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Frontcover by Dennis Glaasker (Bricksonwheels)
Backcover by Luke Hutchinson (Derfel Cadarn)

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Editorial

By A. Bellón (Legotron)

A new edition of our magazine is already out! Every single edition - and this is no. 017 - involves a great number of working hours in writing, translating and laying out all the articles. Such a task is possible thanks to the joint efforts of the HispaBrick Magazine® team and to the enthusiasts that collaborate to the magazine with their articles.

The fact that there are certainly many fans who enjoy our magazine is the best reward to all our efforts. The previous edition of HispaBrick Magazine®, with more than 20.000 downloads, was a dream we never imagined when the project started out five years ago. That is why we want to thank all our readers for such support, for it gives us strength to carry on and encouragement to improve the quality and the contents of our magazine

Like other editions, we have tried to include a variety of topics, reviews of sets of different themes, book reviews, interviews with relevant people in the LEGO® world, MOCs, events, new features, etc. The contents and the distribution of the articles is carried out in accordance with the contribution of the magazine team and collaborators. This is one of the reasons why we like receiving articles from fans from different countries as it gives a broad view of how our hobby is felt everywhere in the world. And also because we love to have your opinions, suggestions and proposals.
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HispaBrick Magazine® celebrates its 5th anniversary. We have made a limited edition of 049 minifigures with the logo of our 5th Anniversary and we offer you a chance to win one. How? Visit our Facebook page, click on "Like" and participate in the contest we have organised. We will draw a winner from among all the participants who will get one of the minifigures. The contest ends on September 30th at 23:59 CET. Good luck!!!

From two to eighteen wheels

By Dennis Glaasker (Bricksonwheels)

When HispaBrick Magazine® asked me if I was interested in being in their magazine and do a feature article, that was an easy decision. In my world there is a limited number of good quality LEGO® magazines and internet blogs to support the big community, and HispaBrick Magazine is among my selected favorites. That said let me introduce myself first: My name is Dennis Glaasker, but many might know me better as Bricksonwheels.

Since the seventies I seem to like the small bricks from Denmark. I just love building scale models from trucks, cars and bikes, with LEGO® as a medium. I have done plastic kits and die casts as well, but nothing is as much fun as building highly detailed models out of LEGO® to me. I have always liked almost anything on wheels, especially the tuned and customized vehicles, and these have become my main theme to build.

Besides building scale models I also like photography, music, drawing and DTP design. Creativity is the keyword, and this within family environment. I have a wife and kids and I like my hobbies being family friendly. My kids often help me sorting bricks or sometimes do some mild work on a build. They like LEGO® as well, but slowly they come to an age where it becomes less cool, a phase I have been in as well when I was a teenager. I picked up my hobby again in the late 90's. I bought a Model Team® truck just for fun, and slowly after that more bricks came and I started building my own things. This was also the time the internet arrived and I got inspired on the webpages of my friend and fellow Dutchman Dennis Bosman, another builder of scaled trucks. One thing led to another and when I found the ways to buy single bricks instead of sets my collection grew steadily and each new build was bigger and better than the one before. I have always tried to push for new levels of detail and accuracy since then.

A big step forward in this respect came around 4 years ago when I met a guy that could do electroplating on ABS plastics in factory environment. This is a technology where true chrome is applied on a polymer. I am a businessman myself in the plastics field and this technology appealed to me, and even better it could be done on LEGO® bricks. Nowadays I use quite a lot of chromed bricks, and have them processed myself industrially.

This is where I am now, and the next pages will show you some insights on how I design and build my creations. HispaBrick Magazine asked me to highlight both a truck and a bike, and I have chosen two of my recent builds to describe to you:

Peterbilt 379 with Mac dump trailer in 1:13

The roots of this work comes from inspiration in several truck magazines and previous builds. Already a few years ago I had built some dump trucks based mildly on existing American show trucks, and most of them in 1:16 scale. My first 1:13 scaled dumper was a tri-axle dumper called 'Eldorado', which was in fact a revamp of a Peterbilt 379 tractor I had built earlier on. The creation got a lot of attention and was published in a number of LEGO®, as well as international trucking magazines. That tasted like more, so I started to look for fresh inspiration and got more and more interested in building a full combo including a heavily customized tractor and equally customized end dump trailer. For those new with dumping technology: An end dump trailer pushes the whole trailer upwards above the tractor's fifth wheel, rotating on the trailers rear axle to unload it.

I started my work on the tractor in 2012, and decided it would be a Peterbilt 379, definitely my favorite American truck, and as it was obviously not the first time I had built one, I already had

quite a few detail pictures and dimensional drawings available. My aim was however not to just copy previous work, but to take this creation to the next level, and I looked for even more detailing possibilities especially in places that would not directly meet the eye under normal circumstances, but would still contribute to the authenticity of the model.

The last step before really getting started included composing some sketches to define a nice color scheme and layout. In the end I decided to use a rather cool and smooth design, combining regular white bricks with the rather rare old dark gray ones, and along with that avoiding putting an overload of accessories on the truck. In the 80's and 90's customized trucks were overloaded with accessories, but lately a more clean low-rider look is trend amongst those who pimp their trucks. When using a color like white, older bricks immediately stand out from fresh ones, so a list with needs quickly went to some Bricklink shops.

Building a truck is quite systematic for me. Basically I build from front to rear. I start with what is for me also one of the most enjoying parts: the front end of the chassis, including front suspension and steering. The challenge here is to keep the detail in, like the airbags for the air-ride suspension, but it also needs to be rigid enough to carry a lot of weight on the front axle and remain steerable for posing purposes only in this case. Sometimes I build fully functional models with a lot of Technic® and Power Functions® parts, but in this case the model is purely static and cosmetics came first.

The radiator and engine come up next, and especially on the engine you can drown in detail, mainly on the hosing, piping and wiring. I can easily spend 3 to 4 hours on the engine only, making sure everything is in place, including the engine room parts that are fit to the cabins firewall and the chassis itself. Many engine parts come in chromed to give that extra realistic touch. The engine is then mounted in the chassis, and all
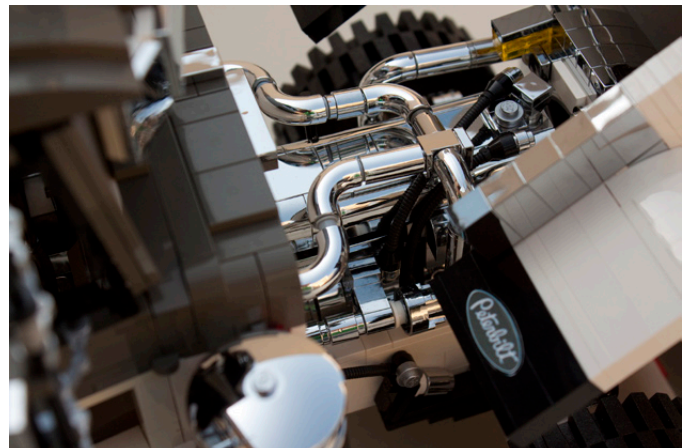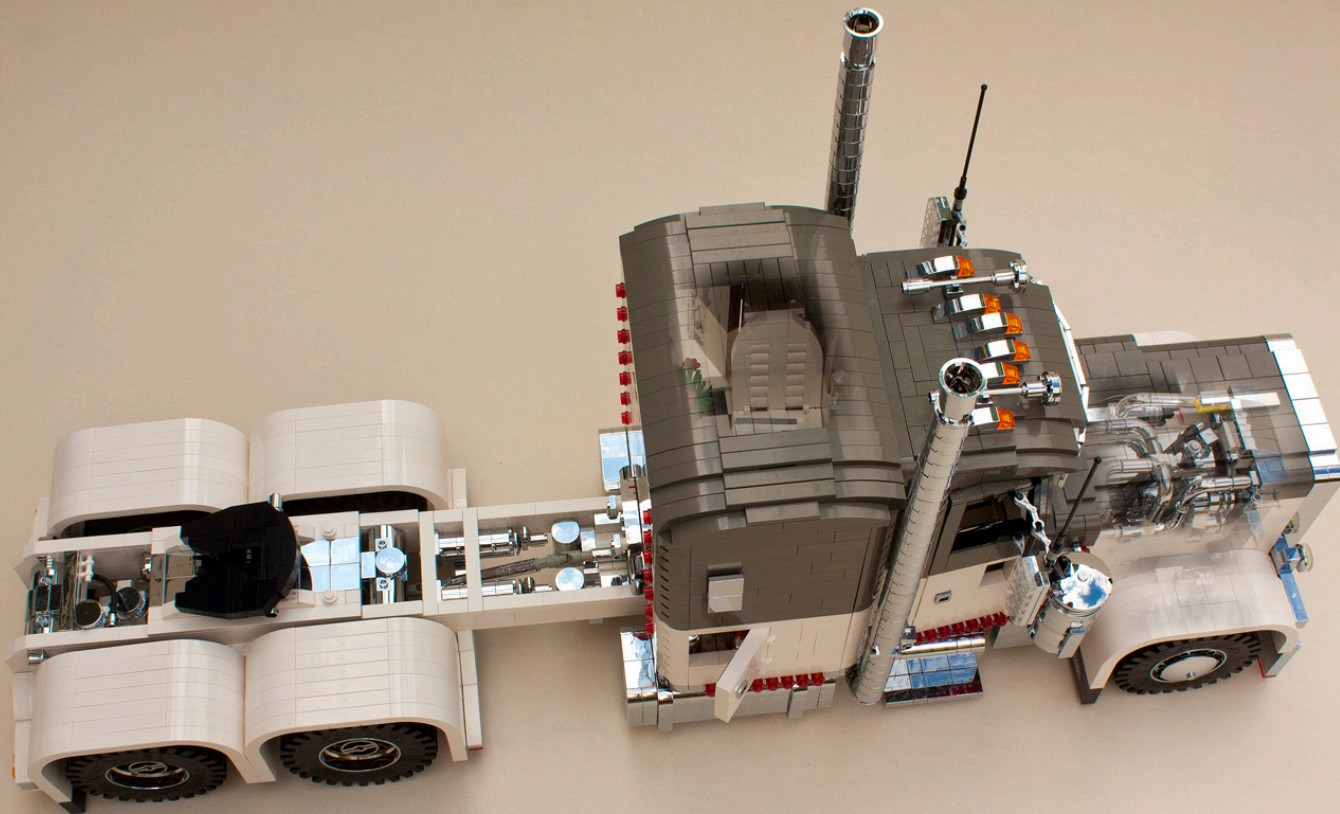
hosing and piping is attached where necessary. I make sure that the underside of the chassis and engine also look like the real thing.

The next phase is the front bumper and hinge system for the hood. When the bumper, hood and fenders are completed I fix them on the chassis, and basically have the front of the truck ready for the biggest part. From here on I start to work backwards creating the chromed air filter housings, and extension of the chassis to create space for the gearbox, air tanks, exhausts, sidesteps and fuel tanks. On top of this extension the work on the cabin begins. The cabin of a Peterbilt or quite similar Kenworth truck seems quite easy to build as on a first glance it looks fair and square, but it is not in practical life. In fact from a top view you can see that starting from the grille the hood and cabin are tapered and challenging to build. The first step in achieving this geometry is already in the hood which is built in 'steps', in this case two, and then continues in a plate hinged construction creating the cabin geometry groundwork, and also the base for the working doors.

At this stage the front part of the truck is already coming to shape, but instead of finishing the cabin entirely, I now start finishing the remaining part of the chassis first. This is for one simple reason; it requires a lot of flipping and rotating to do so and for that the cabin would only be an obstacle all the time. Another building space challenge can be the fact that the whole chassis can be very stretched on this type of custom truck. A wheelbase (the distance between the heart of the front axle and the midst between the two rear axles) of more than 8 meters is quite normal! A tractor can be a few meters longer in the US compared to a European equivalent. For that

reason stiffness is a very important factor building a truck like that out of LEGO®. You cannot build the riggers too thin, but sticking to the scale creates enough possibilities to achieve this, without making unrealistic 'bulky' constructions. Especially the area after the cabin is critical in this respect as not only the sleeper, but also the diesel tanks are positioned here, and as that gives a lot of weight the chassis could start to bend easily, especially with fully chromed tanks which are heavier, and a long sleeper unit on top of that. As a last touch I include the differentials, rear suspension and fifth wheel. The bumper and other accessories in this area I don't touch yet, as they are part of the color trimming and finishing touch, and I take that as a final step.

The interior of a custom truck can be miles away in appearance compared to a regular example. Anyone who has ever attended a truck show can acknowledge that the sky is really the limit here. The floors are fitted with special carpet, wood or special paint. Seats are customized, and often large scale multimedia systems are installed. In many cases a sleeper is not functional as a sleeper anymore, but more or less as a sound studio. In the case of this truck I followed inspiration from show reports and included special seats, that can be hinged, colors matching the outside, and a lot of chrome parts in the interior as well. The sleeper accommodates a kind of sofa, and a big TV screen with sound system. To show the amount of detail in the interior I made the roof retractable only to make the interior visible at modeling fairs and LEGO® shows.

The final step is putting in all the detail, a stage I really love, and one that can take many hours as well. I tend to start on this on an early morning Sunday with a good coffee and a

fresh view on things. Mirrors, air horns, lights, custom bumpers and fenders, I like to go all the way. The result has become a truck that looks quite clean by looks, but still has a lot of custom parts to it. As the last step I add all the wheels to it. These are the old Technic® 24x43 types which have been out of production for two decades now. I have a lot of these, and the oldest ones I have in my collection are from 1978 when I got the 853 set from my parents as a gift as a young boy. These four wheels are still in my collection today 35 years later and are still 'at work' fitted on another truck. Just a proof of the quality and life time fun LEGO® offers.

Two months later however I decided to update the truck a little bit. Most of my builds are evolutionary projects, and this was no exception. I added a tiny bit to the sleeper height, made a new more massive front bumper, and updated some accessories. The biggest addition I had in mind was however adding a new trailer as an accessory. One could call also that adding another MOC. The first attempt was a 40ft flatbed commonly seen in the USA with some mild mods to it. I was not fully happy with that trailer and decided to build something a bit more advanced.

After some research I came to the conclusion it would become a Mac 40ft end dump; a trailer type I had built before in smaller scale, but this time I would build it in a fully chromed version, and in style with the Peterbilt tractor. Now I must honestly admit that trailers are somewhat of a necessary evil to me. Somehow I don't enjoy building them as much as building a tractor, but in this case I was quite convinced it would be a great combo, and besides that I wanted a fresh tractor and matching trailer for scheduled events as well.

The building of this trailer involved not that much work as I had a donor trailer standing around in 1:16 scale. I took that apart mostly but kept the side walls, so I could easily make it wider and higher to fit the new 1:13 scale. That saved me a lot of work on the hinged construction on the inside to get this half round shape. I only needed to add a bit on that in this case. The most time consuming thing was removing all the black tiles from the sides, as it used to be black, and creating a fresh white trailer chassis including white fenders and also chromed rims. Meanwhile I had a chrome batch scheduled and included about 800 2x2 tiles, the majority targeted for this trailer. I just love chrome, and I wanted to build something special and big applying it, without moving away from realism. This was just the perfect opportunity, as these trailers are often fully polished and shiny as well. When the tiles came back there was this big task of putting them all on the trailer, but my lovely wife surprised me, and as I got home from work one day the job was almost done already! Now that is what I call support!

