Wars fans) on the tv screen gliding across the screen....."

OH BOY". I worked in a milk bar for two years filling the refrigerators and shelves in the mornings, going to school then coming back to fill the refrigerators and shelves again then doing all my homework. Late in the evening I would watch television on mum's small black and white. I saw SPACE 1999 for the first time, again spaceships..... It was the amazing vision of what a spaceship could look like that hooked me on science fiction.

My LEGO collection came to a halt for many years when I started full time work as a builder which lead to many facets of the trade and then Interior decoration, Architectural modelling, Set construction, fine furniture making. I just kept wanting to expanding my skills.

Once in a while I got a new set or bought other LEGO collections from the Trading Post. I missed out on so many marvellous space series.

I again collected space related series from 1996 onwards. When Star Wars started being produced in LEGO I did not hold back, I just bought every set that was released in Australia. Frankly it was nothing compared to what was released around the world. That is all I did. I just collected and made each kit several times over "NOTHING special". The collection expanded even more. By now I could fill four 55 litre plastic containers. That was in 1996. Come 2003 the collection had doubled to 8 containers then I lost around 35% in a split up.

When I moved to a small Town in the Bush I got the collection out for 6 months in the year and packed it up for the other 6 months during the fire season, as the threat of bush fires was rather high. I was introduced to the internet in 2004 and a whole new world opened up. WOW there was no stopping me. Battlestar Galactica, LEGO models from the past, LEGO spare parts galore and science fiction. it did not stop. Then came the best find: Brickshelf I was blown away with all the extremely incredible creations 100's, 1000's of them it was mind boggling.

I was told about a LEGO site where I could find my old LEGO plans, PEERON.COM. Boy did the memories come flooding back as I found all my old models plans. I quickly joined. I rebuilt every one of my LEGO models. "What a delight". I posted some of my Massive builds. At the time I had built a Castle style building which was 6 foot in length and there were even larger builds that I never posted. I built an attic in the house and created an entire space city with monorail stations, ships... It kept growing over time. The day came to pack it all away for the fire season to a safer less fire prone area. That ended another 6 month endeavour. The purchasing of more LEGO elements and the pursuit of Battlestar merchandise continued as well as renovating the house and work. I got tired of packing it away for so long each year after year.



In 2009 I began to build my first Battlestar but never finished it. I cannot remember why now, but it could have been lack of the right coloured elements ?????

By accident I discovered a place to purchase parts.... BRICKLINK.COM. This is now my primary purchasing place. WHAT A HEAD RUSH OF EXCITEMENT. Now my collection has grown to twenty 55 litre containers, well over 2 million parts and still growing. I may have a lot of parts but never enough of the same colour or type when building huge or repetitive sections, Bricklink to the rescue....

On the second attempt of the Galactica nothing held me back. I had a surviving 4 foot cardboard model of the Galactica that I used as my primary reference as well as images from the internet. By this time I had bought many large LEGO® Star Wars™ Ultimate collectors series sets.

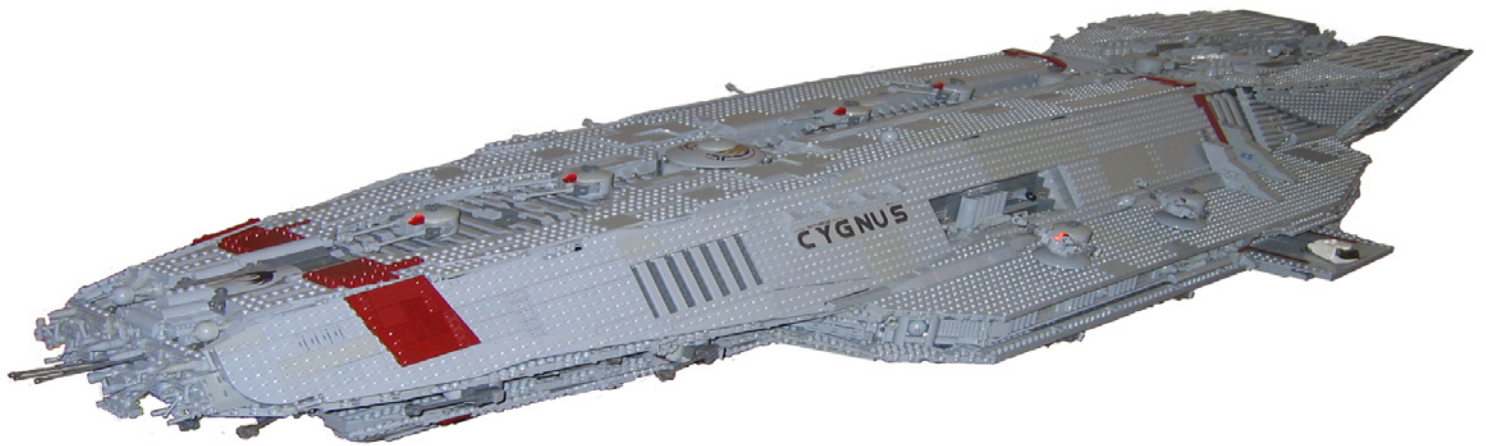
BATTLESTAR GALACTICA MADNESS.

I built the Galactica first as it was my most favourite model of all time. I made the model fixed to a stand and designed it to be totally self-supporting, no strings, no extra struts to hold it up. I used many Technic elements in the initial frame. I still built old school in areas I thought would not hold up to the strain of the weight so it got heavy, 15kg, it stayed intact I was rapped...

It didn't stop there. I then built an orbiting space platform I named the ORION so the Galactica could come into dock for repairs. This build was very flimsy but it did what I wanted for my photo shoot.

I dismantled the Orion and then built the Battlestar Cygnus. I used a small resin model as a guide for the detail and proportions. It grew to a length of over 5 feet. That was a big build and was self-supporting too. I placed a curved backbone





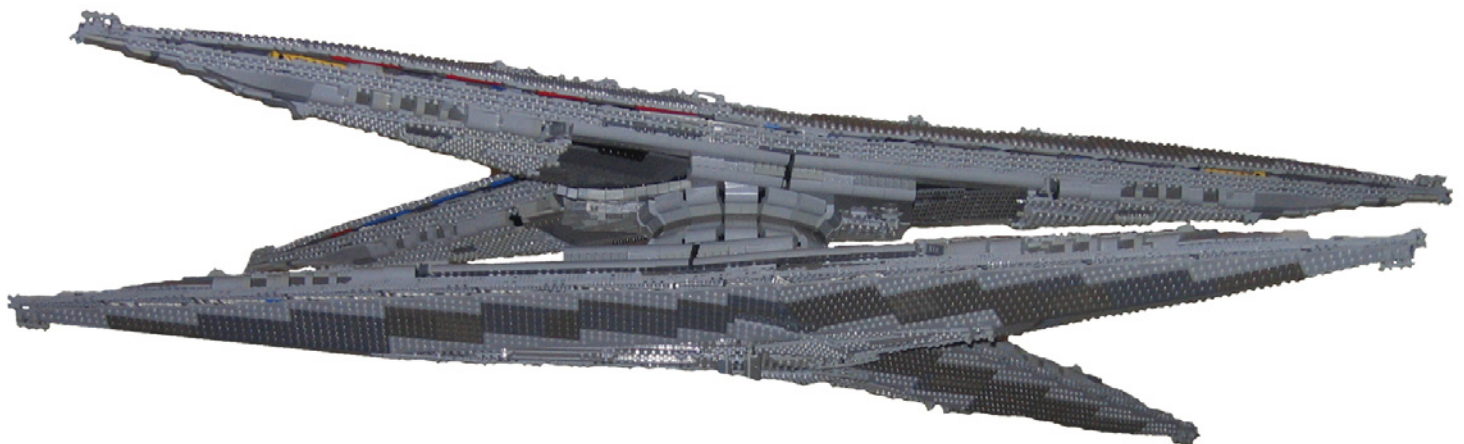
in the design which ran from the front to the back. This took the downward forces of gravity. It was heavy but I was able to carry it from room to room so I could take photos of it.

I then had a bright idea and started building a 2003 Advanced Cylon Basestar but I did not have enough parts... BRICKLINK to the rescue Waiting 3 to 4 weeks for shipping, I continued the build. I thought it was fantastic at the time. So many angles but the ship had to be self-supporting as the arms of the craft had nothing to hold them up. A lot of this build was old school to make the arms strong and rigid. I offset the Technic frame by half a stud to take the strain locked in to place with more components to hold it in place so it did not pop out under the weight. This craft was built on to a framed stand (big mistake). When I took photos of the Basestar, it creaked and groaned under its own weight. Thankfully the model stayed intact...

At this stage I had 3 large builds taking up my lounge room. That did not stop me. Again using a small resin model, I built the shuttle GAL-356 to the best of my abilities. The shuttle had a Technic frame and bracing to hold up its mega structure which was lined with white bricks, panels and plates. Lots of steps and angles all around it made it a superior build compared to the others and I could carry it without it groaning.

I built a cockpit section and the whole model was scaled to the mini figures. It was also able to stand on the flimsy landing gear which made it even more impressive to me.

I had a brighter idea to design and build my own style of Battlestar ... I began the RUBYCON she was a very strong ship. A solid base of 5 layers of plates with sumptuous detail on the underside to a very strong and rigid curved backbone which can be seen if you look closely at the middle of the ship. It looks like a small landing bay on top. Twin engines, three





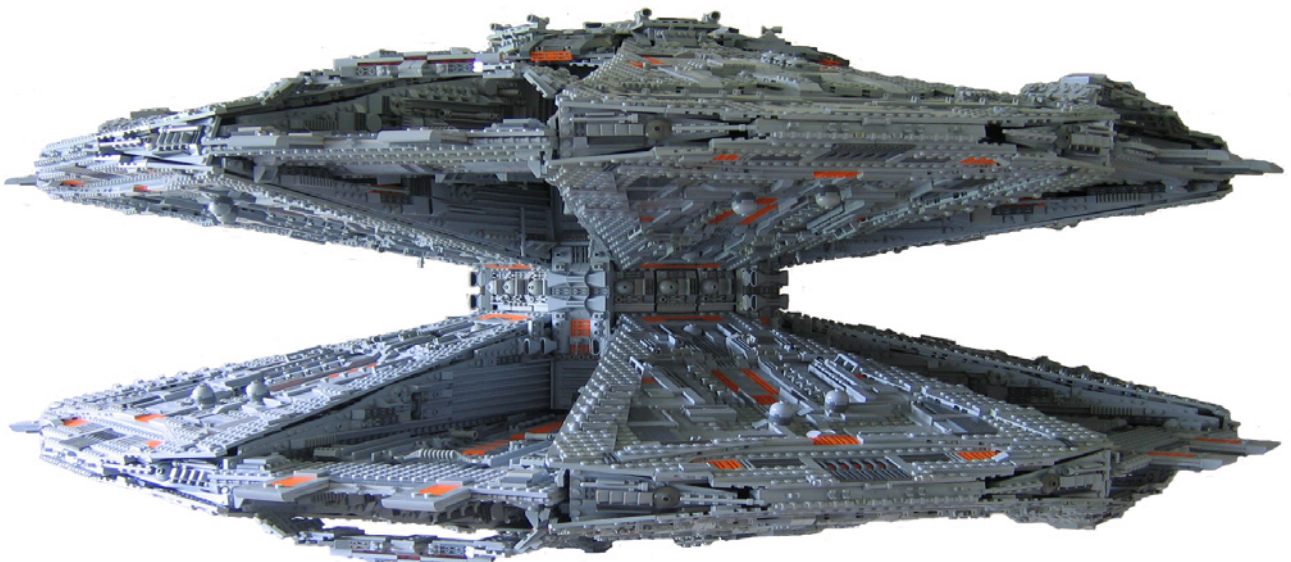
landing bays, one at the stern and two at the front in the head. Flat and sleek she was my second most favourite LEGO® build. I then built a small Viper to compliment the Rubycon.

Sadly and tragically in April 2010 my world came to a crashing end not long after I placed the Rubycon on Moc pages. Less than a month after her 65th birthday, my mother passed away suddenly. I was and still am devastated losing her to Pancreatic cancer. Her encouragement and inspiration and sacrifice will never be forgotten by me or my remaining family.

Then my landlord decided to sell the house I lived in to add salt to the gaping wound. I had to pack up everything, dismantled everything except the Rubycon: she was carefully created up intact. I moved back to live with my stepfather for a few months, then moved away to another state. I took nearly a year to begin my LEGO structures again. In the mean time I continued purchasing 10s of thousands of elements in the colours I liked - white, dark red greys, dark blue and dark greys - and still bought Battlestar merchandise and LEGO Star Wars™ series models I liked just to keep my addiction going. I bought a house, then purpose designed and built shelving storage units in one of the rooms just for LEGO.



2011 I began with the 1978 Battlestar series Cylon Baseship. It was big and heavy; too heavy when it was finished. Two very large discs on top of each other connected to a small stand in comparison. The stand was buckling under the weight. The Baseship's frame was constructed using 1000's of Technic elements then lined with plates and loads of detail. I was unable to carry it or move it from the room so all the photography was done in my LEGO room.





The Basestar was dismantled soon after to save it from collapsing and ruining bricks.

The next build was at the time massive. I built the Battlestar Defender. This was in every respect an unusually shaped vessel. Using my scale model for dimensions and images from the internet for extra detail. It was big!!! 6 foot long, huge engines, curved spearheaded bow, suspended landing bay inside of which I placed lights to give an extra special effect. I

had to weld a stand up to take the weight when I took photos of it. This baby took two of us to lift onto the stand mainly because of the split hull shape and was heavy. Storage was easy, it could rest on the engines vertically.

Not content with that build I proceeded onto another splendid Battlestar "The Berzerk"... I used a commercial resin model as a guide and what images I could find on the internet for detail and proportions. I started with the bow to begin as a platform for the overall size. As the build grew I constructed the hull



from a Technic frame, linking the bow to the body and a rigid network of cross frames to take the weight of the 6kg bow. When it came to build the main boosters I constructed them all at the same time. The lower boosters had the main engine between them making the lower section even heavier. I built a solid frame of Technic bricks from the main hull in a "Y" shape to support the engines to the hull. What a huge learning curve: during the night the booster sections sheared off destroying so many LEGO® bricks. LEGO was not designed to hold that much weight in such a small area. 6x6x6 solid interweaving section was not enough so I redesigned it by using timber in the main hull from front to back with welded steel protruding arms out and extended in to the boosters to take all the weight. It sagged a slightly but saved me another let down.



The Berzerk was coloured White with dark red highlights for an added touch. Even though the Berzerk appeared for only a few seconds on the tv screen, I thought it would have more appeal not being another monochrome build. Many have said it is so "retro". When the rear and hull was completed I returned to the front of the ship. I was not happy with the overall look. I ordered many more elements to do the job, while waiting for the parts to arrive I built a MkVII Viper, 1978 Cylon Raider, A white Strike Raptor and A white Living Raider. Why white you ask. I liked the look and the poor skin jobs seem to get a bad rap all the time, plus other builds are in dark greys to make them more menacing.

I completed the Berzerk with the new elements but still not completely happy with the bow. After the photo shoot, editing and posting the Berzerk on the internet I also placed a request for assistance if anyone was able to suggest another way to do the front.... To my amazement I got a reply with a very ingenious method. It was so well done in LDD... WOW such talent out there and so eager to assist others ... On Moc-Pages I joined two Battlestar Galactica groups. I found

them so helpful and eager to give others help for those difficult builds and photo editing tips. AWSOME!!!!

<http://www.mocpages.com/group.php/13658> and <http://www.mocpages.com/group.php/64>

For that extra effect you may like to try <http://www.mocpages.com/group.php/14752>

Turning 45 this year has slowed me down with arthritis in both hands, clicking and separating bricks is more painful than when I was a kid but that won't stop me yet as you will read below.

Now for the reason I have been asked to write this article

Battlestar VALKYRIE

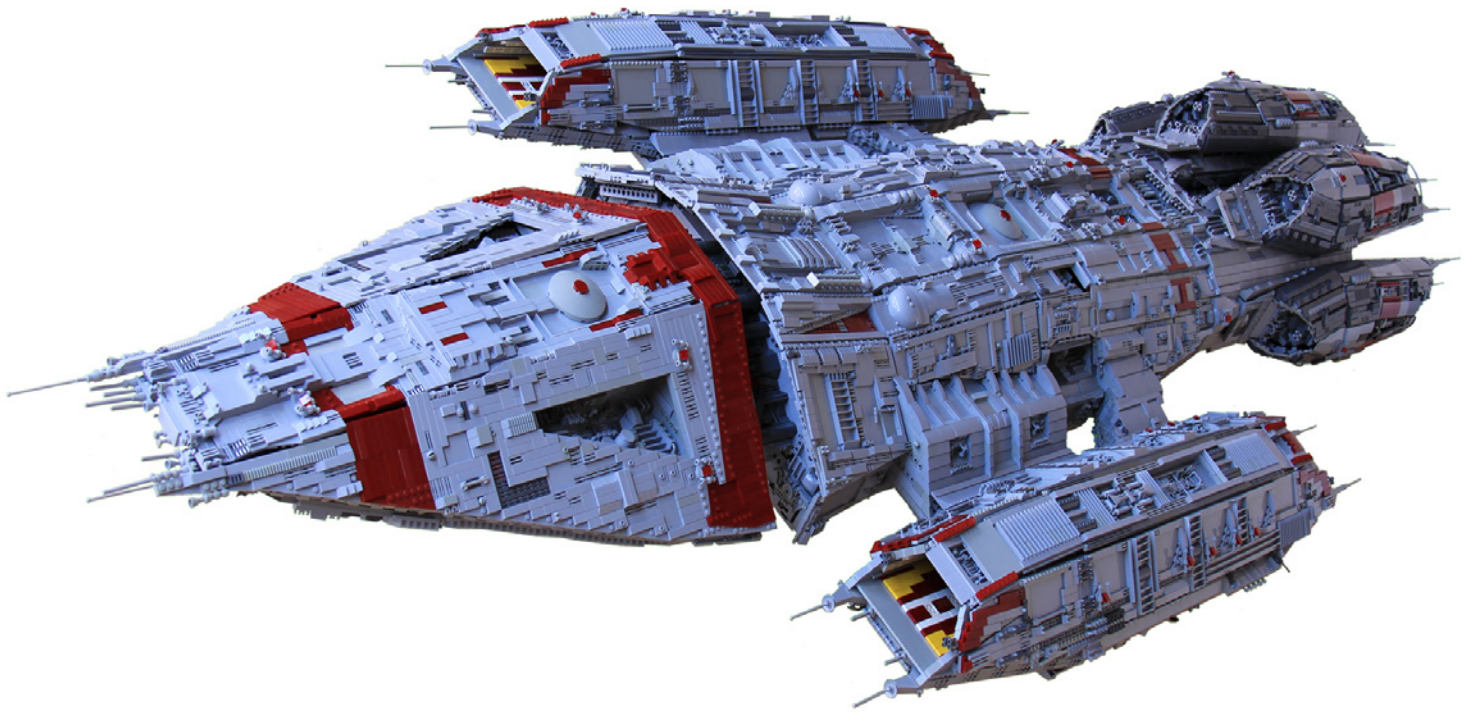
This had to be the best of the best in all ways with little reference material to work from where the movie model was concerned and so many variations from brilliant minds out there on the net. I began to build this mega beast from the front to the back. I thought of the Valkyrie while waiting for parts for the Berzerk. I thought 7 foot long is enough. MMMMMM I was wrong. It kept growing to a 2670mm from the front to the main engines. When adding the boosters the overall length was 3100mm. This mega structure posed so many problems as I built it, I was continually rebuilding sections to support all the angles. When it came to designing the underside I flipped it over to reveal more structural faults in my design. Fixing up the faults I added the detail from stem to stern. I impressed myself this time, weeks passed. The belly was finished. I flipped it over again only to find out it was offset by two plates thickness and caused it to buckle in the middle as I layered on the hull detail. I was not happy!!!!.. I had to flip it over again and rectify the problem, strip off all the details and re-build the sub frame. OH WELL!!! Another learning curve.

With that fixed I rebuilt the main hull again from stem to stern. This time I added a 2400mm X 8studs wide X 6 plates high strap (backbone) with an upward curve at the ends to stop the sagging. A lattice of Technic blocks formed the inner skeleton which all the hull plating was attached to. That was some effort getting to that stage. The Landing bays were fixed to the main hull during the initial build and after two attempts to get it to look right I was Happy WOOOHOOO !!!!!. The boosters were sleek, round, curved, angled and it seemed impossible when looking at them to fix them to the body. I had four attempts at the design. Instead of just building one at a time, I built all four at the same time, to save time. HA. "I was wrong". It took time to build and dismantle over and over again. Yes it was definitely worth the effort, the end product was AWSOME. A spaceship on its own.

All along during the build I was thinking how I was going to get it out of the room and into the Garage to take photos as the house was too small for getting the ship in full frame.

The BIG move

I placed the Valkyrie on a 2400mm x 1200mm sheet of chipboard padded with pillows and screwed a length of board 90degrees to the chipboard long edge so one of the landing bays could rest on it. I strapped it down to reduce any movement. Then the whole thing was tipped on the side so that I could get it through the narrow doors in the house. I made a rolling platform trolley to roll the lot easily to the garage. I called upon my neighbour for assisting in the move and to keep it stable as we rolled it to the garage.



When we finally got it into the garage we lifted it onto a table so I could attach the model to a frame which will allow me to hoist it up and lower it onto a stand which I welded up. After it was lowered on the stand and I was happy that it would not fall off, I rolled the model into position and added the boosters and all the extra detail that set the model off. I took 2500 images over 3 days.

I wanted to photograph the underside without any interference from the stand or the straps used in the lifting of the model. I got some great images of the belly with the straps but not good enough for my liking. The model was getting weaker and weaker each time I placed it on the hoist. When I flipped it over for the final shoot the beggar just crumbled due to gravity. It was in slow motion as it broke up. I wish I'd had the video camera rolling when it did. I threw my arms up in the air and said "OH WELL!!!! At least I don't have to decide if I wanted to keep it for a while". The choice was made for me. I was laughing as I picked up all the parts. I went inside the house and made coffee and left the rest of the mess for another day. I spent many nights selecting the best images and edited out the background to place the Valkyrie on more suitable starry sky.

I liked the Valkyrie because of its Gothic appeal; it was just so different from the rest.

After the Valkyrie's destruction, I pulled the rest apart, counted the elements, colour sorted then sorted all the parts in to their individual components " Boy did that take some time" 42,341 elements.

The next build was another Cylon Advanced Basestar inspired from a LDD build designed by Curtis Black. It was Awesome the way it was designed but I did not think it would be strong enough to hold up to gravity and in LEGO®. Regardless I built it and modified it as I worked on the weaknesses and sleeked it up even more as I could not build it exactly, compromise was in order. It is a very nice looking model.

Now I am working on a special build as a tribute to Ralph McQuarrie and his vision for Battlestar Galactica. I am using his very limited drawings to build the Basestar he designed. I have not seen or found any models on the internet, so it is open season on detail but the shape will be his. After this build I will be creating his Battlestar Galactica. 3 images found. All a tribute to his genius.... Rest In Peace...

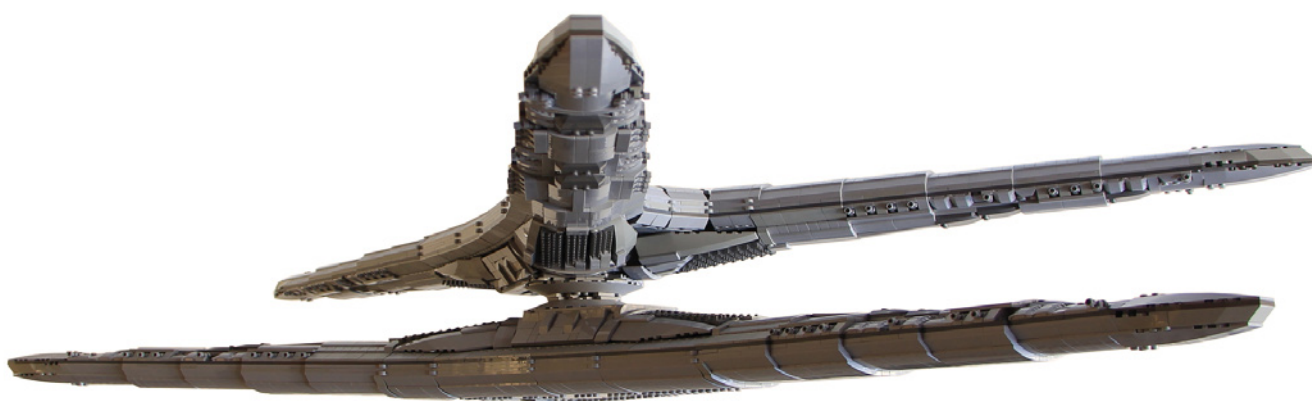
I hope to build for as long as I can. When the day comes the entire collection will be passed to my Nephew and Nieces. I will say I am still "OLD SCHOOL" in my building skills. Still willing to use the new modern techniques unless they or I fail me then back to the old way.

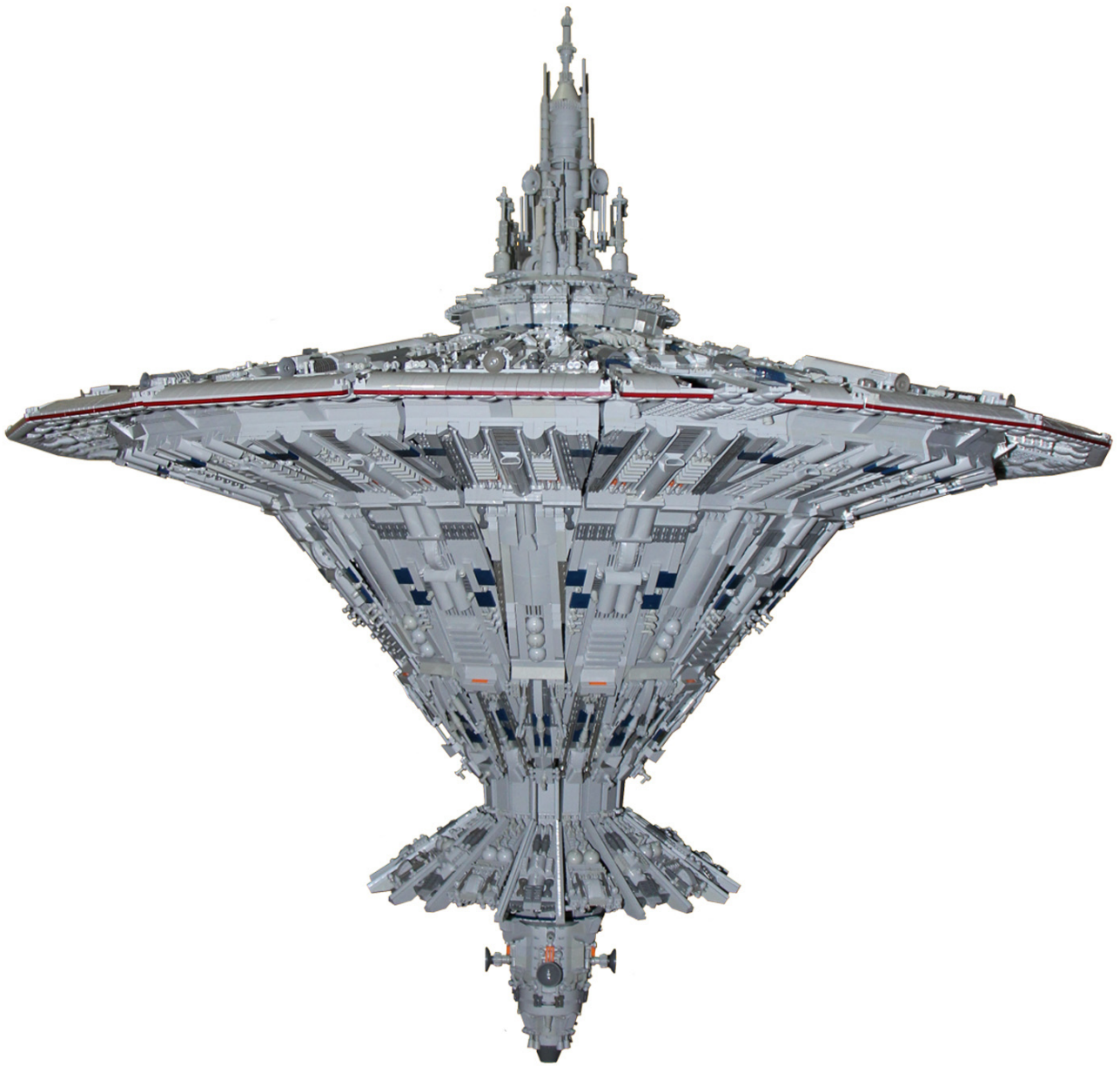
For more information on my builds or if you want more detailed images please go to :-

<http://www.mocpages.com/mocs.php?id=39677>

<http://www.brickshelf.com/cgi-bin/gallery.cgi>

#





Droids, droids, droids

10225 R2-D2™

Text by car_mp

Pictures by The LEGO® Group, Brickset, car_mp and their respective owners

There are many ways to be a fan of Star Wars™. You can be a fan of the fantastic classic trilogy, you can be a fan of the not so fantastic modern trilogy, you can be a fan of Darth Vader and the Dark Side or the Jedi Knights. And then there are those who have realized that the real protagonists of this saga are not the Skywalker family nor any of the characters that surround their stormy life. The protagonists are two droids, C3-PO™ and R2-D2™. If Anakin had known that they would be guilty of bringing down his empire of terror, he would certainly not have built that gold bar with legs nor intimidated with that R2 unit.

Let's be clear, at least once in every film they are there to save the day. Always with the right tool for each task and fortunate enough to dodge the bright laser beams passing all around. What would have happened if these droids had been on the other side?

Each of them has a personality and nature that is much more defined than any of the human characters from which they steal the spotlight, maybe they have no love scenes and their facial expression are a bit limited ... but with their actions and attitudes they have been able to arouse feelings that are more characteristic of flesh and blood characters.

And you will say, "Okay, you're one of those geeks of the droids, so what?". Well, all of this comes hand in hand with the new set of R2-D2 that LEGO® has released. And it is not just any set, but it belongs to the series of the 10000, an UCS and rightly so. But let's get some background



R2D2

R2D2 is an astromech droid that appears for the first time in the series (if we follow the timeline of the story) in *The Phantom Menace*, on board the ship in which Padme Amidala escapes Naboo breaking the planet blockade imposed by the Federation of Commerce. In this first scene it already saves our heroes by repairing the ship and saving it from being destroyed by the Federation. If you look at our timeline, its first appearance is in *The Star Wars: A New Hope* aboard the *Tantive 4*, while Princess Leia records a secret message to Obi Wan Kenobi moments before being captured by imperial troops.

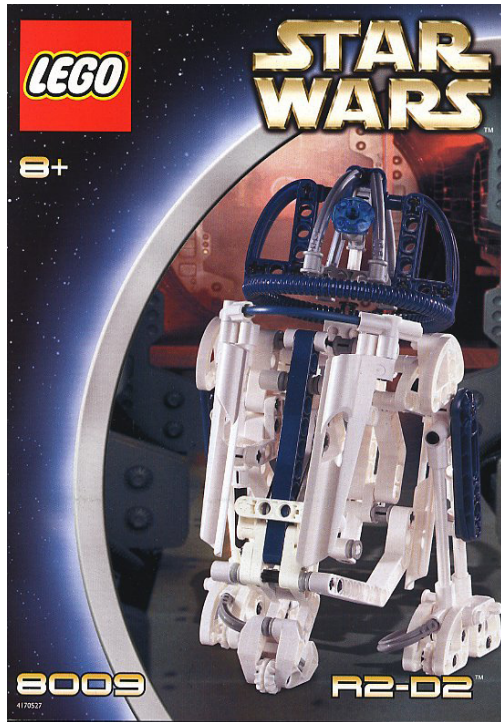
With a cylindrical body and hemispherical head, R2D2 measures 96 cm and has three legs (one of them retractable) that allow it to change its configuration to move or work. Its body is mainly white, with blue and metallic details. Its head is blue and metallic. Equipped with more tools than a Swiss army knife, it would certainly be the ideal companion of Mac Gyver, given its ability to repair, open, hack and if necessary, to fight. Along with C3-PO, Anakin Skywalker and Obi-Wan Kenobi, they are the only characters that appear in all the films in the series.

R2D2... in LEGO

Since the beginning of the LEGO® Star Wars franchise this droid has been represented in different ways and in different themes. At Minifig scale there are several models. Initially its head was white with blue details and later it changed to a more appropriate color scheme with a light bluish grey head. It has emerged as a minifig in sets, magnets, clocks, pens and key rings.



At larger scales it has appeared as a Technic set, alone in the 8009 in 2002, with 240 parts, or accompanied by C3PO in the set 65081. Then within Robotics theme we have the set 9748 Droid Developer Kit, with which we could build a replica of R2-D2™, fitted with a brick with a series of preloaded programs that gave the robot different movements.



R2D2 on the Internet

There have been many attempts to render our favorite droid and there are many models that can be found in a multitude of different scales and with different functionalities.

As examples we can find this model by Flickr user SAPRKART!, which uses all the curved pieces that LEGO® puts at our disposal to accurately portray its form in an intermediate scale. In addition he has also made a tribute to the original concept by Ralph MacQuarrie.

<http://www.flickr.com/photos/36161867@N08/>





PF. I added it the third leg, it was painful for the droid, more painful for me. I added wheels without knowing exactly how to and put two motors in the side legs. As my Technic knowledge is not very extensive (those who read this magazine already know) I decided that the steering would be like the ones in the tanks, using the motor of each leg independently. The main problem, besides my ineptitude, was to get the correct angle on the rear legs and that these legs did not separate from the body by the moments of forces suffered when spinning. At the end it worked..., more or less, and still it does..., more or less. Obviously after the headaches and pain in my fingers, the idea of putting in a NXT brick and making it "intelligent" is basically at the bottom of my to-do list.

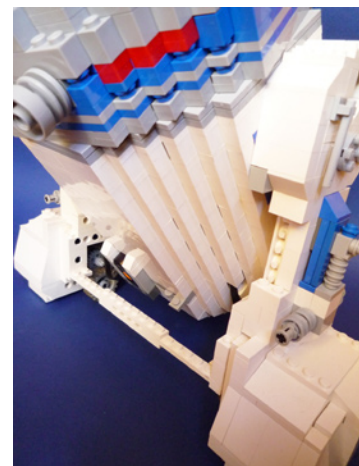
As this model had lost the aesthetics that allowed me to have it at home without my wife giving me funny looks, I have kept

And the second is a fantastic model in a larger scale and endowed with movement. Its author is Peter Salter (Ickelpete) and it is 60 cm high (depending on its position)
<http://www.flickr.com/photos/34247814@N07/>



My personal attempts

As you may have guessed, a fan like me of this little friend, would have tried to have his own droid from a long time ago. Well yes, and not just one, I have three versions of the same "pileup", at three different scales, and each with its own history. As I am a brave man in these things, I started with a big one. And using LDD (in its early versions) I built a 40 centimeter tall R2. It was a static version on two legs, whose unique gadget was its rotating head. After what I thought was an unprecedented success and a great sample of my talent as a builder, my ego was inflated and I decided to power it up with





it in a box which it only leaves to go to events, and I started to build another on a smaller scale. By then, I had discovered the Lowell sphere and my life had changed. So the domes were no longer stacked bricks and plates and became plates in all directions. Thus the two smaller versions that now decorate my desk were born. They have no gadgets, motors or anything like that, but they are nice looking and don't come apart easily. For most of my builds, that is usually sufficient.

The 10225

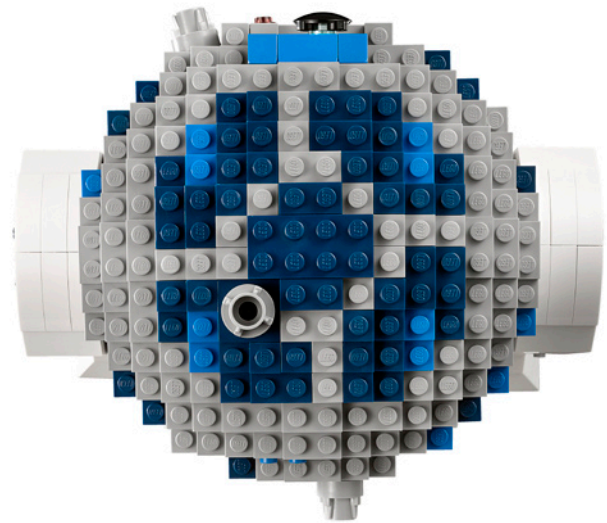
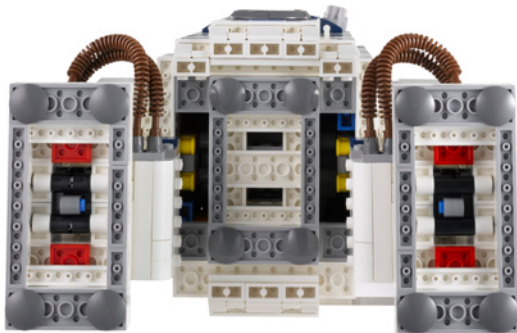
And when everyone had lost hope and we had filled internet with MOCs of R2D2™ in different sizes and styles, LEGO® released this set. And after 2127 parts, this is what I can say about this set.

The box is large, more than necessary, but I have to say that although it has the image of Darth "I killed your master" Maul in the corner, it is quite impressive. The content comes in numbered bags and the instructions are divided into 3 books. It has only one sticker, the information plate.

The building process is entertaining, not too repetitive (it has two equal legs, you have to learn to live with that) and with Technic components in the mechanism of the third leg. There are no problems of confusion with colors although the dark blue and bright blue can lead to error if they are not together, but as the types of parts for each color do not coincide it is not a major problem.

The final set is very attractive and the head is more rounded than the photos suggest. Perhaps the body should be slightly wider, it seems that our dear friend has been on a diet of low viscosity oil lately, but it is not something that stands out. The gadgets included are well designed and work perfectly, except, perhaps, the mechanism of the third leg. We must recognize the difficulty of designing such a mechanism, and it has indeed been done very well, but its operation requires practicing a couple of times before that change from 2 to 3 feet is more or less fluent. In the two-legged position the model is stable but it has gaps that allow it to move slightly in all directions, as when it suffered an overload and deployed all its gadgets. Yet it is not annoying and the aesthetic result in this position allows you to have it on display without your wife giving you funny looks. The three-legged position is more stable, but since it leans back it doesn't look as good. The mechanism of the third leg uses almost all the available space in the interior of the body, so if someone tries to power it or modify it this functionality will probably have to be given up if much extra space is needed. The aesthetic details are many and well made. Perhaps the head could have been worked harder and a gadget could have been added in that area, because the dome is virtually empty. A light brick would have been a good detail and they are very fashionable lately.



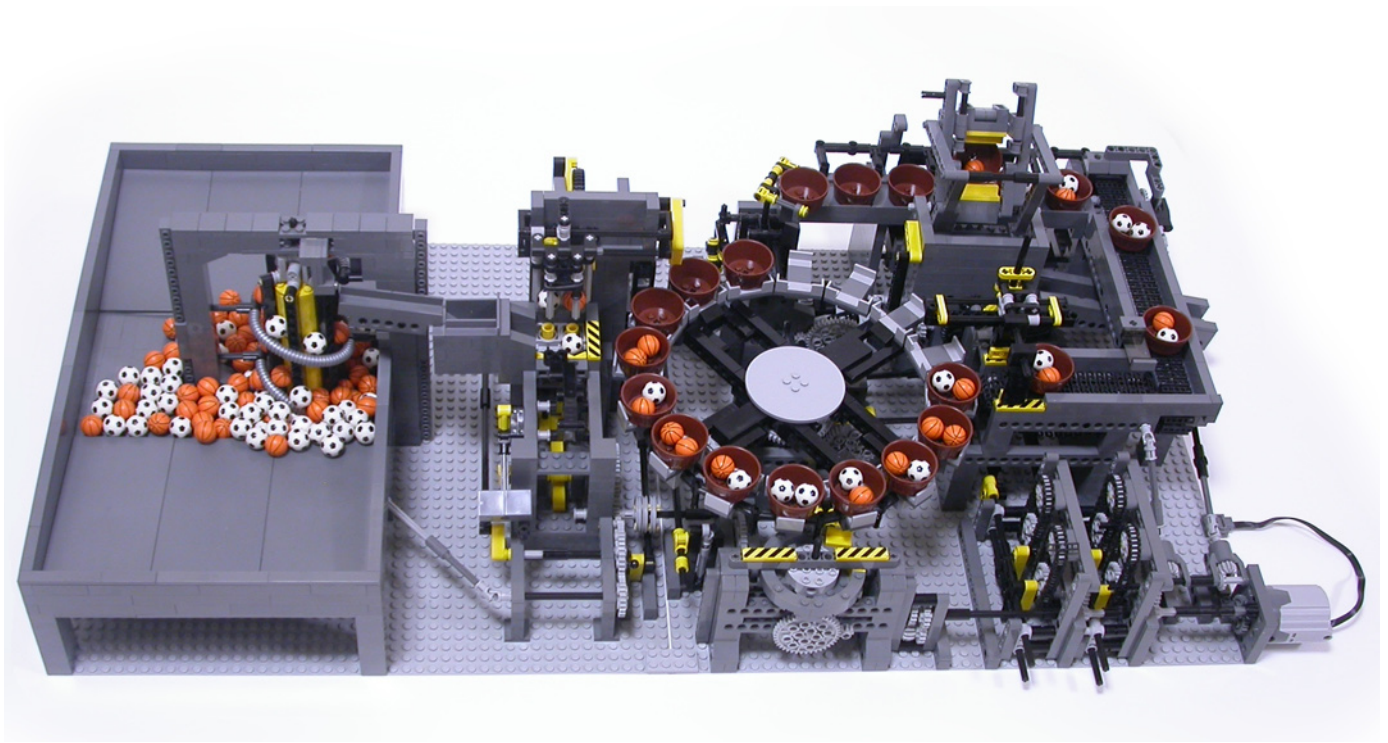


CONCLUSION

It is a great set and personally I like it, I enjoyed building it and playing with it, but I have to be honest and say that I would have paid more for a more extreme version. Larger, motorized, more detailed..., but it is clear that the objective was a balance between what is desirable and possible to a sale price. In short... highly recommended.

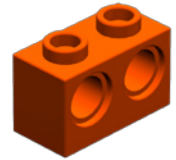
Acknowledgements: LEGO® SYSTEM A/S and Jan Beyer for this set and LEGO Iberia S.A., Joachim Schwidtal and Rosa Seegelken for the official images.

#



GBC with character

Interview with Akiyuki Kawaguchi



TechnicBRICKs

By TechnicBRICKs team members (Jetro, Fernando, Alexandre)

Pictures by Akiyuki Kawaguchi

- Name: **Akiyuki Kawaguchi**
- Age: 21
- Nationality: Japan
- Occupation/education: I'm a student of a college of technology.

TB: What is your favourite commercial LEGO® theme?

AK: Technic and Mindstorms.

TB: When did you first start building with LEGO?

AK: I started playing with LEGO when I was 2 years old. I started Technic at 8 years old. My first Technic set was #3000 Tribuggy. It is a very simple set (24 pieces in a polybag that was distributed with Kabaya sweets here in Japan) that uses a rubber band to give the trike suspension. After that, I became a fan of LEGO Technic. I now play with LEGO as hobby.

TB: When did you discover the GBC system and how did you start creating modules for it?

AK: I saw the GBC in a YouTube video for the first time 3 years ago. I was much impressed by the mechanisms for carrying balls. I thought that the GBC would be just right for the showpiece of my school festival. So I proposed a GBC layout as the showpiece for the school festival. My classmates and

I executed the plan and our GBC showpiece got favourable mentions at the school festival. After that I became quite fond of the GBC.

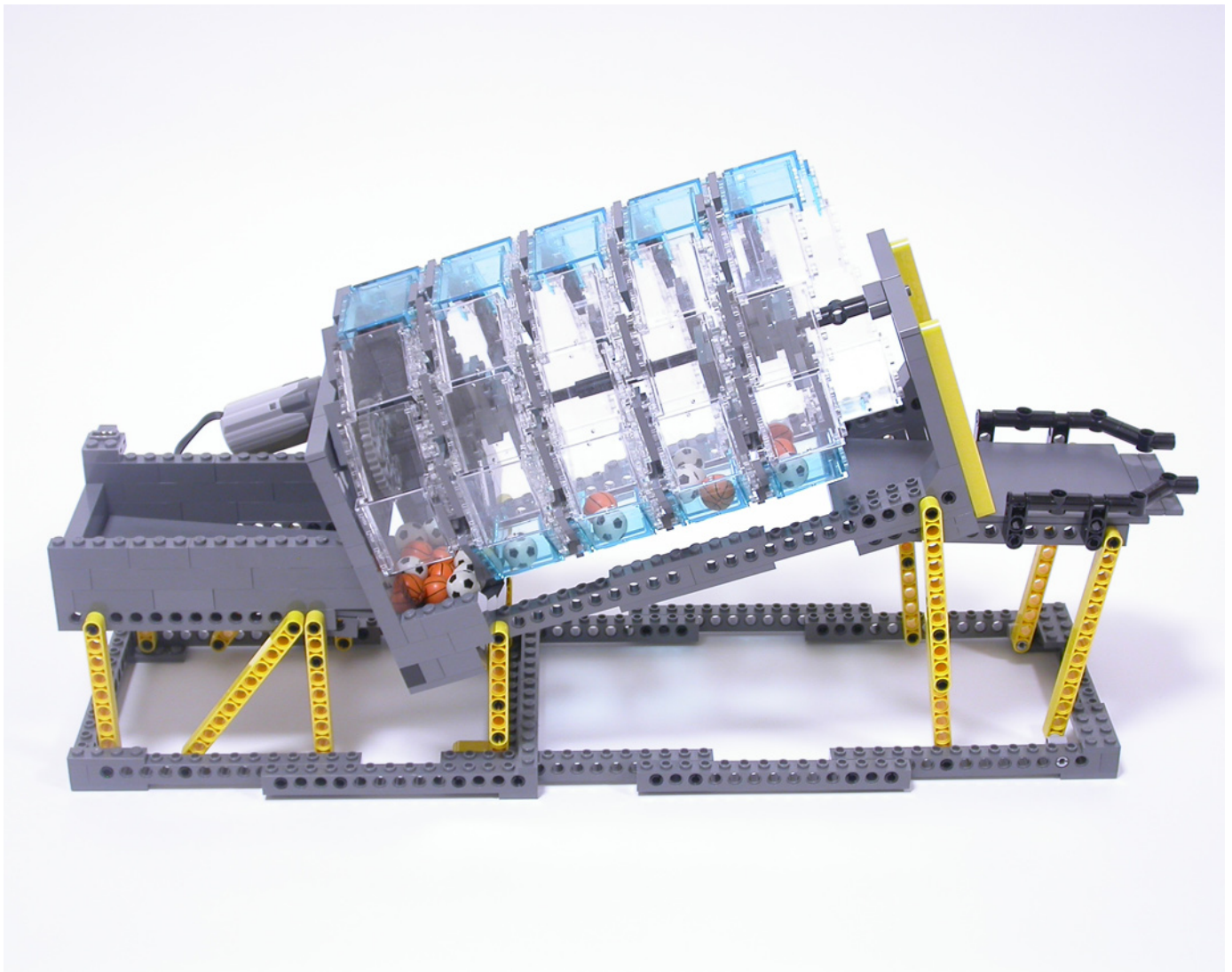
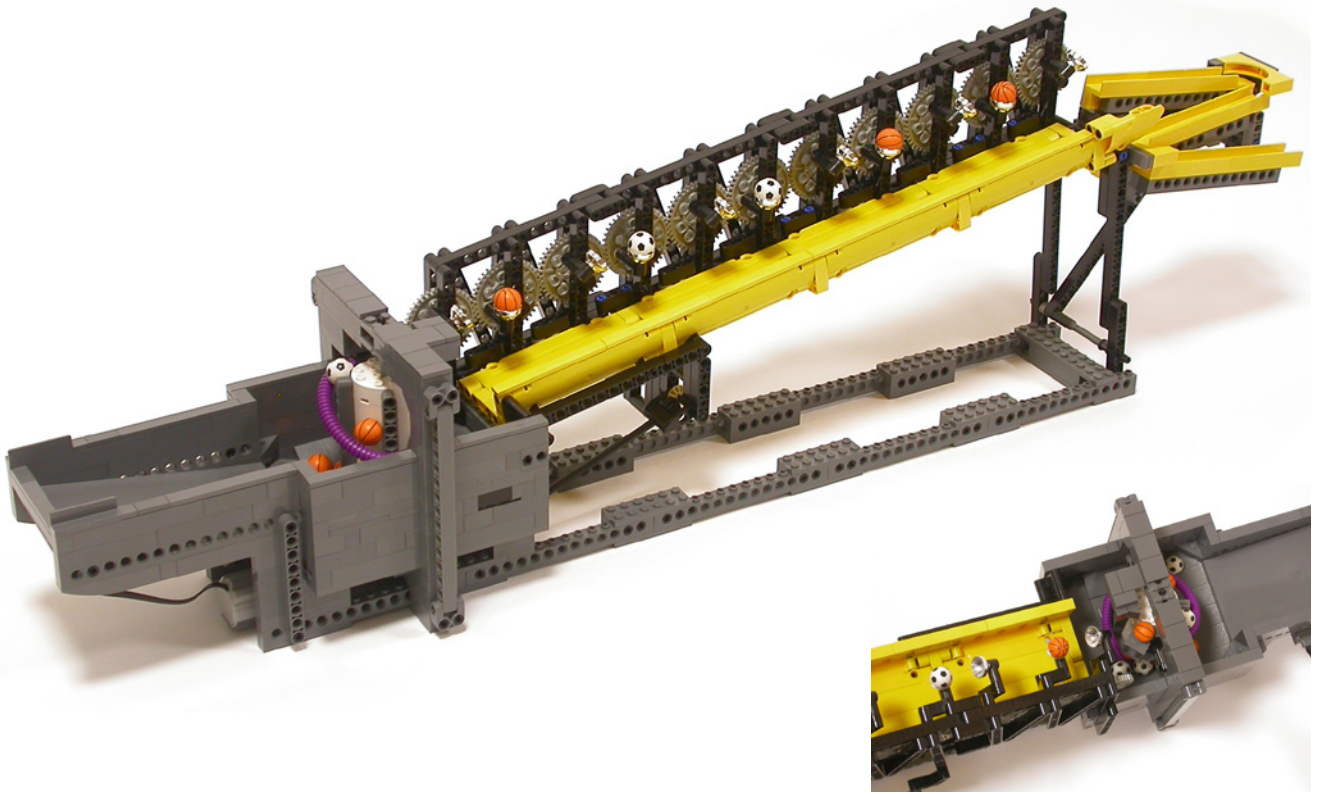
TB: Your GBC modules always show something unique, innovative and something suggesting you have an outside-the-box way of thinking. Where do you get inspiration for your modules?

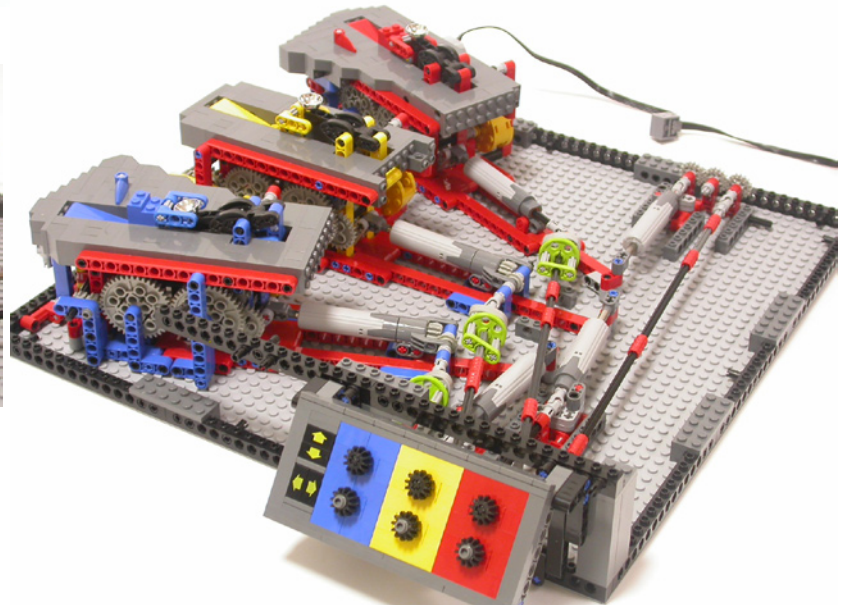
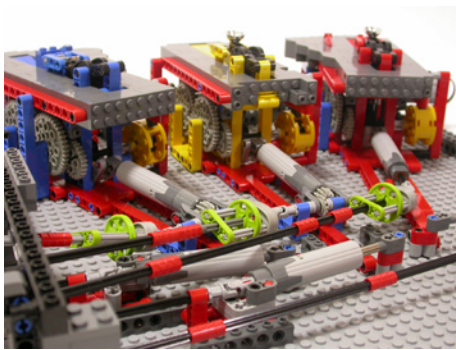
AK: I do not think that I am unique, but I think about mechanisms night and day. I like to watch videos of industrial machines and GBC modules on YouTube. I thank GBC fans uploading their videos to YouTube. In making the ball factory module, special thanks go to YouTube user superbird28. I was much inspired by his videos. If I had not watched his videos, I could not have made the ball factory module.

TB: You show a singular capacity to think and build complex mechanisms while these may also appear extremely simple at the same time in many cases.

AK: I think a complicated mechanism is combination of simple mechanisms in many cases.

TB: Another aspect we really appreciate in your work is the clean design and careful combination of colours. Very Japanese I'd say.





AK: I have recently started to use Dark Bluish Gray bricks as base colour, adding red, yellow and lime as accent colours. I place a lot of importance on the visibility of the movement of the balls. Many clear parts were used for to show this even better. I also prefer a mechanical solution for movements rather than computer programming and servo motors. It may be related to the Karakuri doll of the Edo Era. Karakuri is a Japanese traditional automata. A well-known Karakuri doll could automatically serve green tea.

TB: Your constructions denote a very careful planning in parts acquisition/selection and also on the preparation of what you intend to do. Can you estimate how many parts you have, or do you buy them on purpose for each new module you work on?

AK: I have approximately 100,000 parts in total. 70% are Technic parts. Usually after deciding the module composition I buy the necessary parts for completing the module. On the other hand, I often buy parts without a specific purpose when

I feel interesting in them or I feel they have the potential to be used for GBC.

TB: Do you take your modules apart after completing them, or do you keep them so you can show us an incredible and huge GBC chain later on?

AK: I keep some my favourite modules, most part of the modules, which I would like to use for my next GBC Layout. Other modules are taken apart and go back into the parts collection.

TB: Some of your modules are quite complicated, and certainly weren't trivial to design. On average, around how many tries and fine tuning sessions does it take for a new module to work just the way you like?

AK: It takes about 7-40 hours to complete one module through trial and error. Adjustment for a stable running of the GBC module are delicate and time consuming. The final completed

module is often different from my first image. There are many unfortunate ideas that I gave up.

TB: What model/module are you most satisfied about and why?

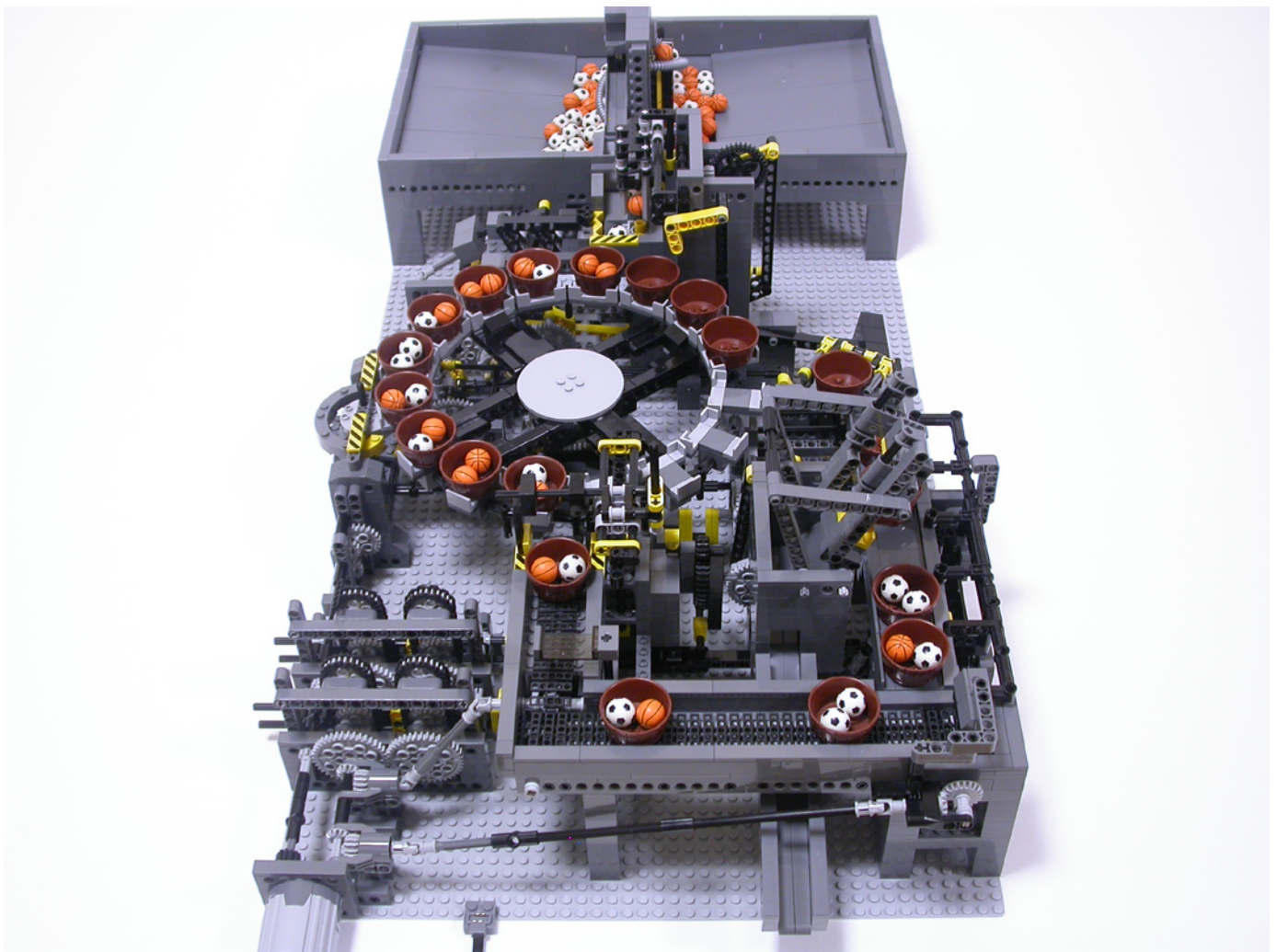
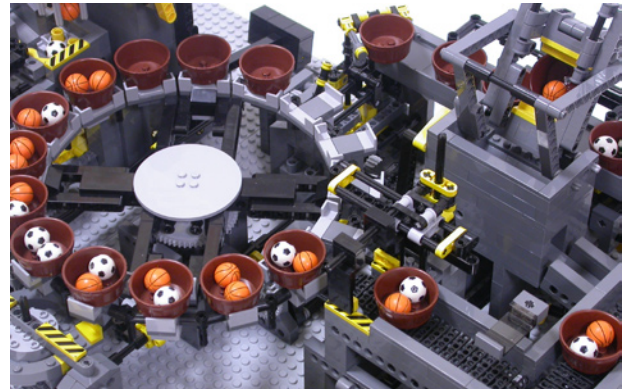
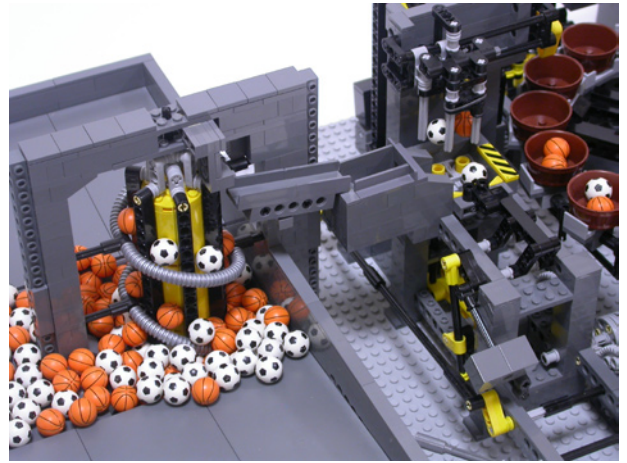
AK: I am most satisfied with the ball factory version2 module. I was deeply influenced by superbird28. His videos taught me another possibility of LEGO® Technic. My most favourite factory module shows complicated movements, but the movements completely synchronize. I spent a lot of time to smoothing the acceleration/deceleration of linkages. I think no other block toy can make crank-slider mechanism as easily and smoothly as LEGO. Next to the ball factory Ver.2 I like the catch & release module. I'm fond of the mechanism releasing a ball.

TB: Is there any part/element you wish LEGO would make?

AK: The NXT's I/O ports are too few. I would like a new Mindstorms system which enables a single computer brick to control more than 20 servo motors.

I also wish LEGO would make shim ring parts.

#



LEGO® and Crowdfunding

By car_mp

Following the internationalization of the LEGO® CUUSOO project, which previously was only available in Japan, internet is filled with LEGO fans in search of their opportunity. Who has not dreamed of seeing his own design become an official LEGO set? The call is strong and the response has been accordingly, though unfortunately also the conditions to achieve it. Getting 10000 supporters is not easy. Until now few projects have achieved it, and it seems that the recipe for success depends on two main ingredients. You need a theme with a large popular support behind it, even if most of it doesn't belong to the LEGO community, or the support of any (or all) of the LEGO reference pages on the internet.

But taking into account that we are in a capitalist world, it is easier to get 10000\$ than 10000 supporters for a project. And that's where Crowdfunding or patronage comes in. This system, which has been operating successfully for years in areas like music or video games, seems to have been useful also for some projects related to LEGO.

Its operation is simple. Upload your project to any of the websites dedicated to these purposes and wait for the money to arrive to move forward with your project. Well, maybe it is not quite that simple. That is the basic principle, but obviously you have to attract your investors in some way, there are altruistic people in the world but they are not easy to find. It is essential, as you may have guessed, that the project is

relevant to the sector that you are focusing on. After that you need to have a well-planned financial plan and the plan of "rewards" for your investors. In any project, the hardest part is getting the initial investment that allows you to move from design to final product and manufacture and initial circulation of the product at a price that can be competitive. From there it's a matter of maintaining the balance between costs and income and you will get your project going. This initial capital injection is what the creators are looking for on the crowdfunding pages. In return you offer your investors an attractive product and a number of rewards, depending on their initial contribution, if the project comes to fruition. The more you invest the more you will receive from the creator once the project is underway. Sometimes that means more copies of the product, on other occasions it is a custom product, sometimes it is only public recognition. But, what happens if the project didn't raise the necessary money in the allotted time? Simple: on most of the pages the developer does not receive your money at the time of donation, you make a payment through a trusted service (PayPal, Amazon, ...) and the payment is not made effective until the project has been successful. If it fails, the money comes back to you.

You might think that the system is good but what comes out of there will not be an official LEGO product. True. If you search a bit through these pages you will find that the LEGO-related projects are very different from official sets. Some of

The image shows three Kickstarter project cards. Each card features a title, a description, the creator's name, location, and funding progress. The first card, 'Robots!', is by David M Pickett in Chicago, IL, with 113% funded (\$3,414 pledged) as of April 11, 2011. The second card, 'Little Guys...In Space!', is by Paganomation in Queens, NY, with 106% funded (\$8,484 pledged) as of May 16, 2012. The third card, 'Mobile Frame Zero: Rapid Attack', is by Joshua A.C. Newman in Northampton, MA, with 916% funded (\$82,499 pledged) as of April 11, 2012.

Project Name	Location	Funding Status	Amount Pledged	Date
"Robots!" -- A stop motion animation using LEGO bricks	Chicago, IL	113% FUNDED	\$3,414	APR 11, 2011
Little Guys...In Space! A LEGO® Fan Film From Paganomation	Queens, NY	106% FUNDED	\$8,484	MAY 16, 2012
Mobile Frame Zero: Rapid Attack	Northampton, MA	916% FUNDED	\$82,499	APR 11, 2012


Several projects related to LEGO in Kickstarter



MINUTEBOT BASE

MinuteBot Base for LEGO Mindstorms enabled robotics
by Soren Jensen


MinuteBot Base is a thick, robust base plate that can be used for construction of robotics based on LEGO Mindstorms.

 Copenhagen, Denmark

SUCCESSFUL!

124%	\$13,743	FUNDED
FUNDED	PLEDGED	MAY 21, 2012


Project name: MinuteBot Base
 Platform: Kickstarter
 End date: 21-05-2012
 Number of investors: 169
 Investment achieved: \$13743 (124%)



SUCCESSFUL!

NXT2WIFI - Webserver module for LEGO® MINDSTORMS® robots
by dbenedettelli

A webserver with Wi-Fi interface that gives your LEGO® MINDSTORMS® robots access to the internet. Control your NXT with iPhone and iPad!

 **Collected € 6350 of € 6000**

Project name: NXT2WIFI
 Platform: Eppela
 End date: 19-05-2012
 Number of investors: 60
 Investment achieved: €6350 (105%)

them could become LEGO® products but others clearly not. For example, a stop-motion film made with LEGO. Or two projects that have recently ended (with success) and could have become LEGO products but they have little relation to the aspects covered by LEGO CUUSOO. One of them is a webserver module that enables communication with our MINDSTORMS models via WIFI and the other is a special Technic baseplate with the appearance of a giant liftarm and an area of 21 x 31 studs. Both projects could have been LEGO products but hardly through CUUSOO. It would not have been easy to get 10000 supports for their production, however both have achieved the necessary economic support. They will have their product, it will not be official but they will not have to renounce to their legal rights and they will earn what they want and others are willing to pay for their product.

It is clear that we are dealing with two different strategies covering two different needs:

In LEGO CUUSOO you get an official product, no investment on your part or on those who support you, with a modest income that will depend on the success of your product (remember that these 10000 supporters have not promised to buy your set) and glory and fame in the AFOL world..., as long as you pass the successive filters of the company.

In Crowdfunding you get economic support to launch your project, donated by people who are interested in your product, and therefore believe that it can succeed. You may need 5 investors or 5000, depending on what you offer and need.

Find your product and participate. Present your own project or support other projects. In many ways our hobby continues to evolve and grow.

#



CUUSOO

LEGO® CUUSOO

Interview with Timothy Courtney

By HispaBrick Magazine®

Pictures by Timothy Courtney

HBM: What exactly is LEGO® CUUSOO?

TC: LEGO CUUSOO is a website where LEGO fans can submit their ideas for new LEGO products and collect votes to make their ideas become a reality. They can also vote for other users' ideas. It can be found at <http://lego.cuusoo.com>. Ideas that are supported by 10,000 votes have a chance of being selected to become part of the LEGO Group's product portfolio. Consumers who have their ideas chosen will earn 1% of the total net sales of the product.

HBM: What is its objective?

TC: LEGO CUUSOO aims to connect great LEGO product ideas with the people who want to buy them, and bring them to life. It's an "open innovation" initiative of the LEGO Group. From a business perspective, we're looking to create a

profitable product line of LEGO sets by fans and for fans. From a community perspective, this is an opportunity to engage LEGO fans of all types in getting behind ideas created by their fellow builders.

HBM: How did the idea of LEGO CUUSOO come about?

TC: The LEGO Group has been producing products that collaborate with fans for a decade now. LEGO CUUSOO came to be after Paal Smith-Meyer, head of New Business Group at LEGO, met the founder of CUUSOO System. The decision was made to test the CUUSOO crowdsourcing concept in Japan since it was a limited market, then based on that roll it out to a global audience.

HBM: What does CUUSOO mean? Where does the name come from?

TC: The word CUUSOO in Japanese translates loosely to English as "wish," or to "wish something into existence." So, LEGO CUUSOO allows you to share your LEGO wishes and attract people who also wish the LEGO Group would make a certain product idea.

HBM: Does this Project have an end date?

TC: There's no end date set for LEGO CUUSOO. We're learning as we grow and looking for the best way to open ourselves up to fan-created ideas and bring them to market.

HBM: How many people, departments etc. are involved in this Project?

TC: LEGO CUUSOO is a collaboration between New Business Group, the Community Engagement and Events team, and our partner company CUUSOO System.



Kohei Nishiyama, founder of CUUSOO System, checking out the Minecraft set for the first time at the LEGO offices in Billund, Denmark

Left-Right: Steen Sig Andersen, Troels Lange Andersen, Daniel Mathiasen, Bjarne Panduro Tveskov.



HBM: Can you explain the process of a CUUSOO project from the end of voting till the finished product?

TC: Anyone over 18 can submit a project to LEGO® CUUSOO. It's best if you take some time up front to work on a quality presentation with good photographs and a well-written description. Once you submit your project, it is put into a queue where our moderators look it over to make sure your project follows our Guidelines and House Rules. Once approved, your project is published and other LEGO fans can support it. A project requires 10,000 supporters to qualify for the LEGO Review, a process where a team of LEGO employees from various functions examine the concept for brand fit, strategic fit, business case, model design, and potential conflicts with existing products or products in our pipeline before making a decision on whether or not to produce it. The review happens once per quarter and includes all projects that reach 10,000 supporters before the set deadline. Each project passes or fails review on its own merits. Since production slots are limited, we currently can choose one project per quarter to produce, with others that pass being reserved in a queue for future available slots. The review is completed with a final model design, so once a product is chosen it goes into production and to the markets. This process takes as little as six months but could be longer for larger and more complex sets.

HBM: Why have the rules concerning what can become a set if it reaches enough votes had to be changed? Shouldn't this have been clearer from the beginning?

TC: When we launched LEGO CUUSOO, we essentially opened our doors wide and allowed our fans to submit any suggestion. It was hard to imagine the wide range of project submissions we would receive. As we learned that projects were suggesting ideas and IPs that did not fit the LEGO Group's brand values, we needed to make adjustments to what we allowed. We've taken great care to build a framework that explains our decision criteria, however at the end of the day deciding what projects fit the LEGO brand and what does not is a subjective decision made by the LEGO Group and by people who take great care to interpret our guidelines. This goes for both what we allow on LEGO CUUSOO and what we release as main line products. Before LEGO CUUSOO, the process of deciding what does and doesn't fit our brand happened behind closed doors and away from the scrutiny of the outside world. It's a bold step to open ourselves up and then make our framework and these decisions in the open. While there is risk to exposing our decision process, and people might not always agree with us, we believe the benefits of the openness and the positive results that have come and are yet to come on LEGO

CUUSOO far outweigh these risks.

HBM: Are you worried there may be a certain disenchantment among AFOLS upon seeing that many projects that receive enough votes are not carried out?

TC: From the start of this great adventure, we've realized that we won't be able to make everyone happy. We're focusing on the opportunities we have to deliver and make fans happy, like we've seen happen with the LEGO Minecraft Micro World set.

HBM: Have you considered selling CUUSOO products in the same way as regular themes? Will they ever be available in LEGO stores or at TRU etc.?

TC: For the time being, CUUSOO products will be available on the LEGO Shop online, from online retail partners, and in select LEGO Brand Retail stores. We're currently working on how we distribute and sell these products more widely.

HBM: In case you have this data: what country/region proposes more projects?

TC: Half of our user base is from the United States, followed by the UK, Japan, Canada, Australia, Germany, France, the Netherlands, and other primarily European countries.

HBM: Has any participant in CUUSOO ended up working for LEGO?

TC: We have not hired anyone as a LEGO designer from their work on LEGO CUUSOO, but that doesn't mean it couldn't happen in the future!

HBM: Have you considered the possibility of carrying out a project you especially like even though it has not received sufficient votes?



LEGO Model Designer Steen Sig Andersen poses with one of the first production copies of LEGO Minecraft Micro World

TC: We haven't considered anything specifically, because LEGO® CUUSOO is about both presenting a good concept and connecting it with a passionate audience who wants to purchase the product.

HBM: Is there any project that you like especially because of the theme, construction etc.

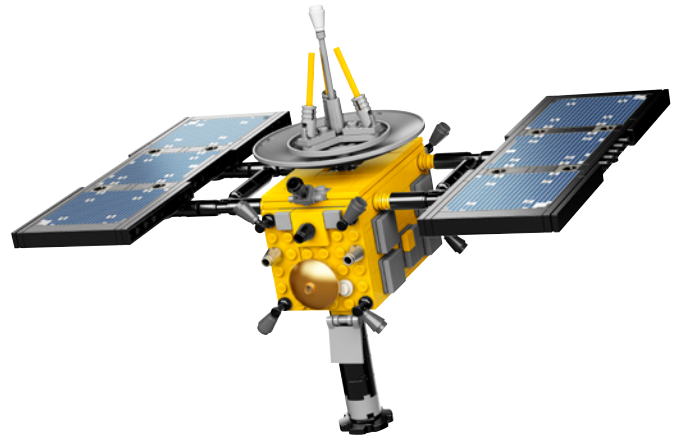
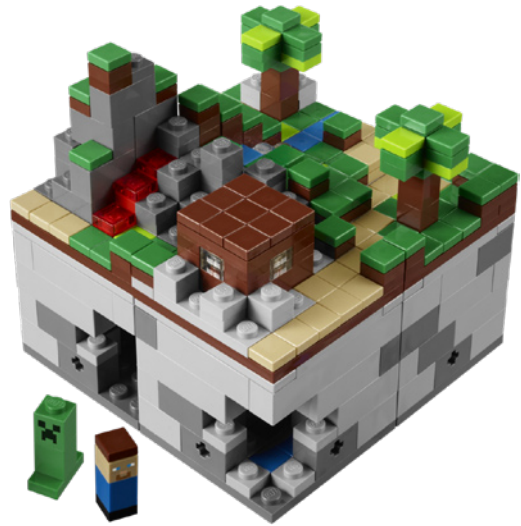
TC: I love anything related to airplanes. My current favorite airplane on CUUSOO is Ssorg's DC-3. It's so well rendered in bricks, and it looks built in a style that would work as a UCS model. If I saw it on a store shelf, I would not be able to resist it. <http://lego.cuusoo.com/ideas/view/17534>. Also, I think that Hidaka's Piano project is overlooked too much. It's a great model and concept and could really do well. It was one of the first projects on CUUSOO from when we opened the site for public beta. Who doesn't want a minifig scale piano? <http://lego.cuusoo.com/ideas/view/167>

HBM: What do you think of crowdfunding as applied to making LEGO projects?

TC: I think crowdfunding would open up a lot more possibilities for bringing fan-inspired products to life.

Thanks for your interest in an interview and keep up the great work!

Timothy Courtney
Sr. Consultant NBG
Community Business



Members of the LEGO Concept Lab and New Business Group teams celebrate the Minecraft project crossing 10,000 supporters in December 2011. This was the first project to reach 10,000 supporters since the global Open Beta, and it reached that level in a record 48 hours

What's your LUG like?

Text by Satanspoet and Jetro

Pictures by their respective LUGS

The LEGO® Group has developed The LEGO Ambassador Program that is a LEGO community based volunteer program made up of representatives from LEGO User Groups globally.

The mission of the LEGO Ambassadors is to work together with the LEGO Group in all areas which concern the worldwide LEGO community and be the voice of their respective LEGO User Group towards the LEGO Group.

As many of you know already, LUG stands for LEGO User Group and there exists practically in all countries. But the questions that will arise is: how LUGs originate? what structure they have? Are all the same?

To give concrete answers, we contacted representatives of different LUG's to which we have formulated the following questions:

HBM: What is the name of your LUG and what does it stand for?

rtlToronto: Chris Magno: rtlToronto was named after the original news group were the three founding members first met online. R.T.L.News. or Rec.Toys.Lego

Builder's Lounge: Chris Malloy: Builder's Lounge

CactusLUG: Clark Edwards: CactusLUG

FreeLUG: Daniela: The name of our LUG is : FreeLUG French Enthusiast LEGO User Group.

ItLUG: Luca Rosconi: ItLUG simply means "Italian LEGO Users Group".

HispaBrick Magazine®: Carlos Méndez: HispaBrick Magazine. Derived from the name of the magazine we publish and around which our LUG is formed.

HBM: When was your LUG started and why?

rtlToronto: rtlToronto is one of the first LUG's formed back in early 1996. It was started from the need for Chris Magno and Calum Tsang to meet fellow AFOLs in the Toronto Area with a focus on Robotics, Technics, and the new MINDSTORMS.

Builder's Lounge: Builder's Lounge was started in 2005, as a retreat for a small group of builders to simply "hang out" and relax, without the need for the usual oversight that must occur in an open forum. Basically, by privatizing the conversations, and keeping a small membership, we are able to foster a much more relaxed and laid-back atmosphere than is typically the case with online forums.

CactusLUG : We started June 2008, just before a new LEGO store was to open here in Phoenix. We started the group with five like-minded people who have a love for LEGO.

FreeLUG: The official birth-date is February 2003, 18th but the announcement in the "journal officiel" is April 2003, 26th.

ItLUG: ItLUG started in 1999 as an independent community of adult LEGO fans willing to share their experience on LUGnet, in a dedicated section in italian language.

HispaBrick Magazine: When it started is complicated to say. The magazine was born in 2008, but we were seriously established as a community in 2011. Our LUG originated from the need to create some structure around the project of the magazine. We were a group of friends with a similar way of living our passion for LEGO bricks, and when we decided to go a step further and organize and participate in events like a LUG then we established ourselves officially.

HBM: How big is your LUG?

rtlToronto: We have 15 - 20 active members, and that number shrinks or grows as people raise families, or discover the group.

Builder's Lounge: A little over a hundred, though even with as small a group as we have, many members are not regularly active.

CactusLUG: We have since grown into a group 15 regulars, and a few more that just visit online.

FreeLUG: In 2011, there were approximately 260 members (adults and children).

ItLUG: At the end of 2011, we have more than one hundred official club members, and more than two hundreds accounts on our forum that has a dedicated section for the members only but also a wide public section open to other fans that are interested in our activities.

HispaBrick Magazine: Currently we have 21 registered members, from three different countries. Each issue of the magazine reaches more than 5000 fans.

HBM: Describe your LUG format:





rtToronto: rtToronto is run as a “group of people who just want to meet once a month and talk about a mutual interest”. We do not collect dues, fee’s, we have no formal memberships, my rule has always been, if you show up, you’re in, and if you do not show up that’s ok too. If one member wish’s to have an event, then I encourage them to organize, and run that event. We are not registered anywhere. We meet once a month at a public restaurant for a nice meal and I never know how many people will show up from month to month.

Builder’s Lounge: Currently, our group is based on flickr, and our discussions all take place there. We have a private membership.

CactusLUG: We are an open group that does not just restrict activities online. We encourage anyone to come and join us for a meeting. We use our site and online group as a means of communication. We are strictly an Adult-Only group. We have allowed a couple of younger members, but that is only on a case-by-case basis. We try not to make a habit of that. We meet once a month in a semi-central location of town. We do have registered members, but refer to them as paying and non-paying in the case of membership dues. We have a President, Secretary and Treasurer. Our project managers try to maintain Membership, LUG Showcase and Displays/Events/Shows.