The last steps on the trailer included stiffening the inner structure a bit to carry a small load of bricks (to save weight they are stacked on top of some lightweight filling material, so there is only a thin layer of red bricks in the trailer), and detailing the back of the truck. I also sourced for some real rubber in 0.8 mm thickness to have more realistic mud flaps, which are quite essential for the optics on this type of trailer. All in all this is a MOC I am very pleased with. The detail is all around, there are many new techniques in it, and especially the old-school colors are appreciated according to the many reactions I have had on those.

Harley Davidson FLH 1340 '' Red Baron" in 1:10

I have built countless trucks and cars over the years, but a motorbike had been on my to-do list for a very long time, basically because it seemed to be too much out of my comfort zone to build. This exact reason made me decide to build some after all, as I don't like moving in circles being creative, and I seem to need a good challenge so now and then.
I just love Harley Davidsons, and as one would imagine along with the trucks and cars I favor the heavily customized ones. I guess I don't like regular stuff and like a bit of pimp. I have a handful of bikes in my portfolio now, and the latest one is featured here on these pages. This build started with not only the type of Harley Davidson as a choice, but also the theme of the customizing. I saw a picture on Flickr from a cool Harley in red and white, inspired by the 'Red Baron'. For those unknown with the Red Baron, he was a German fighter pilot of World war I, in reality named Manfred von Richthofen. He was a war hero to the Germans, and also very much known by his

enemies. He was a very gifted pilot and quickly got a fearsome reputation amongst Allied pilots. Von Richthofen himself anticipated on that by painting his Fokker triplane bright red with some white accents. The word camouflage did not come to his mind, .. his enemies needed to know what was facing them. The bright red plane, together with the fact that he was born a baron in a noble family gave him the nickname 'Red Baron'. His plane is still very famous and replicas are at display in many aviation museums. There is also an official LEGO® set (10024) of this plane available.

The paintjob on the plane seemed a powerful theme to translate into a bike, and to me only one type of bike would fit this job, and that would be a Harley Davidson Roadking. This type of Harley, often referred to as a 'bagger' is a massive, tough looking motorcycle, with a low classic silhouette. The nickname 'bagger' refers to the bags positioned at the back of the bike. I started of making some design sketches and trying to find some more detail pictures on the technical aspects of this particular type of bike. As many pictures can be found on the web, this was quickly done, and together with the experience of an earlier build of a quite similar type of Harley the project was ready to start.

When I started building bikes I just did it in a similar approach as with the trucks and cars: from front to rear. With this bike I moved away a bit from this principle and although I started building the front of the frame and the front fender first, quickly after that I went on completing the whole basic frame. The dimensions are based on the wheels that I chose to use (Part 2903), giving a 1:10 scale exactly.

Finishing the frame first makes putting in the massive engine more efficient. The famous Harley V-twin engine only looks
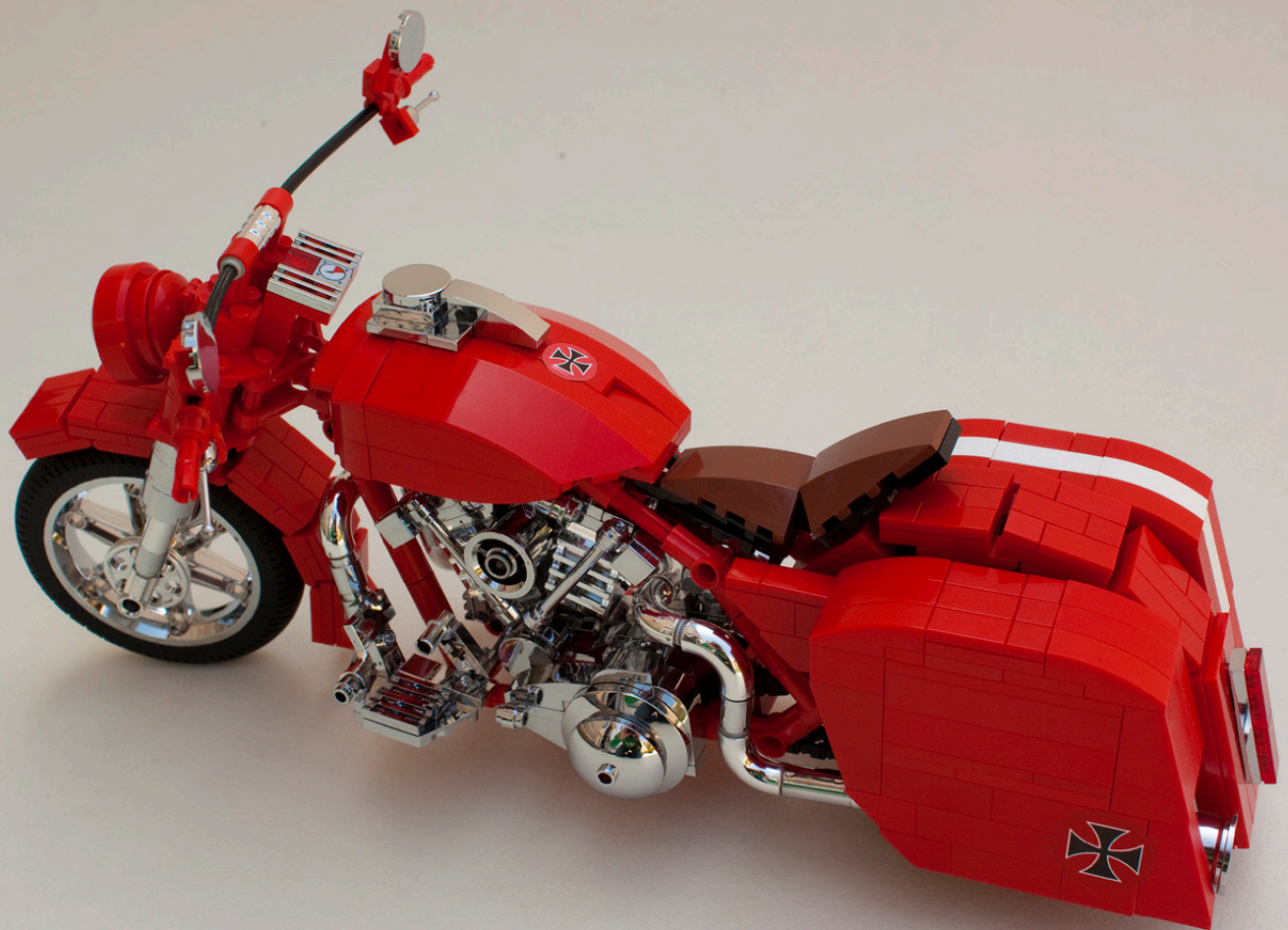
good fully chromed in my opinion, so harvesting my chrome collection for the correct parts took quite some time and included adding some parts to a fresh batch that I had never chromed before. I did not want to sacrifice on any detail here, and made sure all possible parts were chromed. Building a relatively compact engine with chrome is a nice challenge. Due to the chroming the factory tolerances on the LEGO® are a bit compromised by the layer of chrome plating which is a few thousandths of a millimeter. For that reason building very compact with a lot of parts can be a big effort, as chromed parts are sometimes hard to mount onto each other, but then again beauty has its price.

When the engine is fixed on the chassis I mount the fuel tank and the connected seat. Now the engine is chain linked to the rear wheel gear, and the rear fender is put in place. The last phase is creating the bags together with the exhausts, which can now be fully connected to the piping on the engine itself. This is for the biggest part done with the very rare official

LEGO® chromed parts from the model team days (Parts 71075 and 71076). Most of these are over 15 years old. The exhaust ends for both trucks and bikes are chromed wheel hubs (part 2999). I have also used inverted and chromed Fabuland ®buckets for these.

The only thing left then are some stickers, and although many of my builds have some, and some even quite excessively, I am trying not to rely on them too much. I like creating them though. I use some vector based software called Coreldraw for that, as well as some picture editing tools like Photoshop. As some initial groundwork I often browse to the 'Brands of the world' website (www.brandsoftheworld.com). Here I can download several free to use existing company logos and many other vector graphics to use. In this case I found an old Maltese Cross that was very usable as it also used as the symbol of the German Luftwaffe, and in many tuning and customizing themes. I scaled it, and color trimmed it to the official LEGO colors for which I use a color table from the net (Peeron) with printable values (color coordinates). To make all of this work properly you need to know a little bit about colors and processing them into prints. A buddy of mine owns a company that can print quality stickers, and he is always so kind to print mine along in a batch. The big advantage is that these prints are also precut in the stickers desired shape, and therefor very easy to apply. The last step includes adding some detail around the steer and headlight on an early morning Sunday, and ready it was.

Both of the creations featured in this article will be on display at a limited number of events during the year, together with more of my work. News on events I participate in can be found on my Flickr page (www.flickr.com/bricksonwheels).
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The Church of San Gwydre

By Luke Hutchinson (Derfel Cadarn)

The Perfect Setting

I have always been fascinated by church buildings due to the interesting architecture, as well as the images and atmosphere they evoke. I have built two churches in the past and both gave me a great challenge and helped to mold my building style into what it has become today. I have recently been writing and creating my own medieval saga and the first chapter has been based around a village and its various landmarks. I needed a larger more impressive setting for the final part and the idea of the scene set in an old churchyard with the church looming in the background was too good to pass up.

Preparation

Firstly, I needed some inspiration. I already knew I wanted to base the look of the church on the old Norman churches that can be found in many English country villages. Using my local church and a few images from the internet I was able to settle on a design that would suit my story's setting. I have never been one to draw up a rough design; I have always put together an image in my head and then worked from that. Like many LEGO® builders, I will then build a 3D image of the model in my head, working out any possible problems and what techniques and elements will work best. Once I have a clear vision of what I'm going to do, it's time to start building.

Foundation

From the start, I knew the church itself would be the main center piece of the model, so this would have an effect on how I would approach the whole build. Rather than build a landscape and place the church on top, I thought it would be best to build the church first and then build the landscape around it. This allows me to have more ease and freedom to be able to work on the church without a large landscape getting in the way. Another advantage is that having the church in place first, allows me to create a landscape that will compliment it. I started by laying down a foundation for the church building which you can see in Fig. 1.

The foundation needed to be two bricks high to allow me to add a row of 1x2 hinge bricks which are used to angle the walls slightly inwards. I then built one section of wall as a test,

Figure 1

which you can also see in this picture. This wall is mounted on the hinge bricks and then leans inwards against an inner wall of basic bricks. With this important section in place and happy with the result, I could then work on the rest using this as a guide.

Time & Patience

Creating the complex textured look of the stone walls is a long process. Not only do I have to build the outer textured wall, I also have to build an inner wall of basic bricks to add strength and support.

As you can see in Fig. 2, the textured stone effect is achieved by using a combination of many different bricks which are all placed as randomly as possible. This can take a long time as I like to stand back and take a long look at each area to make sure everything looks natural and pleasing to the eye. Sometimes, just the slight change in placement of a single brick can make all the difference! You will also notice that the stained glass windows are off-set using Jumper Plates to allow them to fit perfectly between the arches. Once one side of the church is built, I can then build a mirror image on the other side and build the tower.

Figure 2

Now we come to the roof which you can see in Fig. 3. I would have liked to use standard roof bricks but that would have been lazy of me and would not have allowed me to add any subtle texture. So once again, using hinge pieces I was able to make a roof using plates. Testing various heights of where I placed the hinge bricks allowed me to achieve the best slope gradient for the roof. Then it was a case of adding tiles and plates to achieve a more worn textured look.

Figure 3

Placement & Landscape

After building a solid base for the whole model, I can now lay the completed church in position. The church is placed on a combination of tiles and 1x1 plates which are laid out to match its foundation. This is much easier than trying to attach the church stud by stud and risk breaking it as you force it down.

As you will see in Fig. 4, the church is now in place and I have used various large basic bricks to form the rough contours of the landscape. This idea can be helpful when creating a landscape as it can give you a good template to work with. With this complete, it's now time to create the landscape.

With the rough template already in place, it's now a case of using different plates, bricks and slopes to bring the landscape to life. One of the main features of the settings I have been creating for my story is the use of Dark and Sand green shades for the landscapes. The standard LEGO® green color is very bright and overused, I felt a more realistic and natural look could be better achieved using more earthy tones. It also adds more to the atmosphere as the story I am writing takes place in a very old, dark and overgrown setting.

In Fig. 5 you can see I have covered the whole area in a combination of dark and Sand green plates with various brown

Figure 4

patches and a few hints of Olive green. I tend to use brown for areas right next to the building, then merge it into the Dark green and then into the lighter Sand green. Apart from the set brown pathway, everything else is randomly placed for a more natural look. I have also used various gray sloped bricks to create a few rock formations. These help break things up and add variation to the landscape.

Figure 5

The church is in place, the landscape is laid, now for the fun part.

Bringing It to Life

The final process of the model involves adding all the various details and finishing touches that can really help elevate your model and make it stand out. Firstly, I use Dark green leaf pieces which I place over the various brown patches on the landscape. I then follow round and add lots of the Spikey Appendage pieces which work well as roots, thorns and general overgrown areas.

For this model, I wanted to add a small low section of wall on the outer area of landscape with an old wooden roofed gateway to the churchyard and church. Having this extra focal point at the front gives the feel of more depth when looking back at the church; this can be seen clearly in Fig. 6.

You will notice I have placed two trees, one to the left and one to the right. Placing them in these positions do not obstruct the main view of the church, instead they complement the building and help the whole landscape to blend as an image. Once again, the placement of trees in the right way can really make a big difference to the finished look and can make for some great photos. The trees are built using a combination of Technic pieces for the frame and then wrapping Droid Arms around to get the desired effect. Using this technique to build tree's means the possibilities are endless.

The final touches include using a mixture of 1x1 tiles and plates to lay down a worn cobblestone pathway over the bare brown route that runs from the church and out through the graveyard. Then various gravestones are added, randomly littered around the landscape. A lot of the gravestones were inspired by real ones from my local churchyard as I wanted a bit of variation amongst them.

The final result, an old church and graveyard standing amongst a dark and gloomy medieval landscape. The perfect setting and atmosphere for a showdown between good and evil.

Thank you for reading
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Figure 6

Interview: Jeremiah Boehr

Master Model Builder - Kansas City LEGOLAND Discovery Center

By HispaBrick Magazine®

Pictures by LDC

HBM: What are your main tasks in the LDC?

JB: I am in charge of anything that has to do with LEGO® brick inside the attraction (LDC). I design, build, maintain, and service models throughout our attraction. I create mini models that are sold through our Model Builder Academy, build models for special events, in all sizes, and help to develop and enhance the guest experience at LEGOLAND.

HBM: Since when do you build with LEGO?