FreeLUG: Our Lug is a registered association - in France “association Loi 1901 à but non lucratif” (non profit organization). We have two official annual meetings (General assembly of the association in the first quarter of each year and our summer convention “REF” Rencontre Estivale FreeLUG)

We support different ways for communication between our members:

- Mailing lists:
 - Freelug-general (you can subscribe to this list even if you’re not member but the list is mainly in French) (<http://lists.freelug.org/cgi-bin/mailman/listinfo/freelug-general>)
 - Freelug-adherents (you need to be member of Freelug)
 - Dedicated region lists, (to organize the different events on which we are present), open to members of others (french)-lug
 - Specific lists (board, website management, external contact,...)
- WebSite: www.freelug.org : we continuously publish article about LEGO® (review of sets, technical technic, summary of exhibition...)
- Wiki : wiki.freelug.org : it is a community tool to manage/



prepare exhibition and share others information that don’t need to be on the public website (www.freelug.org)

- Forum: we have a forum directly link to the mailing list freelug-general, you can access on it from homepage of www.freelug.org

- IRC channel: server: [irc.freelug.org](irc://irc.freelug.org)
 - channel #Freelug: open channel for everybody, member or not, mainly in French, but we have people from others country that’s come visit us.
 - a private channel for board monthly meeting.

ItLUG: At the present, ItLUG is an official and registered Association of social promotion, according to National regulation.

We have a website (itlug.org) and a forum, that is the official way of communication for the club. Important news is sent via email to the club members only, to ensure they can be informed even in case they are not always active on the forum. As per official club regulation and statute, members under 18 are admitted only with a written request form signed by their parents, that have the right to vote during the plenary Assembly.

ItLUG members pay an annual fee, and have some gadget, benefit and discount, other than the possibility to participate to the LUGBULK program.

There is a board called “Consiglio Direttivo” composed by 7 members: the board members are elected every 3 years. Official activities are focused on real event and exhibitions: there are national events, and local ones, according to an approved planning along the year calendar.

HispaBrick Magazine®: In principle we are only a group of users, without any legal concept to back it up (association or similar). All our users are adults. There is no fee. We communicate through our web forum, and we meet whenever an opportunity arises, but mainly for the events.

HBM: Why did your LUG choose this format and what are the advantages of it?

rtToronto: It was not chosen per se. the “format” evolved. This system has not been a good fit for a few people over the years. Those people tend not to return. Those that do come to dinner every month are always greeted with a cheerful hello.

Builder’s Lounge: When the forum was started , it was as a retreat from the hustle and bustle of busier forums. By having a small, personal membership, we don’t have to worry about moderation, spamming, or dissension between members.

CactusLUG: This format just kinda grew into being. We didn’t plan it, or cultivate the theme. We do try to set aside the beginnings of the meetings to take care of club business, i.e. dues, projects and the like.

FreeLUG: Mailing lists is our choice, because it is easiest to get message directly on PDA, or when we travel and have only slow internet connections.

ItLUG: As said, ItLUG started many years ago as an open and independent community.

Along the years the community grew up a lot, and so the events changed from some private meetings in house to a much more complex exhibition open to the public.

Due to the increasing success of these events, we were forced to acquire a formal and legal entity to deal with all the collaborators and local authorities.



In addition to that, also the high number of fans involved and present in the forum brought our attention to the fact that the group need to have some rules, and the decision makers have to be legitimated in some way: despite the full respect to the old founders we asked and voted to proceed with the new organization, and the vast majority agreed. Some high reputed members spent a whole year to prepare the Statute, the Regulation, and all the legal steps to become an official Association!

HispaBrick Magazine®: We use this format because we thought it was best suited for work around the magazine, and since our membership is not very high for now we do not need more. The forum allows us to keep track of the different themes and discussions about the events and the magazine.

HBM: What activities do you do as a LUG?

rtlToronto: We try to have a robot contest every year. The group also participates in various train shows, and other display's

Builder's Lounge: The Iron Builder competition, and Creations for Charity.

CactusLUG: We mainly hold meeting once a month. Our December meeting is reserved for a game of Dirty Brickster (gift exchange). We sometimes get together before our meeting and have lunch at a local eatery. We plan for shows and displays. We talk discuss and arrange the LUG Showcase at our two LEGO® stores.

FreeLUG:

• Shows:

Our members participate to about 30 exhibitions each year, mostly organized by other people and they invite us to join them. These shows can be categorized as follow:

1. 100% LEGO Shows (all themes, like LEGOWorld)
2. Model Shows (mainly trains model)
3. Theme mettings (Star Wars™, Comic'Con...)

Last year (2011) we started to organize our own events, called "Briqu'Expo" (100% LEGO exhibitions), and will organize 2 of theses exhibitions this year.

Sometimes we do animations for children at these events (see here some photos) <http://photos.freelug.org/main.php/v/FreeLUG/Animations/>

Sometimes we work directly with LEGO Fr on special projects : kidexpo, gallerie lafayette, pieces jaunes.

• Internal competition:

We try to offer regularly our members internal competitions with some rewards (white Boba Fett, chromed Dark Vador, sets). They are mainly based on building techniques or

constraints like the use of only one color, a maximum number of parts, ...

• bulk orders:

We organize one bulk order of each a year:

1. LUGBulk
2. Minifig Series
3. New sets

ItLUG: Together with ItLUG we've created another official club called "Sleghiamo la Fantasia" (unleash the fantasy) to keep separate two aspects: ItLUG is mainly oriented to exhibitions and to the AFOLs, while SlaF is more focused on the entertainment, education, laboratory, charity, etc. so is also in deal with schools, external meetings, and so on. The two associations are independent, but many ItLUG members are also involved in SlaF, and SlaF is always present during all the major ItLUG events with a dedicated and appreciated area: this way who is merely interested in pure LEGO will join ItLUG, while to play and let the others play with LEGO (also with LEGO Games and Duplo) there is SlaF with his sets for loan, play tables, contests, etc.

HispaBrick Magazine: Our main objective is the publication of the magazine. We publish it three times a year and this absorbs a lot of our time.

We participate in as many events as we can, in addition to organizing our own event next December.

We also participate in LUGBULK and we organize contests among our members whenever we can.

Thanks to:

Chris Magno, rtlToronto founder (<http://www.thepyroguys.com/rtl/>)

Chris Malloy, Builder's Lounge (<http://www.flickr.com/groups/builders-lounge/>)

Clark Edwards, Cactus Brick (www.cactusbrick.org)

Daniela Drost, FreeLUG (www.freelug.org)

Luca Rosconi, ItLUG (<http://www.itlug.org/>)

Carlos Méndez, HispaBrick Magazine member (www.hispabrickmagazine.com)

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Teaching with bricks

By Emma Herrod

Pictures by Brickset. Images by Jetro

I wish I was able to personally chat with everyone reading this edition. I'd like to find out about your experiences of learning a foreign language. Perhaps you would talk about learning English or French at school, or recall a particular teacher who inspired you to visit foreign climes, or indeed perhaps put you off ever wanting to find the way to the post office in a town abroad. I wish I could find out how you were taught. Was it all about the grammar and rules or were your lessons fun and inspiring? My own foreign language is German and I was taught by a lovely Russian lady at school. My experience is certainly full of grammar rules, memorising lists of vocabulary and chanting...lots and lots of chanting. I guess it could be argued that it was actually a very effective way of teaching. I got As in German at school and studied the language into higher education. Possibly infinitely more impressive, is that I am able to recall a number of the memorised lists of words, including 'der Funkamateuer' (the German word for 'amateur radio enthusiast' – vocabulary every 14 year old student needs to survive!

Now (and many years later) I find myself on the other side of the classroom desks as an English as a Foreign Language teacher. Lots of students want grammar. Adult students love rules. They want to know how things fit together, and why. There is also a deep-rooted belief with lots of learners, that text books are the only 'real' way to learn a subject and there is little room for fun amongst all the rules. I reckon it's our job as the teachers to meet somewhere in the middle. Maybe we can use the textbook, if that's where you feel safe, and well...shake it up a little. Cue the LEGO® bricks...

Allow me to set the scene: A Large, very large, well-known pharmaceutical company. One director-level Russian student. One terrified teacher (me) clutching a print out, sent by aforementioned Russian student, outlining all the things he did and didn't want to learn, and how he would like to be taught. Venue: One windowless meeting room. Lesson one of 30. Gulp. My bag rattled as I walked. I had my usual bits and pieces, coloured pens, beautifully laminated flash cards, and my secret arsenal of LEGO bricks. After we had greeted each other, my Russian student was sat, pen in hand, clean pad of paper at the ready, all set to be 'given' lots of rules and things to learn by me. I got my teacher things out of my bag, trying to appear professional and desperately trying not to give away that the bag of LEGO had tipped itself over the inside of my handbag. Tiny bricks were lost amongst a sock, belonging to my son, and some lipsticks and there appeared to be a baby biscuit caked around minifigure Johnny Thunder's legs. This was not going well. Actually, things were fine. He

was a really nice guy, and we worked in his comfort zone for a while, referring to a grammar book, and discussing why certain words were pronounced as they are. In the email he had sent, which stipulated exactly what he would like to learn, he had mentioned that his English staff found him abrupt. When he asked them to do things, he felt they might be offended. He was right, they were. Being Russian, this student's manner was direct and he tended to translate his native directness straight into English. Unsurprisingly, his English staff didn't like to be told "Look into in and write your report by lunchtime!". Out came the bag of LEGO (with the weaning biscuits washed off).

I'm not sure the image will ever leave me of this student's face at the moment I tipped the bricks out onto the table. His expression sort of said, "Oh you have to be joking" and "I asked for a real teacher" mixed with "there is no way I am playing this game". The bricks were all orange and brown, of different sizes. It was Autumn, so you've guessed it, we were making the seasonal pumpkin set (40012). "Here are the instructions and here are the bricks. I would like you to pass me the bricks and tell me what to do please". His shoulders visibly dropped. I'm not sure quite what he thought I was going to ask him to do, but he was clearly relieved. "Put this orange brick down there!", he ordered. I did as I was told. "Put this organge brick on top, on the left side!". I couldn't fault my student's language. He was getting the job done. "Let's try this

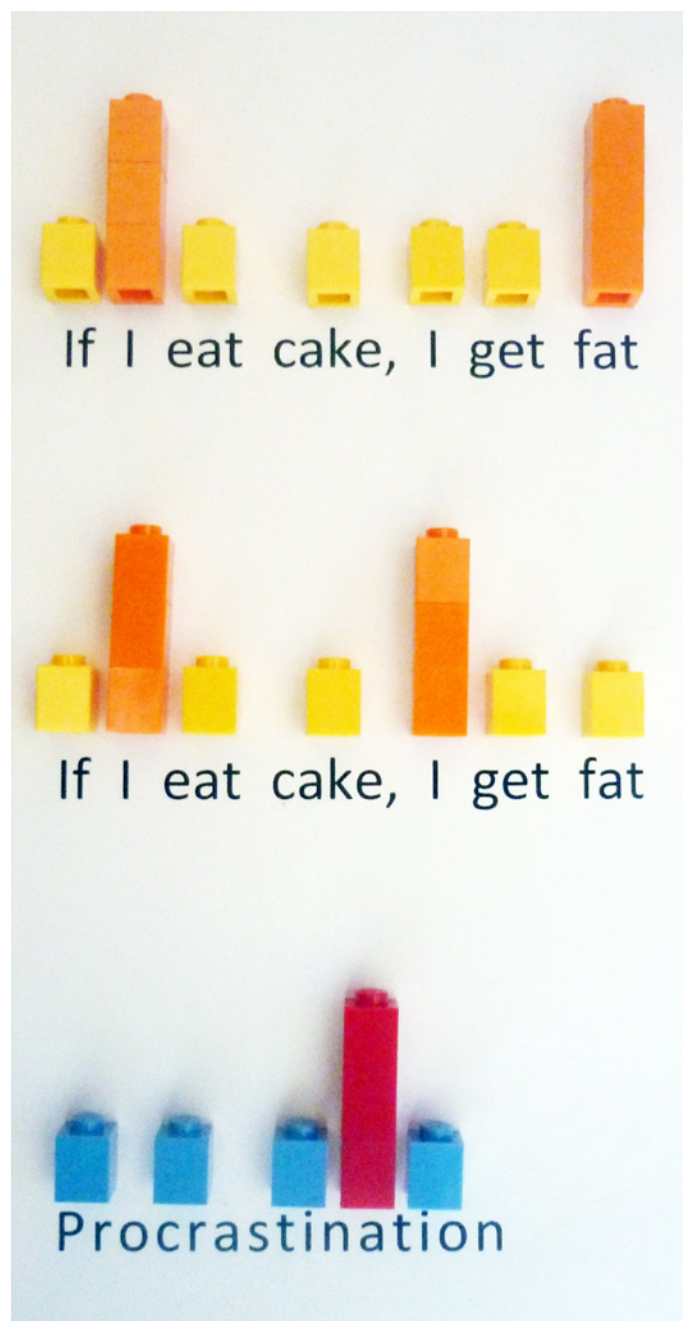
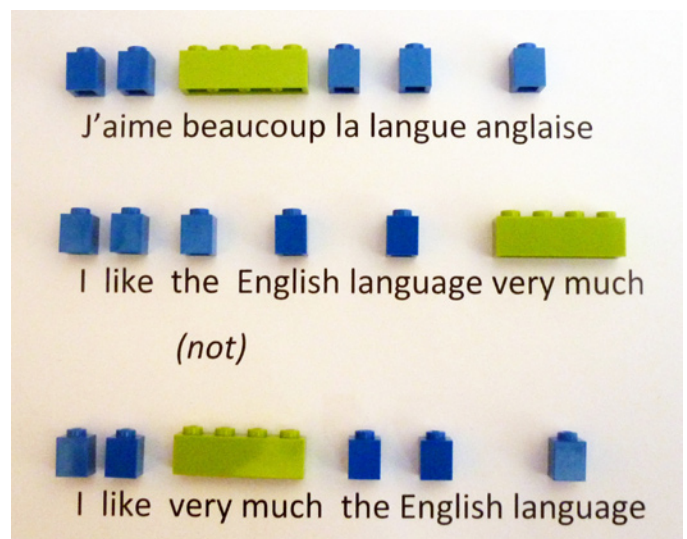


like really polite English people now, shall we?", I suggested. I passed him a brick, "Please could you put that brick down there? Thank you. Now this brick on top, just to the left. Excellent. Now this one goes on the right. Can you take this one and put it on top of that one?". You get the idea. He tried and imitated my exaggerated posh English accent beautifully. In his relaxed state, free of lists of grammar rules, his sense of humour came out. We rolled around laughing as he pretended to ask for "more tea and cucumber sandwiches" with little finger raised. We built the rest of the model, using silly English accents and way too many 'pleases', 'coulds' and 'would you mind ifs'. But it got the point across. He kept the finished pumpkin model and I hope it's still on his desk. He said the bricks and the finished model were a good visual reminder of this particular language point that he struggled with, and one which caused him a great amount of stress and upset at work. He noted that with the orange pumpkin on his desk, he would be reminded of putting his 'English head' on when he needed to ask his English staff to do something.

From the lunchtime lessons in corporate offices to the 4.30pm after school lessons with two sisters from Belgium. Both girls, had recently arrived in the country and didn't speak very much English. I had been told by the language school, that I had to use a particular text book. Children don't usually respond so well to grammar rules and certainly not to textbooks laid out for adults. We were going to need to inject some fun into these lessons and bring the exercises on the page to life. LEGO® to the rescue again!

The 4.30pm slot with kids is a dreaded one. The poor children have had an entire day at school, they're tired, and the last thing they actually want is an hour and a half of English lessons. The key thing here was going to be to keep them moving, and keep them interested. One of the activities which they loved, was 'Running Bricktation'. In the hallway I stuck a set of building instructions to the wall. One sister was the 'runner' the other the 'builder'. The runner would run out to the instructions and try to memorise a couple of the building steps, then run in and tell her sister what to do with the bricks. Only the builder was allowed to touch the bricks, so everything had to be conveyed verbally and in English. The girls loved it! It was always really competitive with lots of shouting. When they got a bit more confident at using English with each other, I used to like to take the model apart and get them to start again if they said any words in Flemish during the activity *insert evil laugh*. We had such a good time.

So far, I've described two scenarios where LEGO has been used in a fairly conventional model-building sense. I also use LEGO to help with more abstract elements of language. For example, take Miss K, a Polish student in her 20s, who had been living in the UK for eight years. Her English was great and full of lots of slang and native-style language. She was worried though because she couldn't work out why people thought she was miserable all the time. It was true, even if she had been describing how she came to win £1m, she still would have come across as totally uninterested! A little listening and it was clear that her issue was not one of being interested, but rather of intonation and sentence stress. In her native Polish, intonation is pretty steady, staying at quite an even pitch. English on the other hand moves all over the place, depending on what's being said. Placing stresses in different places, changes the sense or emotion. With Miss K, we used LEGO bricks to represent rising and falling intonation and stresses within words and sentences. For example:



We found that she responded really well to the image in LEGO®. When she was talking she said she could recall the coloured bricks and it reminded her to tweak how she was speaking. A lot of teaching is about raising awareness of such issues and reassuring students that there is something they can do about it. LEGO® in this case, gave us a wonderful visual tool.

Working with LEGO and larger classes of both adults or children can also be great fun. I think one of my favourite activities to do with groups of learners is one I call 'Home Sweet Home'. Ideal for that bit of the textbook where the theme is 'Home' or 'Where I Live'. I've used the LEGO Family Home (6754) set for this activity before and it works nicely with the detail and size when finished. With one adult class, I split the learners into four groups of three and had each team building a different section of the model (one did the roof, another the garden etc.). They then put the various sections together to complete the model, all the time talking to their colleagues in English to communicate what needed to be done. An excellent activity for giving instructions, as well as positional adjectives

(on, under, in etc.). With one beautiful finished model (and I do LOVE that house set) we talked at length about the little rooms. How did the layout of the house differ from where we live (it's smaller, obviously!)? Which items of furniture should go in each room? The picture of the house in the textbook we were using was ok. It didn't really push any buttons though. It was just a picture of a house. LEGO on the other hand gave us a cute 3D model, made using the learner's own English, which could then be opened up, turned around and played with. It is this tactile, familiar nature of LEGO which lends itself so well to use in the classroom. LEGO has, I believe, a unique ability in today's toy market, to transcend age, language and gender barriers and encourage a therapeutic feeling of familiarity and comfort in adults and children alike. LEGO sits comfortably in little hands. Children are familiar with its colours and shapes, and adults revert back to small children when they hold it in their big hands. It's a perennial hit with every generation. Given the pleasure it so often brings in our hands, it seems obvious to me that it should be used more in educational contexts.

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LEGO® Train: The story of an obsession (II)

1991-2011

By Manticore

Pictures by Brickset and Manticore

Here we are again to continue this review on rails. As mentioned in the previous article, 1986 was marked by the disappearance of the 4.5V and 12V systems. Nothing more was heard of the TRAIN theme until five years later. It was a year before the Dream Team left the world speechless at the Barcelona '92 Olympics, R.E.M. published its successful "Out of Time" and Freddy mercury left an incalculable musical legacy at his passing away. Basketball, music and, of course, bricks. Yes friends, it was 1991, the year LEGO® surprised us with the return of the TRAIN theme, but with a new system: 9V

It was very similar to the discontinued 12V system, but the electric current no longer circulated through the central conducting rail, but the rails that till then were made of plastic were now covered with a metallic conductor. The geometry of the rails was the same, but neither the 12V circuits nor the 4.5V system interface with the new system. The advantage is that for the first time each part of the track was a single piece: no rails, no sleepers, no central conductive rails.

Aside from this, the 9V system had more limitations as far as control different elements and speed was concerned. The transformer/speed regulator is still required and comes with 6 different intensities in each direction.



Several trains can run at the same time, but the 9V system did not include such exceptional elements as remote controlled crossings, signals, lights and decouplers. Of course there were several sets to provide the necessary atrezzo for any TRAIN layout, but it no longer felt like the scale model layout the collection of the 12V system gave.

However, the launch of more modern, realistic and emblematic sets like the ones that will be shown further on has made TRAIN AFOLS see this system with different eyes.

9V TRAINS

The first complementary sets that came out in 1991 are two trains; a cargo train (4563, Load and Haul Railroad), and a passenger train, the incomparable and already mythical 4558 Metroliner. This set allowed you to build two different train designs. The original one, with two identical engines, and the secondary with a single engine, a passenger wagon and a cargo wagon.

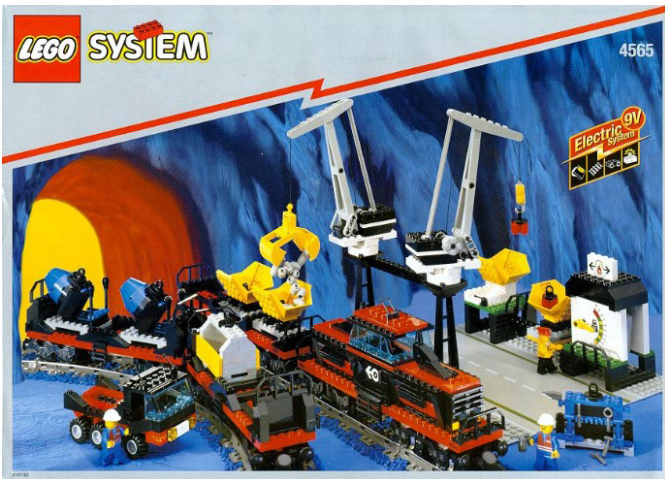


Both had exceptional playability as in addition to the train itself, there were other elements that turned both sets into hours and hours of playtime. In addition, the 4563 came with a speed regulator: open, build and play. Aside from a perfect engine it had three cargo wagons of different design to avoid getting bored.



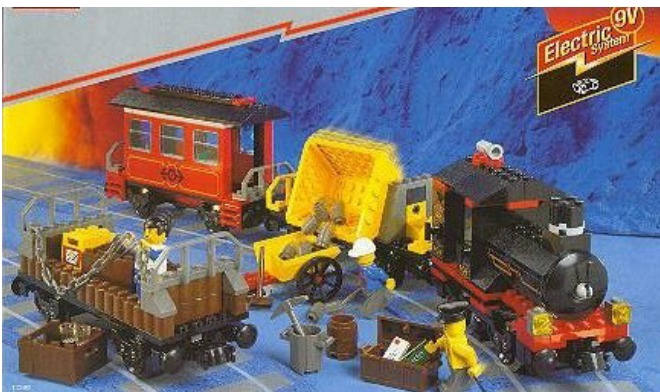
It will be several years before another complete set comes out, the 4564: Freight Rail Runner. Another cargo train that is quite similar to its predecessor, the 4563

By 1996 the second passenger train appears (4559, Cargo Railway) and a third cargo train (4565, Freight and Crane Railway). The 4559 had a strange system of interchangeable passenger pods I would rather not try out in person.

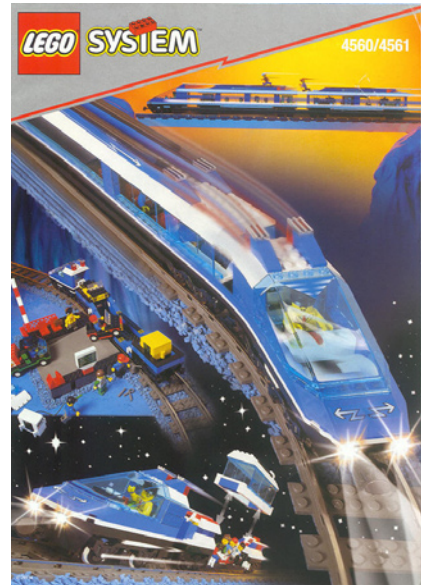


The design was rather more sober (to use an appropriate adjective) than that of the Metroliner. We are getting dangerously close to the worst years of LEGO® TRAIN. This can not be said of the 4565 which still gives great playability (especially with the cranes and cargo station) without losing in design.

A couple of years later a special set comes out that brakes away from all that went before. the 3225: Classic Train:



As the same indicates, it is a replica of the first passenger trains that travelled from west of North America. A steam engine with a passenger wagon of the period, together with two cargo wagons. All in one. In the same year (1998) another passenger train came out (4560) which was brought out a second time including a speed regulator (4561):



In the first year of the 21st century, LEGO surprised with a theme that differed from the classical TRAIN concept. I'm referring to MY OWN TRAIN, more specific designs of engines and wagons that were sold separately. Apart from these new sets, LEGO again sold the Metroliner and its panoramic wagon in the LEGENDS theme. With good reason, right? We reach 2002. The North American public is rewarded with a precious classic set: the 4535, Express Deluxe:



The reduced version 4534, (Express... not so Deluxe) is so much less interesting once you see its big brother I will not include a picture of it. Very similar to the Classic Train 3225, but with a more special look and bigger.

Well, what happened to My Own Train? We have hardly mentioned it. Rightly so; I was waiting for 2002 in this historic review, the year in which LEGO surprised with a replica of the Santa Fe. The "Santa Fe Southern Railway" is a short railway line that connects the cities of Lamy and Santa Fe in the state of New Mexico (U.S.A.). Currently it is only a tourist attraction, the passenger wagons have been maintained from the 1920s

and each return trip is supposed to be a unique experience. As an interesting detail, this train has preference over all other trains.

On the other hand, the “Burlington Northern Santa Fe Railroad” is a railway company (also in the U.S.A.) that is oriented to cargo transport.

So what does that have to do with our favourite toy? Well, as of 2002 a lot, since LEGO®, with the collaboration of James Mathis, launched the 10020, 10022 and 10025, which together make up the Santa Fe Chief, a train that became famous in the 30s for connecting Chicago and Los Angeles in less than 40 hours... almost nothing...



But we have skipped two sets. A passenger train, the 4511: High Speed Train, and a cargo train, the 4512: Cargo Train. Despite coming out right in the middle of the worst era as far as design is concerned, these are two very good looking trains. Especially the cargo train. The passenger train has the minor drawback that the set itself (an engine and a single wagon) is rather poor. Especially taking into account it is a high speed train that needs many more wagons and two engines. However, when you combine two engines with a sufficient number of wagons things change considerably. I suppose the people at TLG were conscious of this evaluation and a year later there were two sets, 10157 and 10158: the engine and the wagon individually. A state secret: its cheaper to buy two 4511.

The 10022 can be built either as a restaurant wagon, panoramic wagon or sleep wagon, while the 10025 allows for two different designs: a luggage wagon or a mail wagon. As a curious fact, the first 10,000 sets of the 10020 were marked as “Limited Edition”, whereas later sets did not have this annotation on the box. Maybe they didn’t expect the success they had or it was simply a marketing strategy.



Another exclusive for the North American market was the 65537, Classic Freight Train, which came out in 2004. It is a beautiful classic and little known model.



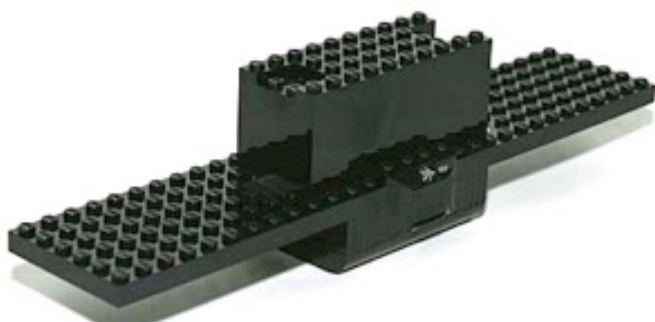
And in the years 2004 and 2005 the 10133 Burlington Northern Santa Fe engine was released, with the typical colours of the BNSF, based on the GP38 diesel engine; and the 10170 (TTX Intermodal Double-Stack Car), with which you can make a spectacular cargo train.

And the last 9V set was the 10173: Holiday Train, sold during the Christmas campaign of 2006.



RC TRAINS (REMOTE CONTROL)

In the same year (2006) the fourth LEGO® TRAIN system is born. Forget about electrified tracks, metal rails and central lines. After nearly 40 years we are back at the beginning and the rails simply carry the train. The form factor is maintained however: each single piece is a 16 stud track. A new wagon that holds the batteries receives a wireless signal from a speed regulator



and sends it to the motor. It was a very comfortable system as there were no cables, but the old romanticism is gone. The only two trains in this system are, for a change, a passenger and a cargo train.



The design of both sets is well done, especially the cargo train, but the system appears to have been a simple transition between 9V and the current system: Power Functions.

PF TRAINS (POWER FUNCTIONS)

In 2007, LEGO Technic presents the 8275, a bulldozer that includes new motors that can be controlled by an IR remote. It is the Power Functions system, PF for the initiated, which two years later, in 2009 is incorporated in LEGO TRAINS and effectively ended the RC system, as with an IR receiver and much smaller battery practically the same speed could be achieved with better power due to the higher torque of the motor.



In addition to this novelty which breaks away from all that went before, the new concept of flexible rails is introduced that will allow geometries heretofore impossible.

And the first train to which the new system could be applied was the Emerald Night; a beauty that includes an A3 Pacific steam engine and a no less beautiful restaurant wagon.



The set included large wheels to emulate those of the old steam engines in which the powered wheel passed the movement on to the others by means of a bar, in this case a liftarm this. These wheels were fitted with a rubber to ensure traction. It is a curious fact that 40 years later we have come back to the same method used in the LEGO trains of the 60s and 70s.

But it wasn't until a year later (June 2010), that LEGO brought out the first fully PF sets which were brought out simultaneously: a passenger train (7938) and a cargo train (7939) that was very similar to the preceding RC cargo train (7898).





The last PF train is another cargo train that is again similar to the previous one, but in red. The name is a bit of a giveaway: Red Cargo Train



It was launched in August 2011. A beautiful engine and three wagons which, together with the accessory sets, ensure many hours of fun. Wait, did I say last train? In April last year the fans of the TRAIN theme suffered a blue shock... Yes, the one commonly known as the MAERSK train. A colour that was reserved to exclusive sets (and with astronomical prices) becomes accessible to a large portion of fans.



The engine is practically identical to the Burlington Santa Fe we have already seen. But this special colour gives it a different look. Two simple wagons for containers and a truck complete the set.

COMPLEMENTARY SETS

In addition to complete train sets we should have a look at those that complete any TRAIN layout. Stations for example. What to say of the magnificent 4554, a reference for any expert.



The set has a "sister" that is practically identical but red and which was launched some years later (2150).



The rest of the stations that have come out till the present day always take up a secondary place if compared to any of the earlier ones. The design of the latest one stands out, the 7997:



and the 7937, more than anything else because it looks like a tribute to the mythical 7822 with its overpass.



At least that's how I see it. Maybe it is just that I haven't got past my 80s addiction.

Another station, a cargo station, that deserves mention is the 4555:



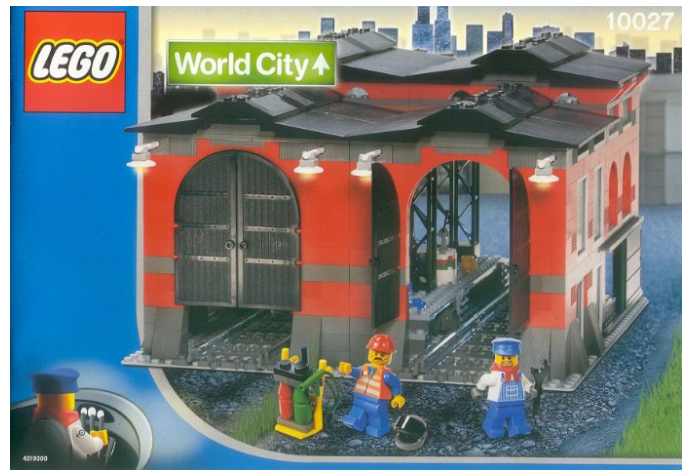
In my opinion it is one of the best TRAIN sets. For its design and playability. If I had had that container crane when I was young I would still be in primary school. The level crossings never top the simplicity and innocence of the earlier sets. Quite to the contrary, they are more detailed and bigger. For example set number 10128.

And if it is wagons we are talking about, we should highlight those from the MY OWN TRAIN series. An open hopper wagon, a fuel tank wagon and a cargo wagon. I should also mention one of the best wagons, the 4552.



The thing is, when I see a crane I get the itches...

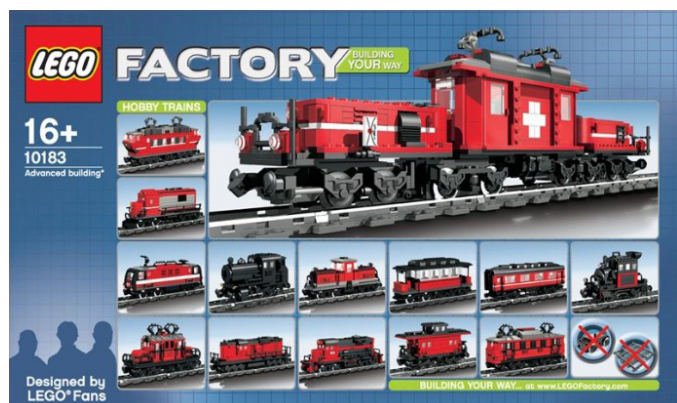
An other novelty that didn't exist before is this trains shed: Train Engine Shed.



For maintaining, cleaning and repairing the engines and wagons. It can also be placed horizontally to give better playability and depending on the layout. I've left the individual engines for the end. Besides the engine from the 4511 which was also sold separately, as well as others from the MY OWN TRAIN theme, it would be inexcusable not to mention the Crocodile, launched in 1991.



This characteristic name may be due to the three-part articulated body or because, originally, these engines were dark green. Be it as it may, in this set LEGO® captured one of the best known engines in Europe. So much so that 16 years after the fact, in 2007, there is another very similar engine that marked the end of the 9V era: the 10183 Hobby Train.



With a more refined design and more details, it belongs to the FACTORY theme, sets that were designed by expert fans. With the parts in the set a total of 14 different designs could be built.

Finally, I wanted to mention that for someone born in the 70s like me, it is only normal to prefer the older sets because of what they meant to me as a kid. However, I must recognise that the current TRAIN system has a lot of details, and the PF system has advantages, some obvious, like the remote control of the speed of the trains. But above all, it allows an unlimited number of trains to use the same circuit without losing power the way it happened in the 9V system and its metallic rails. The limit is the length of the track. Maintaining the track in optimum conditions is also easier due to the absence of metal. This may be an irrelevant detail to a kid who starts with his first LEGO train, but for those of us who are a little older and who have 20-year-old 9V rails, the difference is noticeable.

On the other hand, the use of a rechargeable lithium-polymer battery avoids the impracticable original PF battery box, something that was indispensable in the older 4,5V trains. In addition to being smaller, its weight (75gr.) is an advantage

compared to a full battery box (about 125gr). The only drawback could be the Technic holes, but that is a small problem that can easily be solved as it can be integrated as a mega-brick of 8x4x4 studs.

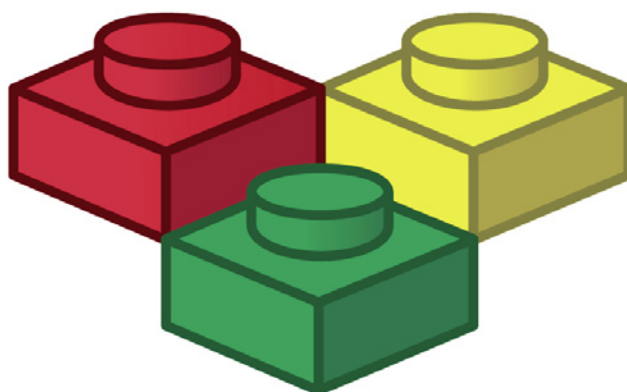


The new PF trains do not incorporate this rechargeable battery, however, in its place there is a box of the same dimensions that holds 6 AAA batteries to provide the necessary 9V.

So it is all advantages, except for those of us who have spent hour after hour playing with a 9V regulator wishing it to be 12V who have a hard time assimilating all this. It will be a question of buying the latest sets and letting my son decide which is best. A good enough excuse for my wife not to get mad: "No more LEGO please.....!"

That's all dear readers. I apologise for the quality of home made pictures. I like building mile-long trains, not taking pictures of them with my simple digital camera. The rest of the images come from Brickset.com.

#



Brickset.com

By HispaBrick Magazine®
Pictures by Rebrick



HBM: Where did the idea for ReBrick come from?

RB: The ReBrick project started with one question: “What if we connected all the LEGO® enthusiasts, so there would be no lost LEGO souls out there?” The online LEGO community is very active, and many builds take on a life of their own via Social Media. However, this community is fragmented; leaving new fans lost and established fans needing to visit a variety of websites to find out what’s new in the community. The community needed a hub, a place to showcase what was new and direction newcomers to LEGO communities.

This is how the ReBrick project started. Once the concept was in place – a social bookmarking platform for LEGO fans – we started developing the website with the help of adult fan community.

HBM: How long have you been working on it?

RB: The project was in planning until early 2010, and began development in the summer of 2010. In fall of 2010 we launched a closed beta called “Octopus” and partnered with a variety of fan LEGO communities. Once we had worked out the details, “Octopus” was renamed “ReBrick”, given a face lift, and moved into an open beta in December of 2011.

HBM: Who are involved in the project?

RB: Of course there’s The LEGO Group, but we also have many partner sites, probably too many to mention here! We had a total of 500 beta users, consisting of fans, academia



Peter Espersen

from business schools around the world, and social media champions. The brain behind the project is Sr. Director Tormod Askildsen, who handed the project over to Online Community Lead Peter Espersen. Espersen’s team consists of Mads Mommsen, Sara Moore and Signe Lønholdt plus a team of developers and designers.

HBM: What is the objective of the site?

RB: Adult fans of LEGO create the most amazing and inspiring creations, but sadly most of this content isn’t reaching outside the established adult fan community. The LEGO Group has the weight to push the creations shared on ReBrick out to the rest of the world, so the incredible builds fans are creating can be enjoyed by people from outside the current AFOL (Adult Fan of LEGO) community. ReBrick’s reach has allowed the community to gain attention from various other online media news channels, which don’t usually feature LEGO content. We even gained an official honoree at the 2012 Webby Awards.

HBM: Is it oriented to kids or adults?

RB: ReBrick is designed for adult fans. Since the ReBrick team is in direct contact with a majority of members, we are able ensure that the community is adult based. We direct younger fans to the LEGO.com community.

HBM: What input have you sought from intended end-users?

RB: We are open to feedback through multiple channels, including conference calls with the beta users, direct emails, presence at larger AFOL events, and via the ReBrick blog. The beta users can also make feature requests by using a special feedback button on the site. These requests are put into a survey where all users can give input, allowing us to produce a prioritized list of what’s most important to the community.

HBM: How has that input changed the development of the site?

RB: One example of user feedback in action is the newly launched activity feed. One of our beta users, Igor Makarov, suggested a “who is online” tool, and the majority of beta testers agreed with him. From there we developed the activity feed on the right hand side of the front page, which provides community activity in real time.

The beta testers have also participated in focus groups for making the categories on ReBrick, reviewed the design of the site, and helped with our House Rules. Many of the administrations moderation tools are based off suggestions by beta users.

HBM: How long has the project been under development?



RB: ReBrick officially begun in early 2010, and came out of closed beta in December 2011. The community is still under development today, and improvements to ReBrick will never end. We believe in continuous development, and will continue to add new features and functionality to better serve the community.

HBM: Why so long?

RB: Before we launched ReBrick, we wanted to make sure we had the backing of the fan community and were going the right way with the content. We didn't want to "rush" the project!

HBM: What's in it for LEGO®?

RB: As a hub for fan created content, ReBrick shows what fans can do with LEGO bricks, which helps promote brand awareness around LEGO products. It engages fans to keep them building, and encourages new fans to start building.



Sara Moore

HBM: Are you not afraid that, since there are other (older) sites with similar functions, you will be accused of trying to take control?

RB: We have no desire to take control, that's why we decided to make it a social bookmarking platform where users cannot upload content. Users don't need to abandon other platforms to use ReBrick; instead they can use the site to promote builds on other platforms to a wider audience.

HBM: How do you decide what content is adequate?

RB: We have a set House Rules, which were created along with users. Basically these rules ask that members be respectful of others, refrain from spamming the community, avoid adding offensive content, and do not plagiarize. Please read the complete House Rules available in the footer on any page on ReBrick for further information.

HBM: What are the general guidelines for moderation?

Not all of the content shared on ReBrick is suitable for children. In order to see all bookmarks on ReBrick, users must first sign in (members must be at least 13 to hold an account, but shh, don't tell the kids). That being said, users should know that any bookmarks which violate the House Rules will be removed.

HBM: Do you think someone may try to take advantage of your efforts (for covert publicity)?

RB: We haven't really seen this yet, although it is a possibility. ReBrick has a self-moderation tool which users can use to report any kind of inappropriate bookmarks or activity, so we rely on the community to let us know if this does happen. As stated in the previous question, we also reserve the right to ban any users that don't behave properly.

#

Cheese Slope Mosaics: A Tutorial

By Katie Walker (eilonwy77)

Cheese slope mosaics are a fun, but often tricky, way to add more detail to LEGO® creations. The use of the small slopes allows for angles in a mosaic that are difficult to obtain with more traditional methods. This tutorial will attempt to explain how to create your own cheese slope mosaic, and why you might want to do so.

Part 1: What is a cheese slope mosaic?

A cheese slope mosaic is a mosaic made of up of “cheese slopes” (which on Bricklink.com are called “Slope 30 1 x1 x 2/3”). The mosaic is made up of slopes (and sometimes small plates or tiles) arranged into patterns or images. A cheese slope mosaic might be of a recognizable image, text, geometric patterns, or other ornamentation. Sometimes it will be a stand-alone mosaic, but more often it will be used as part of a larger creation. Builders have used cheese slope mosaics to make many different things: stained glass windows, tiled floors, fancy carpets, paintings in art galleries, signs in cities, insignia on vehicles, designs on flags, text and images on buildings, etc. Sometimes it is fun to experiment with cheese slopes, just for fun, to see what patterns and shapes can be discovered.

Here are a few things I have made that show some different uses for cheese slope mosaics. Image 1.1 shows a stand-alone mosaic, a Christmas window that could be used for holiday decorations. Image 1.2 shows stained-glass windows, used to decorate a fancy palace room. Image 1.3 is a fancy tiled floor, and there are cheese slopes in the stairs and the wall decorations, too. Finally, Image 1.4 shows an example of text done in a cheese slope mosaic.



Image 1.1: Christmas Window



Image 1.2: Atrium in the Queen's Palace



Image 1.3: The Grand Staircase



Image 1.4: Cheese Slope Mosaic Text

How do cheese slope mosaics stay together?

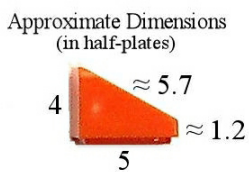
The pieces in a cheese slope mosaic are usually not attached to each other. Instead, they are pushed together tightly, and held into place by a brick-built frame. If you do it well, you can even tip it upside down, and the pieces won't fall out. Usually, some sort of supporting wall is used behind mosaics that will

be displayed vertically, to add another layer of security. And although not necessary (or purist), sometimes builders will use clear, double-sided tape to hold their mosaics in place, especially if the creation is going to be shown at a public event. Techniques for framing cheese slope mosaics can be found in Part 5.

Part 2: Measurements and shapes

For the following discussion, I will use measurements in terms of half-plates. A 1x1 plate would be 5 half-plates long and 2 half-plates high. Since 3 plates stacked on top of each other are the height of a brick, a 1x1 brick would be 5 half-plates long and 6 half-plates high.

When using cheese slopes in a mosaic, they are placed on their sides. The length along the bottom is 5 half-plates, and the height is 4 half-plates. See Image for the approximate dimensions of a cheese slope.



Although it is easy to look at a cheese slope and think that it is a simple 30°-60°-90° triangle, that is not the case. The corner with the 30° degree angle has a blunt tip, approximately 1.2 half-plates in height. Because of this blunt tip, cheese slopes become more

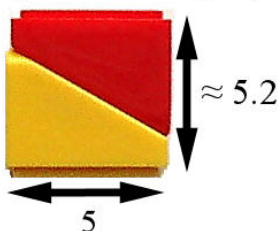
difficult to arrange than actual triangles would be. If cheese slopes were perfect triangles, it would be possible to perfectly fit 12 of the 30° angles around a center point. However, the image shows how putting 12 of the blunt ends together will create gaps. This can become problematic if the mosaic needs to be gap-free.



Image 2.1

Another difficulty with cheese slope measurements comes when arranging two of them together to make a "square", as seen in next image. Although they appear to be squares, the measurements are slightly off.

Cheese Slope "Square"
(Dimensions in half-plates)



The bottom side (where the stud goes) is 5 half-plates, but the sides are 4 half-plates + 1.2 half-plates, making 5.2 half-plates. Over small sections in a mosaic, this slight difference can be ignored, essentially treating the rectangle as a square. Over larger areas, however, this difference adds up, and will have to be compensated for.

Part 3: Techniques for arranging cheese slopes

There are many different methods to use when arranging cheese slopes. Here is a summary of a few of them:

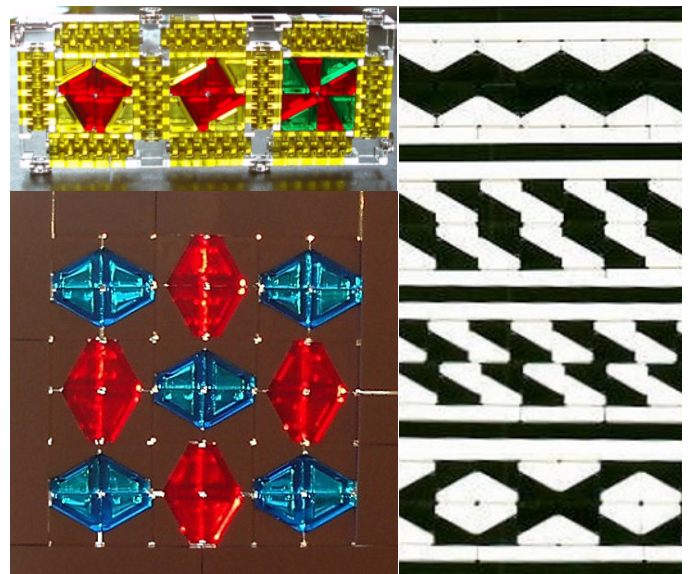
Squares: One of the easiest and most common ways of arranging cheese slopes is to line up rows of cheese slope "squares", and then use different colors to create an image or pattern. The cheese slope squares can be oriented in four

different ways, as shown below:



Occasional problems can arise with this method, since the apparent squares are do not have sides of perfectly equal length. These difficulties will be dealt with in the sections of this article dealing with framing the mosaic and eliminating the gaps.

A lot of different patterns and geometric designs can be made with these squares. Images 3.2, 3.3, and 3.4 show various examples. Many other kinds of non-geometric images can be made as well.



Other shapes: There are other shapes that can be used to create interesting patterns and designs. Some that I have found to be useful are trapezoids, rhombuses (and other parallelograms), triangles, rectangles, and hexagons. A few of these shapes are shown in Image 3.1. Tessellating these shapes, or variations thereof, with careful attention to color, will result in all sorts of potentially fascinating designs.

Here are two examples of designs made using some of the shapes in Image 3.1. The one on the left is done mostly with a two-piece rhombus (the first shape in the second row) arranged into hexagons

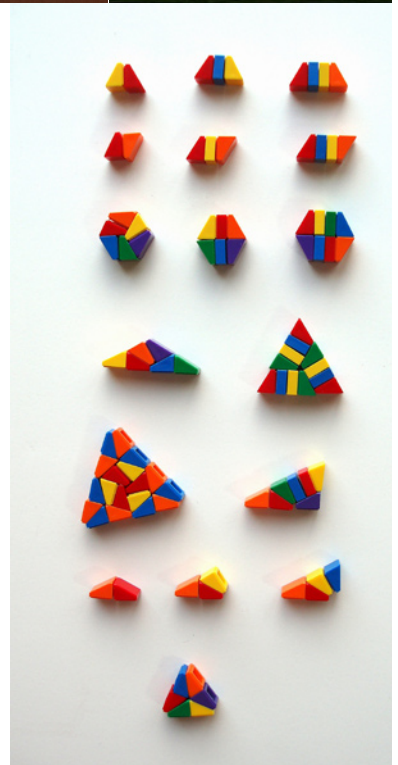
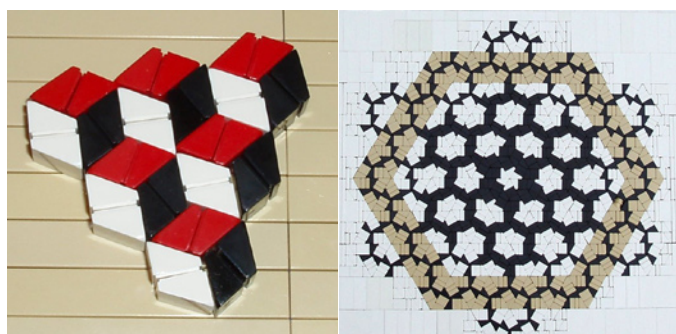


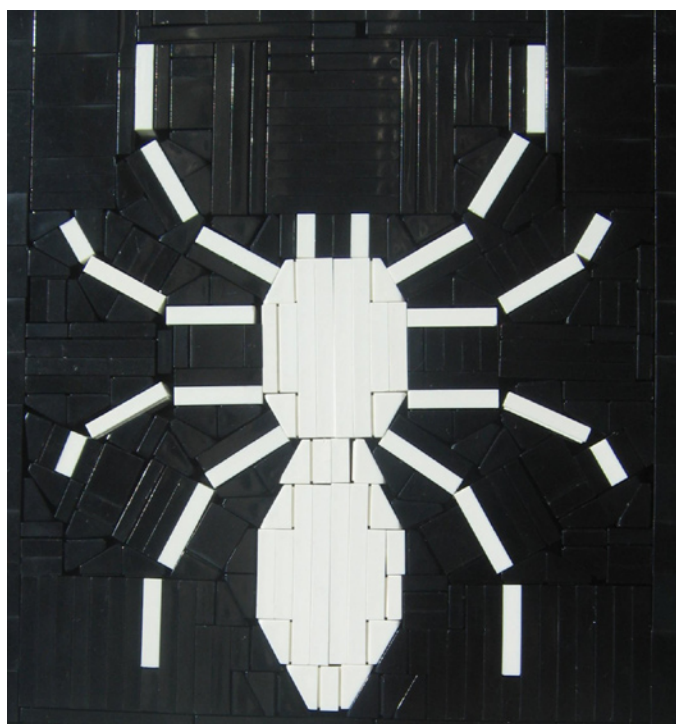
Image 3.1

(the first shape of the third row). The design on the right is made from triangles (the second shape in the fourth row) made out of trapezoids (third shape, top row). In part 5 can be found another example of a hexagonal tessellation.



A crazy jumble: Sometimes you want to make a mosaic that cannot be accomplished by arranging cheese slopes in any sort of orderly fashion. Once you have a specific image in mind, first try to create the shape with cheese slopes and 1x1 tiles (or plates and bricks). Then try to fill in the gaps with other slopes and tiles.

For example, with the spider mosaic, I first arranged the white slopes and tiles into a shape that approximated that of a spider's body. The harder part was to go back and work to fill in all the negative space with black. I kept experimenting with different shapes and angles, trying to fill in the gaps as best as I was able. All sorts of different shapes were used to fill in the black area: lots of rectangles, triangles, trapezoids, and hexagons. There were still a few small gaps when I finished the mosaic, but black is a particularly forgiving color, so the small gaps that remained were not very noticeable.



A large part of making a cheese slope mosaic is just approximating shapes, and slowly filling in the gaps, till you have something that is "good enough". Rarely will it all fit together perfectly in a frame; just try to get it as good as you can, without noticeable gaps (although if necessary, the color black is good for hiding gaps that you just can't get rid of).

Part 4: Planning a cheese slope mosaic

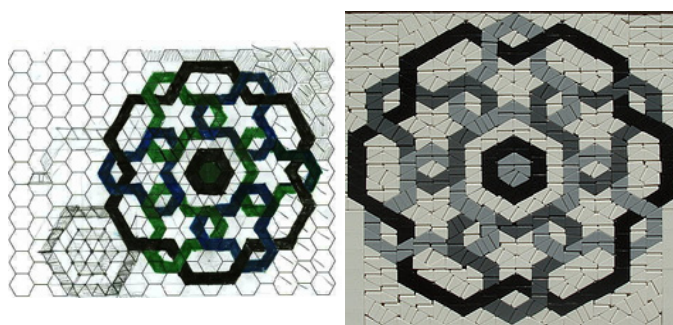
Sometimes it is fun to jump right in and make your mosaic. Other times, it helps to have a plan. Here are some ideas to help with that.

Experiment and document. I have spent many hours just playing around and experimenting with cheese slopes. Then I documented the different patterns and arrangements that I found and developed a "library" of potential designs I could use for future projects. These are collected in a few sets on flickr. Now, when I want a mosaic for a specific project, I will look in those sets to get ideas. If you do spend time experimenting, make sure to take clear photos of what you discover. Then when you want to incorporate a mosaic into a larger creation, you will have several possibilities which you could use.

Do research. It is also a good idea to see what has been done before by others. The internet is a great resource for finding ideas. You could then adapt a design to suit your own purposes, varying a few shapes, changing a few colors, modifying the size, etc. There are some links to some helpful places included at the end of this article.

Draw the design on paper. Sometimes (but not always!) it can be helpful to plan a design out on paper. Graph paper can be helpful for this. If you are planning on making a mosaic with just cheese slope "squares", you could get graphing paper with squares (or print it from the internet), and draw out potential designs. Just draw the diagonal line to indicate the two cheese slopes in each square. Remember that two cheese slopes can be placed together into a square with four different orientations. You can also find hexagonal graph paper on the internet that can be printed and then sketched on. I use these for working on patterns made primarily of rhombuses, trapezoids, and hexagons.

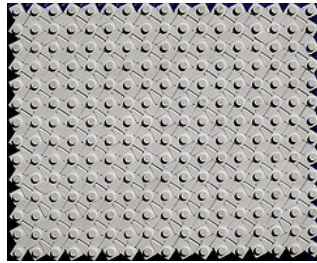
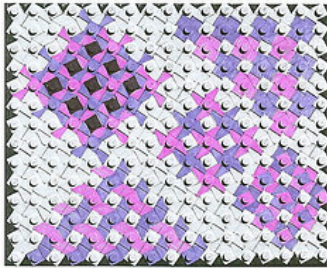
The images show an example of using hexagonal graphing paper to plan out a design. The first image shows the plans made on the graphing paper. For each hexagon I sketched in the arrangement of rhombuses or trapezoids that I wanted. The second one shows the finished result.



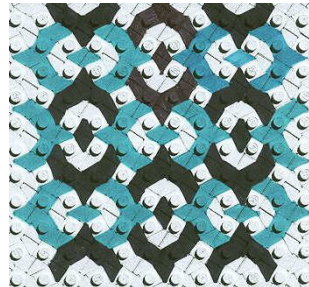
Make coloring sheets. I find this to be especially useful for geometric patterns. If I find an interesting configuration of shapes, I will usually want to try to color it in many different ways, to see what patterns can be highlighted. Actually making a cheese slope mosaic for each possibility is a ton of work. Instead, I will make one all in white. Then I will take a picture of it and print off multiple copies. It is much quicker to draw in the different color possibilities than to try each one out with real cheese slopes.

The following images show an example of this process. First, after coming up with an arrangement of shapes that I liked, I took a photo of an all-white version. (The basic design consists of 1x1 bricks attached to a baseplate at an angle, surrounded by a cheese-slope rhombus on each side).

Next, I printed out several copies, and experimented with coloring in the pieces in different ways.



Then it was much easier to make the actual mosaic (with somewhat different colors), as is shown in the final image. The outside border follows a pattern drawn out in the first image, and the inside design was planned out in the second one.



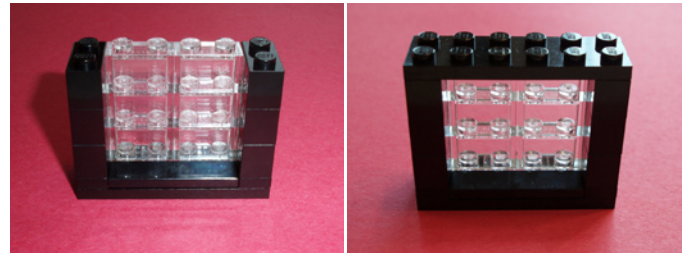
Experiment and document some more. I highly recommend experimenting and exploring, and then documenting all the results that you find. If you sketch out designs on graph paper, or take photos of small doodles, or color a design several different ways – document it. That way you will have a growing repertoire of designs that you can use in the future. And if you don't mind sharing, upload your findings to the internet: there are many other builders out there who would appreciate them.

Part 5: Framing a Cheese Slope Mosaic

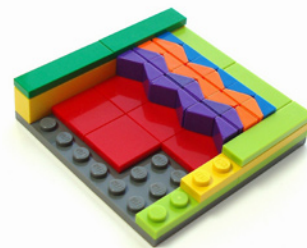
There are several factors to take into consideration when framing a cheese slope mosaic. It can be built in different ways, depending on what it is going to be used for.

Frame Orientation. For mosaics that will be displayed vertically, such as in a wall or window, it works well to build the frame on a plate two studs thick, with whatever length is required. Build up a back wall and two sides, and then top it off

with another plate. For stained glass windows, use transparent bricks for the back wall, so that light can come through. The image shows an example of a vertical frame with transparent bricks used for a supporting back wall. Notice that tiles cover the exposed studs on the bottom plate. This may or may not be necessary, depending on the design being used. The left frame is shown without the top plate, to show more clearly how it is set up. Image on the right shows the completed frame, with the top in place.

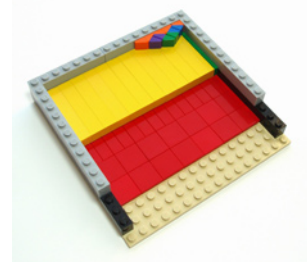


For mosaics that will be displayed horizontally, such as floor decoration, the mosaic can be made on tiles attached to the top of a layer of bricks or plates. The image shows a partially filled-in example of this technique.

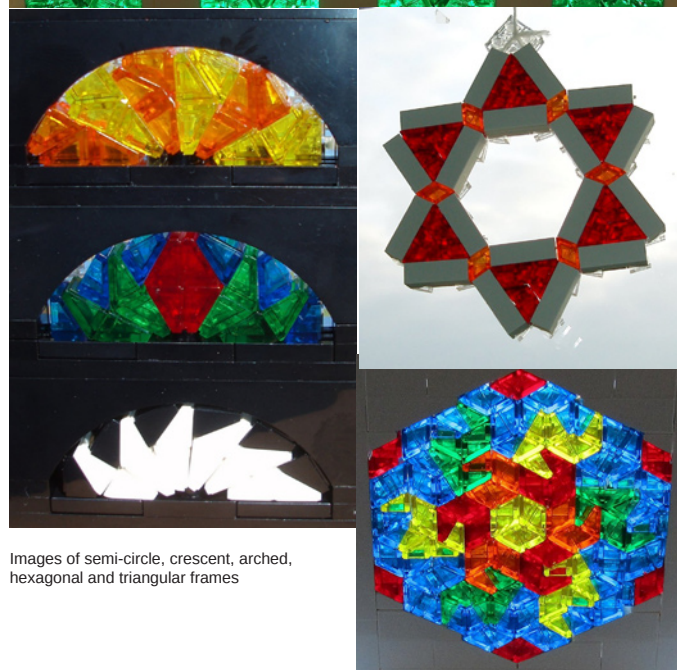


However, with this simple set-up, the mosaic will not sit evenly with the surrounding floor. It will be one (or more) half-plates higher or lower, depending on how high you build the frame. This can sometimes be a good thing, especially if you are making a rug which would normally sit up a little bit higher than the surrounding floor anyway. In the image, the back wall is made with green tiles on top of a single layer of yellow bricks. The green tiles are 1 half-plate higher than the mosaic. The other two sides are made with a layer of two plates, topped with lime tiles. The mosaic is elevated 1 half-plate over this section.

It is also possible to get the mosaic level with the surrounding frame. One way to do this is to insert a level of bricks lying sideways between the tiles and the pieces of the mosaic. This will take up more vertical space, but the mosaic will be able to lie flat with the surrounding floor. The image shows how this is done. On the bottom is a tan base. On top of that is a layer of red tiles. Next comes a stack of yellow bricks lying sideways. In this case, the stack of side-lying bricks is topped with a plate and then a tile to achieve a perfect fit. The mosaic is built on top of the yellow bricks, and will be perfectly even with a frame two bricks high (black and grey in this photo). For an even smoother finish, replace the top gray brick of the frame with a layer of two plates, and then top it off with tiles.



Frame Shape. Rectangles are the most common shape for framing a mosaic, but many other shapes can be used, too. It is possible to use crescents, hexagons, various curved shapes, and more. It will usually take a lot of trial and effort to try to get the cheese slope mosaic to fill in the frame with as few gaps as possible. The following images show a few mosaics done in non-rectangular frames.

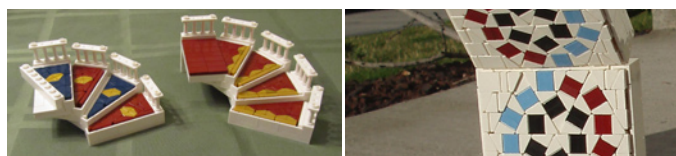


Images of semi-circle, crescent, arched, hexagonal and triangular frames

Special Frames. Cheese slope mosaics can be built inside all sorts of different frames. Macaroni bricks can make fun shapes.

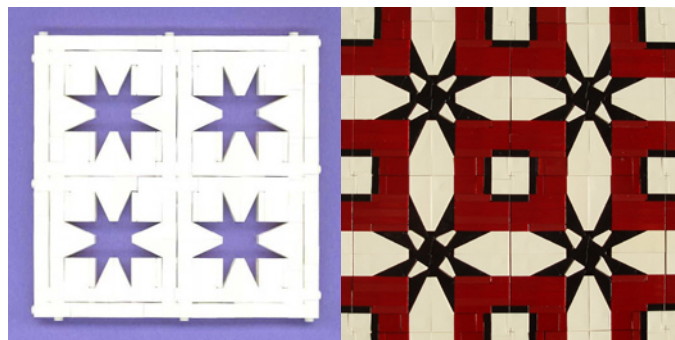


Panels and panel corner pieces can be used to make a thinner frame. This can be useful for various things, such as curving mosaics or making staircases.



A lot of patterns made with headlight bricks and other pieces can have gaps that can be filled in with cheese slopes. For example, the pattern in the image, which uses a lot of headlight bricks and slopes, resulted in a gap the shape of an 8-pointed star.

The star-shaped gaps can be filled in with cheese slopes. With careful color planning, the frame becomes an integral part of the mosaic.



Which comes first, the mosaic or the frame?

Frame First. Sometimes a cheese slope mosaic needs to be an exact size. Perhaps you have built a church and need a stained glass window to fit in a specific space. In that case, you would build the frame first, and try to create a mosaic to match it. This often turns into a puzzle, as you try to fill in the entire space without leaving any gaps. With the Christmas Window (Image 1.1), I found a frame size I liked for one pane of the window. Then I knew that all of the other panes needed to be the same size. It took a lot of trial-and-error to get designs that would fit into the established frame size. Lots of ideas I had were scrapped, but eventually I found ways to fill up all the panes.

Mosaic First. Other times, you might have an idea for a mosaic, but not know how large it will end up. Or perhaps you're just experimenting with designs, and find one you like. You would then need to measure your mosaic so you can make a frame big enough to fit the whole thing inside. After you transfer the mosaic into the frame, there will usually be a bit of extra space, which will need to be filled in. The "Mosaic First" method has the disadvantage of having to make your mosaic twice, once in the designing stages and once again to fit it into the frame. This can potentially be avoided with a bit of planning. One way would be to make the frame first, but make it extra-large, so that you know that whatever mosaic you come up with will fit into it. This method will usually cause you to end up with a lot of extra space, which will need to be filled in. Another possibility would be to carefully adjust the size of the frame while the mosaic is still in it. This is tricky, and will often result in partial destruction of the mosaic, but it can still be quicker than re-doing the whole thing in a brand new (and correctly-sized) frame. Or, if you're particularly brave, you can surround your mosaic with an outside frame, built to fit, but not include a supporting back wall. If you get the mosaic into the frame tightly enough, you can lift the whole mosaic up, and the pieces (hopefully) won't fall out. Image 2.1 shows one mosaic that was done that way.

Part 6: Eliminating Gaps

No matter how well a mosaic is planned, if it is at all complex, there will be gaps between the pieces that will need to be filled in. Otherwise, the mosaic will be too loose. From a purely aesthetic standpoint, a mosaic filled with cracks and gaps is not nearly as attractive. Sometimes filling in gaps will

be as easy as sliding in an extra tile or two. Other times, you can substitute shapes in the mosaic with similar shapes of a slightly different size. This needs to be done with consideration for the colors you are using. Depending on the design, some substitutions might not work, because they would change the image too much.

Here are a few suggestions for substitutions. These shapes are shown in Image 3.1.

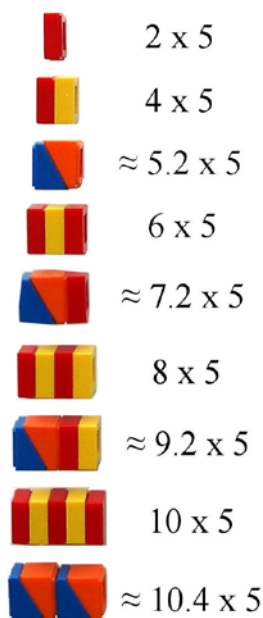
Trapezoids: Add or remove some of the plates or tiles between the cheese slopes. (See Image 3.1, top row.)

Parallelograms: Add in extra tiles or plates between the two cheese slopes. (See Image 3.1, second row.)

Hexagons: Hexagons can be made several ways, with slightly different dimensions. If it is made up of 2 trapezoids, you might adjust the number of plates/tiles in the trapezoids to make them bigger or smaller. Sometimes hexagons are made up of 3 rhombuses. Those are harder to adjust, but often switching to a hexagon made up of two trapezoids will help (as long as it doesn't mess up the colors of your design). (See Image 3.1, third row.)

Rectangles: Rectangles come in many different lengths. You can see various lengths of rectangles in the following image. All measurements are done in half-plates. If just bricks, plates, and tiles are used, the rectangles would all have lengths in multiples of two. But with the addition of a cheese slope "square", you can approximate odd-numbered lengths as well.

Rectangle Measurements (In half-plates)



If you have a section of a mosaic with rectangles that are either too tight or too loose, try using a rectangle either slightly larger or slightly shorter. This usually means pulling out or adding in a cheese slope "square", so that the change in area will be as small as possible.

Sometimes during the process of filling in the gaps, a section might get filled in a bit too much. The tension in the mosaic will be too high, and the frame will start bowing and bending. If

the mosaic is too tight, the frame might eventually snap. This can be puzzling, because this will often happen while there are still obvious gaps in the mosaic. As you tighten some places, others might start getting pressed out of alignment, which can actually start creating more gaps. It helps to take a moment to examine the mosaic carefully, to see which pieces are pushing the others out of alignment. Then try removing some pieces to see if the problem is solved. Use your best judgment and be careful.

Filling in gaps usually isn't easy. Try... and try again... and if nothing works, you might need to re-do a part of the mosaic.

Part 7: Helpful Hints

Here are some helpful hints that will hopefully make construction of a cheese slope mosaic a bit easier:

- Use tweezers and/or toothpicks to nudge cheese slopes and tiles into place. These little pieces can be tricky to move, and they tend to fall over. It's helpful to have something to pull them out with.
- Don't be afraid to experiment! Don't be afraid to try things that seem impossible – it might not be impossible, and even if it is, you might get other good ideas during the attempt.
- It's helpful to buy cheese slopes in bulk, either from a Pick-a-Brick wall or Bricklink. It's hard to get enough cheese slopes in a single color just from buying sets, unless you buy a lot of sets.
- It is okay to use printed tiles in a mosaic, as the printing won't show. For some sizes and colors, printed tiles might be the only kind readily available.
- Not all cheese slopes are created equal. Some kinds, especially transparent ones, and occasionally ones found in a Pick-a-Brick, are slightly larger than others. This can cause a problem, especially since the measurements for mosaics tend to be so precise. This is why it is important to be adaptable, and to readjust your mosaic as problems come up.
- And finally... don't give up! Working with cheese slope mosaics isn't easy, but it does get easier with practice.

Part 8: Resources

Cheese Slope Cubes Flickr Group: <http://www.flickr.com/groups/1274619@N21/>

LEGO® Stained Glass Flickr Group: <http://www.flickr.com/groups/legostainedglass/>

My Cheese Slope Patterns/Mosaics Set on Flickr: <http://www.flickr.com/photos/eilonwy77/sets/72157624654616941/>

My Patterns Collection on Flickr: <http://www.flickr.com/photos/eilonwy77/collections/72157625595331135/>

Stained Glass Slope Windows Tutorial at Classic-Castle.com: <http://www.classic-castle.com/howto/articles/slopestainedglass.html>

Step-By-Step Cheese Slope Mosaic Tutorial: <http://mosaicbricks.blogspot.com/2012/02/how-to-make-cheese-slope-mosaic.html>

Online Graph Paper Generator: <http://incompetech.com/graphpaper/>

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Mechanical Technic parts and how to use them

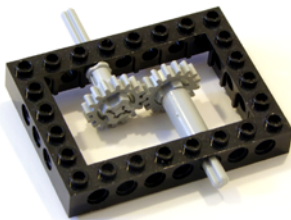
Por Oton Ribic

After we have devoted our attention in the previous two articles to efficiency and practical limits of static LEGO® Technic structures, we are now ready to shift our focus to moving parts. Of course, some principles mentioned in the previous articles apply in a moving context just as well as in a static one (e.g. a beam bends by the same amount under the same force, regardless of whether it actually moves or not). There are dozens and dozens of mechanical concepts and dedicated parts one can use in Technic, whose full descriptions would fill many books. That's why we will now take a look at the elementary ones, while those who seek more can satisfy their curiosity easily with various books and forums on mechanical engineering, Technic builders' websites, etc.

Since the Technic's beginnings in the 1970's, axles and gears have been the mainstay of its mechanical systems, and are still essential for a great majority of models. Let's skip the introduction about how they work in the first place, as this is something you are likely already familiar with, and look at their implementation instead.

The most dreaded occurrence when using gears is skipping, i.e. having a gear and its teeth bend enough to skip over the other gear, instead of turning it, and often damaging both in the process. Of course, it happens mostly when large forces are in question, but is often a result of improper mounting. Namely, the gears should always be as close as possible (preferably directly adjacent) to the structure that holds their axles in place. Restricting axle movement from at least one side, and if possible from both when dealing with large forces, as pictured, will avoid many problems.

Building proper, strong bracing is more difficult when dealing with bevel gears (where axles are perpendicular instead of parallel), but the trick is in using compact Technic parts that are suitable for the purpose, such as rectangular frames.



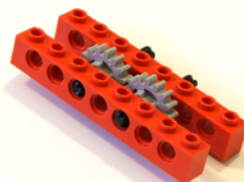
WEAK BRACING

Since their axles are given lots of freedom to bend, these two gears will start skipping at as low torque as 2 Ncm, well under what most today's motors are able to produce.



GOOD BRACING

These gears' axles are fixed well from one of their sides, significantly reducing the risk of skipping. This approach will work for a vast majority of applications.



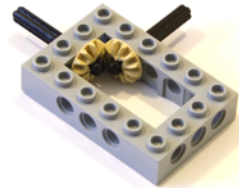
BEST BRACING

With axle's freedom of movement limited from both sides, this is virtually skip-proof solution, but is even a bit over-reinforced for many smaller models.



WEAK BRACING

Strength of the structure relies on a friction pin which the higher torques on the gears will dismount with ease.



GOOD BRACING

Using compact frames such as this one, the bevel gears will mesh more reliably and transfer higher torques.

However, avoiding gear skipping under high loads is just a part of the picture — keeping all the axle rotation speeds and forces in your models within efficient limits is just as important. For instance, having a system transmit lots of torque while rotating slowly, even if properly reinforced, will put it along with the underlying mechanisms and mounting points under lots of strain which may be unnecessary. Just gear it up a couple of times at the beginning and it will release the tension on its bracing, for a usually cheap price of higher rotation speed. Similarly, extreme gearing up (though, much less common) is not a solution either; high rotation speeds are hindered by friction, especially if the axles pass through plenty of parts. A bit of friction can never be avoided, but at high speeds the loss of torque becomes quite evident. In those cases it is advisable to gear the system down a bit.

There are no fixed limits on this window of efficiency, and sometimes it is impossible to keep within it anyway, due to the nature of the model — sometimes high rotation speed or lots of torque are simply required to make it work in the first place. But if you have the opportunity, try not to, for example, gear down the output of a Power Functions XL or an NXT motor, as they already produce lots of torque and can seriously strain the axles and gears on their own.

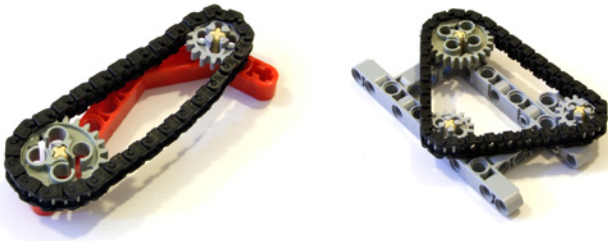
On the other hand, rotation speeds above approximately 1000 RPM will start incurring noticeable friction, while above 2000 RPM a significant portion of power will be lost. This is the main reason why the early Technic motors that rotated at enormous speeds regularly required plenty of downgearing in almost every model they appeared in.

TORQUE OVERLOAD:
Avoid solutions like this one. The torque produced by the XL motor, pretty high by itself, is further increased through gearing it down threefold. The output axle has enough torque even to break some Technic parts!



When the task is to transmit rotation, chains are an interesting alternative to gears, though rarely seen. Combining various sizes of the gears they run around, they allow very easy gearing up or down, and are not troublesome when running at high speeds. However, their obvious drawback is lack of tensile strength. They tend to break when subjected to tensions exceeding about 12 N (equal to a 1.2 kg or about 2.5 lbs weight), are usually difficult to remount in a constructed model, and any reliable system should not even try getting remotely close to that limit.

While their power transmission therefore cannot match gears, chains compensate for these limits with their flexibility. Connecting axles that are at non-integer distances and difficult or unpractical to bridge with gears, are usually no problem for a chain. Connecting more than two axles is easy, too, so it is certainly worth having a couple dozen chain links handy for any Technic builder.



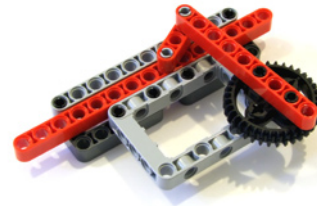
Belts running on pulleys behave similarly, but are less suitable since one can't choose the overall circumference arbitrarily, they pull the axles together and thus increase friction, and can usually transmit only little torque before slipping. However, this very property can make them useful for various safety systems where they will slip by design if the rest of the system gets blocked (similar to a clutch gear being used often for the purpose).

Another mechanical task required in many situations is converting the rotational motion to linear and vice versa. There are lots of implementations, and the most widely used is the rack and pinion system, spanning its LEGO® tradition from the first Technic car's (No. 853) steering in 1977. With so many vehicles built over the decades, rack and pinion has seen many forms and designs, and is supported by so many dedicated parts, that there is little left to improve. It will work in most situations, but depending on the situation, it is worth considering other options.



Where simplicity and small usage of volume is paramount, without much torque involved, a rotating liftarm like the one

shown in the picture, can offer good results. Its main drawback is that small rotations in input axle usually produce very large movements at the output beam, typically requiring a gear-down stage before. Also, the rotation and resulting linear movements are not perfectly linear, unlike a rack and pinion.



For the situations where plenty of force is required, The LEGO Group has provided a dedicated part a few years ago — the linear actuator (61927c01). Its very low gearing ratio lets it reliably lift several kilograms of load if ran with sufficient torque at the input, and it is quite easy to combine several of those for even more output force. The side effect of low gearing ratio is relatively slow operation, but that is exactly what makes it particularly useful where high precision is required.



However, avoiding slack movements in Technic and obtaining precision will be the topic of the following article in the series, so stay tuned!

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<http://legoism.blogspot.com/>

Conclusions: Mechanical parts basic

- Gears need to be properly braced to avoid skipping - at least from one side, and if possible, from both. This is usually done with standard beams.
- Bracing bevel gears is more difficult, but can be done by using various compact rectangular Technic frames and similar parts
- Avoid the axles rotating very slowly and transmitting high torque, or rotating at very high speeds and carrying almost no torque - use gears to bring them into optimal working window. Otherwise, the model could be hampered by high strain on parts, or high friction.
- Where gears are impractical because of distance which is too large or of inconvenient length, consider using chains, especially if there are more than two axles involved, but pay attention not to involve too high torque.
- When converting the rotation to linear motion, rack and pinion is the most common solution and it works well in most situations, but consider rotating arms where simplicity and economy of space is important, or linear actuators where large output forces or precision are required.

Tutorial: Pneumatic Sequencing (II)

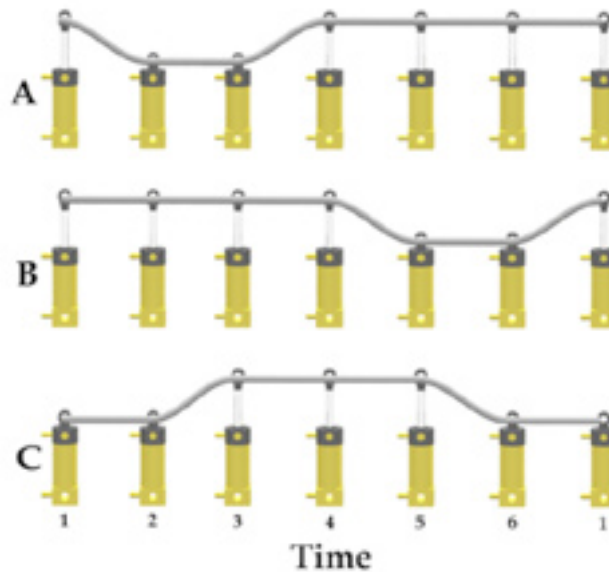
In this second part of the tutorial you will see a practical application of a pneumatic sequence and how to solve problems in a circuit with the help of diagrams..

By Kevin Clague
Edited by Jetro de Château

Three pistons Five switches

I wanted to build a four legged pneumatic walker (Quad242) to show off a creation of mine, a pneumatic polarity reverser. I thought the reverser was the fancy part, but in fact making the walker walk the way I wanted was the hard part. I learned much of what I know about pneumatic sequencers making Quad 242 walk.

Quad242 has four feet split up into two synchronized pairs. The front left and back right feet do the same thing, and the front right and back left feet do the same thing. Quad242 walks by driving its feet back, lifting them off the ground, bringing them forward and dropping them on the ground, over and over. I wanted to make Quad242 put the up feet down, before it moved the down feet up, so it would have two feet down, then four feet down, and then two feet down (thus the name Quad242). To make this happen I needed a pneumatic circuit that created this waveform.



Piston A represent the front left and back right vertical leg movement (expanded pistons are on the ground). Piston B represents the front right and back left vertical leg movement. Notice that in the first step both pistons A and B are expanded. Piston A then contracts and expands leaving both piston A and B expanded. Piston B then contracts and expands leaving both piston A and B expanded and the cycle repeats. Piston C is used to control both piston A and piston B.