JB: I've built with LEGO since I was toddler, so I guess I've been building for almost 30 years. I never stopped building through my teenage, college, and 20's, as LEGO has always been my creative outlet.

HBM: When did you decide to start building professionally with LEGO?

JB: When I got my job as a Master Model Builder was the first time I got officially "noticed" and that was in January of 2012. I was teaching at the time, and always thought it would be great to have a job where I got paid to build and design with LEGO, so entering our local "Brick Factor" competition was my chance to prove my skill and switch professions.

HBM: What process did you follow to become a MMB?

JB: I entered the Brick Factor contest, researched what other competitions had been like so I was prepared for it, and then went into it with the goal of just showing what I could do and having fun. I had confidence that I was a skilled builder with my years of experience, and other skills like public speaking, and a background in education. All three proved to be an excellent combination for what a MMB needs to be successful.

HBM: When you build a model for the LDC, what guidelines do you get? What level of freedom do you have when building a model?

JB: I have a lot of freedom and autonomy when it comes to what I build. It's one of my favorite parts of the job, because it truly allows me to the most creative and challenge myself to do new and different things. There are some restrictions, such as not being able to build certain types of things (religious symbols, modern weapons, etc) but those are general guidelines from LEGO®. My marketing manager and I work closely to choose themes and ideas our guests will like, and then I usually run with it! Other than that I get to decide size, color, sophistication, based on the time and funds I have to spend on the model.

HBM: Do you have any limitation in the number or type of pieces?

JB: Not usually, unless it is a mini model for our Model Builder Academy. Those sets have to be within a $5 price range, equaling 30-50 pieces. It can be a challenge to make a cool model with those constraints, but that's part of the fun. For larger models, I don't count the # of bricks, but make estimates. It has more to do with time and money, rather than # of pieces.

HBM: Among your activities in the park, which is your favourite one?

JB: I love our Miniland, which is a scale model of Kansas City's top 20 sites and buildings. I am often adding models to it for scavenger hunts and creating new scenes for our guests to enjoy. Some people can spend 30 min alone in Miniland looking at all the details we have!

HBM: Aside from working at the LDC, do you have any other relationship with LEGO as a company (design department, etc.)?

JB: The only direct contact I have with LEGO is through their loose brick warehouses, which we use to order our brick from. I have met the CEO of The LEGO Group, Jørgen Vig Knudstorp on his visit to our attraction last fall, in which he said he was impressed with my designs and passion for LEGO. I've also done some design work for the LDC's as a brand through our marketing teams, which have been passed on to LEGO for approvals to add to our attractions.
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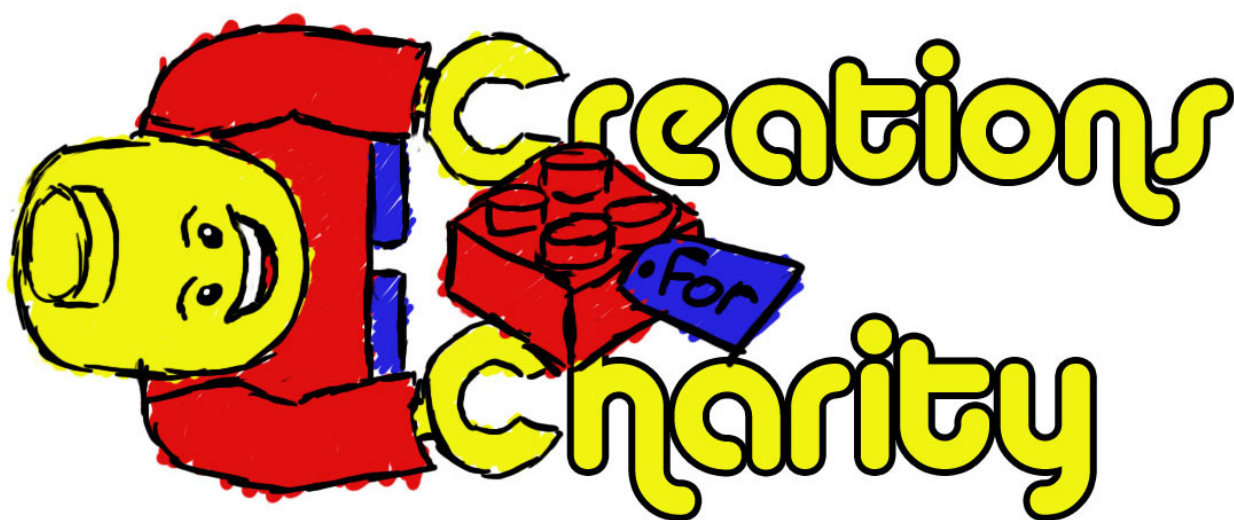
Creations for Charity

By Nannan Zhang

Creations for Charity is an annual fundraising event where LEGO® builders from all over the world sell their creations to buy LEGO sets for underprivileged children during the holidays. Organized in 2009, Creations for Charity has become the online LEGO community's annual tradition of giving back.

Who we are and what we do:

As the founder of Creations for Charity, it is my pleasure to see LEGO builders use our hobby in a unique and meaningful way to give to charity. Each year, Creations for Charity has shown how much the LEGO community cares about giving back and brightening the holidays of many kids. We have a unique way of doing this. We raise money by selling custom LEGO creations made by builders from all over the world. Since 2009, we raised over $26,000 and donated over 1,500 brand new LEGO sets to organizations like Toys for Tots, Make-A-Wish, and children's hospitals across multiple cities in the US and in Croatia and Chile.

From October through November of each year, builders can sell their LEGO creations through our store on Bricklink. To donate a creation, a builder would fill out a form on our website, which gives us permission to upload the creation to our store. After the creation has been sold, we notify the builder to send it to the buyer. It's a simple process and easy for anyone to participate. When the fundraiser is over, the money is allocated to our distribution coordinators, who then buy as much LEGO as they can and donate them to the kids. On Christmas Day, I post pictures of all the LEGO we donated and everyone is happy knowing the positive impact they had on lots of kids that year.

Our history:

The idea for Creations for Charity began when a friend suggested in an online forum that its members donate LEGO sets to charity during the holidays of 2009. I liked the idea of the LEGO community giving back, and I wanted to think of a way for us to use our unique talents of building with LEGO to achieve this. That's when the idea of builders selling their MOCs in a fundraiser was born. Within a short time of several weeks, I organized and launched the first Creations for Charity event online. The idea gained popularity quickly and we sold 43 creations and raised over $2,000 that year, which we used to buy LEGO sets for a local Toys for Tots organization in Michigan.

In the next 3 years, Creations for Charity expanded to include donations in multiple cities in the US as well as other countries such as Croatia and Chile. We raised over $9,300 in 2012, making it our most successful year. Our distribution coordinators in each of those areas are enthusiastic about our cause and work hard to find the best deals on LEGO so we can buy as many sets as we can. In 2013, I hope we will raise even more money and donate LEGO to new places in the world.

Cool creations from the builders

People have donated some truly remarkable creations over the years. We have sold LEGO creations from all themes from chromed superhero minifigures to a motorized sci-fi helicopter from Avatar. There were many other cool things such as a life-sized LEGO katana, cartoon Star Wars™ characters, mosaics

of Harry Potter™ and Indiana Jones™, autographed LEGO®
Architecture sets by the designer, and even a sculpture of the
Toys for Tots teddy bear mascot. One of my favorites was an
elegant moving sculpture of Pegasus. It was so popular that
someone bought it as soon as the sale began!

Of course, we welcome all creations from any builder to be
added to our store. Besides the larger creations, there were
many small gems such as a LEGO mousetrap, minifigure-
scaled water coolers, a Pokeball, and brick-built Christmas
ornaments. It's always exciting when we are notified of a new
creation donation, and I can't wait to see what builders will
donate this year!

How to get involved

Anyone in the world can participate in Creations for Charity;
you don't have to be a superstar builder or donate a big
creation. The simple act of contributing a creation to our store
shows that you support the cause. We accept any custom
LEGO creations between October 1st and November 15th
each year, so now is the perfect time to plan what you want to
donate!

We know that LEGO is expensive and not everyone wants
to part with their bricks, so we give everyone the option to be
reimbursed for the cost of making their creation and shipping
it to the buyer. This way, you are simply donating your time for
making the creation, which is still a big help. And lastly, visit our
store during from October 15th to November 30th to see what's
on sale. Don't hesitate to make a purchase, because you won't
get a second chance if another buyer beats you to it!

The future of Creations for Charity

It is my goal to expand our fundraiser each year and to attract new builders to take part. As we grow, I hope to donate LEGO to new locations in more countries. Although it is a challenge to donate LEGO® to countries outside the US due to higher costs, it is worth it to know that they are going to very good places such as an orphanage in Croatia or a Chilean school for children from poor families.

In addition, I am looking for more ways for the LEGO community to raise money. A lot of people aren't able to afford an expensive custom creation, so I am thinking about adding other options such as a raffle to give everyone the option of contributing smaller amounts of money. We also give unique thank-you gifts to those who have made large contributions, and each year we have exciting gifts to reward our helpers. In the end, what matters the most are the children. It's hard to find a kid who doesn't like LEGO, but some have never owned a LEGO set or much of other toys. When we give LEGO, we give a toy that sparks the imagination and provides endless possibilities of play. You may have fond memories of yourself growing up playing with LEGO, and if so, be thankful. We would like to see more children growing up with these memories.
To learn more about Creations for Charity and how you can participate, visit us at creationsforcharity.org. We accept creations for the 2013 fundraiser beginning in October. Our store opens on October 15th.
#

The Hogwarts School of Witchcraft and Wizardry

Model by Alice Finch
Pictures by Alice Finch and Carlyle Livingston
Text by Katie Walker

Alice Finch and her massive LEGO® Hogwarts Castle were previously featured in HispaBrick Issue No. 15 in the article about BrickCon 2012. Since then, Alice has published beautifully detailed photographs of her model, some of which have been used by the Hogwarts Admissions Office for the following recruitment brochure.

About the Builder

Alice Finch has been called both the Queen of Tan and the Crazy Lady Who Buys Too Much Tan. Either way, she is pretty fond of tan LEGO bricks. Her LEGO Hogwarts, which has a few hundred thousand of them, has been featured on CNN, WIRED, Gizmodo, and The Brothers Brick, and is also on a STUDS LEGO Collector Card. Since she's a serious Harry Potter fan, what started as just the Great Hall quickly grew

to encompass the entire Hogwarts School of Witchcraft and Wizardry. See the links below for more information about this beautiful model.

Alice's flickr photo gallery: http://www.flickr.com/photos/88574960@N02/

Video interview with Alice on CNN: http://www.youtube.com/watch?v=tADU7qjW1gI&feature=youtu.be

Written interview with Alice on The Brothers Brick: http://www.brothers-brick.com/2013/02/26/alice-finch-builds-massive-lego-hogwarts-from-400000-bricks/

Video showing the time-lapse set-up of Hogwarts at Emerald City Comic Con 2013: http://www.youtube.com/watch?v=ItFu-TtcFS0
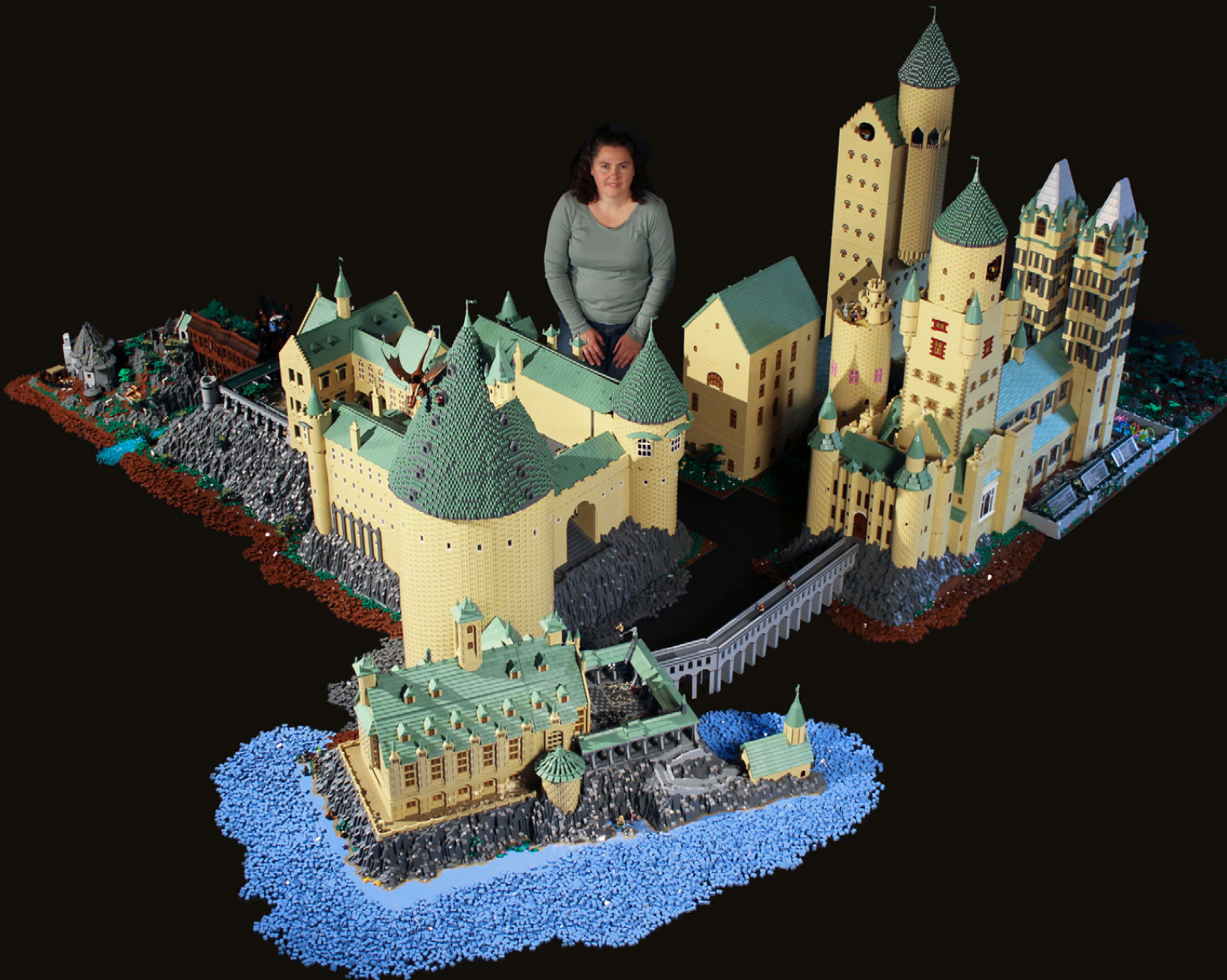
Hogwarts School of Witchcraft and Wizardry: The Best in Magical Education!

Congratulations on the birth of your new witch or wizard! Your child's name has been marked down in the Hogwarts birth register by our Magical Quill, indicating acceptance into the Hogwarts School of Witchcraft and Wizardry once your little one reaches eleven years of age.