Circuit Analysis and Derivation

First pass analysis of the waveform indicates that at time 1, piston B has just expanded, which makes piston A contract. This gives us the formula:

$$A_c = B$$

At time 2, piston A just contracted which makes piston C expand. This gives us:

$$C_x = \sim A$$

At time 3, piston C completes expanding which makes piston A expand, so:

$$A_x = C$$

At time 4, piston A completes expanding, which makes piston B contract:

$$B_c = A$$

At time 5, piston B completes contracting, which makes piston C contracts so:

$$C_c = \sim B$$

At time 6, piston C completes contracting, which makes piston B expands, so:

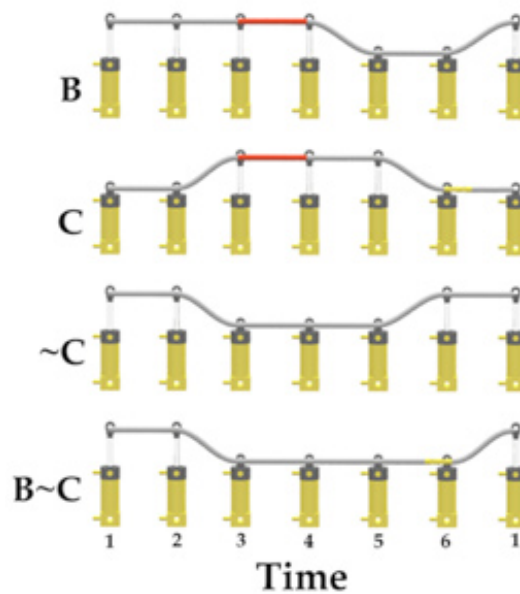
$$B_x = \sim C$$

Now we need to examine piston A's formulas for pressurization.

$$A_x = C$$

$$A_c = B$$

If you pressurize both ports of a pneumatic piston at the same time, the piston's behavior is unpredictable. Your pneumatic sequencer will probably lock up and stop sequencing. To make sure that this won't happen in our circuit, we need to examine the inputs to each piston over time. This timing diagram represents the pressures going into piston A from switch ports B and C over time.



Notice that B and C are both providing pressure to piston A in time 3 (indicated by red hose). To avoid this we need to modify one of the two formulas. C starts providing pressure into A_x at the right time, and B starts providing pressure into A_c at the right time, but the pressure from B stays on and overlaps the pressure from C. We can modify the pressure into A_c using an and gate by adding another switch to piston B. Since A_x 's pressure is behaving correctly and A_c 's pressure is behaving incorrectly, we need to modify A_c 's formula. If we and $\sim C$ (because $A_x = C$) with B, by running B through the new switch on piston C, we get a new A_c that does not overlap with A_x and still contracts piston A at the right time.

This analysis leads to these formulas for piston A:

$$A_x = C$$

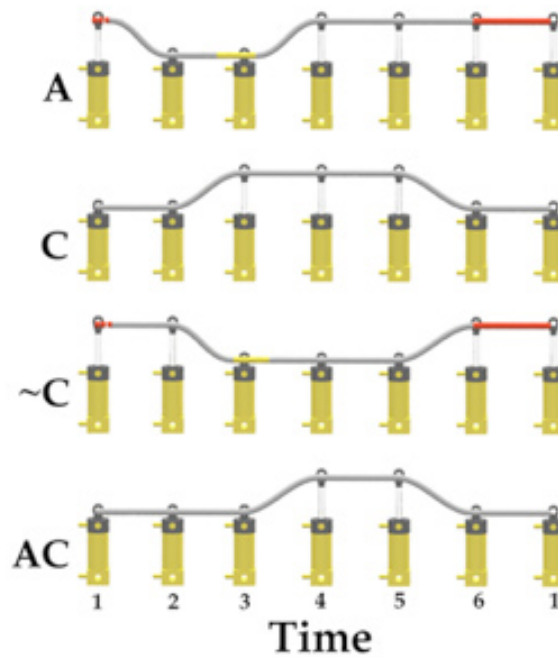
$$A_c = B \sim C$$

Note that at time 6, piston A is depressurized indicated by the yellow hose.

Piston B's initial expansion and contraction formulas are:

$Bx = \sim C$
 $Bc = A$

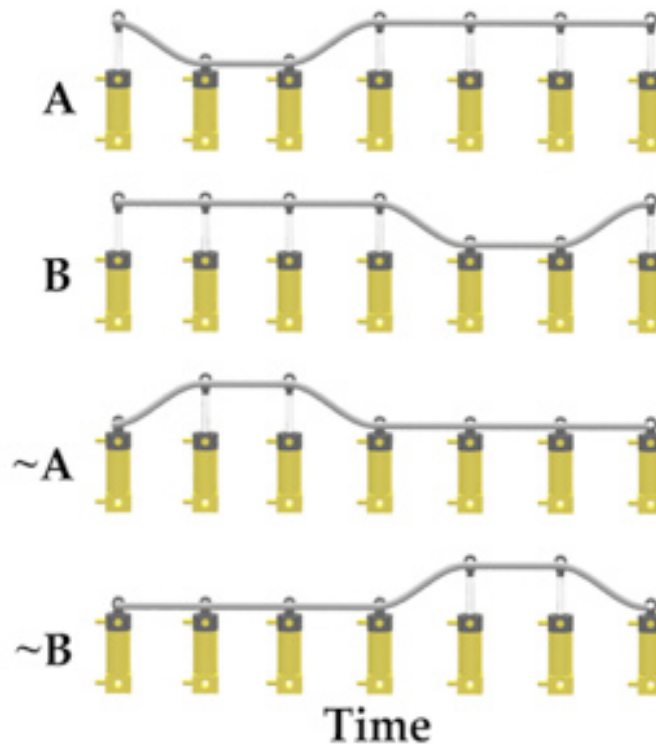
Examining Piston B's pressure ports graphically reveals another double pressure point in the cycle in time 6, and time 1. Bc's pressure stays on too long, so we need to modify Bc's formula. We can resolve piston B's double pressure problem by adding another switch to piston C, and run A through it creating the formula $Bc = AC$. AC pressurizes piston B at the right time, but does not overlap with $\sim C$. Notice that piston B is not pressurized on either port during time 3.



Piston B's final formulas are:

$Bx = \sim C$
 $Bc = AC$

Piston C is expanded by $\sim A$ and contracted by $\sim B$. Studying these waveforms show that piston C has no pressure conflicts, so the initial formulas remain unchanged. Note that piston C is depressurized at two points in the cycle.



After simultaneous pressure analysis and avoidance, we end up with these equations describing our circuit:

$$A_x = C$$

$$A_c = B - C$$

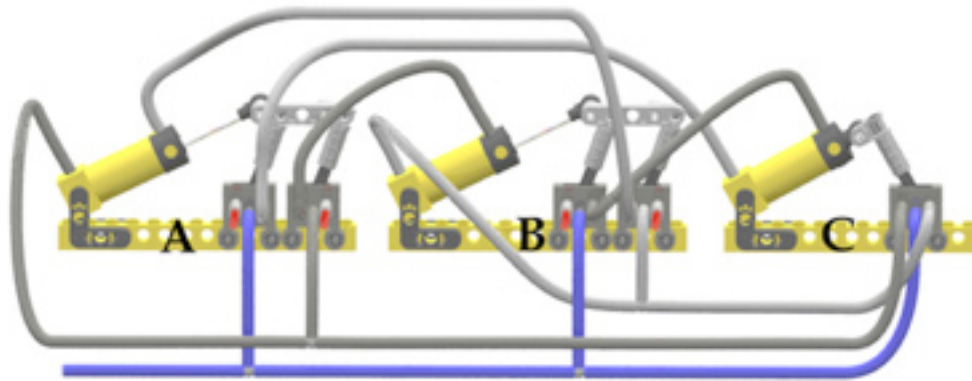
$$B_x = \sim C$$

$$B_c = AC$$

$$C_x = \sim A$$

$$C_c = \sim B$$

Here is a diagram of circuit 7:



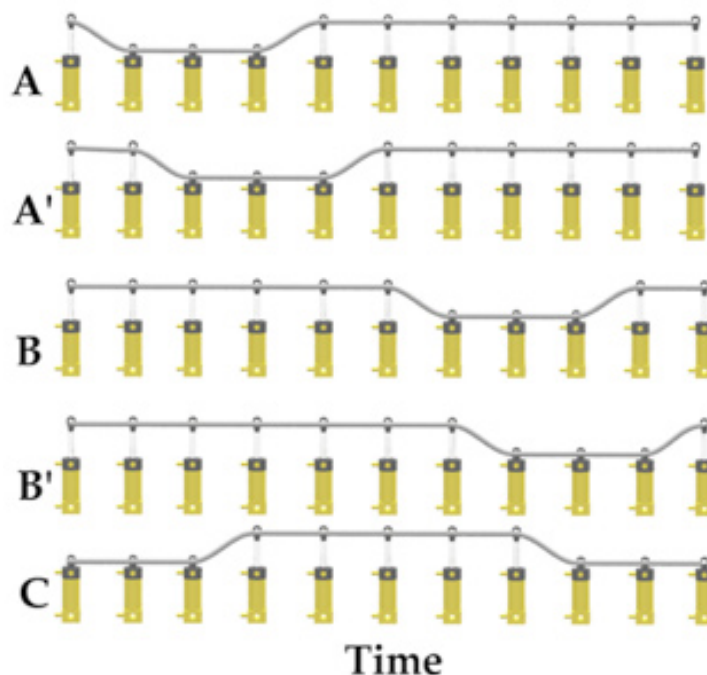
Outside Forces

Circuit 7 is the base circuit used in my four legged walker named Quad 242. One pair of feet is controlled by piston A, and the other by piston B. Piston C controls when the legs go forward and backward.

When I first designed Quad242, I used circuit 7 to control it. I added synchronized twin pistons for piston A and piston B, so that there were four vertical pistons, one for each leg. I also added three more copies of piston C (one for each leg), that were synchronized with piston C. The circuit did not function as desired, because pistons A and pistons B are depressurized during the six step sequence. This made Quad242's body drop to the floor twice per cycle due to gravity pulling the body downward. I tried many ways to make piston A be pressurized at every point in the sequence, with each attempt ending in failure.

Finally I decided that piston A could not be weight bearing. I realized that I could create an always pressurized copy of A and an always pressurized copy of B by making these simple additions to the circuit.

The wave form for the new circuit looks like this:



Piston A' (pronounced A prime) is driven by piston A's switch, so A' does what A does, except delayed in time. Piston B' is driven by piston B's switch, so B' does what B does, except delayed in time. The output from piston A' is used to control the other pistons, instead of A, and likewise for B' and B. This means that A' and B' are synchronized with the circuit, but are always pressurized (which means they can be weight bearing.)

The formulas that describe circuit 8 are:

$$A_x = C$$

$$A_c = B' \sim C$$

$$A'_x = A$$

$$A'_c = \sim A$$

$$B_x = \sim C$$

$$B_c = A'C$$

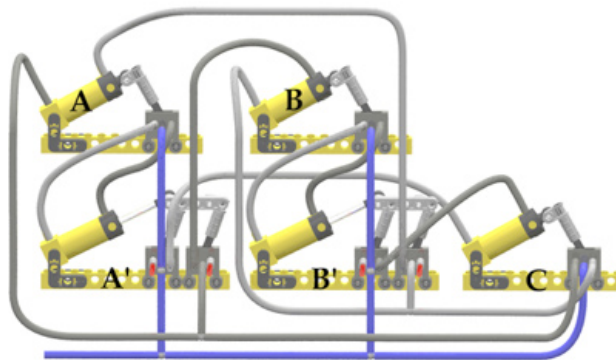
$$B'_x = B$$

$$B'_c = \sim B$$

$$C_x = \sim A'$$

$$C_c = \sim B'$$

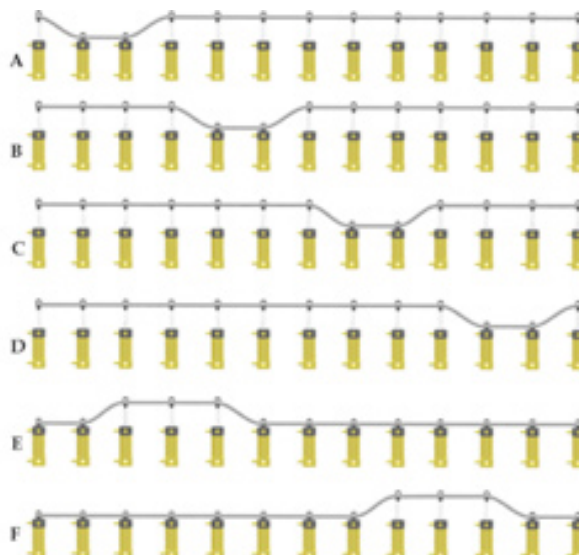
This gives us this circuit diagram:



Piston C is not a weight bearing piston, so we do not need to add an extra always pressurized version of piston C.

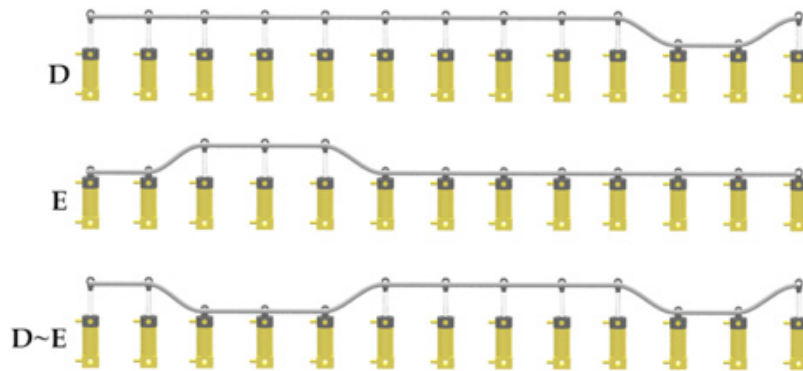
Unachievable sequences

One of my next projects is a four legged walker that always has at least three feet down. When transferring weight it would have all four feet down. It will probably be named Quad343. I tried to create this sequence for Quad343.



That's a lot of sequence!

I started to do analysis for piston A which contracts when D expands, and expands when E expands, giving this pressure diagram:



The first problem is that D and E are both pressurizing A at the same time. When trying the standard trick of and-ing the one that is on too long with the not of the one that is being trashed, it doesn't work. The last row of the diagram shows the result. The problem is that D~E pressurizes A at two different points in the cycle. Not good because piston A will expand/contract twice in the same cycle violating the original goal for A. The result is that we cannot create a circuit to generate the wave form as proposed. I'll have to come up with a different sequence for Quad343 (I've already got that one figured out :^)

Stopping and Starting

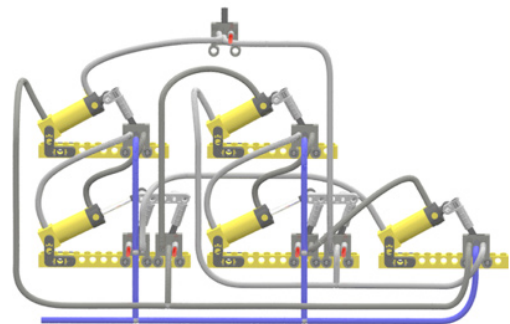
It is possible to make your sequencer stop and start under external control. If you disconnect a pressure port to a piston, run the pressure through a stand alone switch, and hook the output of the switch back to the piston, you can make it start and stop. By preventing the pressure from hitting the piston, you prevent it from expanding or contracting (depending on the port you modify). Preventing the piston from changing prevents the circuit from making forward process. This is circuit 8 with a switch that can freeze the sequencer at the beginning of the sequence.

If your sequencer is part of a carnival ride that changes shape over time, you might want to stop and start the ride so your mini-figs can get on and off. Stopping the sequencer at the end of the ride could be controlled by an RCX that controls a motorized pneumatic switch.

Your complete model could very well contain two sequencers that interact and stay coordinated by controlling each other's forward progress.

You can put more than one stopping point switch into your sequencer so you can stop at multiple points in the cycle.

Each of the stopping point switches acts as an and gate that controls forward progress.



Where to go from here

There are any number of possible places to use complex pneumatic sequences:

- Animated creatures walking, or moving appendages
- Carnival rides that change shape over time
- Simulation of manufacturing processes (a common use of pneumatics in real life)
- Pneumatic computing devices

Summary

This tutorial explained how to create pneumatic circuits that go through repeating sequences of pneumatic piston expansion and contraction. It explained how to make multiple pistons be coordinated (synchronized) even though the pistons themselves expand or contract at different rates. It explained how to start from a description of the desired sequence and see if a circuit can be created for it. This chapter introduced the concepts of boolean logic, how it is implemented in LEGO® pneumatics, and how it can be used to create pneumatic sequencers.

Pneumatic sequencers can be used to create complicated and advanced self actuated LEGO models that require no motors or RCX.

#

An introduction to Robotics with LEGO® MINDSTORMS (XI)

Basic Robot Movements

By Koldo Olaskoaga

This is the third article in a series of challenges to be solved using LEGO® MINDSTORMS. The idea responds to the questions some FLL teams have asked me about how to navigate the table. We are going to look at creating a robot that can move wherever we want and some proposals for improved use of the NXT-G Move block.

Challenge

This proposal is very basic, the typical starting point for programming the robot. It is a challenge in which we use only the motor ports of the robot.

The idea is to build a robot that move along a predetermined path that can be defined at will. In my case what I will do is place three cans on the floor and we will see how to solve some common problems.

The robot

Let's start by building the robot. Before we start programming with sensors it is a good idea to practice with robots that move along a predetermined path, much the same way you would move through a well-known space without being allowed to touch anything and blindfolded. This means we are not going to ask too much, just the following:

- Capacity to move in a straight line and turn.

With this starting point, the first decision we need to take is what locomotion system we are going to use.

Locomotion systems

The choice for one system or another conditions both the structural complexity of the robot and its programming, and in addition, its maneuverability. Without trying to be exhaustive, let's look at the following systems.

Differential drive

This system is based on connecting a motor to the wheel or wheels on each side of the robot. If both motors turn in the same direction the robot will go straight forward, if the turn in opposite directions the robot will turn to one side or the other. It will even be able to turn in place.

Depending on the surface the robot will move on there can be differences in the way this system is implemented. Let's see three of them.

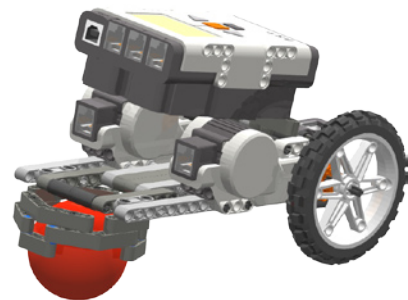
- Robot with two wheels

This first construction is the the most basic, simple to build and program, although it doesn't move well on irregular surfaces or surfaces on which it cannot slide well. The robot in the picture is supported on two wheels and two additional sliding points which will work better or worse depending on the

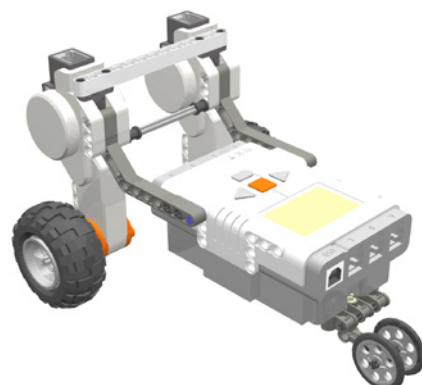
characteristics of the surface it moves on.



- Robot with two wheels and a third support
The frontal support of the previous system can be substituted by a third support , although this makes the build a little more complex.



- Robot with two wheels and an idler wheel
In this case the robot is also supported on three points, with a wheel that changes its position to adapt to the turning. In this case the design of the idler wheel conditions its efficiency. It is also possible to use two idlers in the same way, just like wheelchairs or baby strollers have.



- Robot with tracks

This system gives us a very stable base. It is an easy to build robot that is relatively stable. The track system is compatible with different types of floors, like carpet, ceramic, wood... and allows the robot to overcome obstacles. This is the system used by the starter bot from LEGO® MINDSTORMS 2.0

Other locomotion systems

Another well known system is the one used in cars and which requires 2 motors; one for propulsion and one for steering. The robots have reduced maneuverability. Walking robots deserve a separate mention and correspond to a more advanced level.

The centre of gravity

There is an important factor that must always be taken into account in any mechanical design: the position of the centre of gravity. The centre of gravity will influence the behaviour of the robot, especially at start, stop and turning. A robot that is apparently stable may sway or even topple over when starting if the centre of gravity is too far to the back. It can topple over at turning if the centre of gravity is too high.

The centre of gravity should always be located inside the polygon described by the supports on the floor (triangle, rectangle...), but not only that. When the robot starts, stops or turns there are new forces that can also make the robot sway or topple over and for this reason - just like in cars - it is convenient to have the lowest possible centre of gravity.

My choice

I have built the robot you can see in the first picture, simple, and easy to build. Nothing further is required to experiment with motors.

Programming

Let's start with a basic program and then improve on it.

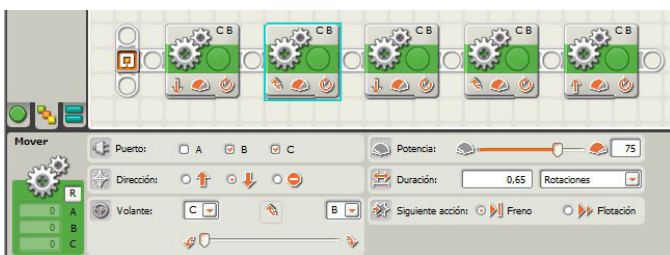
Basic challenge #1

We draw a straight line and place a can at a predetermined distance. The robot starts at the line, turns around the can and returns.

The algorithm in this case is very simple:

1. Straight forward
2. Turn around the can
3. Straight forward

When we turn this into an NXT-G program, after going straight forward and although this could be done differently we'll do it as follows: turn 90°, go forward past the can and another 90° angle turn. In this way you can make a smaller turn that by doing it in a single movement. The program will be as follows:



To determine how much the motors must turn, NXT-G allows you to use time, degrees (with a precision of 1 degree) and rotations. A fourth option, unlimited, is very useful when working with sensors. In this program I have used the rotation option in the control panel of the Move block. This option allows for more precision, since the time option may not work the same way if the batteries are low. The necessary rotation has been determined by trial.

Improvement #1

Although the program carries out the assigned task, the movement is not fluent and when the execution of the program passes from one block to the next the motors stop and start again. By default the Move block has the Brake selected in the control panel, which means it ends by blocking the motors and starts them again with the next block.

This behaviour can be improved somewhat selecting the Coast instead of Break. In this way at the end of each block instead of blocking the motors, power to the motors is cut and they could continue turning if they have enough inertia.



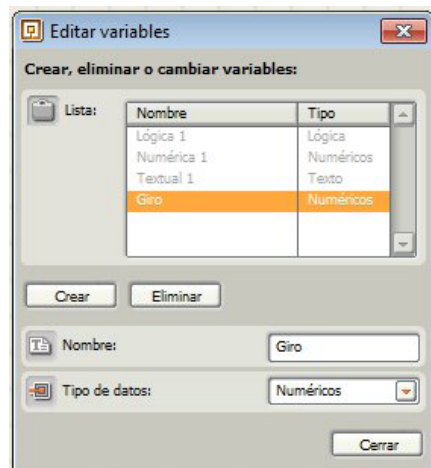
Challenge

Another interesting challenge is placing several cans on the floor to create a slalom. I will leave this as an exercise for you. What you need to do is place the necessary Move blocks (straight and turn) to solve the challenge.

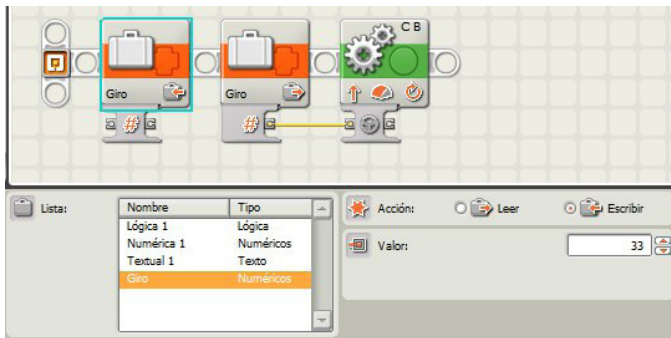
Improvement #1 Improving precision in the turns

The slider in the control panel for the Move block allows 10 different positions for turning left and 10 for turning right. This will be enough in many occasions, but in some cases one position will be too little and the next too much.

Turning can also be done with a numeric value between 0 and 100 in one direction and between 0 and -100 in the other. Remember that a value of 100 means the robot will turn in its footprint in one direction and with -100 in the other direction. To assign this value we will have to use a variable in which to store the number for the desired turn. After opening a new program we will go to Edit > Define new variable. We create a new variable called Giro (Turn - it will hold a numeric value).



In the following image you can see a fragment of the code that shows how to store a value in the previously defined variable and use it to establish the turning radius. The value of a variable can be changed at any time.



The first block stores the desired value in the variable “Giro”. The second reads the variable and sends this information to the plug with the steering wheel on the hub of the move block.

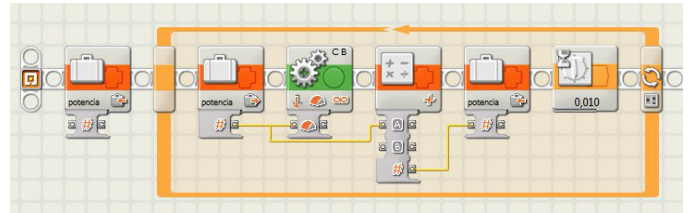
Improvement #2 Ramping starting and stopping

While it is good practice to have a low centre of gravity, at times there may be circumstances that impede this. It isn't the case in the robot we are using, but in other cases starting and stopping may topple over the robot (as will happen to a motorcycle or a bike if you suddenly block the front wheel). One way to avoid this situation is to ramp up speed, i.e. in stead of going to full power at once to do so progressively until you get to the desired value. The motor block has this option, but since the Move block doesn't we are going to do it another way. Let's see the algorithm to make the robot increase speed progressively and reduce it in the same way.

1. Define a variable to store the value of the power and send it to the Move block.
2. Give it an initial value of 0
3. Repeat the following 100times (to get to power level 100)
 - a. Send the stored value to the Power plug on the Move block
 - b. Add one to the variable
 - c. Wait 0.01 s (this way, since we will repeat this 100 times we will go from 0 to 100 in 1s).
4. Advance at full power during 2 seconds.
5. Repeat the following 100times (to get to power level 0)
 - a. Send the stored value to the Power plug on the Move block (the last value was 100)
 - b. Subtract one from the variable
 - c. Wait 0.01 s (this way, since we will repeat this 100 times we will go from 100 to 0 in 1s).

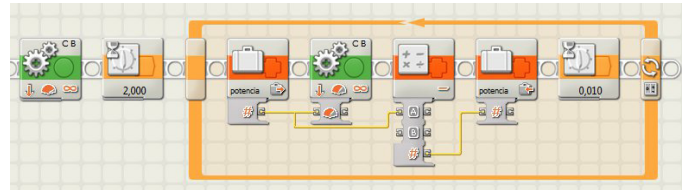
After opening a new program we will have to create a new variable. I have called it “potencia” (power) and it is a Numeric variable (it will store numbers).

In the following image you can see steps 2 and 3 of the algorithm.



A value of 0 is assigned by the variable and the loop is started. In the control panel of the loop you select the option Count and enter 100. Internally, the sequence of blocks starts to assign the value contained in the variable to the Move block, add one, wait one hundredth of a second and start over.

The rest of the program:



To advance we will use the Move block with power level 100 and for duration the option unlimited. If instead of this option we were to use just the Move block with a duration of 2 seconds we would not be able to control the braking in this way. The rest is similar to the first loop, with the exception of the subtraction instead of the addition.

Proposal 1

It's time to practice: try to do the same without using a variable. To this end, look at what happens in the control panel of the Loop structure if you check the box at the bottom of it.

Proposal 2

Although the power of the robot can be set between 0 and 100, the robot doesn't start to move at power level 1 as it needs a minimum power level to start moving which depends on its weight and mechanical design. If the robot uses different accessories for different tasks, like in FLL, this minimal power may vary. Develop a program to find out this power level and show it on the display.

#



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Robótica Educativa y Recreativa

Modular Integrated Landscaping System (II)

In this second article we will start with the MILS rules related to the compatible terrain modules (CTM), so we can add new elements to the basic terrain modules (BTM) of the previous article.

By Legotron (A. Bellón)



Continuing with the explanation of the modular integrated landscaping system with LEGO® pieces started in HispaBrick Magazine® 013, we will start with some clarifications concerning some doubts people have voiced about this system.

- Firstly, the MILS system does not imply or require that all the modules in a diorama have to be MILS modules. MILS rules emphasize the need that these rules are to be satisfied in elements that will be adjacent to those of different builders within a diorama. The rest of the elements of the diorama can be built as their owners want. We in HispaBrick Magazine® decided to build as many MILS modules as possible in order to exploit and test the efficiency of the rules, so the dioramas in our examples will contain a majority of MILS modules.

- Non MILS compatible elements also have a place in this system and this will be analysed in the last article in this series. As one of the ideas was to show the development of the modules explained in each article, we want to describe all the elements of the MILS rules in order to build and test them before we explaining how to integrate non MILS elements.

- We have tried to make the rules describing the MILS system as simple as possible, in order to make it easy to work with them; this does not mean that no additional module types or details can be developed. But in the construction of a diorama in which many people participate with different qualities and parts, it is important to lay down some common rules that all participants can follow as the idea is to allow the easy integration of modules from anyone who wishes to participate in the joint diorama.

CTM (Compatible Terrain Module)

As mentioned in the first article, the CTM modules are 32x32 studs in size and at least one of their sides must be compatible with the MILS rules. Unlike BTMs (Basic Terrain Modules), CTMs do not have a predefined height as that can change depending on the type. CTMs should be built as similar as possible to BTMs, especially on their compatible sides, with 2x2 stud corners for identifying the builder and the adjacent 1x4 Technic bricks.

The first reference for the purpose of CTM modules is in the elements that are represented with them, and whose main characteristic is the need for continuity along several consecutive modules. This continuity means that CTM modules lose coherence with adjacent modules when their orientation is changed. The clearest examples would be rivers, roads, coasts, mountains etc. Why? Well, it's evident that a module with a part of a river will always need other modules with other parts of that river connected to its sides to make sense in a diorama, and on the end of that stretch of river there will have to be yet another one, which in addition needs to coincide in width and depth in order to create a consistent whole.

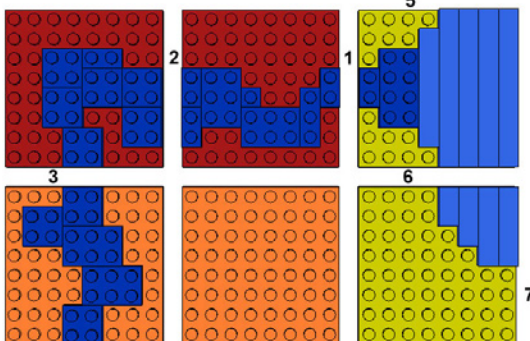
In the MILS system a number of groups have been defined to describe each type of element the CTM have been divided into.

- Roads and paths
- Rivers
- Coasts
- Hills and mountains
- Transitions between different types of terrain.

AFOL 1

Common side 1: Both, AFOL 2 and AFOL 3 must have a perfect compliance with MILS rules related to rivers

Common side 2: As these two sides belong to AFOL 1 elements, there is no need to fulfill the MILS rules. Size and dimension of the river in this part is up to the AFOL 1



AFOL 2

Common side 3: Due to the fact that this joint side belong to two different builders, AFOL 1 and AFOL 2, both of them have to meet MILS rules

Side 4: This is an external side, so the AFOL 2 is not obliged to comply with the MILS rules. If this module is intended to be part of other rivers built by different AFOLs then this side will have to comply with MILS rules

There are many more elements that could be included in CTM modules, like railway tracks, city streets, bridges, etc. but due to the complexity of describing all possible variations we have preferred to leave those outside the MILS system for now.

CTM: Roads and paths

CTM modules related to roads are intended to be used to represent any type of track, path, paved road and so on. These modules will contain a section of road or path inside their 32x32 stud size. In most cases the section will have 2 ends (opposing for straight sections and adjacent for curved sections) to link to other roads of the same size, although it is possible to create modules with 1 (end of road), 3 (T-junction) or 4 (crossing) sides with a road end. MILS rules are compulsory on the edges of the module, but the dimensions described below may vary within the module. It is necessary to emphasize that not all the parts of a road are subject to the MILS rules; these rules are intended to be used for elements adjacent to those of different builders. You can build all your road elements as MILS modules if you want, but you are not required to.

In order to simplify the great variety of existing roads that can be built, this classification has been reduced to 3 types:

Paths: CTM modules related to paths are intended to represent small rough roads, of stone or earth surface. Paths will be integrated at the same height that the rest of the module surface (4 plates over the baseplate). On the module edge, the paths must be located in the middle, with a width of 4 studs. This type of roads can be built with brown/reddish brown, dark bluish gray, light bluish gray or tan parts and do not need to be uniform or levelled as they represent irregular paths. The height variation on the sides will be restricted to 1 plate difference from the standard height of the module.

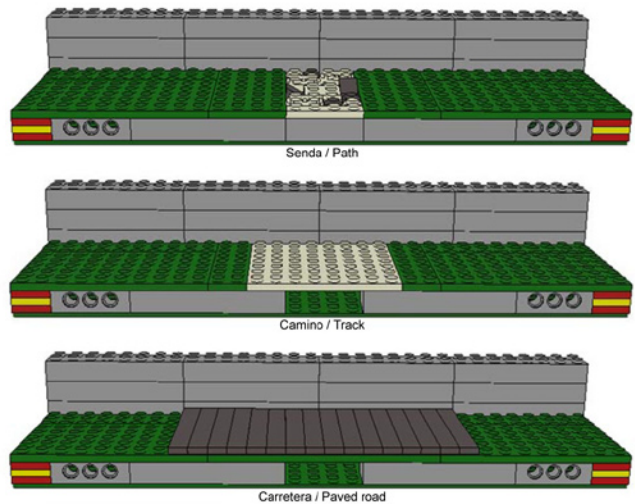
Tracks: CTM modules related to tracks are intended to represent regular roads of earth, larger and more regular than paths. Tracks will be integrated at the same height that the rest of the module surface (4 plates over the baseplate). On the module edge, tracks must be located in the middle, with a width of 8 studs. This type of roads can be built mainly with brown/reddish brown or tan parts. The height variation on the sides will be restricted to 1 plate difference from the standard height of the module.

Paved roads: CTM modules for roads are designed to represent paved roads with a regular surface. These roads are built on top of the surface of the module (at a height of 5 plates). In order to make them look like a road they are built with Dark Bluish Gray tiles. These roads will be 16 studs wide and start at the centre of the edge of the module. Variations in height are restricted to 1 plate, but only above standard height as a difference of two plates would be inconsistent with a road.

The restrictions of the MILS rules involving the types of edges built in the modules don't mean all the modules must be built as a straight segments or 90° curves. A builder can make a road with the desired course using several modules, as long as those elements are adjacent one each other and not intended to be adjacent to modules of a different builder. Each builder has to have on his mind that MILS rules are only mandatory for elements that he wants to connect with modules of other builders.

CTM: Rivers

Perfiles laterales / Side profiles



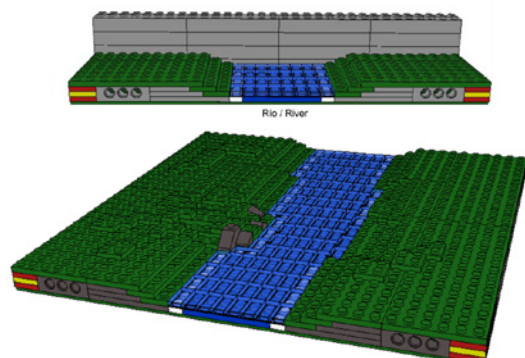
CTM modules related to rivers are intended to be used to represent parts of a river or watercourse. These modules will contain a section of road or path inside their 32x32 stud size. In most cases the section will have 2 ends (opposing for straight sections and adjacent for curved sections) to link to other parts of the river, although it is possible to create modules with 1 (start or end of river) or 3 (incorporation of tributary). Although there can be many sizes of river, in order to simplify the connection of different parts of the river it will be built in a single size. On the module edge, the course of the river must be 8 studs wide and located in the middle. This width may be made up of blue, white and brown plates in order to create different shades of water. They will be covered with Trans Dark Blue tiles. This does not mean the whole surface of the river must be covered with this kind of tiles, but it will be the main element. The height therefore will be two plates over the baseplate. On either side of the river, the riverbanks will rise one plate per stud with the stud adjacent to the river at 2 plates and increasing to the level of the module (4 plates). There may be variations of 1 plate in this height.

Any kind of element used to decorate the river bed, like slopes to represent stones or small white or trans clear plates to simulate foam on the river can be used on the edges without any problem.

No reference has been made to the slope of the river as under MILS rules the whole river will be at the same level. The complexity of making modules at different heights makes it infeasible for simple rules so this aspect is reserved for non standard constructions that can be connected to MILS modules.

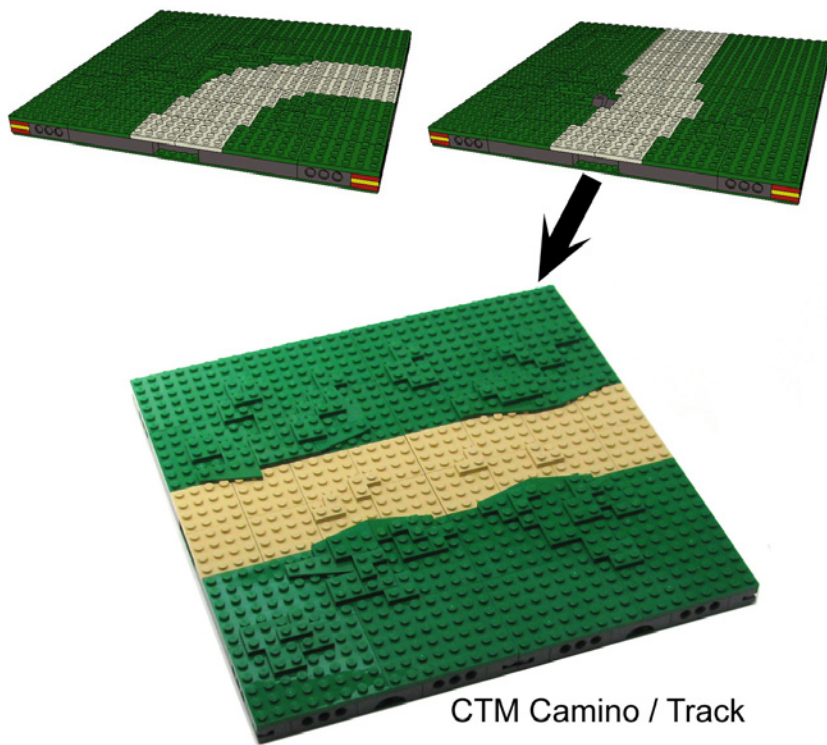
CTM: Coasts

Perfil lateral / Side profile

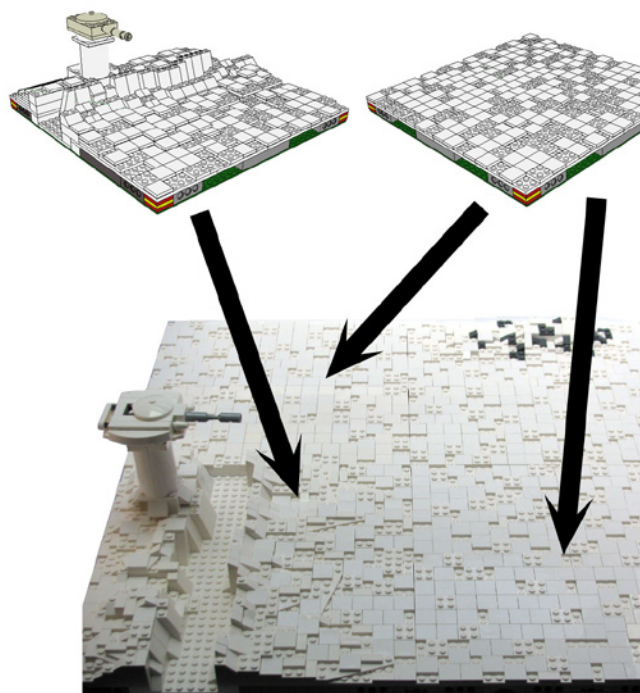


CTM modules for coast are those used to create a shoreline between land and the sea or a lake. In both cases the same rules apply, with the exception that for the water of the sea blue tiles will be used and for that of lakes trans dark blue tiles. Transition modules between land and sea must have at least one side on which there is stretch of land, which must comply with the conditions that will be explained below. The area that separates land and sea will be placed at 16 studs from either side (in the centre). In this way endless combinations of modules can be made, with edges that are all land, all sea or half sea half land. Looking at the area where land and sea meet, the sea should be made with tiles on the baseplate (a height of 1 plate) Where the land starts the parts representing land should be at a height of one plate above sea level and rising one plate per stud till the standard height of the modules. There can be variations of one plate in height at these edges. In modules that have corners with sea, one stud can be left free on each corner to allow joining adjacent modules with sea by means of a tile or plate. The fact that there is a type of piece that represents the bulk of a sea - blue tiles - or of the water of a lake - trans dark blue tiles - doesn't mean the entire surface must be made up of these elements. Trans clear or white tiles can be used to simulate waves or foam and can be included in these kinds of modules without any problem.

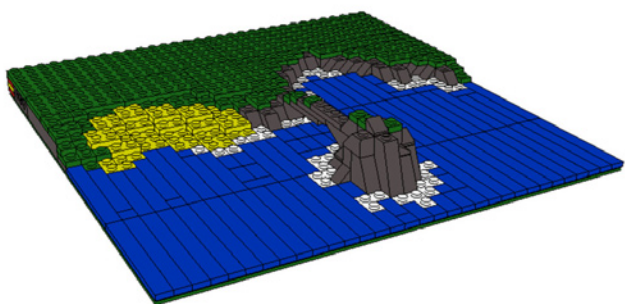
In addition to the described CTM types it is also possible to make combinations of types, like a river flowing into the sea, roads that cross a river or a path that leads to a paved road, etc. In these cases it is important that each edge follows the MILS rules corresponding to the type of terrain it has.



CTM Camino / Track



Módulos nieve / Snow modules



Work on modules at Hispabrick Magazine®.

On of the goals of this series of articles was to create physical versions with LEGO® bricks of our digital designs. As examples and in order to coordinate our work, over thirty different designs have been made which, little by little, those involved in the MILS project are building. At the time of writing of this article more than 30 modules have been finished or are being built (mostly BTMs related to the previous article) and by the time this article is published we will have finished another 30 (mostly related to the material from this article). For this

reason, and in order to show our work, solve doubts, compile all the rules and show different examples as they are finished, the following website has been created:
<http://www.abellon.net/MILS/index.html>.

In the next issue we will continue with the last CTM elements, hills and mountains, in order to finish the description of all the groups of CTM modules.

#

LDraw Tutorial Part 13

MILS with BlueBrick (II)

By Jetro



In the first part we saw how to create an image of a module and prepare it for use in BlueBrick. In this second part we will see how to add functionality to these modules.

Connection points

One of the strong points of BlueBrick is that it allows for inclusion of connection points in a module. In the second article on the MILS system which is published in this edition, several elements have been introduced that can benefit from these connection points.

BlueBrick already has several types of connections points (for roads on baseplates, train tracks, DUPLO tracks and monorail tracks) and the system can be easily expanded. To this end the following steps must be taken:

1 - Define a connection type

Connection types are defined in the file `ConnectionTypeList.xml` which is located in the `Config` folder of your BlueBrick installation. The file can be easily edited using any text editor, like notepad in Windows (to open it right click on the file and select "open with" or open it directly from the program of your choice. If you open it in a browser - usually the default option - you won't be able to edit it).

Between the tags `<ConnectionTypeList>` and `</ConnectionTypeList>` you will find several blocks of code that look (approximately) like this:

```
<ConnectionType name="1">
  <ColorARGB>FFFFFF00</ColorARGB>
  <Size>1</Size>
</ConnectionType>
```

The first field, `<ConnectionType name="1">` contains the name of the connection type. In this case it is "1" which corresponds to train tracks, but you can use a descriptive name for the connection type, as long as you place it between quotes, for example "MILS River".

The second field, `<ColorARGB>`, indicates the colour of the dot that will indicate the connection point in ARGB format. This format is similar to RGB which you may already know, but is preceded by two digits indicating the opacity of the colour. To simplify things, you can use an RGB colour and precede it with "FF". In this way the LEGO colour Dark Blue, represented by 0A3463[1] would become FF0A3463.

The third field, `<Size>`, indicates the size of this dot.

In order to create a connection type for MILS Rivers, we could add the following code to the list:

```
<ConnectionType name="MILS River">
  <ColorARGB>FFFFFF00</ColorARGB>
  <Size>1</Size>
</ConnectionType>
```

Repeat the process for all the connection points you are going to need and save the file in its original location[2]

2 - Adding connection points to a module

To include these connection points in the corresponding modules some lines need to be added to the XML file that goes with the module. This file is located in the same folder as the .gif image of the module, as was explained in the previous article.

After the description of the module the tag `<ConnexionList>` is added, after which the connection points of the module are described.

The block of code will look like this:

```
<connexion>
  <type>MILS River</type>
  <position>
    <x>0</x>
    <y>-16</y>
  </position>
  <angle>-90</angle>
  <angleToPrev>-90</angleToPrev>
  <angleToNext>0</angleToNext>
  <nextConnexionPreference>1</
nextConnexionPreference>
</connexion>
```

Although it may look complex, it is actually quite simple. Between the tags `<type></type>` the type of connection is indicated. In this case it's a MILS River Next the location of the connection point is indicated. This is calculated from the centre of the module, with X increasing from left to right and Y from top to bottom. In this way the centres of the four edges of the module have the following coordinates (starting at the top and going clockwise). X=0, Y=-16; X=16, Y=0; X=0, Y=16 y X=-16, Y=0. To make identifying these points easier I will call them A, B, C and D [Table 1]

The field <angle> indicates the direction of each point. Since in MILS this angle is always perpendicular to the border and the 0° angle is in the direction of the X axis, the values are as follows: A= -90, B=0, C=90, D=180.

	X	Y	Angle
A	0	-16	-90
B	16	0	0
C	0	16	90
D	-16	0	180

The next fields, <angleToPrev> and <angleToNext> depend on the number and location of the connection points. In this example the values are always -90 and 90 respectively, but you need to look at the angle between one point and the next in each case and remember positive values are clockwise.

Finally there is the field <nextConnexionPreference>. This serves to indicate which point is selected by default and in what order the other points are selected. Keeping in mind that this list begins with the number 0, if we want to follow the order A, B, C, D we will have to indicate 1, 2, 3 and 4 respectively, but of course this order can be changed to fit your preferences. [3]

Why make connection points?

Connection points make it easier to place different elements in the layout. After placing the first element you can rotate it using the space bar until placing it in the desired orientation. After that, using the enter key, you can select the next connection point. Now with a simple click on any module in the Parts pane on any module that can connect to this point it will do so automatically. If you now use the space bar, the module will only turn in such a way as to leave a valid connection (it will never allow for the connection of two different types of points).

A second way to (re)create a module

In addition to creating an LDraw version of a module, it is possible to create an image of a module with a different, less time consuming process, although there are some disadvantages

If you take a picture of the top view of a module and crop it (using the process described in the first part to create an image from a virtual module) you can get a representation of an existing module with relatively little work.

However, you should keep in mind the following inconveniences of this method. In the first place, taking a picture from a "bird's eye view" of a module isn't as simple as it sounds. The first hurdle is taking the picture perfectly perpendicular to the centre of the module. Otherwise, the picture of the module will not be perfectly square; if for example you take the picture perpendicular to the base of the

module, the opposite side will look considerably shorter.

Another factor to keep in mind is the distance to the module. The closer you get to the module, the more deformation there will be at the edges of the picture, so it is a good idea to take the picture from some distance and at a high resolution so later you can crop the image and still get enough resolution for a BlueBrick image.

Finally you should take into account the lighting. If the module has some elevated parts it will be hard to avoid shadows in the picture. At the same time, the colour of the module will almost certainly be different from the ones made using LDraw and, unless you manage to recreate the exact same circumstances, modules photographed at different moments will also have colour divergences.

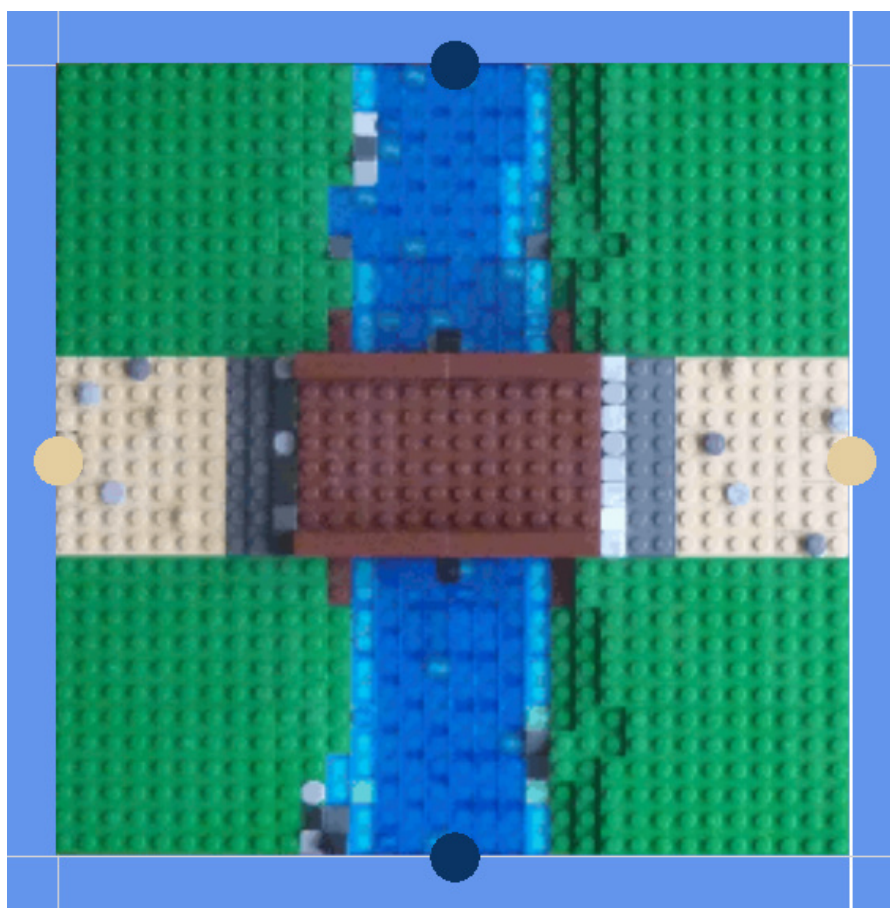
The big advantage of this method, however, is that keeping these factors in mind you can create a BlueBrick module in a relatively short time.

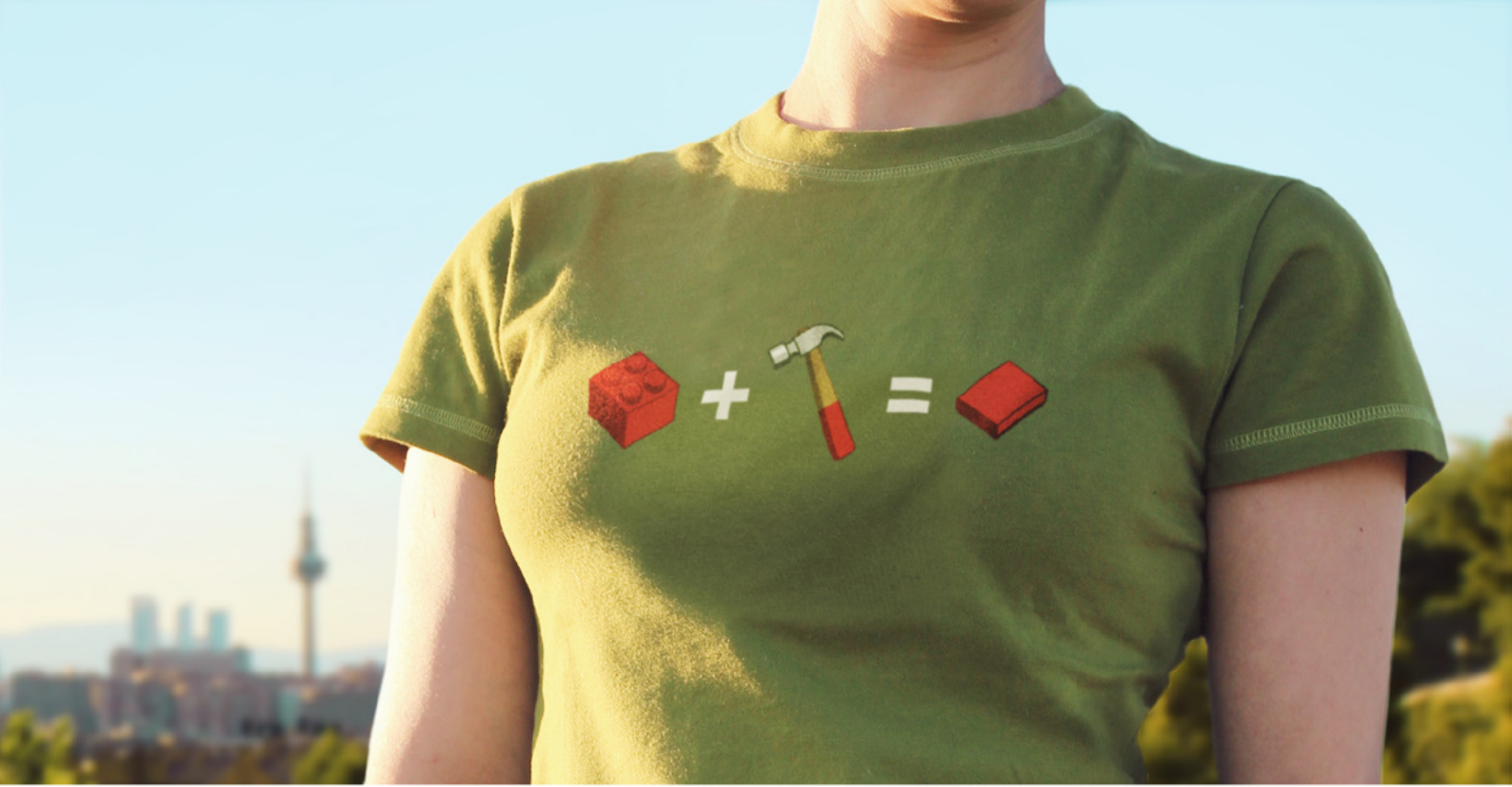
[1] There is a complete list of RGB values for LEGO® colours at <http://beta.ldraw.org/article/547.html>

[2] At the dedicated MILS website: www.abellon.net/MILS/index.html there is a section where you can download a modified file that contains the connection points explained in this issue.

[3] At the dedicated MILS website: www.abellon.net/MILS/index.html there is a section where you can download several MILS modules and their corresponding XML files which may serve as a basis for any other module.

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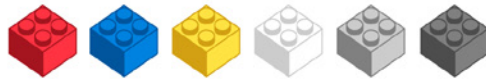


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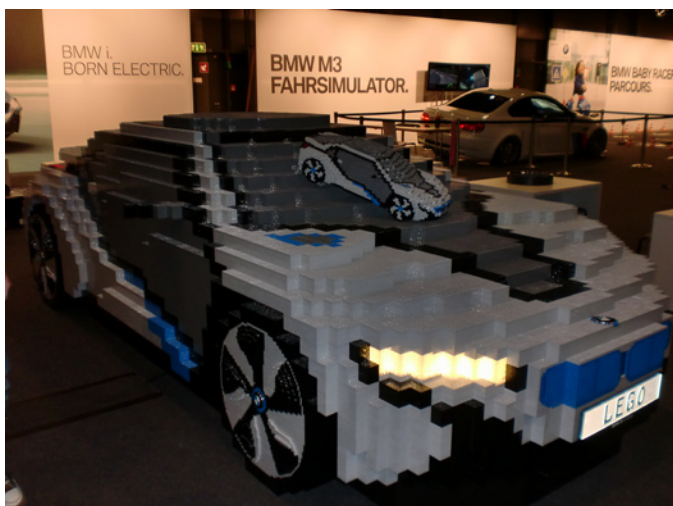
Bricking Bavaria 2012

By Iluisgib

Participating LUGs: 5
AFOLs: 100
Visitors: 20,000
Total area: 10.000m²
Area AFOL Exhibition: 1.200m²

From April 12 to 15 the 2012 edition of Bricking Bavaria was celebrated in Event Arena located in the Olympiapark in Munich. The event was organised by the Bavarian LUG Bricking Bavaria. As usual, due to work issues I couldn't attend until the Saturday morning, but even though it was only for 2 days, HispaBrick Magazine® was represented at the event with two small MOCs, together with another 4 LUGs: Bricking Bavaria, 1000steine, SwissLUG and LGOe.

In this edition, and for the first time in Europe, the AFOL event was celebrated together with a KIDSFEST, an event that is organised by LEGO® and imported from the USA, geared towards kids. The KIDFEST is a combination of activities for children to play and learn. In addition to areas for different LEGO themes, like NINJAGO, STAR WARS™, LEGO GAMES or FRIENDS, several sponsors had their own spaces and had activities that were a mix of their brand and LEGO bricks. For example, BMW gave road safety lessons to the kids, while a BMW i8 Concept car was built in bricks at 1:1 scale. LUFTHANSA was also represented and they had a map of the world for which visitors were asked to build models representing different countries and that were placed on the map to complete it. In the STAR WARS area there was a curious pianola with a drum that could be rotated with a handle which made the piano play the Star Wars theme. The drum was covered with LEGO models and it was those that made the keys of the piano move.



The combination of both events was interesting, but the timetable was a bit "heavy" for our Central-European friends. The event opened from 9:30 to 14:00. Then there was a 1,5 hour break after which it opened again from 15:30 to 20:00. Eight in the evening was hard on them, since in Central-European countries that is after dinner. They looked really tired, especially if you keep in mind that the day I arrived was in fact the third day for them. In each turn there was a limited number of visitors (3,000), which had a to get ticket that was moderately priced (4.50€). On Saturday and Sunday the "Tickets Sold Out" sign had to be put up for both turns. Quite a success.



The KIDS FEST was on the lower floor of the Event Arena and the AFOL exhibition as well as the LEGO FRIENDS and LUFTHANSA areas were on the first floor. There were escalators to get to the exhibition. We were welcomed by the organisers' table, where in addition to solving any problem exhibitors might have, some LEGO models designed by Bavarian LUG members were sold to pay for expenses. The exhibition started right in front of the escalators.

As always it is hard to put into words each and every one of the exhibits, so I'll concentrate on those items that I was most attracted by, and those were quite a few.

I'll start with a fully functional cable car. It wasn't the first time I saw one, as I could see a similar model at the 2009 Ballabio event, but I appreciate designing and engineering effort it takes to build a model of this magnitude. Next to it there was a fantastic Star Wars diorama. One representing the battle of Hoth and the other of a hanger on the planet Naboo. Both dioramas were very detailed and of considerable size.

Continuing on my visit I was pleasantly surprised by an enormous modular Space display. It has been developed over



Another diorama worth mentioning was about the Lord of the Rings, reproducing different scenes from the trilogy. I don't know much about the Lord of the Rings, so I can't identify the different scenes, but as a whole it was spectacular and very elaborate.

Evidently there had to be a CITY display. There were several, some larger than others, but all with a notable level of detail that must have taken a lot of work. I was especially surprised by a reproduction of the main street of Neustadt, an impressive diorama of over 200,000 pieces, with dozens of buildings, vehicles and minifigs and over 40 metres long.

As for singular models, I really liked a large scale reproduction of a building of the historical centre of Munich that was very detailed. There was also a reproduction of Mount Rushmore with Star Wars™ characters in stead of American presidents. This model was integrated in a Western diorama.



One of the models displayed by the Swiss community was a hercules air plane that was a combination of MODEL TEAM and TECHNIC. This model was built by Beat Felber from SwissLUG. On the other hand, the Austrian community (LGOe) showed a model of Scrooge McDuck's money bin (Walt Disney™) with all the characters represented in the same scale. I could also see the effect the collectible minifigs have had in a scene with troops from the Roman empire by Verena and Thomas, also from Austria. I was impressed by a model of a plastic moulding factory that faithfully represented all the

several years by a number of German AFOLs and contained a complete space station with interstellar cruisers and even a futuristic amusement park. I talked to the designers who told me about the details of the modular set-up which allows for infinite configurations of the station. I also saw the level of detail on the inside of the cruisers that were all minifig size. I was surprised to see that the models incorporated everything necessary to make a trip across the universe.





details of a factory, from the production area to the offices and the rest area.

HispaBrick Magazine® was also represented with the already well-known Castellers and also a model of the Sagrada Familia by Gaudi at Architecture scale. Hand luggage doesn't allow for carrying too many LEGO® models, but I couldn't imagine attending an event without showing any models, small as they might be, if the rules of the event made it possible.

It is a pity I can't talk about all the models exhibited, but it would make the article very long. What I have told you is just a small part of what could be seen, and it proves once again that the best thing to do is just visit an event, a highly recommendable experience.

The organisation was perfect and there were many and varied activities. I liked the MOC-Tour. Each day there were two tours in which the creators of different MOCs explained the characteristics and peculiarities of their models to other AFOLs and visitors. Unfortunately, my complete lack of German skills didn't allow me to enjoy this activity, although the concept is great.

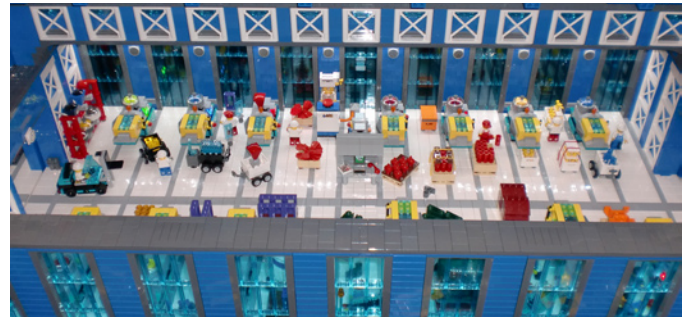
I would like to thank Jürgen, Thomas and the other members of Bricking Bavaria (many of whom also are part of 1000steine) for the excellent way they treated me during the event, making sure I lacked nothing. Also a special thank you to Marco



Tagliaferri, responsible for the Space display and the group of exhibitors I was part of. Thanks to him everything was very easy.

Next year Bricking Bavaria changes location as the event is held in a different location in Bavaria each year. I recommend you visit it. You will find fantastic models and even better people. Vielen Dank!!!

#



NorteBrick 2012

By Legotron

NorteBrick event was held From March 31 to April 1, 2012, and was located in Liendo, Cantabria, a small village in northern Spain. This was the first edition of this event, and was organized by Hispalug® (www.hispalug.com), in collaboration with the municipality of Liendo. The exhibition was located in a multipurpose hall of the village.

I was invited to attend the event, and due to geographical proximity and friendship with the organization staff I accepted the invitation. It was a new opportunity to have fun in a LEGO® event. The first day was very busy, after a hard work to set up all the exhibition, the staff, many of them members of Hispalug®, left everything ready for the opening of the exhibition to the visitors.

The exhibition of LEGO® constructions was divided into different areas grouped by themes. An entire side of the hall was occupied by all constructions related to the Star Wars™ universe. There were many different sets and dioramas

covering all the 6 movies of the Star Wars™ saga and Clone Wars. The biggest highlights were the dioramas of the Battle of Hoth and the Imperial hangar. There were many kinds of starships, from the Clone army, the Rebell Alliance, The Empire, The Republica or the Droid Army. It was a huge parade with so many starships of any kind, a comprehensive representation of sets from the last 10 years, related to Star Wars universe.

In one corner of the hall there was a diorama of a French city of the 60's. The diorama was full of vehicles and buildings of that period, all of them were original creations, full of details, and very well designed. The vehicles, the train and many elements of the diorama were nicely built. There were also a small GBC circuit and a stand with the sets of the Architecture line. the main diorama of the exhibition was placed in the middle of the hall. It was a big City diorama. The town was made up with many modular buildings and many other original buildings. The town was surrounded by a train. This was





the most favourite element for the children visitors, and was running the whole day. On the outskirts of the town there was a beach area and an amusement park, full of details.

At the other corner of the hall there were the tanks and military vehicles of the Panzerbricks collection and other military MOCs. Furthermore, there was a small representation of the new sets of the Friends theme, and some others of Harry Potter. Just in front of them there was a MOC of a modern house, on a big scale, with many details of its interior, furniture and many elements built up in a very realistic way.

Although this was the first edition of this event, everything related to organization was very well accomplished. There was a friendly atmosphere to gather all the LEGO® builders of the

region. There was also a meal in which all the event attendants were able to talk about LEGO and other non related to LEGO things, in order to welcome and know the new AFOLs and TFOLs.

#



LEGO® event at the X Collectors Fair at Mungia, Vizcaya

By Legotron

The Collectors Fair was held in Mungia, Vizcaya, from April 14 to April 15. This year was the tenth edition, organized by the Bitxikiak association (www.bitxikiak.org), in collaboration with the local municipality. Like preceding years a hall was reserved to prepare an event related to constructions with LEGO® bricks. The effort made by the organization to provide a proper place for the elements that were displayed was incredible and the familiar treatment to the attendants was very remarkable. It was clear that we were welcome, and they were very happy to hold the LEGO event within the Collection Fair.

The exhibition of constructions made with LEGO® bricks was organized by HispaBrick Magazine® (www.hispabrickmagazine.com) with the help of Hispalug® (www.hispalug.com) members. The exhibition was composed of several dioramas and many MOCs divided in several small thematics areas. With more than 200.000 bricks, this edition was the one with the most bricks ever.

In the middle of the hall there was a city diorama. This diorama was built by I. Pernia (Koska) and S. del Álamo (Sergilogrono) and was spectacular. The setup itself was built with the LEGO modular houses and many other custom buildings. There was a very remarkable group of houses that recreated a typical square of a Basque country village. You were able to compare the LEGO buildings with a picture of the original buildings, and the final result was incredible, with all those details and the design of the facades. The whole city was surrounded by a double railway. Children crowded the sides



of the diorama each time the trains were activated. This was one of the things they wanted to see most. Near the city was a leisure and rest area, full of small details and very funny vignettes.

Side by side with this diorama was the Star Wars™ area. There was an Imperial Hangar, depicting the arrival of Lord Vader to his Commandship, made by A. Bellón (Legotron). This MOC is a veteran of preceding editions, from the beginning of the LEGO events in the Fair of Mungia. Just in front of this were the Star Wars maxifigs and the TIE starfighters collection. There was also a collection of imperial minifigs.

Then there was the Panzerbricks Collection of A. Bellón (Legotron). This was made up of more than 40 different military vehicles of World War II. There were tanks, halftracks, lorries, cars and many types of howitzers. The next area was reserved for the Architecture Sets of S. del Álamo (Sergilogrono). All the buildings were perfectly documented in order to compare with the original ones, and the whole collection was very impressive.

In a different corner of the Hall another one of the dioramas was displayed. It was the most spectacular display of the exhibition. The diorama was about a French town of the sixties, made by H. Hoexbroe (Hoexbroe). Everything was an original creation of the author, the buildings, the vehicles, the train, everything. The whole diorama was wonderful, with so





many details and scenes that I would need an entire article to describe it. The train that crossed the city was a nice creation itself, with the special design of its boggies to allow the passing of the curved sections of the railway. There was also a small setup of the new Friends sets, that were very succesfull among the children, especially the girls.

There was also a HispaBrick Magazine® stand, in which different issues of the printed magazine were shown to the attendants. That was an information point to comment the activities of the event and everything related to the exposition.

This year we had a novelty. In addition to the small gifts to the children who visited the exposition, we held several



competitions both days, and some children were rewarded with some special prizes. These prizes were generously supplied by LEGO® Company through HispaBrick Magazine®

In conclusion, although the weather was really horrible along the fair, rain and cold caused some problems during the mounting and dismounting of the elements displayed in the exposition, there were many, many visitors. The exhibition was a success again and we were given an outstanding treatment by the organization staff.
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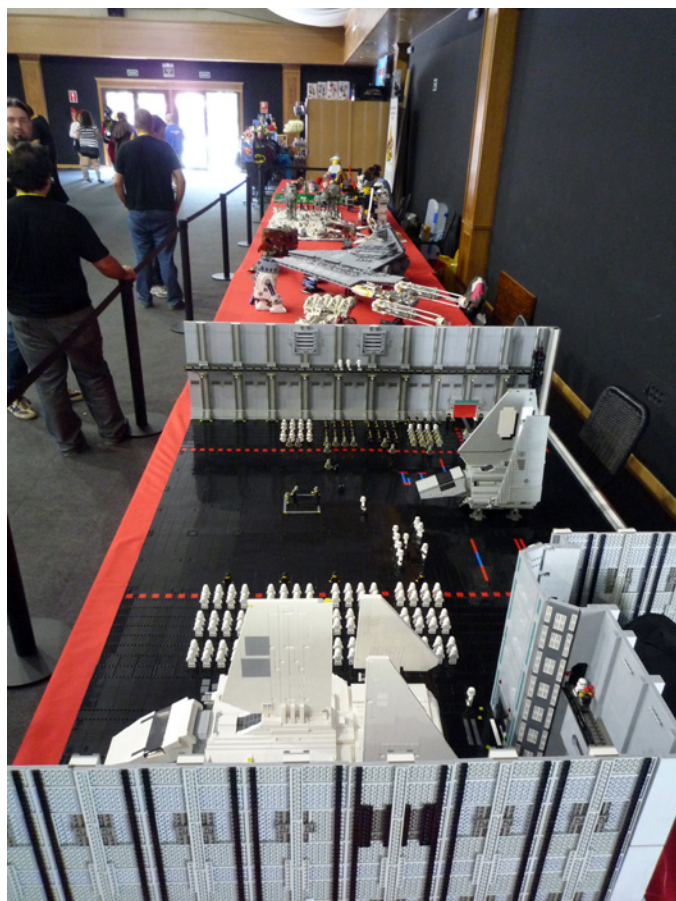
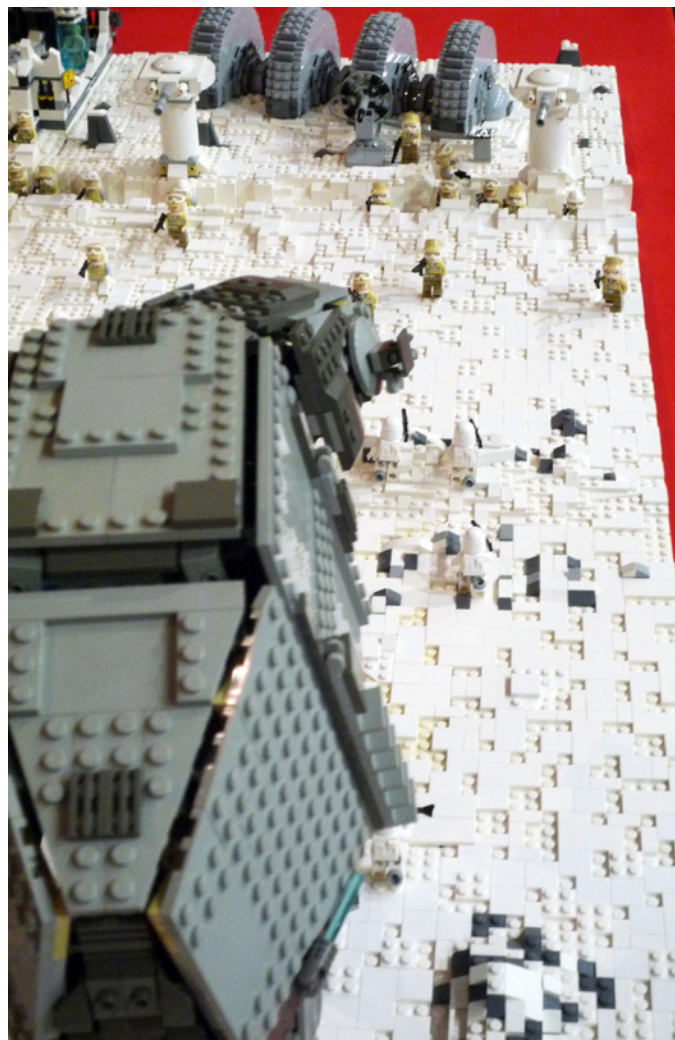
Fanvención 2012

By HispaBrick Magazine®

On 21 and 22 July the 1st Sci-Fi and Fantasy Charity Fan Convention was held at the “Parque de Atracciones” in Madrid. The organization of the event was so kind as to invite us to set up a stand at the convention and since it was a charitable event we could not refuse.

Taking into account the theme of the convention it was clear what materials we needed to display. Star Wars™ was our main theme, and we also had sets from the Indiana Jones™ and Lord of the Rings™ themes. Aside from the official themes we showed some constructions with a wink to mythical Science Fiction films and series like Stargate or 2001: A Space Odyssey, as well as some sculptures of famous characters from series like Futurama or Family Guy.

During the two days of the event we did live construction of sets from the Superheroes, Star Wars and Lord of the Rings themes and the younger visitors to our stand could win a miniset of one of several themes or even Star Wars battlepacks.





During the Sunday afternoon there was a charity auction for which HispaBrick Magazine® donated two Star Wars™ sets as well as an R2-D2™ from the personal collection of one of the collaborators of the magazine.

We would like to thank LEGO® Iberia for the sets we gave out in their name to the visitors of our stand and the organisation for their efforts to making this initiative a success. We also thank the other collaborating organisations for the good time we had together. And for the organization we only have words of praise. We have been treated very professionally and we can say without a doubt that as far as we are concerned this has been one of the best experiences we have had in this type of event. Our best wishes for future events!
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Grupo de Aficionados a las construcciones de LEGO®



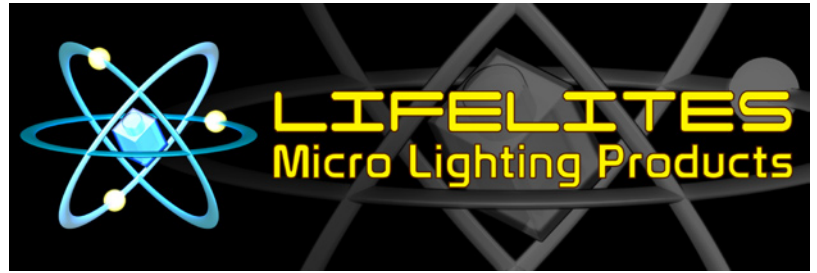
Visítanos en nuestra web y descárgate nuestra revista gratuita HispaBrick Magazine®, hecha por y para l@s aficionad@s a las construcciones de LEGO®

www.hispabrickmagazine.com



LifeLites

By car_mp



For a long time the AFOLS have had to work hard to be able to illuminate their dioramas and creations as they had imagined in their minds. LEGO® has made different ways to illuminate their creations available to their fans over time. These methods have evolved as technology has done. From the first 2 x 2 brick, with a small light bulb inside and one of its walls transparent, of the early days, to the current LED technology of the Power Functions line or the famous lightbricks.

For models that already use PF for other functions it is not expensive to add the official LEGO LEDS, but if not, the space required for the battery box and connections can be a major obstacle. And the bricks with light, although lately they appear increasingly in official sets, still have very limited use due to their configuration, size and usage.

Even with all these products from the official line, the discontinuity in time, their availability and their prices have pushed AFOLS to go a step ahead of the company and make their own LED-based assemblies, cables and customized light parts to illuminate their cities, vehicles or trains.

Unfortunately many of us have zero capacity for DIY or zero time to devote to all this planning, installation and even programming. That has created a niche market that some companies have used to create a line of business. One of these companies committed to making our life easier is LifeLites.

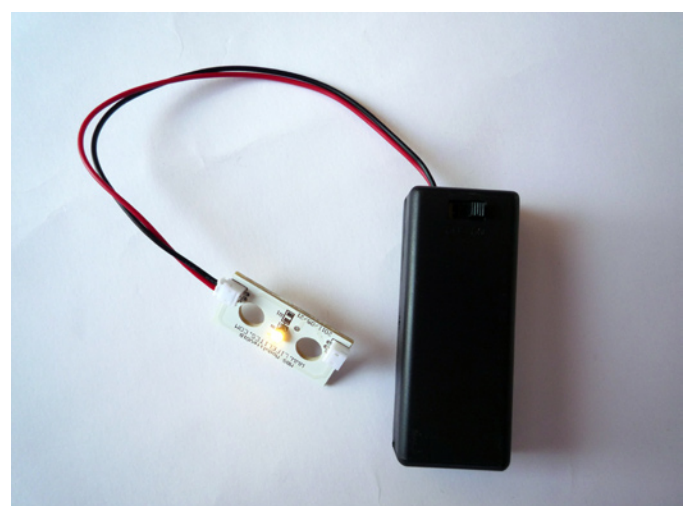
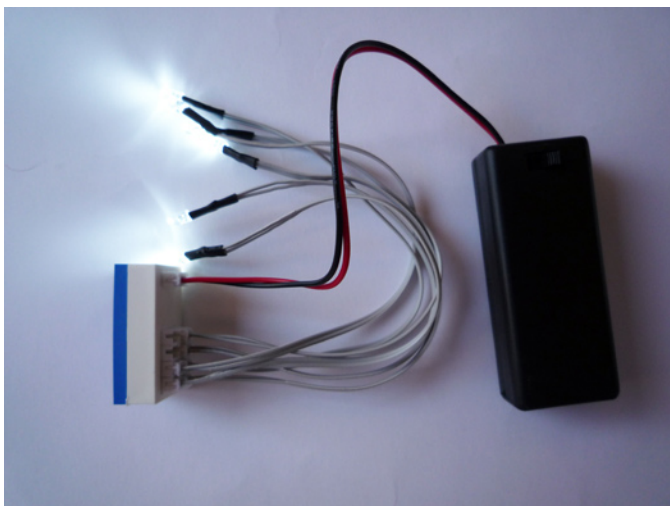
The company markets a series of kits that include everything you need to start making your first attempts in the world of lighting. They have different products according to the buyer's needs and then a catalog of accessories for specific needs in terms of wiring and colors.

The first thing you notice is the small size of the elements, allowing great versatility of use, being able to light up minifigs or small vehicles. The small size of the elements, together with the type of connections, make them inadvisable for the little ones (recommend over 12 years), because it can be difficult to connect and disconnect the elements.

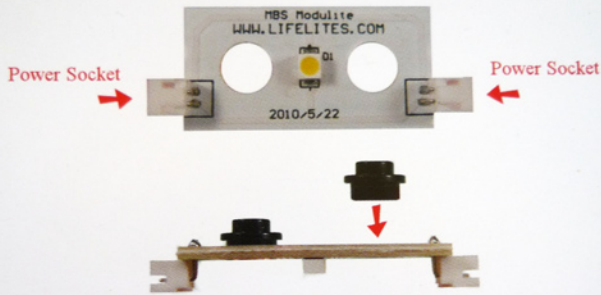
I had the opportunity to test two of its products, a "Modulite kit" and an "Elite kit". I was struck by the design of the first one. It is specially designed to illuminate the interior of buildings or structures where the light source isn't going to be seen. They are designed to be connected in series and placed on the roof of any room with the help of two 1x1 round plates.

The second, the "Elite kit" is closer to the concept of lighting with LEDs of LEGO PF, but with a much smaller size and greater variety of colors. The connecting pins of all kits are compatible and most of them work at 3V so you can mix systems for added versatility. This kit comes with a main unit with eight LED outputs. Taking into account that it can be put in series of up to 4 of these units connected to the same source of 3V, we have the possibility of light 32 LEDs with the same battery box. That's a lot of LEDS. This unit is mounted on a 2x4 plate to facilitate their integration in the constructions. In addition to these kits there is also a product that drew my attention but which unfortunately I could not test this time, the Elite Jr, which brings a series of pre-recorded lighting effects (different intensities, sequences, etc) to give even more life to our models. Unlike its brothers, the power comes from a button battery and not 2 AAA batteries as in previous kits.

LEGO City fans can also find a kit with everything needed to mount a lamppost in your city.