We here at Hogwarts would like to take this opportunity to assure you that, despite the recent Wizarding War, the Hogwarts School of Witchcraft and Wizardry still provides the finest magical education available anywhere. This brochure will introduce you to some of Hogwarts' most popular classes, as well as showcase some of the luxurious accommodations that Hogwarts Castle has to offer. It is our hope that, after perusing these materials, you will decide to enroll your child in the Hogwarts School. For your convenience, enrollment starts at birth.

The Castle

Hogwarts Castle is situated in the mountains of Scotland, nestled next to a dense forest on the shores of the Black Lake. The castle itself was built circa 993 A.D. It is seven stories high, and contains many towers and dungeons. Two of the highest towers are the Ravenclaw and Astronomy Towers.

The castle grounds are also extensive, containing many greenhouses and gardens, outbuildings, forests and fields, and a boathouse.

Hogwarts is surrounded by a dense forest filled with many different kinds of magical creatures. This provides many opportunities for hands-on magical practice. However, it is not recommended that students enter the forest without proper adult supervision, especially if they have any fear of giant spiders.

Course Offerings

Your witch or wizard will receive the finest magical training that Europe has to offer. By the seventh year, he or she will be fully prepared to excel on the N.E.W.T.s ("Nastily Exhausting Wizarding Tests") and pursue a dream career after graduation. Hogwarts offers the whole gamut of magical courses, from the practical to the obscure. Here is a sampling of some of our most popular classes:

Potions. In this class, students will learn the fine art of combining ingredients in order to produce potions capable of great effects. As former Headmaster Severus Snape once said, for those with great skill, it will be possible to brew potions to "bewitch the mind and ensnare the senses... to bottle fame, brew glory, and even put a stopper in death".

Charms. A charm is a spell that adds certain properties to an object or creature. In our Charms class, students will learn spells that will allow them to do such things as levitate objects, unlock doors, or improve one's mood. Charms are some of the most powerful spells in existence, and our classes will teach your young witch or wizard to manipulate them with ease.

Divination. Everyone wants to know what the future will hold, but only those schooled in the Art of Divination will be able to uncover its secrets. Through methods such as tea-leaf reading and peering into crystal balls, students will learn to interpret symbols in order to gain insights into the future.

Transfiguration. Through precise wand movements, proper incantations, and great concentration, objects can be changed in both form and appearance. Although this is a complex and dangerous branch of magic, our excellent professors will ensure that your little witch or wizard masters the skill with a minimum of unfortunate accidents.

Defense Against the Dark Arts. And finally, we come to what is probably the most important of all of our classes, especially in light of recent events: Defense Against the Dark Arts (DADA). In DADA, students will learn spells to defend themselves against all manner of creatures, from boggarts and cornish pixies to dementors and DADA teachers.

Room and Board

Upon arrival at Hogwarts, your young witch or wizard will be placed into one of the four Hogwarts houses: Gryffindor, Ravenclaw, Hufflepuff, or Slytherin. Your child will live with other students from the same house, sharing dormitories and a common room. All of the living areas at Hogwarts are clean, comfortable, and almost always safe.

Food services at the school are first-rate. Hogwarts employs a legion of house elves that cook every meal as well as clean throughout the castle, so that your child will be free to study and learn the finer points of magic without the interruption of such mundane affairs.

Other School Facilities

Hogwarts has many other facilities that will help make your child's education a truly memorable one. The Hogwarts Library is legendary in the wizarding world. It contains many tens of thousands of books and provides an excellent resource for students looking to excel in their studies, or, perhaps, to discover ways of rescuing the school from impending doom.

Hogwarts also contains an amazing number of hidden passageways and secret chambers. These provide the perfect opportunity for your young adventurer to explore and challenge him- or herself against the unknown. Some of Hogwarts' most famous graduates attribute much of their success to the skills they learned during their adventures around the castle.

And finally, if during all of those adventures, your little explorer should perhaps lose a limb or get turned into stone, Hogwarts has a state-of-the-magical-arts infirmary, ready to provide immediate and excellent medical attention. Just don't expect the potions to taste like pumpkin juice.

A Last Word...

We here at the Hogwarts Admissions Office want to thank you for taking the time to look over this information about our most excellent school. The Hogwarts School of Witchcraft and Wizardry provides the best magical education available anywhere, and we are certain that your little witch or wizard will love it. We look forward to greeting him or her in the Great Hall eleven years hence, and always remember: Draco dormiens nunquam titillandus ("Never tickle a sleeping dragon").

Building in Microscale

By Rocco Buttliere

Building landmark locations, specifically skyscrapers and supertall structures, in LEGO® bricks often varies in terms of difficulty by the scale at which the models are depicted. One of the more challenging scales to build in is microscale. The way I would describe microscale is that one of its main characteristics is the need to portray a sense of realism with a model that is so much smaller than it would be in real life and also give the viewer a sense of where a person would fit into the model and what size they might be in comparison. While there are an infinite number of subject matters a builder could use microscale to make, my area of "expertise" would be in making skyscraper models.

Whenever I attempt to replicate a famous building or structure, I first try to envision a small section or certain "moment" within the fabric of the buildings' architecture that I would be able to capture nicely in the medium of LEGO bricks. For all of my models, this is the determining factor in how I go about designing the overall model and capturing the realism as best as I can. Not only do I strive for accuracy in a model by itself, I also fashion all my models to a common scale of 1:650. I believe that part of appreciating an individual model in my scale is also appreciating its size in comparison to many other well-known landmarks. For example, the tallest building in the world, the Burj Khalifa in Dubai, stands at an impressive 2,717 ft or 828 m. Compared to Chicago's Willis Tower and John Hancock Center, the Burj Khalifa is taller than both Chicago buildings combined, not counting antennas. Having these three models among my collection not only celebrates each one by

expressing their unique architectural aspects, it also helps to accurately illustrate the comparison of each one to the next.

Part of capturing the realism of a building also depends greatly on how I translate specific architectural elements into LEGO bricks. Building in microscale, I use many small pieces that are often not commonly found or abundantly used in the average LEGO set. The trick, I have found, is finding the right piece, or arrangement of pieces, to be able to achieve the realism I strive for. For many of the more vertically inclined skyscrapers, or ones with long, continuous vertical lines, my typical de facto piece to use is the 1x2 grill tile. This element has been rather invaluable for many of the older skyscrapers I have modeled, especially those of the Art Deco movement. Architecturally speaking, Art Deco is well known for its strong vertical lines, often continuing from the lower floors all the way to the upper setbacks. The grill tile also lends itself well to the narrow window space between these lines.

I believe that the uses of a single piece, however, only leave a lasting impression so long as they are not over-used within

the overall context of my work. For this reason, I try and think of new methods for modeling aside from simple brick-stacking for basic floor-by-floor buildings. I have managed to invent a few useful techniques for more unique buildings. In my Marina City model, for instance, I was able to replicate the two towers' famous corncob-shape using the out-of-production 1x8 technic plate with rounded ends. By placing jumper plates in the middle, I was able to rotate the 1x8 plates on top of one another and create twenty-two rounded columns to represent the buildings' windows and balconies. Another example is my model of 311 South Wacker. To represent each of the building's floors, I used 1x2 log bricks turned sideways with the bottoms facing out. The underside of these pieces gave a nice depth to each floor and also helped me realize how useful the undersides of elements can be in microscale buildings.

Another useful trick I have learned is incorporating sideways techniques into the bases of my models. Part of capturing the realism of a real-life building, I believe, is also modeling the context of the building, specifically the plaza details and cross-streets. For the majority of my models, the bases are usually quite straight-forward to design and feature no special methods such as pieces on their sides. For a few, however, the modeling requires more complex techniques. Something like a strip of marble tiling on the ground can determine whether the technique must incorporate sideways plates to better portray a thin line. Sideways pieces in the base can also help represent the border between a street and a sidewalk. In my World Financial Center model, I had to use sideways slope bricks to represent the numerous angled divisions between the streets and sidewalks. Similarly, my model of 311 South Wacker incorporates sideways slopes and tiles for some tricky angled sidewalks in the building's plaza.

Altogether, I would say that I have come a long way since I started making microscale skyscrapers back in 2009. In more than one instance, I have not been able to make a model I have wanted to do because I could not think of the right technique at that moment. In most of these cases, I have since succeeded in replicating the buildings I had been stumped by. Part of the fun I derive from making these models is coming up with new techniques to share with my fellow builders. To me, the best question a fellow builder could ask is, "How did you do that?"

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NXT2WIFI

By Daniele Benedettelli

WHY ANOTHER WIFI SENSOR FOR NXT

In 2006, at the University of Siena, I developed a team of mobile robots team using the good old LEGO® MINDSTORMS RCX, in order to test the performance of a control law for collective motion (http://robotics.benedettelli.com/publications.htm).
http://www.youtube.com/watch?v=S2aAZBS0Rp0

The RCX was a good choice for research purposes because of its low cost, and the LEGO building system flexibility. The control law was implemented in a centralized supervisor software that detected the robots position on the ground using a ceiling mounted webcam and sending speed commands to the robots using the LEGO Infrared tower (do you remember it?). There were no servomotors at that time, so I had to implement a speed controller on the RCX using rotation sensors on the wheels and BrickOS replacement firmware. The main problem during the experiments was the flaky communication of the coupled infrared towers that sent broadcast messages to the team of RCX robots.

Then the NXT came out, and I started my collaboration with LEGO as a MDP in late 2006. The NXT has Bluetooth, but that still does not solve the problem of broadcast communication, where you have a unit sending data to multiple clients. In fact, Bluetooth is designed for point-to-point communication, with a master/slave scheme that is the opposite of broadcasting. NXT firmware allows only three slaves to be connected to a master NXT, thus limiting the maximum size of a team of mobile robots.

I began to wonder if it would be possible to enable Wi-Fi communication on the NXT, before other third party Wi-Fi adapters (from Dexter Industries and Humarobotics) came out. I didn't have any company behind me to support the development. I started making a working prototype based on the Flyport, a opensource Wi-Fi enabled controller made by openPICUS (http://www.openpicus.com/site/products)

THE GREAT OPENPICUS TEAM

Flyport is a powerful and low-cost system on module (SOM) with embedded Internet connectivity. Since every product of openPICUS is released as open source and is well documented, I could easily design a simple prototype board to connect the Flyport to the NXT, using the high speed serial port RS485 built in Sensor Port 4. I thought the idea was interesting and new, so I contacted the openPicus team, which is actually made up of two smart Italian engineers, Claudio Carnevali
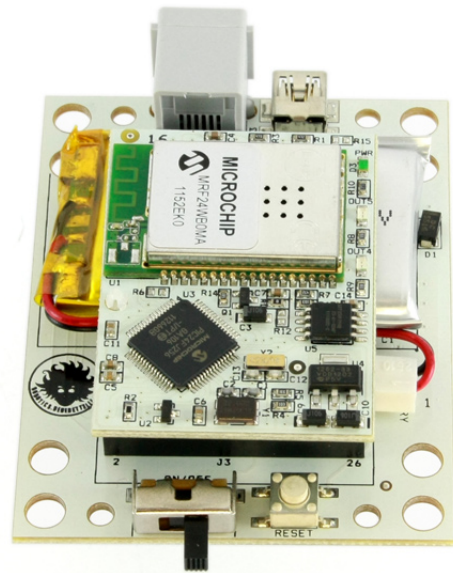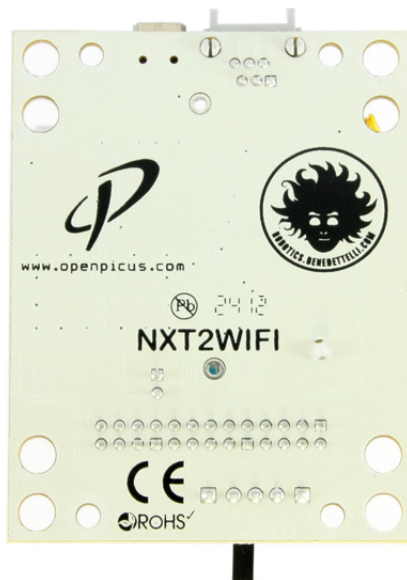
and Gabriele Allegria. We started a fruitful collaboration at a rather slow pace, mainly because I was working full time for a company, so my spare time for LEGO® was quite limited. OpenPICUS believed in my idea, and had the infrastructures to bring the NXT2WIFI onto the market, from homebrew prototype to fully industrialized product.

DIFFERENCES WITH SIMILAR THIRD PARTY PRODUCTS

During the development, Dexter Industries came out with its Wi-Fi adapter, but I was not discouraged, since my NXT2WIFI was meant to be much different, in terms of hardware and software. NXT2WIFI has a built-in rechargeable battery, and a firmware that can be updated and customized according to the needs of the user. NXT2WIFI supports every kind of network and security (WEP, WPA), it has a built-in flash memory to store rich webpages. It features a webserver, so you can control your LEGO NXT creation from everywhere in the world, just by connecting to the fully customizable webpage contained in the NXT2WIFI adapter. This means that you can control your LEGO MINDSTORMS NXT robots using any web browser enabled device, also including iOS devices: iPhone, iPad, iPod Touch. The webpage can be customized using a WYSIWYG editor, so the user does not have to bother with JS coding at all.

THE BETA TESTING

After dozens of firmware development hours, firmware 1.0 was ready in February 2012. I wrote a library for the NXC programming language, but I needed to cover other languages. I asked my MCP fellows, LEGO MINDSTORMS experts and friends Mark Crosbie and Xander Soldaat to beta test the device and write the libraries for it. They came up with many useful suggestions on how to improve the communication protocol and helped in developing the libraries for NXT alternative languages as LejOS and ROBOTC.

CROWD FUNDING

With Claudio Carnevali, I decided to get the money needed to make the first batch of devices using crowd funding. We believed in the project, but we wanted to test the market,

avoiding personal risks. The successful crowd funding campaign took place from March to May 2012, using the Italian crowd funding portal EPPELA (http://www.eppela.com) http://www.eppela.com/eng/projects/162/nxt2wifi-modulo-webserver-per-lego-mindstorms-robots

Besides the niche target of the product, the fact itself of having used the alternative way of getting funds from passionate people and hackers, attracted quite a lot of attention from Italian newspapers and television.

THE LAUNCH

The NXT2WIFI was launched in October 2012, that is quite late, considering that a new LEGO MINDSTORMS generation was going to be revealed in February 2013, the EV3 generation. The EV3 generation is Wi-Fi enabled, can be controlled with iOS devices, but still misses the onboard graphic webserver. However, there are many NXTs still around, and it will take time before the EV3 becomes as mature a development platform as the NXT, in terms of alternative programming languages and alternative firmwares.
In December 2012, I published a video in which a team of many NXT robots dance in sync, remote controlled by a custom Android App that broadcasts commands over UDP.

CONCLUSION

This adventure, thanks also to the wonderful people I met during the process, taught me how to bring an idea to market. My first real product, on which I could print my logo. I finally could make a really big team of mobile robots dancing together in sync! The team can be theoretically infinite, in my case it was limited by the number of NXT I had! A swarm of NXT robots is ready to take over the world!