Bring your models to life with products from
www.lifelites.com



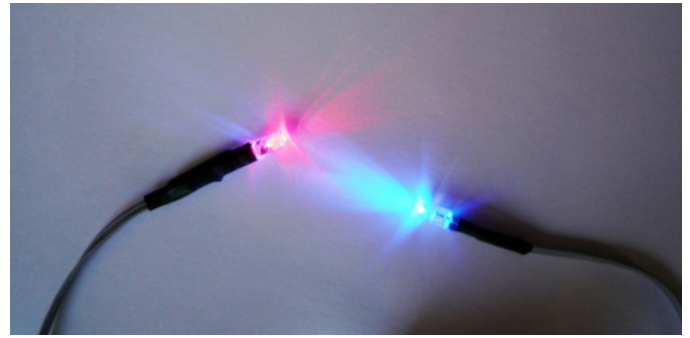
Instructions:
 Insert a 1x1 round plate (not included) into each hole of each Modulte board as shown in the photo above. Connect battery box to any Modulte power connector and daisy-chain remaining Modulites together with the supplied extension cables. You can connect up to 32 Modulites to one battery box.

Insert two AAA batteries (not included) into the battery box and turn on. You're ready to install the Modulites into your model!

Package Contents:
 Full Kit - 1 battery box, 3 Modulte units, 2 jumper cable
 Starter Kit - 1 battery box, 1 Modulte unit
 Expansion Kit - 2 Modulte units, 2 jumper cables

Technical support can be found at <http://www.lifelites.com> or you can contact customer service at support@lifelites.com.

This product uses two AAA batteries, not included.

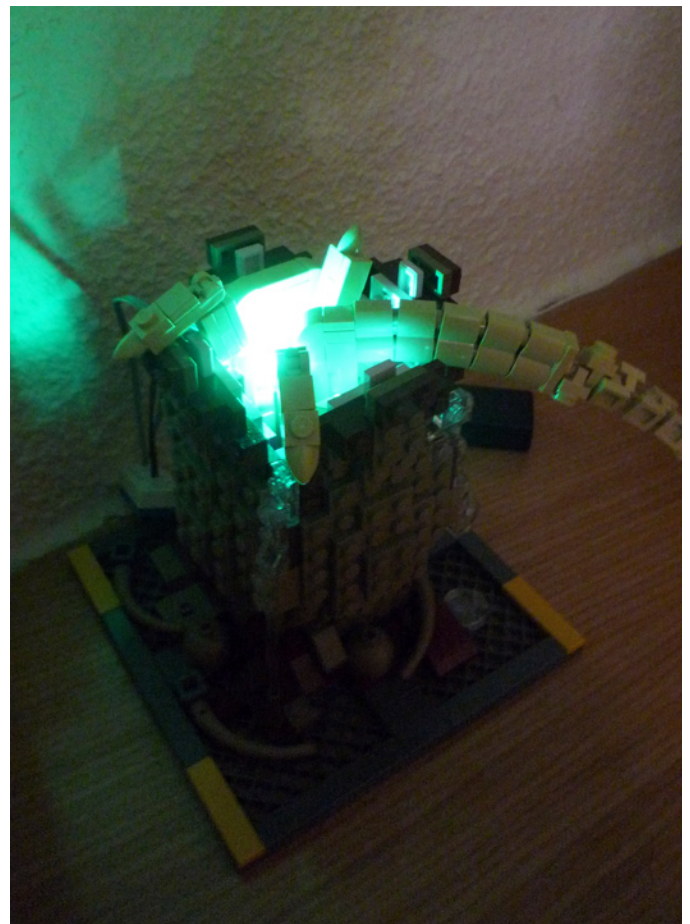


About the company:

Rob Hendrix started installing LED lights into LEGO® models and minifigs in January 2002 at his home in Bismarck, Arkansas and at various “brick” conventions he attended around the US. By 2004, he had invented the initial LifeLites product line. With the help of Stuart Guarnieri, who was well versed in programming Microchips, the first run of LifeLites modular lighting products became available in 2006 and were sold by Brickmodder Labs from a newly created website; www.lifelites.com. LifeLites, LLC was formed in 2012.
 #

Apart from the kits, you can also get extension cables and LEDs of different colors for more specific uses.

In short, this is a very effective lighting system, very small and with great versatility. The only drawback perhaps could be the slight difficulty when it comes to the handling of the wiring, especially to unplug. Its reduced size and how tight the wires fit, sometimes arouse a terrible desire to pull the cable, NEVER DO THAT, as anyone who operates electrical machines already knows. However, given that its use is recommended for kids over 12 years, this should not influence us to make the decision on the method of choice to illuminate our creations. Its operation is technically simple and you will get a very good play experience and incredible results.



Discovering LEGO® FRIENDS

*By Enric Gibert and Alba Gibert
Pictures by Enric Gibert*

Alba's relationship with LEGO® started before she was born. Her uncle is a fan of this construction toy which has led him to build up an incredible collection of sets merchandising and everything that is related to this Danish brand. Additionally, he was the LEGO Ambassador in Spain for three years.

While she was still in her mother's belly, her uncle Lluís had already bought two LEGO baby toys which Alba, who is by now nearly 11, still cherishes.

During these 10 years Alba has had a lot of LEGO toys. Some she has liked a lot, others not so much, but all have always entertained her. She doesn't usually keep the sets built, but after opening the box and building the set for the first time she uses the parts to make her own constructions. It's not that she plays with LEGO every day, but now and then she and her brother Nil get out all the LEGO pieces that are in the house and build a large project, without rules or building instructions.

A few months ago Lluís told Alba LEGO was going to release a new line of sets oriented to girls, with new characters that are more similar to a doll than the classic minifigs are. Alba was used to minifigs and couldn't imagine what those new figures would be like. Lluís told her he'd get her a Friends set - which is what the new LEGO theme is called - so she could build it and give him her opinion. And Alba would have the privilege of building the set before it came out on the Spanish market.

The day Alba received the Friends set she was pleasantly surprised. It was very different from the usual LEGO boxes. The colours, the decoration and the shape of the new figure



were much to her liking. Being a girl, she felt more attracted to that "look" than to the more neutral look of the usual LEGO sets.

She opened the box without being too careful. She didn't use the punched opening area, but literally tore the box open. She wanted to get what was inside as fast as possible. As always when she gets a new LEGO set, she got out the instruction booklet and quickly started to build. She had to rebuild certain parts a couple of times because she didn't pay attention and wanted to build it as fast as possible. After a short while the set was built and she spent quite some time playing with it.

Alba's opinion about this new LEGO theme is very positive: "It's a different LEGO because there are pets and the people are more beautiful, cuter. The colours are also different. The set is bright and colourful. It's different from normal LEGO because the parts (accessories) are larger."

The characters who are more human-shaped than minifigs, larger and articulated, give a lot of room for play, even combined with dolls of other types, which makes LEGO Friends not just a toy to play with, but it integrates better into the daily play scenarios of girls.

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Review 4204: The Mine

By lluisgib



Set: The Mine
Set number: 4204
Number of parts: 748
Minifigs 4
Recommended retail price: 79,99€

Keeping in mind how things have happened in the last couple of years, it isn't hard to know that in the second semester LEGO® launches the "interesting" sets for the year, defining as interesting those that are outside the traditional police, fireman or airport sets.

During these years there have been several surprises, like the coastguard, farm or harbour sub-themes. This year there is a major surprise as it is something that has never before been done in CITY: The Mine. It's true that in the past there have been themes like Rock Raiders or Power Miners, but in universes that are independent from CITY. This time we have a real an fully fledged mine.

The theme to date consists of 5 sets and a promotional bag. I don't expect it to go any further. In order to see the characteristics of this attractive sub-theme we'll have a look at the crowning set of this series: The Mine.





It is made up of the façade of the mine, which has a modular design and contains all the necessary accessories for working, a drill and a transport truck.

The truck is probably the most predictable part of the set. It isn't very different from other trucks we have seen in the last 2 years, although evidently adapted to the task it has to perform. The trailer has the typical container which can be lifted to empty it. The cabin is similar to others with small variations.

Looking at the models that are more specific to the mine, the drill has an interesting design. It has large wheels that give it good traction and allow it to go into rough terrain. The driver's seat is in the front right of the vehicle and has no protection whatsoever. The engine is in the back. Using a central liftarm which goes through the whole vehicle you can make the drill head turn to perforate the mountain. As for accessories or characteristics there isn't much to say, but the model is quite attractive.

The part that corresponds to the face of the mountain is the most interesting part of the model. It is made up of 2 modules:
 - The access to the mine, where the drill enters
 - The mountain block with a gate for a mining train and a crane to hoist the mineral onto the truck.

The entrance to the mine has a large door that allows the tunnelling drill to enter. To the side there is an access door for the miners, and on top there is a conveyor belt to transport the mineral from the crane in the other module to truck. I have tried the system, as the set comes with several round bricks 1x1 to simulate the extracted mineral, and it works really well. The hopper that receives the mineral from the crane has a sign (sticker) which informs us that this is a gold mine.

The largest rock part is the most interesting one as far as



design and detail are concerned. The mountain is built using BURP and LURP together with bricks and slopes. In the centre there is arch through which the train enters the mine to extract the mineral. To the left there is a building with a safety door where the explosives and the extracted gold is stored. The safety door is well built and looks like the door of a safety vault. On top of the mountain there is a crane that collects the mineral and takes it to the conveyor belt which is in the other module.

The model is beautiful and quite well represented, but there are a few details that make it an extraordinary set. I will start with the train. It is I'd say a perfect representation of the typical mining train you might imagine. With a limited number of parts this is a more than acceptable model. The wagon is also well represented with little over 20 pieces.

A lot of small details complement the mine, starting with the miner's helmets, a new part that has a stud to attach the light that is necessary for working in the dark. There are also the typical plungers to detonator the dynamite, gold bars, a wheelbarrow, new decoration for the torsos of the minifigs...

It's a great set that shows the possibilities of this CITY sub-theme and that guarantees hours of fun and probably many dioramas with mining scenes.

Acknowledgements: LEGO® SYSTEM A/S and Jan Beyer for this set and LEGO Iberia S.A., Joachim Schwidtal and Rosa Seegelken for the official images.

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Review 4207: CITY Garage

By *lluigib*

Set: CITY Garage
Set number: 4207
Number of parts: 933
Minifigs 5
Recommended retail price: 99,99€

Every year around April CITY fans wait anxiously for the first images of the set nobody expected and that usually stirs our fondest memories of our childhood.

This year, at LEGOWorld Copenhagen and a little earlier than foreseen, our staff member Vicente spotted the "surprise" set for this year, which was hidden in a huge CITY display. A few months later the launch of the 4207 - City Parking was officially confirmed.

The set is an interpretation of one of the mythical TOWN theme sets. To be precise, the 6394 - Metro Park & Service Tower, but adapted to modern times. I say interpretation, because there have been substantial changes for better and for worse. I won't make the mistake of comparing them, but as there is a certain connection between the sets I can't help but comment on the similitudes and differences.

There are some evident differences, like the change from Shell to Octan and the almost testimonial presence of a petrol station in the new set. The similitudes are to be found mainly in the parking, with a lift that gives access to the floors and a car wash. But enough blasphemy already!



The set is visually very attractive and functional, although it is a little fragile if you want to move it. When I started to build it I first made the 4 vehicles. It seems it's not too hard to design variation of the 2006 Police Car (7236) and in this set I have found 4 new and interesting ones. The most outstanding one is the new minivan, an interesting vehicle that is quite different from what we have seen so far, although it is still in line with current designs. In two of the cars there is a captivating change. The wheels of these two vehicles are no longer the typical CITY wheels, which are completely off scale except in 4wd vehicles. Now the rims are the same as those from the RACERS and CARS™ themes, together with narrower tyres, the same ones that were used in the 7731 - Mail Van. This combination of rim and tyre is a lot compact and integrates better with the vehicles. Bull's eye, in my opinion.

The parking has a lot of details and characteristics that provide hours of playing time. On the ground floor there is the typical car wash. Cars can drive through and the brushes turn simultaneously, simulating the car being washed. The car wash is protected by two windows to keep the water in. On the other side is the parking meter, a barrier and a ramp that leads to the lift that will take the vehicle to the corresponding floor to park it. The lift is in the centre of the structure and has access to the platforms on both sides.

On the first floor there is one of the novelties in the design of this set. On the left side there is a booth for the security guard, which has a surveillance station with a computer and a security video camera. Of course there is a security guard watching over the parking. On the right side there is a small mechanical shop for basic repairs. The shop has a tow truck to assist





broken down vehicles. On the upper floor there are 4 parking spaces, two on either side.

The parking is designed in the OCTAN colours (white with a green and a red line). In the top centre there is a large OCTAN logo which partially hides the lever that is used to make the lift go up or down. It's a simple system and from my experience of building and using it, it isn't perfect. The small tolerances in the thickness of the parts, combined with the weight of a car and the platform of the lift mean the lift occasionally gets stuck where the pieces of the shaft meet while going down.

The small petrol station is a little poor and doesn't have a fixed place in the model. It's a pity there is no specific location as this way it looks a bit like an afterthought.

The set has quite some stickers, but contrary to other cases in this model they are necessary to give it a finished look. Without the signs indicating the Parking, the car wash, the mechanical shop or the license plates of the cars the set looks a lot poorer.

Here we have a set that has never been made in the CITY era, with some interesting novelties, that is striking and colourful. Since the set is an exclusive which is not distributed in the normal shops I'm sure it will become one of the mythical CITY sets.

Acknowledgements: LEGO® SYSTEM A/S and Jan Beyer for this set and LEGO Iberia S.A., Joachim Schwidtal and Rosa Seegelken for the official images.

#



Review 6914: T-Rex

Concerning cavemen...

By Jetro



Set: T-Rex
Set number: 6914
Number of parts: 191
Recommended retail price: 14,99€

There is something about the creatures in the Creator theme that strongly attracts me... Maybe it is because the first Creator set that brought me back to "classic" LEGO® building after many years of building exclusively Technic and MINDSTORMS was the 4892 Prehistoric Power, followed shortly afterwards by the 4894 Mythical Creatures. Both these sets revolved around building surprisingly attractive monsters with comparatively simple bricks. And something must have stuck in my mind, because every time I see a Creator set with a creature I am immediately attracted to it.

The 6914 T-Rex 3 in 1 is no exception. Despite the fact that it is supposed to be a ferocious dinosaur my first thought was "cute!" The set does seem to fulfil its goal as my daughter refused to build the main model on the grounds that it was too scary.

Although the main (or should I say biggest) model may be the most attractive one to boys (I saw a few video reviews of boys who hadn't even bothered to build the other models) and has lots of nice articulations, the other two models are by no means inferior builds. Personally I'd go so far as to say that while the T-Rex may be the most spectacular construction I much prefer it's four-legged alternative (which is "evidently" a she and was immediately baptised "Dina" by my daughter). Even the third option – a pterodactyl – has hip and ankle joints and can move its head and tails in the same way the other models can. Another distinction between the main and alternative models is usually the number of parts that are used in each case. In this set, however, a pair of slopes are unused in the Tyrannosaurus and both other models use a large proportion of the available pieces.

With sets like these we hardly ever take a model apart before attempting to build any of the alternatives. This gives you an interesting insight into which pieces are used where. Most of the hinge pieces are used in exactly the same places in all three models, which is hardly surprising since they all represent animals with 4 legs/wings. They each have a peculiar and personal character given not only by the shape of their bodies, but by the features of their heads (and all the mouths can open). And even though my daughter is still outside the age range for this set, she was quick to discover that all three share the same final segment for the tail – economy of building!

One thing I did miss in this set, although it comes as no real surprise, is what got me so excited about the sets that re-

introduced me to the Creator theme some years ago: those sets featured a number of inspirational models for which no instructions were available. For such a comparatively small set as this one, three building options is already quite something, but one of these days we should really try to build something else with those pieces – that's what LEGO is really all about. I'll have to take a trip to the library to get some inspiration (or maybe to Brickshelf). For now I've been told to keep my hands off Dina - she lives in my daughters LEGO city, with a reindeer for a friend and I get to play with the caveman...

Acknowledgements: LEGO SYSTEM A/S and Jan Beyer for this set and LEGO Iberia S.A., Joachim Schwidtal and Rosa Seegelken for the official images.

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Review 9473: The Mines of Moria

By Jetro

Set: The Mines of Moria
Set number: 9473
No. of pieces: 776
Minifigs 9
Recommended retail price: 79,99€

For quite some time it has been my (not so) secret wish that LEGO® would make Lord of the Rings sets. I was immediately captivated by Tolkien's universe when I read The Lord of the Rings for the first time some 25 years ago and I quickly delved deeper into it. Reading everything written by Tolkien I could get my hands on. When I found out a film was in the making I was excited and wary at the same time. Excited, because the epic tale would make a great movie, but wary because films tend to be quite different from the books they are based on and because I was loath to lose (part of) the picture I had forged in my mind. Despite the many deviations and omissions compared to the book, the trilogy was a pleasure to watch and I am now looking forward to the upcoming film version of The Hobbit.

Back in 2001, when the Fellowship of the Ring was first screened, LEGO didn't jump on the bandwagon and it was only logical to assume that it would be very hard to do so years later. However, the filming of the Hobbit has blown new life into the Oscar winning movies from a decade ago, and this time LEGO has not only secured a licence for The Hobbit, but also for The Lord of the Rings. As is to be expected, the licence is related to the film and so the scenes depicted in the sets will be faithful to the film and not necessarily to the book. And again I was torn: LEGO LOTR is great news as it combines two areas of great interest to me personally, but how would it measure up to the film and to what extent would the compromises that inevitably need to be made affect the sets negatively?

There has been much rumour and speculation, from leaked catalogue images to "stolen" pictures at toy fairs, but on the whole the changes we have been able to see in the sets (from preliminary to final product) all appear to be for the better and now that the official sets are available it is time to take a closer look.



There are 7 sets in the LEGO® LOTR theme and they come with a large number of minifigs. Even so you need to get 4 sets if you want to have a complete fellowship and the other sets all contain interesting minifigs to complete the collection. Unfortunately there are only 2 ringwraiths in the series (out of 9 in the book/film), but they come with the beautiful new horses designed for this theme.

With the exception of the smallest set (Gandalf Arrives, 83 pieces, including Gandalf, Frodo and a horse drawn cart) all the sets centre around the battle scenes of the films: the attack of Shelob on Frodo and Sam, The “Uruk-Hai Army” which is a module that can be integrated into the “Battle of Helm’s Deep” set, the “Attack on Weathertop” and the “Mines of Moria”, with an exclusive set called “The Orc Forge” that is a kind of battle pack for the dark forces.

So let’s have a closer look at one of the sets to get a feel of the new LEGO LOTR theme.

The Chamber of Mazarbul

The set I will review in this article is 9473 - The Mines of Moria. Moria is the vast underground realm of the dwarves under the Misty Mountains, which the fellowship need to traverse. There are two iconic scenes in Khazad-dûm as it is otherwise known, one is the flight of the fellowship, down the crumbling stairs and over the narrow bridge and the other the fight in the chamber of Mazarbul on which this set centres.

The Mines of Moria contains four separate structures that form a playscene of the chamber: the doors, one of the walls with pillars, Balin’s tomb and a well.

As mentioned earlier, there are notable differences between the book and the film, and the scenes in the chamber of Mazarbul are no exception. Peter Jackson (director of the LOTR trilogy and of the upcoming The Hobbit) was looking for action and combined as many elements in the same place as possible. In the book, the chamber has two different stone doors, one on either end, and the fellowship go in one and out another. In the film there is only one way out and the doors are wooden. That helps to build up tension as the orcs tear down the doors and allows for a visually different note in the construction in the set. The doors are beautifully detailed on the inside (unfortunately the outside is rather dull) and the set contains a long axe to block the doors against the oncoming orcs. Surprisingly a section of the wall is prepared to crumble and a technic beam is attached to activate the mechanism. It makes the playscene livelier, but this doesn’t happen in the film or the book...

Another difference between the book and the film is the presence of the well. It is here that foolhardy Pippin manages to attract the attention of the orcs by accidentally tipping a dwarf skeleton into the well, together with the bucket and chain it got entangled with. There is a well in the book, but not in the chamber of Mazarbul and it is merely a stone Pippin throws in to gauge it’s depth, although Gandalf is equally angry at him for his foolishness. The LEGO version of the well has a nice octagonal shape, even though it is only 3 bricks deep, using just enough parts to make it look good and give it a mechanism, though I must say this one puzzles me somewhat.. Rather than depending on the skeleton to sit on the edge and only fall in when pushed, a sliding mechanism has been devised that covers the well. The skeleton is placed on top and when the slider is pulled from under it the skeleton drops into the well. What can I say? It works, and it’s probably more reliable for a small kid, but to me the mechanism is a



waste of parts. I love the well though.

Balin’s tomb has a mechanism. In the film the troll shatters part of the tomb with its hammer while attacking the fellowship. It would have been quite hard to recreate this in LEGO and the solution they have come up with is to make a removable lid and place a lever under the skeleton inside the tomb. It takes some practice and a rather strong blow to get any effect out of that mechanism, but the final result is quite nice. Neither Tolkien nor Peter Jackson give any information as to Balin being exceptionally tall. I mention this because the skeletons that come with the set are both minifig size, even though they represent dwarves. A missed opportunity, but not a serious problem.

The fourth element in the set has no less than 3 mechanisms which though nice had me baffled for a while. The element represents one of the walls of the chamber with two columns, the very ones Frodo and the troll play hide and seek around. In the central section of this wall there is a recess that contains a treasure chest which is placed on a slider that can be activated from the rear. The chest comes out and you have access to the jewels that are inside. Check book... no, check film.... no, ... ok... The other two mechanisms are designed to make the pillars collapse (one mechanism for each pillar). Checking... again no reference. These mechanisms provide the set with more action, but where do they come from? It appears they were deemed necessary to make the set more interesting. None of the mechanisms really inspire me, but I suppose a younger audience may appreciate them.

Playing the hero (or the villain)

An important feature of this set are the 9 minifigs it includes. I have already mentioned the two skeletons, so let’s have a closer look at the remaining figures. Four of them are members of the fellowship, Pippin, Gimli, Legolas and Boromir, and with the exception of Gimli who also turns up in the Battle of Helm’s Deep, they are all exclusive to this set. Of course a set centred on Moria without a dwarf would be inconceivable.

The remaining minifigures include two Moria orcs. I suppose they have such a clear, olive green skin because they don’t see a lot of sunlight in the mines, compared to their Mordor cousins who have a dark tan complexion.

Last but not least there is the Troll, the largest "minifig" LEGO® has made to date. A faithful LEGO representation of the one from the film. Both arms and hands are articulated (at the shoulder and wrist respectively), but the legs and head can't move. The Troll is very top heavy and the placement of the legs is such that you need to be careful when placing it or it will easily topple over. The hammer or club it uses as a weapon is nicely built, but there is really only one position for the troll to carry it: lifted up behind its head. In any other position the troll will fall over. As a nice extra, the claws of the troll are shaped in such a way as to be able to accommodate a 1x brick and it can carry a 1x8 brick between them.

Attention to detail

The level of detail in the structures is great and gives the set a very real feel. The dark tan details in front of the door, the use of the new brick-pattern brick, the shape of the columns, the decoration of the doors... Also, the wall section with the pillars is built up of three modules that click together, allowing you to place the independently if you would ever want to. It is a pity that there are no less than 34(!) stickers in this set, some of which are frankly unnecessary while other (the 1x4 tiles on the doors that get a sticker with a wood pattern) could have been replaced by the printed tile that has been included in other sets in this range. However, the marking above the door and on Balin's tomb give the set an extra feel of authenticity.

There is also a whole bag of weapons to be strewn on the floor of the chamber and a nice bone and extra skull, the book of Mazarbul as well as a second book... in short, a set full of details.



The journey continues

The first series of sets is a promising start for the LEGO Middle Earth theme, which in a few months will be expanded to include new sets for The Hobbit. I can only hope there will be a second wave of Lord of the Rings sets in 2013, and that it will fill some of the gaps that this first series has left: no female characters (Arwen, Galadriel and

Eowyn come to mind) only two Nazgul, ... Middle Earth is a large place and there are still many stories to be told. Sauron and the cracks of Doom, the fell beasts the Nazgul ride, Faramir's hideout, to name but a few, but I am confident that this first series of sets is only the beginning of something that will become bigger and bigger.

Acknowledgements: LEGO SYSTEM A/S and Jan Beyer for this set and LEGO Iberia S.A., Joachim Schwidtal and Rosa Seegelken for the official images.

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Review 9398: 4x4 Crawler

By Jetro

Set: 4x4 Crawler
Set number: 9398
no of pieces: 1327
Recommended retail price: 169.99 €

When LEGO® launched the 8275 - Motorized Bulldozer in 2007 there was a lot of expectation: a new system of motors was launched. After decades of the 9V system LEGO Power Functions appeared, and although there were also some other sets that year that included one or more elements of this new system, the Bulldozer was without a doubt the king as in a single set all the elements released so far were included (2x M-motor, 2x XL-motor, PF battery box IR receiver and IR remote). Additionally, the set was an interesting buy both for the set itself and for its value, as although it was the most expensive set in Technic line for that year, the large number of PF elements it included made it doubly attractive.

This year something similar happens from the time the first images of the box of the set appeared. It was clear there would



be some novelties, particularly where motors are concerned. The videos of the model in action taken at a toy fair helped get more information and to a certain extent the same thing is happening as with the Bulldozer: we have a set that is attractive in itself, with the additional attraction that it contains all the new PF elements at a very attractive price.

Opening Pandora's Box

The 9398 4x4 Crawler comes in the usual box for the largest LEGO Technic sets. The cardboard is rather thin, but the box includes a thick lid which on the outside shows the model on a rocky background and a band to the side with all the most attractive elements from the set. Opening the lid you can see the main characteristics of the set. On the back of the box the alternative model is shown, the instructions of which, as usual in sets of this size, are only available in for download from the official LEGO website. This year the alternative instructions have been made available at the same time as the digital instructions of the main model; LEGO has done its homework after the claims from the fans last year.



Upon opening the box and reviewing the contents we find the physical instructions well protected inside a plastic bag and on a sheet of cardboard to avoid them folding or deteriorating in any other manner. This means that also the sticker sheet is in perfect condition. Together with the building instructions there is a sheet that at first glance looks like a set of corrections. It is, however, a reminder to make sure that some of the key steps that might cause problems in the model's proper functioning are carried out correctly.

The parts come divided into bags marked "1" and "2", for the chassis and bodywork respectively, the PF elements come in separate bags and the wheels and rims unbagged.

The new PF elements.

As I already mentioned, the 9398 4x4 Crawler includes several new PF elements. The first of these is a new proportional servo motor. This motor has several characteristics that are worth pointing out. The first instructions you find in the instruction booklet, even before starting to build the Crawler, are related to this motor; you need to connect it to the battery box and briefly turn it on. This is because the servomotor only turns 90° left or right (depending on the polarity of the current applied) and after turning off the current the axis goes back to the "zero" position. In order to build the model correctly it is important to make the initial position of the servo motor is correct.

Another important feature of the motor is that it is proportional. In the 4x4 Crawler this feature is not used as the remote control in this set only allows you to turn the motor 90° in either direction. However, if instead of the remote that comes with this set you use the proportional Train remote you can see how the motor turns from its neutral position to the 90° angle in 7 steps /this can also be done using the rechargeable PF battery, regulating the intensity of the current with the built-in control).

The motor has two connection point for an outgoing axle, one on the front, below the centre of the motor, and the other directly behind it, so it looks as if an axle was connected straight through though in fact there is a 1L distance between the points. It also has numerous mounting points and in the 4x4 it is an integral part of the structure of the chassis.

The second PF element is the "L" motor. Just like the servo motor, it has many mounting points, making it easier to integrate in a Technic model than the "M" motor. Compared to this motor it has a turning speed that is slightly slower (at 9V and without load, "L"=390 RPM, "M"=405 RPM), but considerably more power (approximately 50% more torque and almost twice as much mechanical power[1]).



The set comes with 3 motors, but only one IR receiver as both "L" motors work in parallel. To make this possible it has been necessary to update the IR receiver. Previous versions allowed for the use of two "M" motors per channel, but the "L" motor requires a lot more power and this has been achieved in the new IR receiver which is marked "V2". Other than delivering more power, the receiver is no different from the previous versions.

Building the set

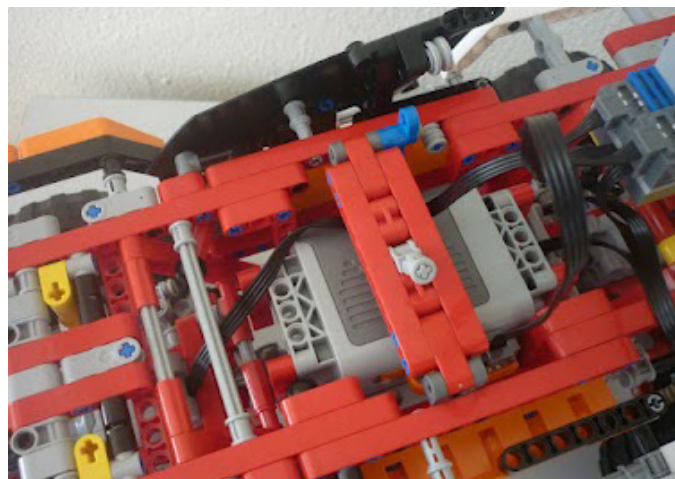
After building the central part of the chassis, with the servomotor as central element, the front and rear axles are connected - both are virtually identical. The connection between these parts of the chassis is made with the Steering Ball Joint Large that were first seen in the Unimog (8110). The Steering Portal Axle of the Unimog are also used to get a good ground clearance, as well as Technic links to keep the front and rear axles in line with the centre of the chassis, although the configuration is different from the Unimog.

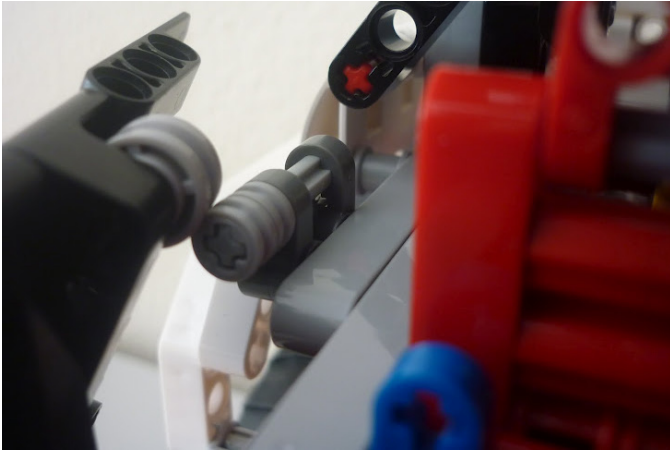
However, that is where the similitudes with last year's flagship end. While the Unimog was an eminently mechanical set, the Crawler is, at least at first sight, a lot "simpler". Even so, this model has a fair number of mechanisms and is in no way less interesting. The two "L" motors are placed on top of either axle, providing a relatively direct transmission system to the wheels. Between the motor exit and the axle for the wheel there are still 5 pairs of gears (6 if you include the internal gearing of the differential), 4 of which reduce the speed to a little under 1 Km/h, but increasing the torque at the wheels by a factor 1:6.48.

More novelties

The PF motors are not the only novelty in this set. There are also a few other new parts. It is the first appearance of the 10197 Axle and Pin connector 90° in a Technic set (previously this part had been seen in Monster Fighters and Ninjago - it is interesting how there are more and more Technic elements in other themes).

There is also a new axle 4L (Tan) with a centre stop. At first sight it isn't evident why this new axle is better than the well-known black 4L axle, but while building the model it becomes clear it is a great addition. When building the differentials with this axle, the stop prevents the axle from going too far into the differential, causing problems with friction. When connecting the front and rear axles to the central part of the chassis the stop on these new axles prevents them from falling out and when using them in the "L" motors it ensures the axles don't





fall out due to vibration and other forces in the model. Is this model really that powerful? Well, we'll see what it is capable of further down, but there is no doubt that the designers it was important as for example the 3L axle on which the upper gear in the Portal Axle turns has been blocked against coming out by a piece whose only function is just that.

Well Built

The construction of the chassis is very compact and a lot of care has been taken in placing the gears in such a way as to ensure they are completely locked in.

Also a lot of attention has been given to making sure no mistakes are made during the building process. To this end some elements have been included whose sole purpose is to "force" a correct construction. A good example of this is the inclusion of an Axle Pin and Bush in the frame that is the basis of each axle. It's only function is to force a specific orientation of the differential. Due to the compact nature of the construction a mistake like that would be very hard to correct later on (without dismantling almost the entire axle) and would have disastrous results as an incorrect placement of the differential would make the axles work against each other.

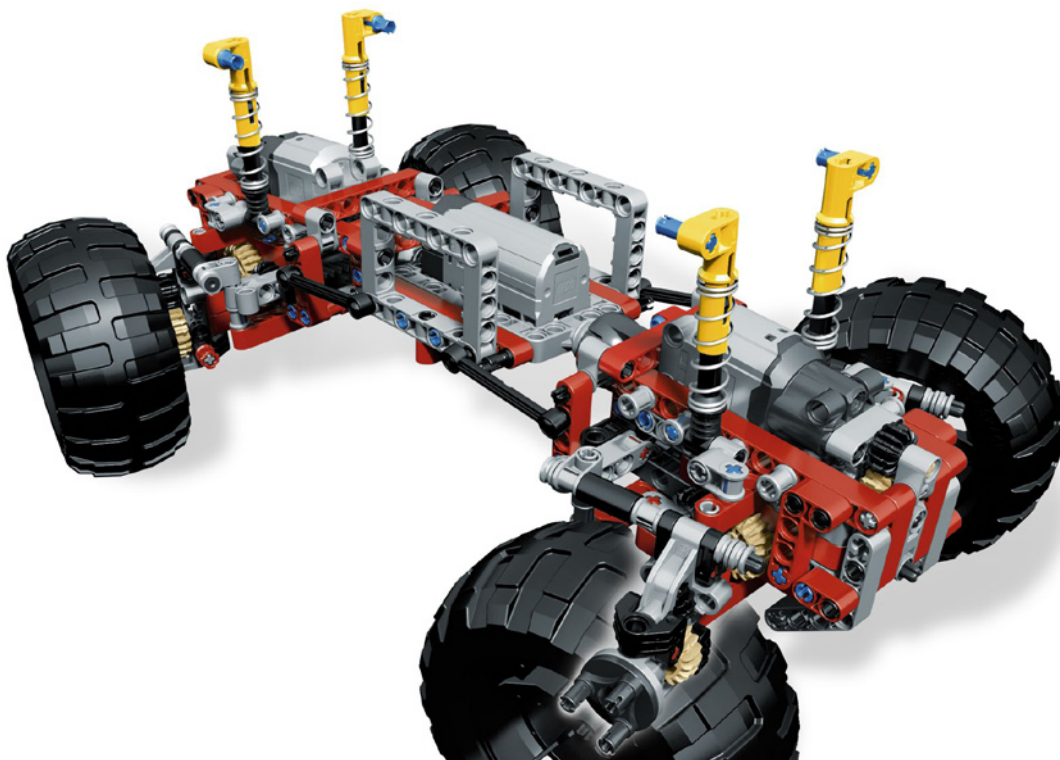
There are also structures that serve to correctly align the wheels and the steering mechanism. This is important as just as in the 8880 Supercar, the axles steer in opposed directions, allowing for a considerably reduced turning radius. The result of these constructions (which are later dismantled to reuse the pieces in other parts of the model) is that there are some elements in the model (pins and axles) that stick out for no purpose afterwards. Fortunately these are quite well hidden and don't make the finished model look any the worse.

Finally it is interesting to mention the mechanism of the doors. On the one hand they are built to limit the opening angle and on the other (more importantly) they have a closing mechanism - an element on the inside of the door that hinges on another in the chassis. In this way the doors can't open by accident.

The bodywork

Although I am still not convinced about the colour scheme of this model (red, grey and black for the chassis, black orange and white for the bodywork) it is an excellent way to include some elements in colours that fans had been asking for. It is the first time the Panel Curved 11x3 appears in white and a number of elements are added to the list of available parts in orange.

Just like the chassis, the construction of the upper part is very robust. In addition, the system for connecting the body to the chassis uses a hinge construction at the back, allowing the whole upper part to lift (as if it were one large hood) to provide access to the battery box compartment. This is located on top of the servomotor. As a consequence, the centre of gravity of the Crawler is a little high, but there is no better place in the model without making big changes. Curiously, the battery box is not fixed but "trapped" between the servomotor and a bar on top which is locked in place with a latch. Taking out and putting in the battery box is very easy and in order to turn it on or off there is easy access opening the door on the side of the driver (which curiously is part of the chassis).



Let's play!

The 4x4 Crawler is surprisingly robust and very powerful for a LEGO® toy. Evidently it's no match for other radio controlled vehicles, but the concept is completely different. Even so, the long travel of the suspension and the power of the "L" motors make it a vehicle that is slow, but prepared to face serious obstacles. Keep in mind we are talking about a toy made with plastic pieces and as such the designers have tried to reach the limits of what is possible, but maintaining a safety margin for the integrity of the pieces.

How does the vehicle respond to uneven terrain? On the first pages of the building instructions LEGO advises this is an indoor toy. Not only because of the interference direct sunlight can have on the IR signal from the remote, but also because the gears and motors are not protected against external elements (mud, water) that would deteriorate them. Even so there are already several videos on YouTube showing the Crawler outside with a very reasonable performance.

It would be a mistake to compare this set to the Truck Trial vehicles made with LEGO and their performance. Although it is true that those are comparatively more powerful and manage to overcome much bigger obstacles, the techniques used in these vehicles are not appropriate for a children's toy. These vehicles go beyond the safety limits (more than once a gear or even other LEGO part is broken due to their extreme power), at least for a toy in the hands of a child, which doesn't mean that the selection of parts included in this set isn't an interesting starting point for those who want to get started with Truck Trial, maybe starting by modifying the original design of this set.

Overcoming indoor obstacles, the 4x4 Crawler is powerful. Due to the reinforcements, the distance between the floor and the axles of the Crawler is slightly less than in the Unimog, but the height of the central part allows the Crawler to, for example, climb onto its own box without much complication. The fact that the centre of gravity of this vehicle is relatively high means that, even though the suspension has quite some travel, if one side is lifted too much it rolls over quite easily. This is where the robust design and the closing mechanism of the doors



prove their importance. Even after rolling over several times the Crawler is still intact and no parts have come loose. It's great fun to play with the Crawler and experiment with the best angle for overcoming different obstacles.

For the Technic lover not all the fun is in remote controlling a vehicle. The mechanisms and their design are also important. One thing that stands out in this model is that although it isn't conceived as a modular set, it is very easy to disengage the "L" motors (maybe to use them in another project :D). Pulling out 4 Pins with Stop Bush the motor comes out easily. It only requires taking out another two bushes with their corresponding Axle Pins and the Links on either side of the axles and you can disengage the Steering ball Joint Large, effectively separating the entire rear and/or front axle. Ready to start making modifications!

Another easier option is to customize the top of the Crawler. The B-model instructions already give an idea of the possibilities of this model, turning it into a truck. The first proposals have already surfaced, like for example a Buggy (modifying the angle of the suspension as well). Are you ready to start experimenting with this set? I'm curious to see all the modifications that will no doubt be shown on different forums and picture sites.

Let's play!



[1] technical information extracted from Philo's motor comparison page <http://www.philohome.com/motors/motorcomp.htm>

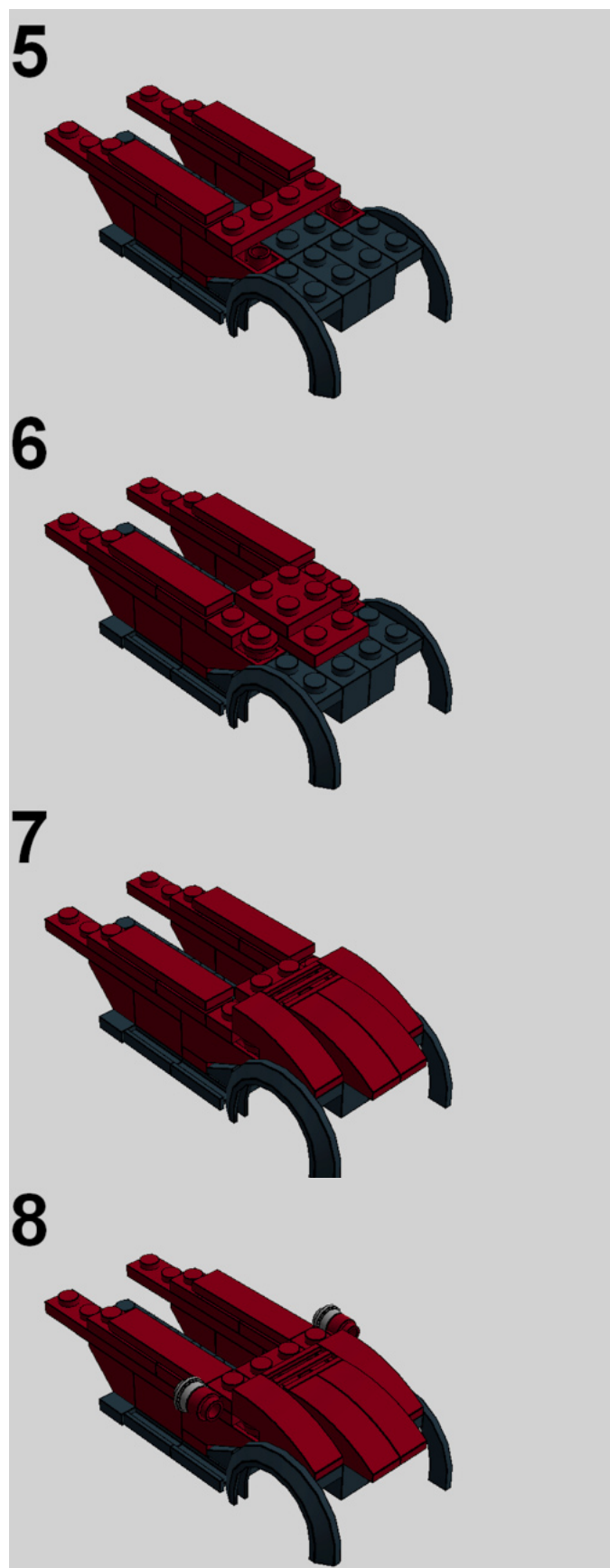
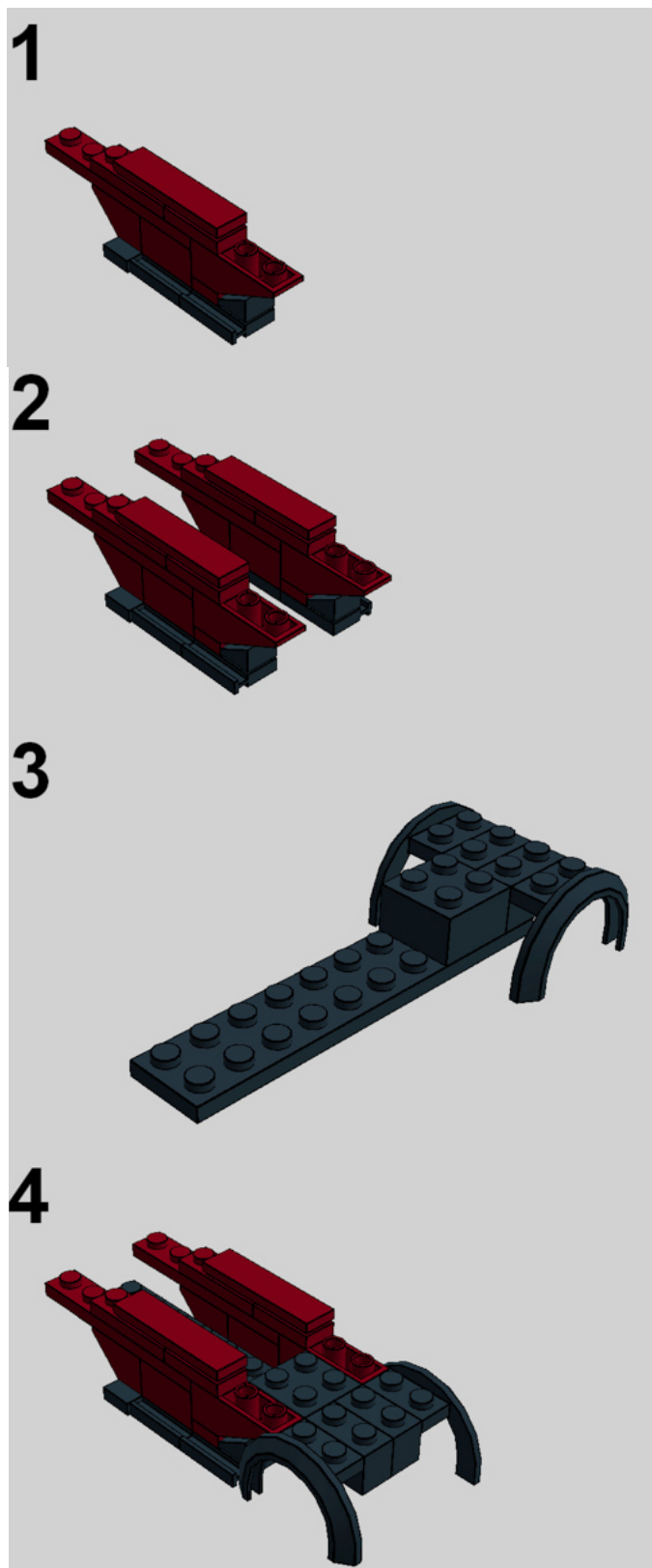
Acknowledgements: LEGO SYSTEM A/S and Jan Beyer for this set.

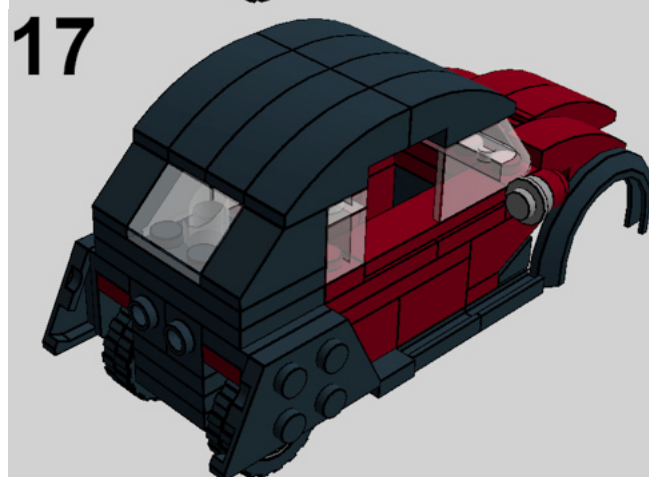
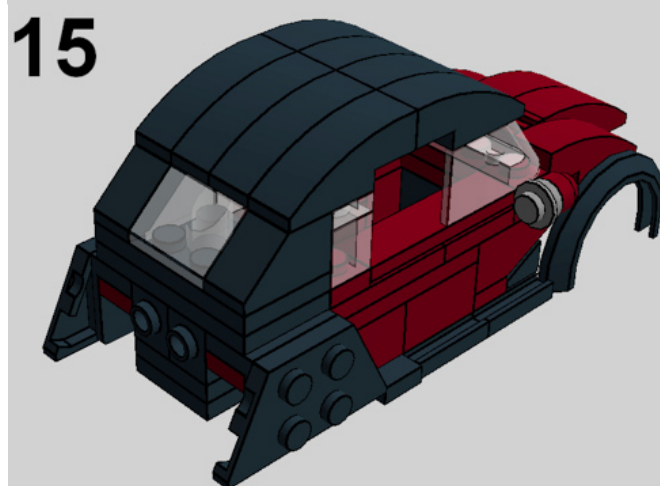
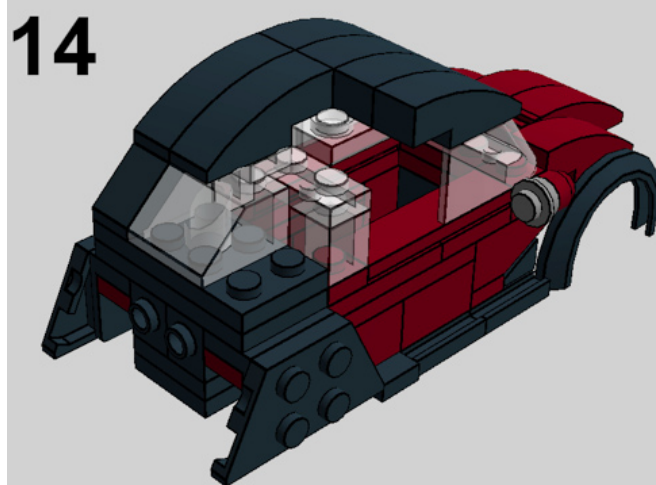
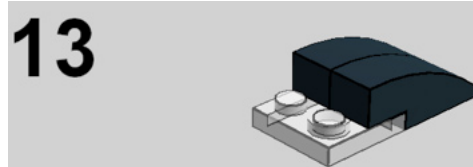
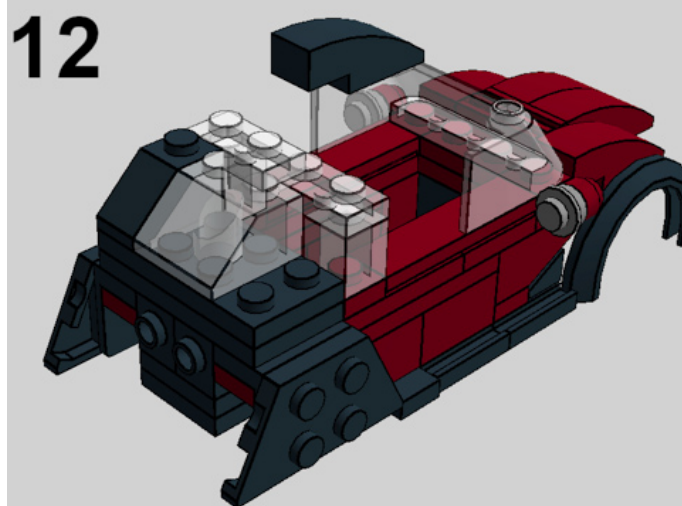
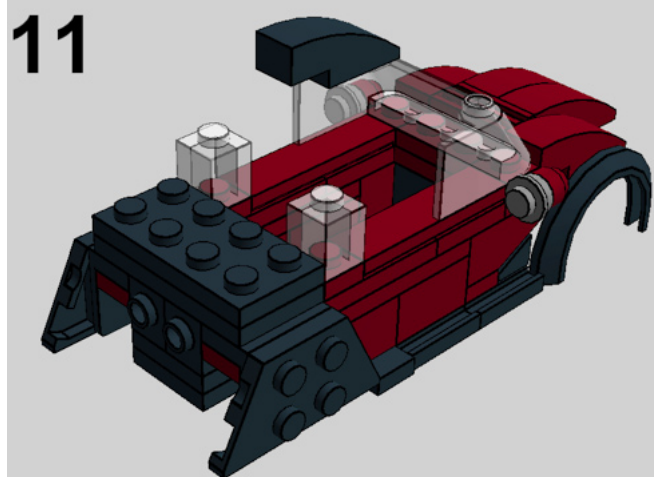
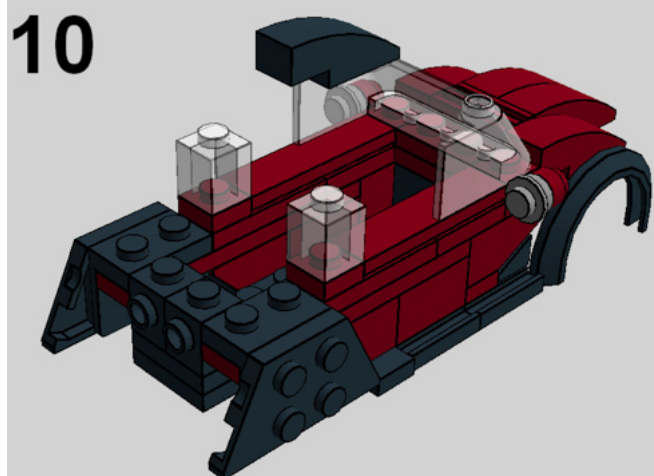
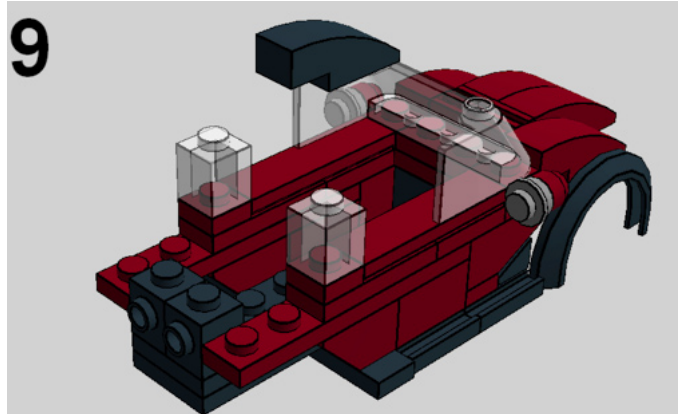
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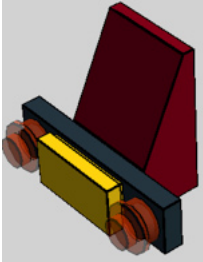
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Created by Henrik Hoexbroe, 2012.
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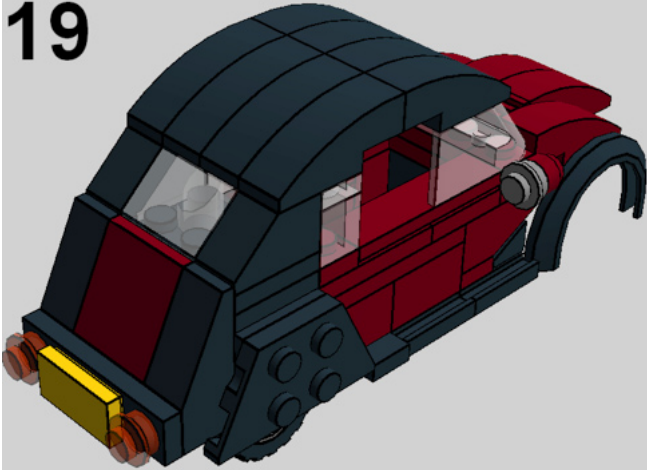




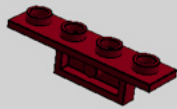
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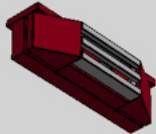
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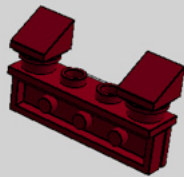
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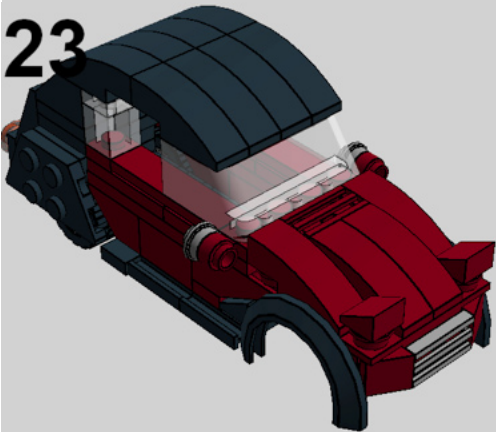
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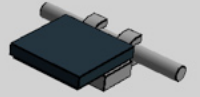
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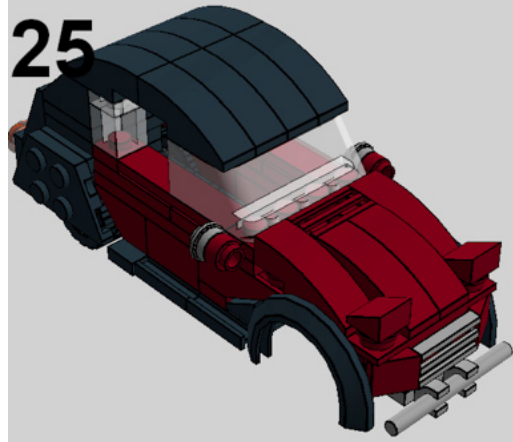
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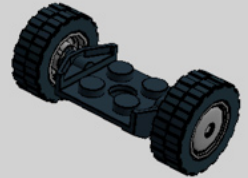
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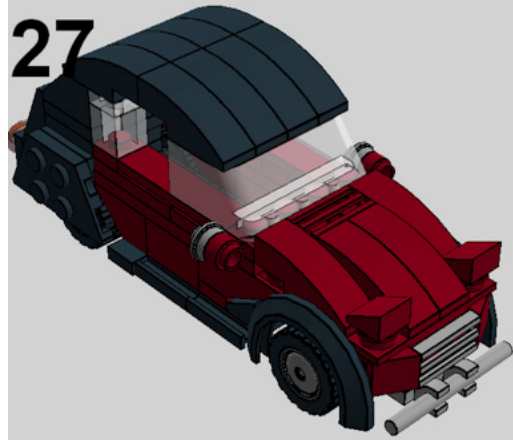
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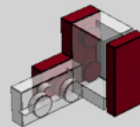
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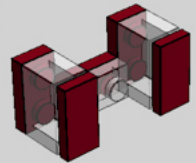
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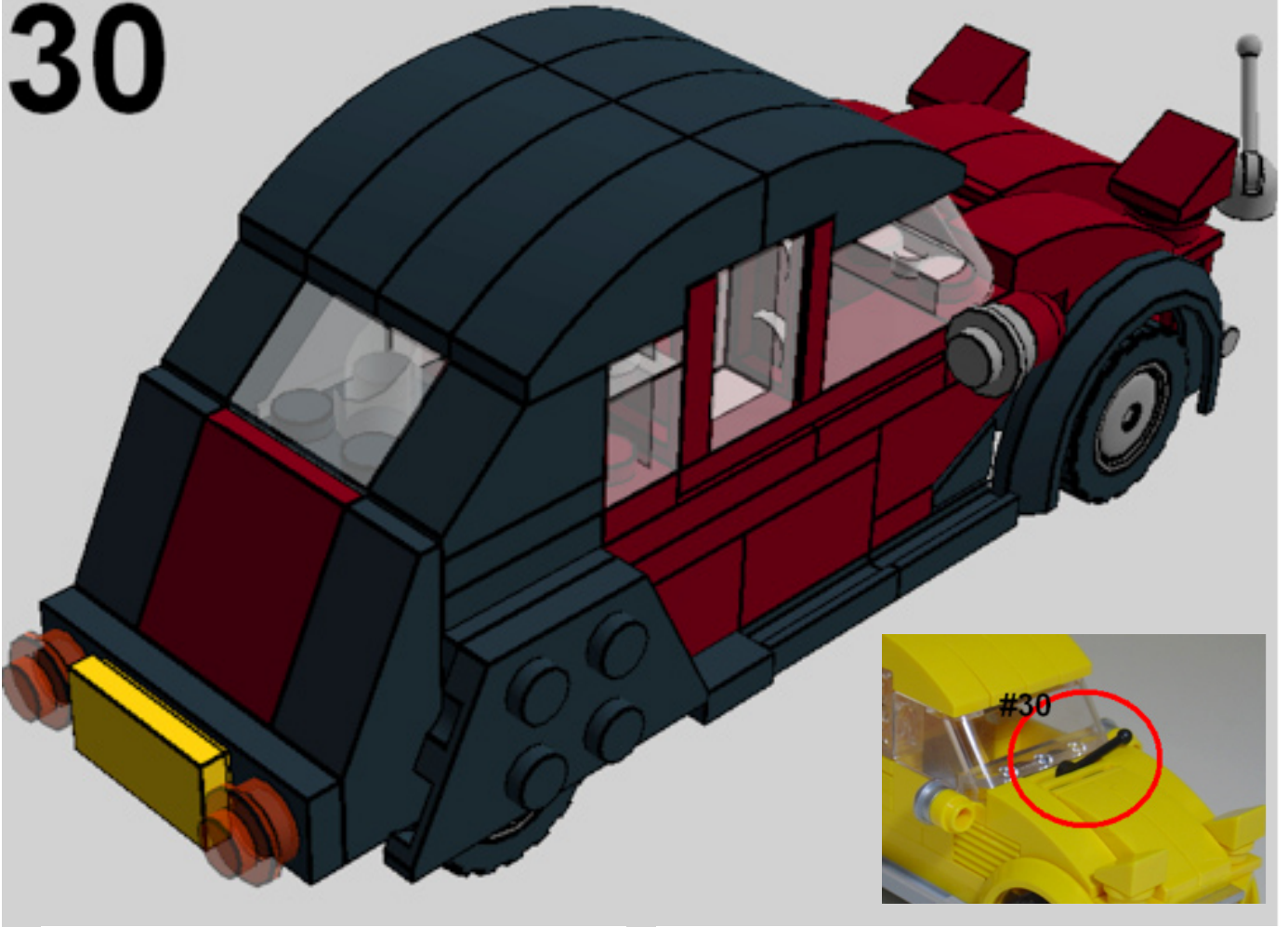
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| 2x | 30510 BRICK 1x1 - Transparent | 2x | 4153454 BRICK 1x2 - NewDark Red | 2x | 306510 BRICK 1x2 WITHOUT PIN - Transparent | 2x | 4154451 RIVET PLATE 1x2 / 2x2 - Black | 1x | 4156021 RIVET PLATE 1x2/1x4 - NewDark Red | 1x | 4156027 WINDSCREEN 36 GR. 30x11 1.0 - Transparent |
| 1x | 30028 BRICK 2x2 - Black | 2x | 4558951 BRICK 1x1 W. 1 HX0B - Black | 2x | 4263940 ROOF TILE 1x1x20, PC - Black | 4x | 4824473 BWM NO.2 011.175x6.2 - Silver Metallic | 4x | 4161053 TYRE 01T.5, X16, 24 - Black | 1x | 4600206 BEARING ELEMENT 2x2, DOUBLE - Black |
| 4x | 4258211 ROOF TILE 1x1x20, PC - NewDark Red | 2x | 304026 ROOF TILE 1x2x4P - Black | 2x | 4224320 ROOF TILE 1x2 RV - NewDark Red | 1x | 4015726 BEARING ELEMENT 2x2 2x3 - Black | 1x | 4211620 LIGHT SWORD - BLADE - Medium Stone Grey | 1x | 4232205 MIN ANTENNA - Medium Stone Grey |
| 2x | 426626 ROOF TILE 1x3x2P - Black | 2x | 4240904 ROOF TILE 1x3x2P INV - NewDark Red | 1x | 302040 ROOF TILE 2x2x4P - Transparent | 2x | 4205489 BRICK 2x4x1 W. SCREEN - Black | | | | |
| 1x | 4162215 ROOF TILE 2x3x2P - NewDark Red | 8x | 4251161 BRICK W/BOW 1.0 - Black | 4x | 4258211 BRICK W/BOW 1.0 - NewDark Red | | | | | | |
| 4x | 4153501 PLATE 1x1 - NewDark Red | 1x | 302326 PLATE 1x2 - Black | 3x | 302210 PLATE 1x2 - Transparent | | | | | | |
| 2x | 4162502 PLATE 1x2 - NewDark Red | 2x | 379426 PLATE 1x2 W. 1 HX0B - Black | 2x | 4154223 PLATE 1x2 - NewDark Red | | | | | | |
| 2x | 4154227 CORNER PLATE 1x2x2 - NewDark Red | 1x | 4152633 PLATE 2x2 - Transparent | 2x | 4152160 PLATE 2x2 - NewDark Red | | | | | | |
| 1x | 371026 PLATE 1x4 - Black | 2x | 4154219 PLATE 1x4 - NewDark Red | 2x | 4154108 PLATE 1x5 - NewDark Red | | | | | | |
| 2x | 302026 PLATE 2x4 - Black | 1x | 382326 PLATE 2x10 - Black | 4x | 4208387 PLATE 1x1 ROUND - NewDark Red | | | | | | |
| 2x | 614141 PLATE 1x1 ROUND - Tr. Red | 2x | 453969 PLATE 1x1 ROUND - Silver Metallic | 2x | 4531412 PLATE 2x4x1P - Black | | | | | | |
| 1x | 4211350 RADIATOR GRILLE 1x2 - Medium Stone Grey | 1x | 4162204 RADIATOR GRILLE 1x2 - NewDark Red | 2x | 4156763 FLAT TILE 1x2 - NewDark Red | | | | | | |
| 1x | 30624 FLAT TILE 1x2 - Bright Yellow | 2x | 4273614 LAMP HOLDER - NewDark Red | 2x | 4154220 FLAT TILE 1x4 - NewDark Red | | | | | | |
| 1x | 30626 FLAT TILE 2x2 - Black | 4x | 4107701 PLATE 1x2 WITH SLIDE - Black | 1x | 4515173 PLATE 1x2 WITH SLIDE - Medium Stone Grey | | | | | | |

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Pillars of the Community: The Brothers Brick



By HispaBrick Magazine®

Pictures by The Brothers Brick

In this issue we interview the founder of most famous and most viewed blog about LEGO on the Internet, Andrew Becraft of The Brothers Brick.

HBM: How did the idea of TBB come up and what was its original purpose?

AB: I started "Dunechaser's Blocklog" back in 2005 to highlight my own LEGO models – mostly minifigs at the time. By the time six months had passed, I was highlighting models and minifigs from lots of people, and I wanted help, so I asked Josh Wedin to join me. That meant the blog wasn't just "Dunechaser's" anymore, so we held a contest to change the name. Josh and I liked how LEGO can tell a story, so we chose "The Brothers Brick," like "The Brothers Grimm." We've been telling stories with LEGO ever since.

HBM: To what degree has that goal been fulfilled ?

AB: The Brothers Brick has become far more successful than we could ever have imagined. We highlight LEGO models from all over the world, as well as LEGO news, reviews, and interviews. Tens of thousands of people visit the site every week, but we take the most pleasure when something we post sparks an interesting discussion in the comments.

HBM: How many people are working on the site and how did you meet? (You can do a presentation of the team here if you like)

AB: Today, we have twelve contributors, from all over the world. Since we're an English-language blog, most contributors are naturally from the United States, Great Britain, Australia, and Canada, but Croatian LEGO fan Matija Grguric recently joined us as well. In general, we invite people who are active in the online LEGO fan community and who are good builders themselves.

HBM: How do you distribute the work?

AB: We don't really distribute the work in any specific way. We tried that for the first few years, with each contributor responsible for specific themes, like Castle, Town & Train, or Space. But we've found since then that it's simpler if people just blog what they like, regardless of the theme or where they found it.

HBM: A website like The Brothers Brick should cost money. How is it funded?

AB: Yes, it's not inexpensive to run a website that averages one million page views per month. To me, advertising is a "necessary evil" to cover server and bandwidth costs. However, we usually have money left over in any given year, and we turn that back around into the LEGO fan community. We sponsor events like BrickCon each year in Seattle, for example. But having to cover expenses means advertising is necessary, and for a LEGO fan site, the most logical way to do that is to sell some LEGO through the LEGO Shop online. Naturally, that changes our relationship with the LEGO Group.

HBM: What is your relationship with TLG?

AB: Our relationship with LEGO has evolved considerably over the years. Before we moved to our own domain at Brothers-Brick.com near the end of 2006, running the website was free, and there was no need for advertising. By adding advertising through LEGO's affiliate program in the US, UK, and Canada, we have much more frequent contact with LEGO about new and upcoming sets, to coordinate the release of information timed alongside launch events at fan conventions, for example.

Getting this type of information from LEGO directly makes the information much more reliable, but it also means that we tend to avoid blogging about poor-quality information like unconfirmed set lists or low-resolution scans from LEGO's retailer catalog.

HBM: Have you had problems with TLG due to the news leaks?

AB: I think people suspect that we don't highlight that kind of pre-release information because LEGO has asked us not to post "leaks." To be honest, "leaks" are LEGO's problem, not ours. (Occasionally we are contacted by someone who wants to share leaked information with us. That information is stolen, and The Brothers Brick does not trade in stolen goods.) Regardless, we decided several years ago to focus on reliable, high-quality news about LEGO sets and product releases, which means that we do find ourselves relying on the LEGO Group's official sources more often than we did in the past. Thankfully, LEGO knows that we exist, and it's rare that we're not one of the first websites to release information.

However, there have been times when we've highlighted high-quality, reliable information from a source other than LEGO. For example, Amazon.com was the first place most of us ever heard about the Prince of Persia sets – complete with high-resolution photos, prices, and release dates. We promptly blogged about this news, but LEGO sent their lawyers after us (not after Amazon.com, as far as we know). We're a small, fan-run website, and we don't have the resources to fight a legal battle with LEGO, even when we're in the right, so we agreed to take the pictures down. LEGO hasn't pulled a stunt like that in several years; I think they've learned that they do more harm than good when they punish LEGO fan sites rather than trying to fix the information leak at the source.

HBM: Which criteria do you follow to publish a MOC in the Blog?

AB: That depends on the contributor, I suppose – we each have our interests. Two things that are fairly consistent across all our posts are that the models are well-presented and that the photograph itself is well-sourced.

Far too many LEGO® models are poorly lit against a cluttered background, even when the model itself is pretty good. When I've found ten great MOCs and only have time to blog two, the presentation of the model can be the deciding factor. Thankfully for LEGO models overall, photography has improved dramatically over the last five or six years. Unfortunately for us, that just makes it even harder to pick the best ones to feature.

It's also important that the builder gets well-deserved credit for the model that they've built. Until a few years ago, LEGO fans were talked about on major websites as though we were a nameless bunch of nerds who had too much time on our hands. As a result, websites and blogs would do what all our relatives do in email – “Look at this hilarious thing that someone built!” I felt that both builders and their models deserved to be taken seriously. Today, websites like Gizmodo, Boing Boing, MAKE, and others do just that, crediting both the builders and the talent that goes into building the model. I like to think that The Brothers Brick influenced that change in some small way.

HBM: After so many years blogging the best MOCS of Internet, is it difficult to find new material that surprises you every day?

AB: Yes. Even when I find MOCs to blog, I sometimes find myself with nothing to say. That's when I take a break from blogging for a while and focus on other interests. I even build myself sometimes!

HBM: During these years of daily following the LEGO community, which do you think are the main changes that have occurred in the AFOL community?

AB: The threat of Brickshelf going away for good back in 2007 has had the single greatest negative impact on the AFOL community over the last six or seven years. I'm not exaggerating. As a result, the LEGO fan community splintered into all sorts of different directions. Even those who argue that most of us ended up on Flickr don't account for the fact that Flickr itself is split across hundreds of groups. These groups themselves, combined with commenting directly on photos, have pulled discussions away from the traditional LEGO fan communities like Classic Castle, Classic Space, and so on. Whether directly or indirectly, the uncertainty surrounding Brickshelf's future splintered a fairly unified community to all corners of the web.

Now, all that said, I actually think we're in a better place than we were five years ago. Sites like Flickr and blogs like ours have exposed a huge number of people to LEGO in ways that a standalone site like Brickshelf never could have.

HBM: Have you done any activities in “real life”? Can you explain them?



AB: I attended my first SEALUG (Seattle LEGO® Users Group) meeting in May 2006, and attended BrickCon here in Seattle later the same year. I've also attended BrickFest when it was in Portland, and contributed to LEGO displays at Emerald City Comic-Con earlier this year. After six or seven years interacting with fellow AFOLs only online (going back to the very earliest days of FBTB), it was wonderful to meet people in person whom I'd only known by their screen names. Today, some of my best friends "in real life" are LEGO fans, and LEGO is one of the things that keeps me close to my younger brother, who travels up to BrickCon each year.

HBM: Can you explain any interesting anecdotes related to Brothers Brick?

AB: I think of myself as a reasonably talented writer and editor who can build some cool things now and then. I'm proud of what TBB has accomplished, but I don't think of myself as particularly interesting or worthy of celebration. But at least once every LEGO convention, someone will see my name, see "The Brothers Brick" on my name badge, and ask something like, "Are you that Andrew Becraft?" This is mostly embarrassing, and I always suspect that I'm a disappointment in real life to fans of The Brothers Brick, but it is amusing to be treated as a celebrity from time to time.

HBM: In your opinion, which is the key point for TBB to become a reference blog in the AFOL Community?

AB: Consistency. I can't say that we always succeed at this – either in the quality of the models that we highlight or ensuring we don't miss anything interesting or important – but a consistently high level of writing about interesting LEGO models, posted on a consistent basis is what we strive for.

HBM: How much time do you spend to keep TBB running?

AB: I used to spend three hours every evening, and many more hours each day on the weekend. That wasn't sustainable. This is one reason we bring on new contributors from time to time, ensuring we have a consistent rate of new posts without overburdening our contributors – all of whom have relationships, careers, and other aspects of real life that are far more important than LEGO ever can or should be.

Every one of our contributors is a volunteer. We do this because we like doing it – like writing about LEGO, like contributing to the conversation across the LEGO fan community, and even like finding ourselves representing the AFOL community to casual fans and "observers" who don't build themselves. But one thing I don't want The Brothers Brick to ever feel like is work – it's just something we do in our spare time, for fun.

HBM: How do you see the future of The Brother's Brick?

AB: To be honest, I think I kind of like things the way they are. I'd like us to do more interviews and set reviews, but BrickJournal does a great job at the former while BrickSet does a fantastic job at the latter. We wouldn't be filling a gap by doing more, I think – just creating more work for ourselves. And as I said earlier, "work" is the last thing that I want TBB to feel like. LEGO is fun, and that's what The Brothers Brick is all about.

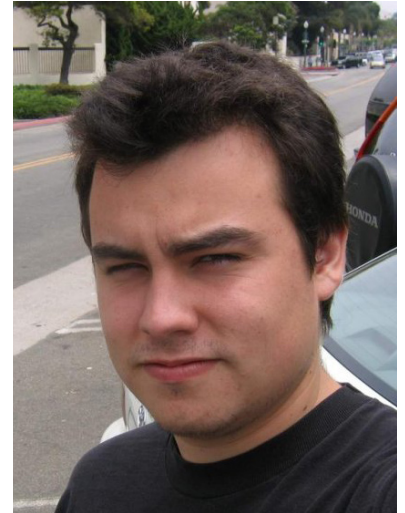
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Great creators of the world: Bruce Lowell

By HispaBrick Magazine®

Pictures by Bruce Lowell



HispaBrick Magazine®: Name?
Bruce Lowell

HBM: Age?

BL: 27

HBM: Nationality?

BL: American

HBM: What do you do normally?

BL: I work as a computer technician.

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

BL: Probably when I was around three years old. I don't remember a time that I didn't have LEGO to play with.

HBM: Which was your first set?

BL: The first set I remember my parents purchasing for me was 6660 Hook & Haul Wrecker

HBM: And your last set?

BL: The latest set I purchased was 9490 Droid Escape

HBM: Your favorite commercial LEGO building theme?

BL: Star Wars™!

HBM: What is your favorite LEGO element and why?

BL: 4733 Brick, Modified 1 x 1 with Studs on 4 Sides
This is the quintessential SNOT (Studs Not on Top) piece; it allows building on the X, Y, and Z axes in the smallest space possible.

HBM: Which part would you like LEGO to produce?

BL: I have a long list, but one I've wanted lately is a 1x2 plate with a stud on only one side.

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

BL: On average about three hours a week.

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

BL: They have grown up with my building LEGO so they tend to accept it as something I do for fun, but usually when they see something I build they're reminded that it can also be an art form and not just a hobby.

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

BL: I usually come up with a basic design or a specific piece or piece combination in my head, and start building it as soon as possible. I usually do not draw up designs beforehand.

HBM: One of the topics on which you like to build more is everyday objects. Why are you searching for the perfect imitation of such objects? What do these objects have in common for you to replicate them?

BL: I tend to translate what I see in my everyday life into LEGO in my mind, and it makes sense for me to build some of it. I used to think of myself as just a Star Wars or minifig builder, which prevented me from building a lot of everyday objects, but I've found a lot more inspiration and I've had more fun building some of the more common things I see in my life, and it also has a broader appeal.



Bruce Lowell | flickr.com/bruceywan

HBM: Sometimes you build at minifig scale; is it more difficult to you to create at this scale?

BL: All building scales have their unique challenges, and minifig scale is obviously not excluded from this. I think my mind gravitates to minifig scale because LEGO® System has been around as long as I've played with LEGO, so sometimes it can be difficult to think outside of minifig scale. Because minifig scale is small, you have to be very precise about which details are the most essential to convey what a particular object is.

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

BL: Right now I'd have to choose the Oscar Mayer Wienermobile. I was very happy that I was able to incorporate the sphere design I created almost ten years ago as the basis of it, which was actually the first MOC I had planned for the sphere. I'm happy I did wait until now to follow through with the idea because a good amount of the pieces that helped perfect the MOC were not available ten years ago.

HBM: The increase of AFOLs and lines like Star Wars™ create new possibilities not imagined before by LEGO. What do you think about the old school LEGO and the new LEGO?

BL: I have a great admiration and fondness for the beauty of LEGO from the 1980s and before, considering the limited parts and colors available at the time, but some of that might also



 Bruce Lowell | [flickr.com/bruceywan](https://www.flickr.com/photos/bruceywan/)



Bruce Lowell | flickr.com/bruceywan

be the nostalgia of my childhood. The increase in the color palette, the transition in parts from angular and studded to curved and tiled, and the amount of parts available has made building much more fluid and more realistic.

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

BL: I like the challenge of building within the framework that LEGO gives us, which is why I stay away from non-official elements as a rule. Occasionally if a MOC or commissioned piece call for it I will create a sticker or use engraved bricks, but when I do I like to keep it to a minimum and utilize them in a way I think LEGO would if they were building what I was.



Bruce Lowell | flickr.com/bruceywan

HBM: In addition to the Lowell sphere, lately you are experimenting with other surfaces derived from the sphere. Is it a way of challenging the square shape of the LEGO brick?

BL: Definitely. I've always liked experimenting with SNOT and other non-traditional building styles. What I like most about SNOT building is that it allows a far greater "resolution" in building, which means that MOCs can be more accurate in their shaping and successful in their completion. Using the Lowell sphere as an example it is very round for being only 7 studs in diameter. If the same size sphere were to be built traditionally (studs up) then its outcome would be much less rounded.



HBM: Recently you have faced Legohaulic in the Iron Builder Contest. Is it hard not to draw on opponent models to find new uses for the part chosen for the challenge?

BL: When I have an idea for a MOC I purposely avoid looking at what other people have done to try and keep my design completely my own. With Iron Builder it was difficult because Tyler (Legohaulic) and I had to see what the other was making for the entire month of the contest. Seeing what he built helped me constantly try and think of new and better ways to use the part. I'm very fortunate to have gone up against such a good builder who never let me take a break for the entire month! And looking back, I've extremely pleased with the MOCs I created during the contest.

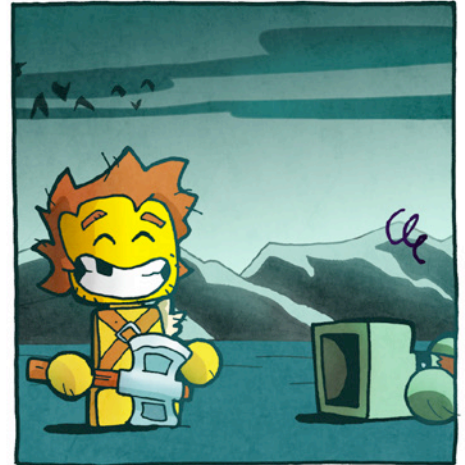
HBM: How do you think of the combinations of the different parts from the minifigs for your fantastic minifigs of famous characters?

BL: I love minifigs, so I try and stay updated on any new minifigs and printings. Having a good working knowledge of what is available helps me make connections as to what part combinations would work well to make a certain character. I also keep my printed minifig pieces sorted by categories (for example happy faces and angry faces or space torsos and pirate torsos) that I can browse on a wall to come up with as perfect a combination as is possible. Since I try not to use any custom parts or prints, most of the character minifigs I make are very close to what they should be but could be perfect if LEGO were to make an official version.

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Bruce Lowell



How to collaborate with us

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ISSN 1989-0982



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