LINKS

Official support page http://nxt2wifi.benedettelli.com

NXT ballet http://www.youtube.com/watch?feature=player_embedded&v=yP41p8Aipw8
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LEGO® Rover with NXT2WIFI

By Benoît Parsy

The minute I read about Danielles' crowdfunding project on the Eppela site, I bought the NXT2WIFI sensor.

I knew I was going to use it but I wasn't sure exactly how and for what…As soon as I received it, I updated the firmware, enabled the module, verifying that everything worked well. I used the test interface to check computer and iPhone compatibility and then I put everything neatly away into my toolbox

And then opportunity knocked, in the form of an email from the "NASA Challenge" event organizer in Paris. She knew me through the Hackidemia Association and my MINDSTORMS robot programming educational workshops. She told me about the "LEGO Rovers" challenge and asked me if I would be interested in building a robot (what a question!) which would:

- Demonstrate a in simple and practical way the difficulties of operating Rovers on Mars
- Use LEGO® if possible, so that existing LEGO MINDSTORMS kits can be re-used.
- Create a user-friendly interface, enabling the user to modify the parameters as desired: delay, objectives, timing and the way in which the task is performed.

All this should be available as accessible as possible, via tablets, computers and smartphones, WIFI: Bingo! I now had the opportunity to test the NXT2WIFI in situ.

The evening before the challenge, I went to the team-building party with two robots and my NXT2WIFI, and there I met two guys who were interested in the LEGO Rovers challenge and in playing with LEGO! A third guy borrowed one of my robots for a completely different challenge about Martian Rover trajectories, Curiosity@home.

What a stroke of luck, they were newcomers to

MINDSTORMS, but with excellent computer programming skills.

Using the test server source code we were rapidly able to get the Rover working albeit with limited features: left, right, forward, reverse.

Enguerran implemented the simulation of the propagation time directly in the webserver's javascript code, delaying the reciprocal transmission of messages by the number of seconds entered into the interface.

Guillaume was in charge of the interface; he modified, cut and pasted and set up the controls one by one, and so doing was able to offer two types: a simple one for children and a more advanced one, enabling all the features interactions.

I wanted to implement a sophisticated odometry with commands such as "forward 10cm, rotate 70° forward 50cm, but a weekend was all too short. Changing the structure of the robot to create an arm, and the addition of color and touch sensors, made the usefulness of the Mars rover's arms more tangible.

Well, we had a great time, lots of fun experimenting with the NASA Challenge, and NXT2WIFI enabled us to propose a simple and robust solution that the other competitors at the Parisian meeting appreciated so much that they gave us the second place, allowing us to compete for the final round at world level. The challenge creator herself is now trying to get funds in order to buy a NXT2WIFI to test our solution.

Project page: http://spaceappschallenge.org/project/nxtspaceapps/
http://pbenco.wordpress.com/
#
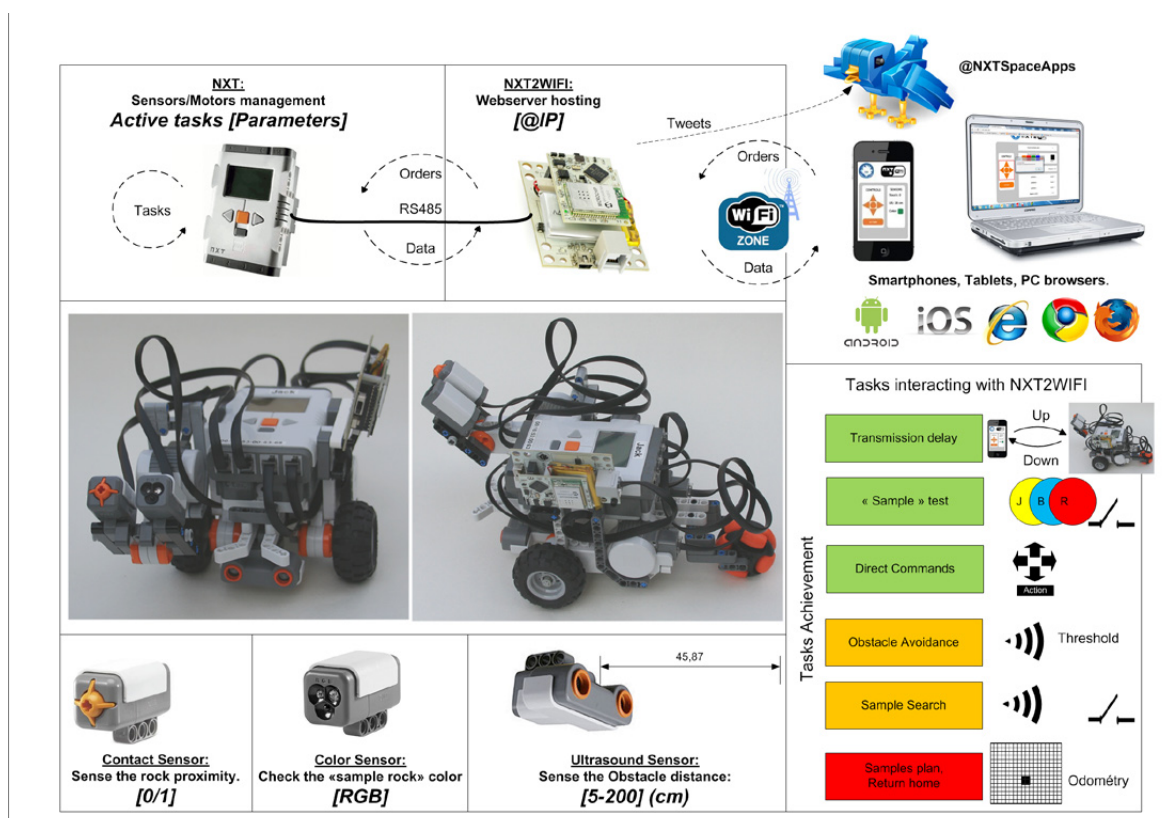
Do you like what I made?

By Carme Roca

A 2-year-old child is capable of understanding more than it can express verbally, so playing is the way it explores the world. A good way to start this project is to favour fine motor skills with building blocks. From about 1 year old, a child can build towers, stacking pieces, and create different colour combinations, even fit pieces in place.

So.... once upon a time, thanks to a collaboration agreement with LEGO® Iberia, some DUPLO pieces arrived at school and the children had the opportunity of building, creating and discovering many ways to play!!!

With the children of the group of 1-year-old born at the beginning of the year (almost 2 years old), LAS GRANOTAS, we started with a first contact with the DUPLO animals. We emptied out two boxes of the 6784 set on each table (no chairs). The happy faces and the surprise were the best part. Some started building, other classifying by colour and choosing pieces of the same colour as their starting block,... Concentration, pride in recognising what they are doing, smiles, expressions, ability to walk around to look for the pieces they want, others ask for help... Later sessions we did on the floor: MUCH BETTER!!!

The children in the class of 1-year-old born at the end of the year (those that had just turned 1), LAS TORTUGAS, started just like the first group. First they experimented, some threw pieces on the floor to find out what it sounded like. Later, the educators introduced the templates with animal shapes in order to complete them. They did the game and the children copied. They would take a pieces and the children would take a similar one. They children understood there was an empty spot in the template and they fitted the piece in correctly. In a second sessions they were more concentrated because they knew what they were going to do. Even so, they threw some pieces on the floor, but picked them up immediately.

They tried to put the pieces on the templates, trying to match both shape and colour, stacking pieces to build towers and they tidies up all the pieces one by one: BRAVO!!!!!!!

In the class of 2-year-olds, LOS PINGÜINOS, we were working around a city theme and in order to learn by playing we placed the city theme blocks in 4 containers. At each table there were 4-5 children.

We let them experiment, first, and as expected, they surprised us. Some made cars with or without wheels, others houses. Some looked at the models to get ideas from the images and others built towers fitting pieces together... and all were proud of their creations, while respecting the quiet environment and their classmates. Some have even built a landscape and shared in symbolic play. The interesting thing is that it was a free activity that was not at any time coordinated by an adult and without a marked objective.

In each session, when the kids started to lose interest we asked them to put away the pieces in the corresponding container or box, loose, so that play could be resumed on the next day. Some children kept strict watch that all bricks were loose and there was no conflict regarding this.

In the next session they were very participative and with the same attitude as in the previous session and we decided to do an exhibition with their creations. WHAT A SUCCESS!!!!!!

All of this is just a sample of what the children of between 1 and 2 years old at Llar d'Infants el Timbalet have been able to do. The only thing we can't share is what we as educators experienced first hand: their expressions, their faces, their silence and shared playtime.

Playing with DUPLO has been a pedagogical experience

and an aid in our City project. The children have been able to express and reason about where they live and have created houses, a garden, a truck, cars, a tower... There has been a positive language development since, without any prompting, they have started to name the pieces they were using, by shape, colour and by what they were creating. In the first sessions the silence could be felt, as the children were focussed on learning, curious to know more and get to it without losing time. Each day full advantage was taken of the proposed activities and the children carried them out with great interest. They would occasionally ask the educators for help, who in turn observed the attentively. In addition, they have developed good social relationships with the other children in the class, because they have shared the pieces, handing them to their classmates, and have interacted playing with what they created.

To value all they have been doing we did an exhibition at the entrance of the class so their parents could see and share with their children all the things learned in class with DUPLO blocks. Most of them were impressed!!!!!!
We never had any doubts about what we would learn with them. It has been a surprise!
#
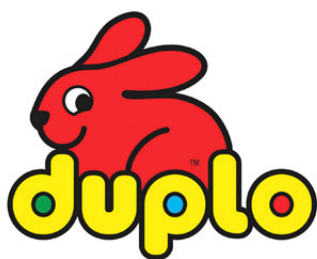
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Llar d'infants el timbalet

Designing the EV3 Education Core set

Interview with Lee Magpili, lead designer of the set

By HispaBrick Magazine®

Pictures by Lee Magpili

August 1st is the official release date of the 45544 LEGO® MINDSTORMS Education EV3 Core set. To celebrate this fact and to show you a bit more about what you will find in this set and how it was put together, HBM talked to the lead designer for this set. In case you haven't heard of him before, let me introduce you to Lee Magpili. You may have seen some of his other creations, like VALENTINE, the red dragon that was shown at LEGOWorld Copenhagen and EVAN the EV3 android that has been travelling along with the EV3 Education presentations to different events.

HBM: Before becoming a LEGO Designer you were AFOL. What was the transition like?

Lee Magpili: There's no real short answer to this, I did a whole talk about being an AFOL and Designer, 20 minutes and I could probably go for an hour or maybe more.

For me, I'm still an AFOL that just happens to work for LEGO

as a designer. It just so happens that I get to work and make money doing something I absolutely love to do. LEGO bricks have been a way for me to express myself as an individual through the craft and creativity, and everything I have done in my lifetime has led me to this career. Learning the basics of design process and mechanical functions through university as an Engineer, selling LEGO as a retail associate and eventually creating and teaching robotics programs has all but made me a better LEGO Builder. Being an AFOL has made me humble to all the great work that is being done out there by fans and enthusiasts and building the right network of fans and internal employees got me to where I am today. And now, I can say that I have my life's work up until now packaged up and ready to go to the masses, that everyone who will touch a LMS Education EV3 set will get a part of me, and will get one of my MOCs sitting in their classrooms. I also hope that I'll spark one genius kid into becoming something greater than I'll ever be. That's what it's like to go from an AFOL to a Designer.
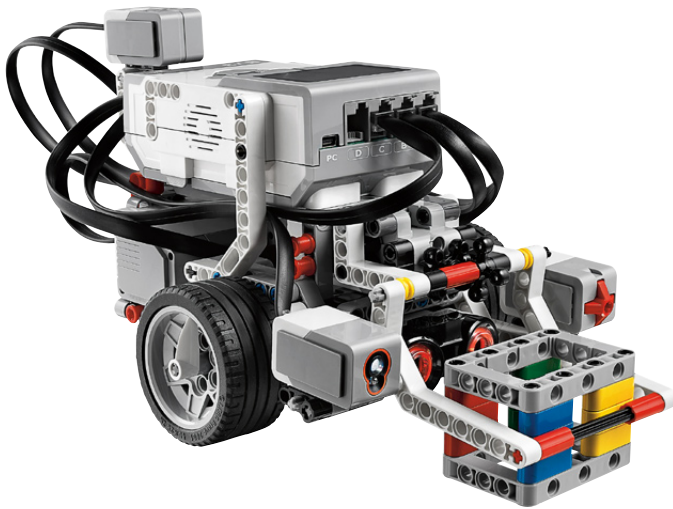
HBM: What were the main values that new educational EV3 models intend to convey to students? How are they different from those of the NXT Edu set?

LM: Firstly, we wanted to make a robot that was easy to build and learn the programming language with, there the EV3 and the NXT are similar. We also wanted to give some additional experiences after the initial learning of how to robot as well, hence the additional models.

There were also significant hardware upgrades that had our users in mind. Surely there were the upgrades in technology such as more memory and faster processing speed, and we also developed a new smaller motor and reshaped the NXT motors to make a better building and robotics experience.

(I put a lot of learning from my personal experiences into the EV3 core set and models. I felt that the model should also be good for competition and have a good look that kids would really appeal to. Decreasing build time without sacrificing stability was also something we wanted to go for in our models.)

Ultimately we wanted to make it a better experience overall, from building to programming and start to 'finish'. I made models to try and give the students something to strive for, building and programming techniques that were clever and useful as the student got better at making robots.

HBM: Did the models influence the choice of sensors to be included in the set, or was it the other way around? What were the considerations behind a sensor assortment so different from the retail EV3 set?

LM: We really had to go with what made sense in a classroom or educational setting here, even competitions were taken into account. Every brick, and HW piece have been chosen with that in mind. Of course the models needed to have a clever way to use them to make sense. The addition of the second touch sensor, for example, came late in the process, so it wasn't easy or possible to include a model that had two touch sensors. Including the ultrasonic sensor instead of the IR sensor was a matter of precision. Schools, educators, robotic competitors wanted the precision of the US sensor so that made more sense to have in there. The gyro sensor was a big question in that we had to come up with a way to make it simple enough for younger students to use and understand. I

think we came up with a great assortment that will add some great new functionalities to new robots students make.

HBM: Is the design process (philosophy, budget, building techniques, and other requirements) very different when designing models for the Education Division and for the "mainstream" line?

LM: I believe so, as it includes the input of an Educational specialist at the very least. We need to work together to make a model that is understandable for teachers as well as students and it needs to have the content and tutorials to match their needs. There needs to be a good dynamic between the designer and educational specialist in order to make a great content and model. Our sets typically contain many models out of the same volume sample, for example, the Core set was designed with almost 30 models in mind, including the expansion set models, the core set models, and the Design and engineering pack models. We had to maximize the use of the collection of elements in the box.

In my experience, for an LE model, everything matters so much more. Each step takes a lot of care as it needs to make sense in a classroom. The building experience has a lot of other things to consider, such as build time, building space and element sorting or finding. Not that those things don't matter in a 'mainstream' model, but we need to consider a couple of different audiences and spaces as well.

HBM: A lot of open frame pieces (e.g. 64179) are used in the base set and the expansion set. How has the availability of this kind of piece influenced the design process?

LM: I personally really love the frames as building elements and use them in so many of my own models. This element has been found to make building so much easier and sturdier so we really wanted it to be a feature in our sets. Even the motor design had these elements in mind so that we could use them more efficiently.

HBM: What does the EV3 offer to motivate female students in classes? Were female LEGO® Designers involved in the development of the EV3?

LM: Unfortunately there were no 'official' female designers in our EV3 team, but we did have a host of female marketing managers as well as another female designer in the LE team. I would say it's pretty difficult to create a base model robot that appealed to girls only for example, although I believe we have chosen robot models and programming activities that appeal to both boys and girls. We did not have a female designer on our theme, but one of our educational specialists who has developed Design & Engineering is Cathy Helgoe. As a whole, we wanted to make our models more 'cute' and 'accessible' as well as add a few decorative and colored elements that we hope could draw in some other females. Models such as the Puppy and the Elephant really appealed to everyone and even Znap, Tankbot and Gyroboy had a lot of character that girls might like and identify with.
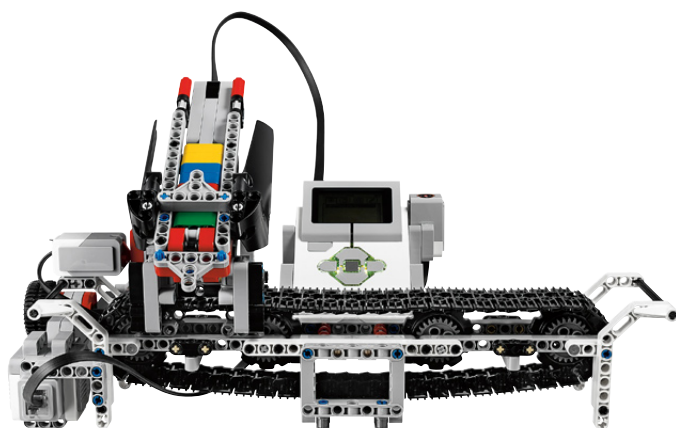
HBM: Do you have any favourite model? Why?

LM: I'm the most proud of the robot educator base model since so much of my experiences have gone into it. I'm just proud to be able to design what could be someone's first experience with a robot and hope that person really comes out enjoying and wanting to learn more about robotics.

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Robot arm - this was designed by Hans Madsen, and for his 25th year working at LEGO® we named it Robot Arm H25. My original sketches had a turning wrist, but it turned out much more complicated and did not have quite the right look that we wanted. Hans was able to give the robot arm a more modern look and simpler functionality. I hope that students can do a lot with it, especially when there is more than one Robot arm.
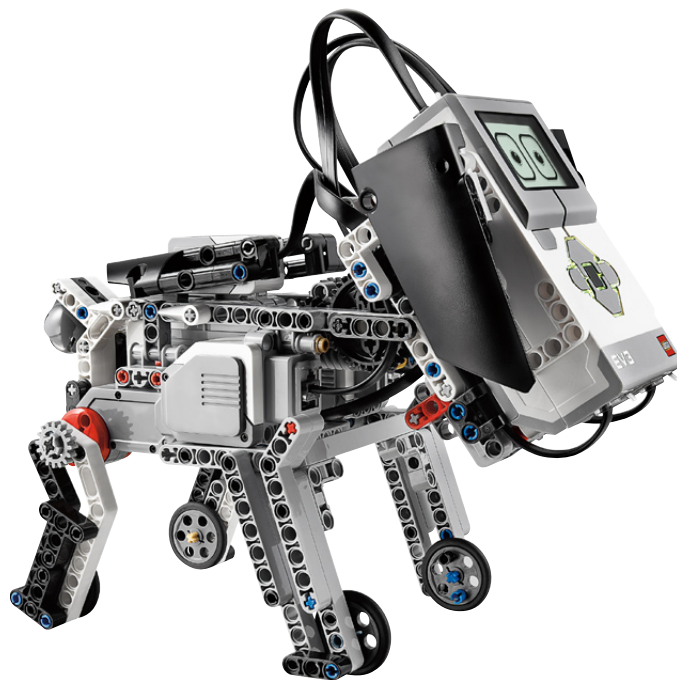
really looks great and is cute and approachable, its simplicity is really contrasted by a major programming feat! Regards to DB for this one.

Color sorter - I wanted a more hands on experience with this model as well as something a bit more radical in how we used our parts, officially anyway. We also wanted a way to show how arrays were used, so information should be stored and played back. Scanning and sorting meant the builder had that much more contact with the robot and having the conveyor belt gave much more reason to have the tracks in the set.

Gyroboy - The front cover model. Segway and balancing robots have been done before, so there had to be something special about this one. I already had the puppy and a bit of the color sorter as a start for inspiration, this model had to have character. I wanted to make a fun model that could do more than just balance, he had to be able to stand there and look great, and do cool stuff as well. I originally wanted a game to play with the robot, such as tag or the like, but i did have some limitations in the programming. Balancing had to be first, and then I could throw in a bit of control by color and expression with the eyes. At the end of it all, it came out being super iconic, using all of the sensors (save for one extra touch sensor) in the set and in a clever way. So much went into the design of the arms, the stand, the programming, it was a real labor of love, and it came out great.
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Puppy - the most advanced and interesting program went into this one. As a physical robot, it doesn't do that much, just sit, stand and move its head. There's a game you play with the puppy, if you pet and feed it the right amount of times, it will have hearts in his eyes and bark lovingly. If you pet him too much, he gets angry and if you feed him too much you get a surprise. And some other behaviors as you let the pet and feed count go to zero over time.
Here we also take advantage of the screen and the speaker by using eyes and sounds to give the puppy emotion. The puppy

LEGO® Education StoryStarter

By Jetro

Pictures by LEGO Education

LEGO® Education is putting the finishing touches to a brand new product, designed as a hands-on approach to creative writing and storytelling.

Once upon a time… four easy words to get a story started, but they are only the beginning. I still remember the horrible moments that seemed to stretch out to an eternity whenever we got a writing assignment in primary school and I simply didn't have a clue as to how to get the story going. So how do you get a story started, and, of equal importance, how do you give it a good ending? LEGO Education has the answer and it's called StoryStarter.

Teaching with LEGO bricks.

In previous issues of HispaBrick Magazine® we have written about the use of LEGO in teaching Science, Technology, Engineering and Mathematics (STEM), for instance on the legospace.com website which features experiments with LEGO constructions that are carried out on the International Space Station[1], but this is not the only field LEGO Education is active in. There are many other areas of education where a hands-on approach can stimulate students to take a bigger interest in the subject and have fun learning. It is all about creating an engaging learning experience and what better tool to use than a product many students already have a great affinity with: LEGO bricks.

One of these areas is literacy, an important part of which is related to being able to get ideas and thoughts across both verbally and on paper. Creating stories is an important step in the development of these skills. LEGO Education did research into using LEGO Bricks to teach storytelling. A story is more than a collection of words. It needs a plot, a structure and other elements, and the groundwork for all of these can be made using LEGO elements. The result of this research was then further developed by LEGO Education into a set made up of an ample collection of LEGO elements (1147 in total in the starter pack), a curriculum including lesson plans, story topics and reading material and a software program with which the students can turn their ideas into nicely presented stories.

Building the story.

Any story consists of several clearly identified elements: a beginning, middle and an end. Using StoryStarter to create a story students will work together in groups to build these three (or up to five [2]) stages of the story, each on their own baseplate. By putting bricks into the hands of the students the story turns from something abstract in their minds to something tangible to build and expand on. The science-fiction writer Isaac Asimov quoted to have said: "Writing, to me, is simply thinking through my fingers". StoryStarter aims to be a tool to help students do just that.

But what if you get stuck? What if you don't know where to take the story? The StoryStarter set comes with another plate on which a cardboard decision card can be placed. With the help of a spinner the card can help decide if the story takes place in the countryside or in the city or whether a character feels sad or confused after a certain incident.

After building the story as a group, each student writes his own version of the story, and since each one chooses his own point of view this may result in very different stories based on the same builds. As a final step students can use the web-based program StoryVisualizer to publish their story, importing pictures of the builds and choosing different layouts to give it a nice look [3].

The results

StoryStarter was tested in 50 schools across the USA. The feedback from those trials was very positive. Take for example Mary Walser, a 3rd Grade Teacher at Fairview Elementary School (High Point, NC): "Since my students thought of it as fun, many of them didn't realize they were learning throughout the process. For students who do not usually think of themselves as good writers, StoryStarter acted as a springboard into a part of themselves they didn't know was

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there". Her words are typical for the feeling the product generates among both students and teachers. The former are especially excited by the use of LEGO® bricks which they are often already familiar with and feel inspired by the fact that rather than having to work out a story all by themselves, creating a story now becomes a playful and collaborative problem-solving task. The latter are stimulated by the fact that their students not only perform better, but are actually looking forward to classes they used to dread.

It's no wonder then that there is a growing interest in StoryStarter, which was officially launched in the USA and Russia in January 2013. And the product will not be limited to those two markets. It is programmed to be released on the European and Asian markets in early 2014 and will be available in a dozen languages, including Spanish, German, French and the Scandinavian languages for Europe, and Japanese and Chinese for Asia.

The AFOL point of view

LEGO Education products are a very specific segment that many AFOLs don't usually pay much attention to. The specific

nature of the products, which are often presented in a much less glamorous way that retail sets, and the different pricing, partly due to the fact that rather than a construction set you get a teaching solution, often result in little interest from AFOLs. However, when you have a closer look at the inventory (like the different Community Worker sets that contained 30+ minifigs) or when the set is made up of specific elements that can only be obtained from LEGO Education (like the 9688 Renewable Energy Add-On Set which contained elements like the E-Motor, Energy Display and Solar Panel), some sets are real gems for AFOLs.

The StoryStarter set has two strong points from the AFOL point of view. The set comes in a practical storage bin with two extractible trays, providing a LEGO solution to the ever present sorting dilemma of many AFOLs (how I wish those boxes were available separately!). It also contains a large variety of specialty bricks: minifigs, animals, complements, trees and plants, etc. in multiples of five to ensure you can include every element in each of the up to 5 stages of the story. [4]

In the end of course it comes down to the excuse you find to buy the set you know you want. I'm sticking with the fact that my kids would really benefit from having this valuable educational material available at home. Whether I'll actually allow them to play with it (unsupervised) remains to be seen…

[1] See the article LEGO in Space in HBM011
[2] A 5 scene structure would consist of: beginning, building up, climax, building down and end.
[3] StoryVisualizer takes its inspiration from the Comic Builder application available for many of the LEGO themes on the official LEGO website, like the City Comic builder at http://city. lego.com/en-us/comicbuilder/intro.aspx
[4] You can find the BOM of this set ("element survey" in LEGOspeak) on the product page at http://www.legoeducation. us/eng/product/storystarter_core_set/2457

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Homemade sensors for NXT: a multiplexor

By NXTorm

As you all know, the NXT is the programmable brain of the current LEGO® MINDSTORMS universe. You can connect official sensors to it, but also your own sensors. This article is an introduction into the DIY of MINDSTORMS: you will learn to program your own multiplexed touch sensor. Come again, a what? Well, it's a number of touch sensors that are connected to a single NXT sensor port. Let's get going!

WARNING

If you don't want to break anything, stop reading. I won't be held responsible if anything happens to your NXT. But it will certainly be fun. More information: www.nxtorm.es

NOTES:

All the experiments described below have been tested previously.

In order to understand this article it is helpful if you are familiar with the basic programming functions of NXT-G. Even so, I will explain everything step by step.

MATERIALS

The materials we will use are cheap, relatively easy to obtain and won't require soldering. You will find them in electronics shops or on the Internet; there are many options. With this in mind, let's get to the list of materials and their pictures.

1. An original LEGO MINDSTORMS connection cable that we will cut in half.
2. A test modulo or "breadboard" (see image).
3. Four push buttons that can be stuck into the breadboard.
4. Black and white wire for connections, both long ones and short ones for connections.
5. Three resistors of ¼ watt (1/4W) of 2K2, 4K7 and 6K8. The colours are: 2K2: red-red-red; 4K7: yellow-violet-red;

6K8: blue-grey-red.
6. Two screw terminals for the cables.

THE CABLES

After cutting the original NXT cable in half, strip only the tips of the black and white cables to leave the inner cable bare. The rest you can leave unstripped.
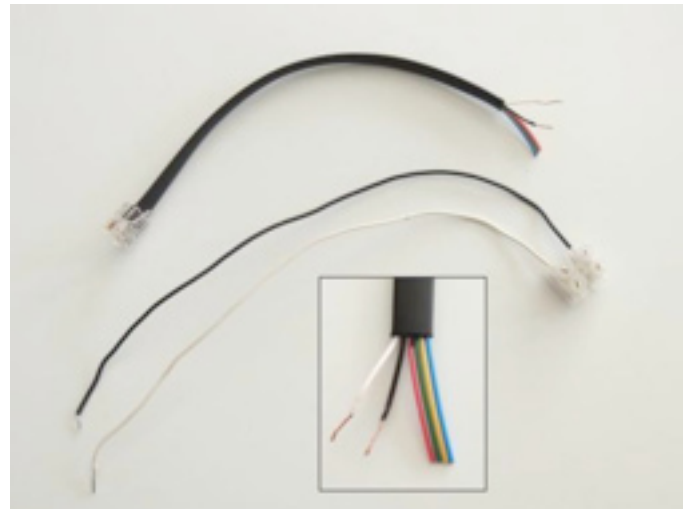

It is easiest to fit them to a screw terminal and connect them the stripped end of a rigid cable (wire) as in the picture. These are easier to connect to the breadboard than the original NXT cable, which is made up of several thin copper wires and so less rigid.

FIRST TEST

The easiest thing is to start the NXT, go to the Try-me menu and select Try-Touch, i.e. the touch sensor. Connect the cable to port 1, look at the screen and let the stripped ends of the black and white cables touch.

The first time I did this test I was really excited, but of course it is a little rudimentary. We can make a small improvement with the following program:
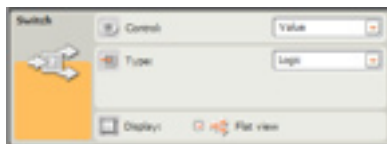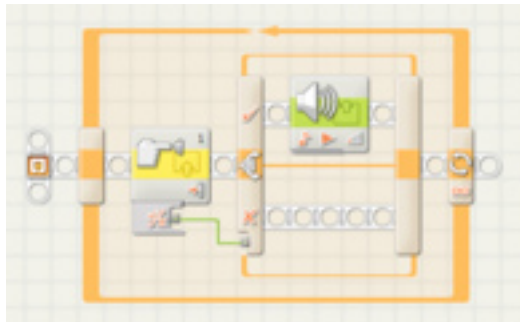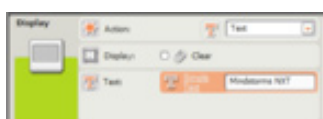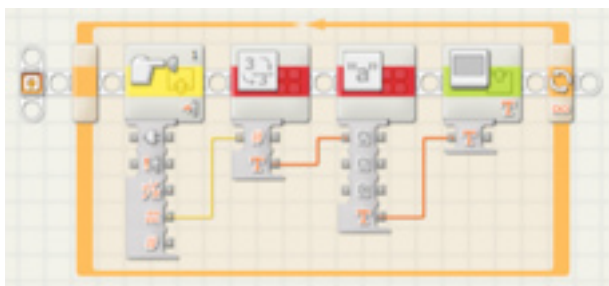

Configuration of the program

Contact sensor: select "Pressed".
Sound Action: "Tone"; Note: for 0.1 sec; Wait for Completion: No;
Switch: Select "Value" and "Logic" (see image).
Loop: unlimited

As an aside, you can select the icon of the Touch Sensor Block on your computer and then check the lower left corner of your screen as you connect and disconnect the cable.

OBTAINING "Raw Value"

Although there are several ways to obtain data, we will concentrate on the RAW value the touch sensor provides, and which goes from 0 to 1023. Click below the block to access the hub as seen in the image and write this program. The details are below the image.

In the configuration panel of the Text block, write several spaces in the box marked "B". The Display block is configured for Text and the check box for Clear is unchecked. This program prevents the screen from flickering and digits from previous numbers showing up.

THE BREADBOARD

There are many models, but they all have a common row at the top and at the bottom, i.e. a row in which all the pins are connected. There are also columns of 5 connected pins. Are you in doubt if two pins are connected? Use the NXT with the previous program!

THE FIRST PUSH BUTTON

Push buttons have 4 pins to fit them into the breadboard. The pins are internally connected in pairs. How to tell them apart? Connect them diagonally (see image or... use the NXT to find out which pins are connected!

How? With the push button on the breadboard, connect the black and white cables randomly and use the previous program. Do you get a 0? In that case the push button is incorrectly connected: change the cables until you get a reading of 1023. Then the connection will be right.
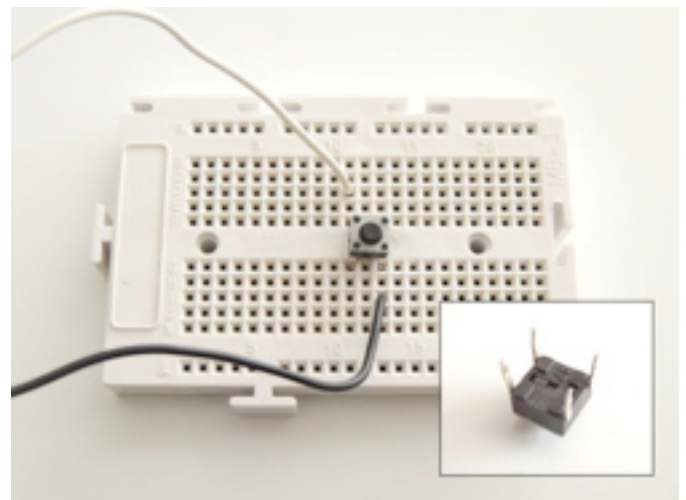
ONE MORE STEP: A RESISTOR

Now we are going to add a resistor of 2K2. The white and black cables are connected to a common row (one top, one bottom) and I have used a small white cable for the connection. With the 2K2 resistor the value is approximately 181, because not all resistors are the same.

A SECOND PUSH BUTTON WITH RESISTOR

Now that we have a first push button, let's add another one together with a 4K7 resistor. Simply duplicate the earlier construction.

What value do you get when you push the second resistor? In my case it is 322. As you can see, THE RAW VALUE DEPENDS ON THE EXACT VALUE OF THE RESISTOR YOU USE. You can use this idea for many uses, including a multiplexor or a resistance reader.

THE MULTIPLEXOR

To finish our multiplexor we simply need to add another two push buttons. With one of them we will use the 6K8 resistor and the last one will go without 0K resistor, i.e. a bit of wire. We already know the RAW value without a resistor: 0. My RAW value for the 6K8 resistor is 409.
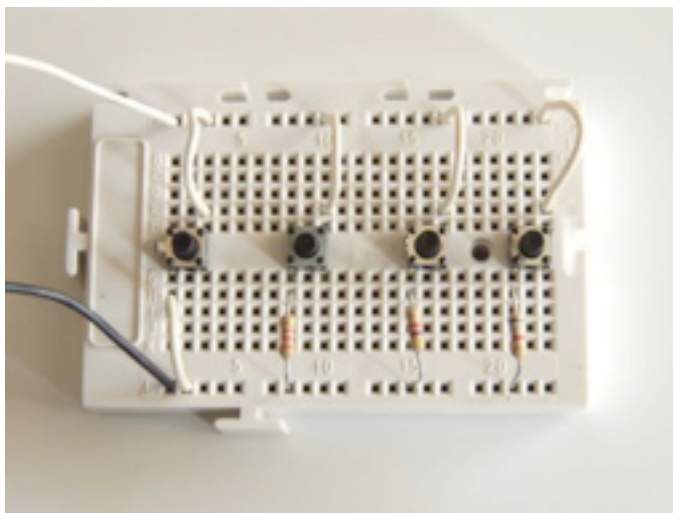
So now, simply reading the value on the screen you can know which push button is pressed. We have built 4 home-made touch sensors using a single NXT port. And you could add even more!

THE IMPROVED PROGRAM

Looking at the screen you know which push button is pressed, but can the NXT do the same? Of course! But the program gets a little more complicated. Among other things because sometimes values can vary between two number, e.g. 409 and 410. The "dirty" way of fixing this is to add more tabs for these values. Write down the values for your buttons on a piece of paper and we can continue:


In the configuration panel of the Switch block, select "Value" and "Number" (see image). Now deactivate the Flat View check box.

On the right in the configuration panel of the Switch block you will see three buttons. +, - and *. The + serves to add more tabs, up to 5 in our case, corresponding to each one of the push buttons plus one for 1023 when no button is pushed.

Make 1023 the default with the *. Remember my numbers are: 0, 181, 323, 409 and 1023, which are written in the window below.

Now you'll need to select each of the tabs with the mouse to program each one for the action you want to associate with the button: the movement of a car (a remote with 4 buttons), showing a number on a screen, playing a sound as if it were a piano, etc.

Each tab in the Switch corresponds to the action of one push button and the additional tab is for the default case when no button is pushed.
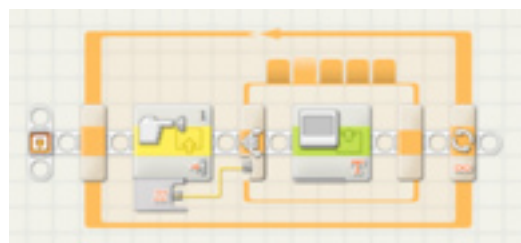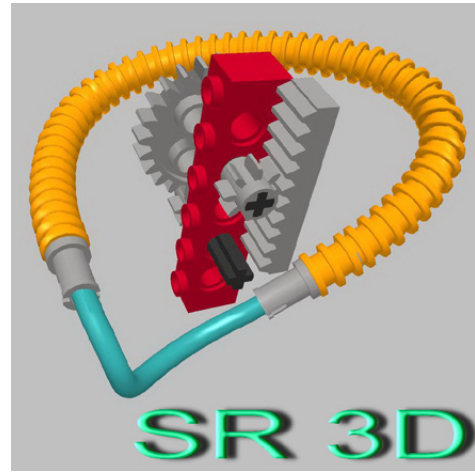

And that's it, we're ready. I hope you can take advantage of this idea for your own ideas and applications: the possibilities are endless. And it looks like things will work exactly the same on the upcoming EV3. Good luck!

Would you like more information? www.nxtorm.es
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SR3D Tutorial

Basics

By legolijntje

SR3D Builder is a LEGO® CAD program to build your digital models. It uses the LDraw library of parts and it's files (.l3b) can be used in other LDraw programs such as LDview, LPUB, MLcad and more (although there can be compatibility issues).

SR3D Builder is the perfect combination between LDD (LEGO Digital Designer) and MLcad. It has the easiness and modern feeling of LDD (and the automatic brick placing; bricks snap into place) and the huge parts collection and a variety of options of LDraw.

SR3D Builder can be used for every theme or model type you want to make, but it's focus is on Technic models. It has tools to animate and test your model's functions, it has (at the time of writing) basic pneumatic movements, it has all kinds of connections and much more.

In this tutorial, you'll learn the basics of SR3D Builder. The more advanced stuff will be explained in later issues Before I start, there are some things to remember:

- SR3D Builder is still in development, so, it is possible that there are some changes in future versions. This tutorial uses V0.8.9.16.
- SR3D Builder has a free and a paid version. The basic stuff covered in this issue is all available in the free version. However, more advanced things aren't. I will add a note when a function is not available in the free version.

Installing

I won't go very deeply in installing SR3D Builder. Just go to the website and click on Download in the download menu. When downloaded, it's just a normal installation, which I think doesn't need any more explanation.

The first startup can take some time, because SR3D Builder has to build its database images.

The interface

SR3D Builder consists of 2 windows. The Model Space, in which you build and view your model. And the Toolbox, in which you can choose parts and colors, manage your groups (explained later on) and move (animate) your (Technic) model.

The Model Space

The Model Space has 2 top bars. The first one is the standard top bar that you've probably seen in other programs. It includes things like save, open, import, help, options and some other less used stuff.

The top bar underneath it includes all the main functions SR3D has to offer. I won't explain every button now, as you will come across them eventually as you go along.

On the bottom of the main windows you will see a small bar which shows information. From left to right:

1. A loading bar for general use (for example when selecting multiple parts or loading a file).
2. Your current FPS (frames per second).
3. The green block shows the group in which you're currently building.
4. The red block displays information about what the program just did (or is doing). It shows things like "Action: Add Step" when adding a step or it displays the loading time when you selected a brick and much more.
5. The blue block displays the name and number of your currently selected brick.
6. The last part displays the position of your current selected brick.

The Toolbox

The toolbox is a very important part of SR3D Builder. It has four tabs on the top:

- Parts: this is where you choose your parts and colors.
- Groups: this is where you can manage your groups (explained in a later issue).
- Minifigs: this is where you can assemble your minifigs. At the time of writing, this isn't working yet.
- Anim. Console: this is the Animation Console (only available in the paid version). This is where you can make buttons and sliders to control and test the functions of your model. This is mainly used for Technic models.

For now, I'll only explain the Parts tab.

On the top is a dropdown menu in which you can select the brick type you want to use. Under the dropdown is a search bar, in which you can search bricks. And next to the search bar are quick searches: left-click on a quick search to find the bricks matching the query (only in the current brick type). Right click on the quick searches to see more quick searches (not all brick types have 2 pages).

The search bar has some special commands to make searching easier:

- Just type something to search all parts.
- Add a – before your search term to only search in the currently selected brick type.
- Add a * before your search term if it's a part number, so the program will search for a part with that part number.

Placing your first bricks

When you start making a new model, this is what you have to do:

1. Choose your model theme/type in the top bar. This affects what parts and categories are shown in the parts drop down in the toolbox.
2. Choose a part by clicking on it in the toolbox. It appears in the model space with a pink line, this means the part isn't placed yet. You can also choose the color now.
3. a. You can move the part by holding the left mouse button and dragging the mouse/part across the screen. You can rise and lower the part using the mouse wheel (difference: 1 plate), holder ALT while using the mouse wheel (difference: 1 brick) or using the "Page Up" and "Page Down" buttons on your keyboard (difference: 1 brick).
   b. You can rotate the part by using the 3 arrows sticking out of the brick. Holder CTRL while using the arrows will make the rotations smaller. Holding SHIFT while using the arrows will make the rotations even smaller then CTRL.
   c. You can move the "camera" by holding both left and right mouse buttons and dragging the mouse across the screen or by pressing the mouse wheel. You can rotate the camera by holding the right mouse button and dragging the mouse across the screen. (*)
4. When the brick is on the right place, just press enter or use the spacebar to place your brick. You can also right-click on the yellow dot in the middle of the blue arrow. The brick outline will switch to green, which indicates the brick is placed.
5. You can now place the same brick again or press delete or escape on your keyboard to stop placing the brick (you can also just select another brick if you want to place more bricks).

(*) If you don't like the way the camera moves, try using the "LDD like mode". Many people prefer this over the standard. To enable it, go to "View" in the top bar, select "Preferences" and an options screen will appear. Select "LDD like rotation mode" in the "Appearance" tab.
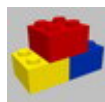
Selections

If you are new to SR3D Builder, I recommend to try to build a small model or set before going further.

This part is about the many different selection modes SR3D Builder has to offer. I'll list them all together with a description and the button to use them (all in the second top bar), but remember: the first click is very important.
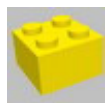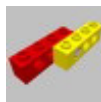
- Brick Selection Mode
This is the normal selection mode. Just selecting a piece in the model.

- Block Selection Mode
This selects all bricks connected to the selected brick, but it selects only the really connected ones, such as normal bricks or pins in Technic holes.

- Connected Selection Mode
This is the same as the previous one, but it also selects connected parts that are loosely connected, such as axles in Technic holes.
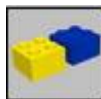
- Color Selection Mode
This selects all bricks with the same color as the selected brick.

- Shape Selection Mode
This selects all bricks with the same part number as the selected brick.

- Group Selection Mode
This selects the whole group the selected part belongs to.

Moving parts

In this last part, I'll explain how to rotate things and how to test functions like moving gears.

This is the button you have to select to rotate bricks:

If you've have selected the button, you can select the brick you want to rotate. If you've selected a brick, all available rotation axles will have a green box and the active rotation axle will have a red box.
You can change the active rotation axle by pressing \ on your keyboard (it's probably located under your backspace). When you are ready to rotation, just keep the left mouse button pressed while dragging to the left or the right.

To test (Technic) functions, like moving gears or beams you have to select the button next to the rotation button, called "Animation Mode":

Now select a gear or beam or whatever you want to try and do the same as rotating: drag the mouse to the left or the right while keeping the left mouse button pressed.

WARNING: SR3D Builder is still a beta program, so it can't handle all types of connections and functions yet, so the program could crash (although the chance of crashing gets lower with every version). However, ALWAYS save you model before using the Animation Mode.

In the next tutorial, I'll explain how to use groups and how to animate your model using the animation console (only for the paid version).

For more information about SR3D Builder, visit http://sr3dbuilder.altervista.org
#

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Robotics with LEGO® WeDo (II)

An introduction to robotics for the young with LEGO® WeDo

By Diego Gálvez

In the first part I talked about the characteristics of the LEGO® WeDo set and the steps to follow when designing a model using this set (Design, Build, Program, Test and Document. In this part I will focus mainly on programming, exploring the programming environment of the WeDo software, how it works and we will end with a first program.

To develop this activity we are going to go through the following development phases.

Design

Since we are going to program the motor, we will need to design a prototype that allows us to observe the behaviour we will program for the motor.
This is where you decide what to build: a wheeled vehicle, a walker, etc. The objective is that it uses a motor to function. As an example I will use my crocodile design.
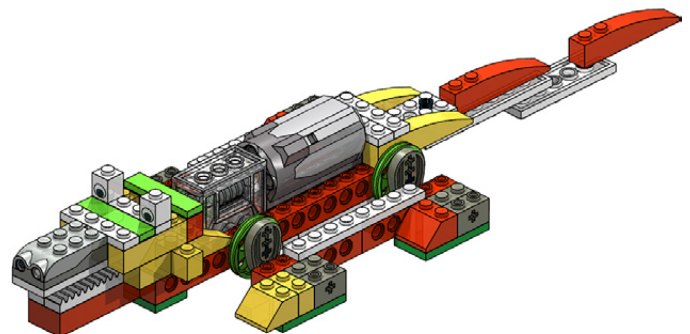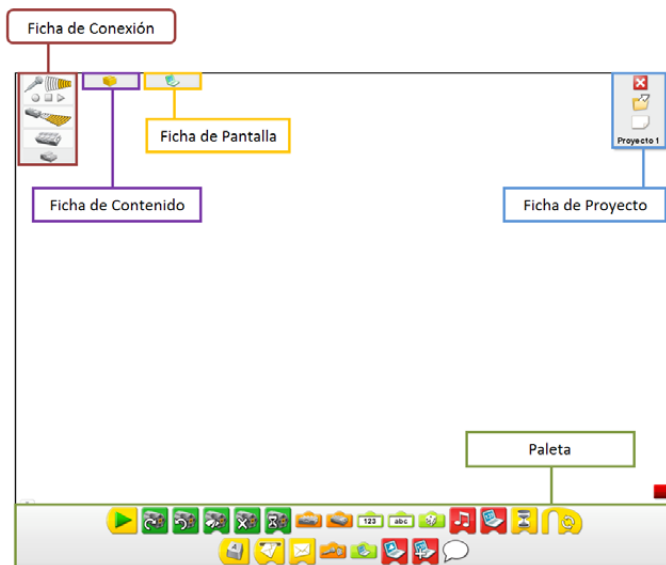
Build

After you have built your prototype it is time to build it. If yo would like to follow my design, the building instructions are on my blog.

Program

Before we start programming our prototype we should have a look at the programming environment and how it works.

When you open the WeDo programming software you will see the following window.

The window consists of 6 areas.

Connection tab

Here you can see which hubs, actuators (motors) and sensors (inclination, movement) are connected to the computer and also record sounds.

Content tab

This contains a basic building guide called "First Steps".
It also contains 12 constructions guides with their corresponding programs. Together these are called "Activities".

Screen tab

This allows you to visualise numbers, letters and images that must have been previously programmed.

Project tab

This allows you to do the following tasks: Exit, Open a project and start a New project.

Palette

This shows all the programming blocks. To visualise all the icons, click as indicated below:

Working area

All of the white area is the space where we will develop our programs.

Drag and Drop

The LEGO® WeDo programming environment is iconographic software as it allows you to create programs using blocks that represent instructions.

Dragging and dropping blocks into the working area, programs are built.

Let's do a first activity in the software, dragging the first block (start block). First, place the cursor over the block:

Then, click and hold the left mouse button. You will see the cursor icon has changed:

Now if you move the mouse you will see the block is dragged along. Once you are over the working area, let go of the left mouse button. You will observe the cursor returns to its original image and the block no longer moves.

If you need to delete a block from the working area, you can do a left click on the block (without letting go) and drag it to the palette, until you see the cursor change again:

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When the cursor icon changes, you can let go of the left mouse button anf the block will have been deleted.

Connecting blocks

Blocks are connected or linked to make a program.

To explain how this works, first place a Start block on the working area

Now drag a Turn motor clockwise block to the working area. Don't let go just anywhere: if you want to connect it to the block that is already in the working area, you need to drag it to a valid connection point, in this case to the right of the start block. You will see a shadow appear:

Once you see the shadow you can let go of the block.

How do you know if the blocks are correctly connected?

To check the blocks are connected you can left click on the first block in the program and drag it over the working area. When you do so, you will not only drag the first block, but also all the blocks that are connected to it. If you see that one or more blocks don't move, these have not been correctly connected.

In the example, if you drag the first block, the second block will also come along

Ready! We have just made our first program in the WeDo software; now it is time to test it.

Testing

In order to test the program we need to connect the motor to the hub and the hub to the computer. When you do this you will see the following change in the Connection tab:

You can now see the connected devices: A motor and a hub.

After this, the only thing that remains is to make your prototype (or the crocodile in case you have followed the building guide) is to click on the Start block.

To stop the program, you must click on the Stop block, which is located in the lower right corner of the interface.

To change the direction of the motor, simply click on the Motor block in the working area and you will see how the direction of the motor changes.

Documenting

If you have built a new prototype you can document it taking pictures or making a construction guide using special software.

Since the programs are automatically saved by the software, if you want to copy one you need to go to the following path on your computer:
User/My Documents/LEGO Creations/WeDO/Projects

In the next part we will have a closer look at the other programming blocks, which will allow us to make more and more complex programs.

You will find multimedia material (images and videos) of the creations of the author, some of them with building guides, at notjustbricks.blogspot.com.
#

LEGO® WeDo

The sky is the limit

By Edwar Romero
Pictures by Osvaldo Romero

LEGO® is a universe in itself; we can build our own worlds. We know it for sure. Give me a pool full of blocks and I would be able to make your dreams come true. The real challenge arises when we have few pieces, very few. From that point on, everything becomes intriguing, because now the question that comes into mind is how many models could I design?

That is where we are faced with the typical mental trap. A set with a limited number of pieces and designed for little kids in mind, must be limited as well in the amount of things we can build. Isn't it? We should think just the opposite, because that is what motivates our minds to go forward. That is why the programming language included with the software is designed so no previous programming experience is required to start working, or should I say playing? I have watched little kids from kindergarten to become experts with a little of play time. I would even dare to say that WeDo is designed with teachers in mind, not only with kids in mind. I know that teachers enjoy it more than the kids! It is incredible to observe how first or second grade students of elementary school can explain, as the best engineers can do, how mechanisms full of gears and levers work without any difficulties.

And that is not the only thing that we can think of when talking about the LEGO WeDo set. Diego Galvez summarized it nicely on the 16th edition of HispaBrick Magazine®. We usually think that WeDo is for the little ones and belongs only to the classroom. WeDo can be found in elementary schools around the globe. It has only 158 pieces, including the motor, two sensors and a handful of gears. Although it was designed for
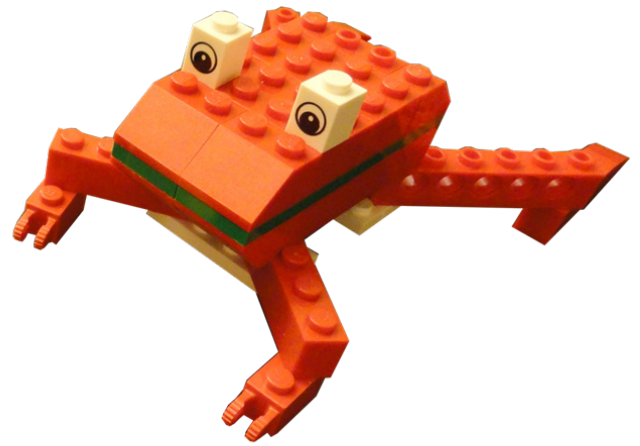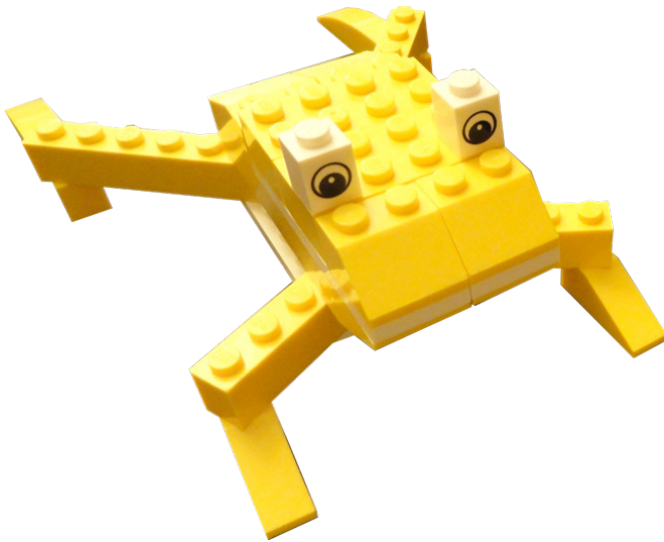
the school, little by little is entering our homes.

When we think about LEGO®, we think about fun, hours and hours of fun time for everybody. When we think on educational robotics with LEGO, the first thing that comes into mind is one of the MINDSTORMS® versions. They have been so successful that are even used in universities around the world for engineering classes. That is partially the reason why there is a version for the kids, the LEGO WeDo. If MINDSTORMS can motivate many to go to the university and follow technical careers, imagine what you could achieve if you motivate them from a younger age. Everything starts with little steps, overcoming a challenge after another, building and programming, playing and learning.

The WeDo set is not only for playing, the software includes classroom activities and a study plan covering math, science, technology, engineering and language. Yes, you read it right. Math, science, technology, and engineering make sense for this robotic kit, but language? LEGO calls it language, but it is more like language and arts. At the end, it is a complete curricular program.

Simple machines, motion, transfer of energy, animal structures, programming, sequence of events, search for creative solutions, mathematical concepts; all this educational notions have a common term, a common connector, the communication process, the language. There is also a motivational agent behind, the artistic construction that motivates and guides us to represent the world. What a school curriculum, not bad, isn't it? It is really interesting that if we try to remember the time when we were kids, or when we observe kindergarten students, there is something in common, we learn best when we play with things. We learn more by manipulating objects than sitting down in a classroom.

This educational technique has a name, constructionism. Not by chance Seymour Papert developed it, and became so influential that he collaborated with LEGO in what today we know today as the LEGO MINDSTORMS. What a coincidence.
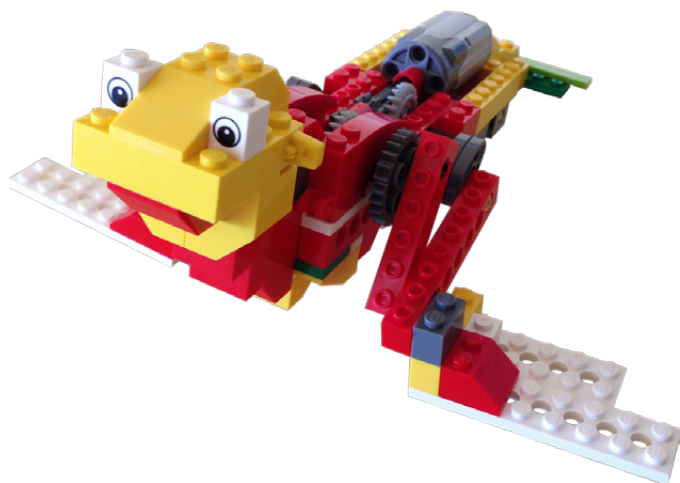
These sets were designed with an educational objective in mind. That must be the reason why we always end up learning something else and eager for more.

I need to mention that although there is only one commercial set of WeDo, there is also another version designed exclusively for Peru with 208 pieces (50 additional parts). The Government of Peru, OLPC (One Laptop per Child) and LEGO® reached an agreement to distribute more than 90,000 special sets of WeDo through schools around the country. In addition to the official WeDo set, and the special Peruvian version, LEGO also has available an additional set, called WeDo Resource Set (325 additional pieces).

However, what can you build with this set of LEGO? I would venture to say that almost everything. Simple and not so simple machines, your favorite bug and all kind of animals, among other things. The software includes 12 robot instructions ready to be assembled.

Since seeing is believing, the article is illustrated with a few samples of what can be achieved. The images used on the first and last page were assembled using additional bricks from WeDo Resource Set. The other included images were designed with the basic set of 158 pieces.

Although WeDo does not have the custom designed pieces of LEGO Technic® or the computing power (nor the batteries) of MINDSTORMS®, this set will challenge what you know about games for little kids. The colorful blocks are no less equipped tan the sets designed for older kids. Many parents have felt under the magic spell that seems to be casted on them. At the end, WeDo is a good excuse to go back in time to remember

how fun was to play around with blocks imaging your own world. I would bet that at a few homes you could hear similar conversions when the father is found playing around with the WeDo set: For God's sake honey, I'm telling you that this robotic set is designed by LEGO to be used at school, there is nothing wrong to have it at home. You will not complain when our kid becomes an engineer!

So, do you accept the challenge? How many designs you think you are capable of doing?

Like everything related to LEGO, the sky is the limit.

You can find more information and assembly instructions for the designs presented here and many more at:
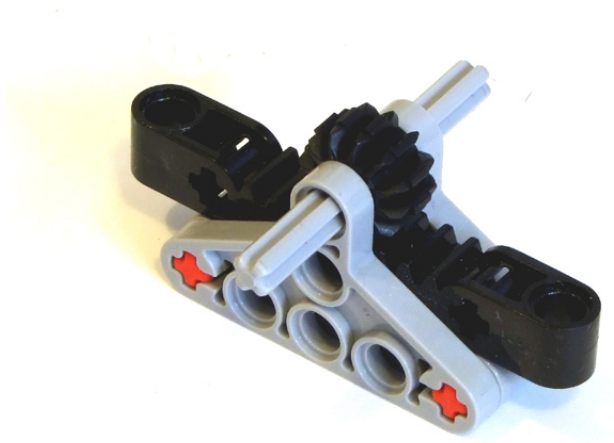www.wedobots.com
www.facebook.com/wedorobots
#

Technic basics: Circular and linear motion

By Oton Ribic

In the LEGO® Technic world we can see all kinds of mechanical actions: from the elementary circular and linear motions, through the more advanced elliptic and quadrilateral systems, to the complex multiple linkages that are capable of performing some amazing mechanical tasks. However, it is the first two—the circular and linear motions—that the vast majority of Technic models rely on. This time we shall focus on them, or more accurately, look at the ways to convert one to another, which is another common task occurring in all kinds of Technic models.

The carriers of the circular motion in Technic are almost exclusively axles, while there are many methods to build and implement linearly moving systems, each with its pros and cons; the choice usually depends on what the specific mechanism is supposed to do, and LEGO provides a considerable number of parts for this exact purpose.

Let's start with a mechanism which is probably familiar to everyone, as it is widely employed for vehicle steering control: the rack and pinion system. Nowadays there are compact racks available in various sizes, though for large extents of movement it may be necessary to build a custom one using Technic bricks and some dedicated racks (part no. 3743).

one controls the exact movements of motors. An additional advantage is the virtually unlimited extent of the movement, since the custom racks are restricted in size only by their structural strength (and the pinion torque, which can however be increased by gearing down). Note that this system, like many others, works in reverse as well: the rack may be stationary and the pinion movable.
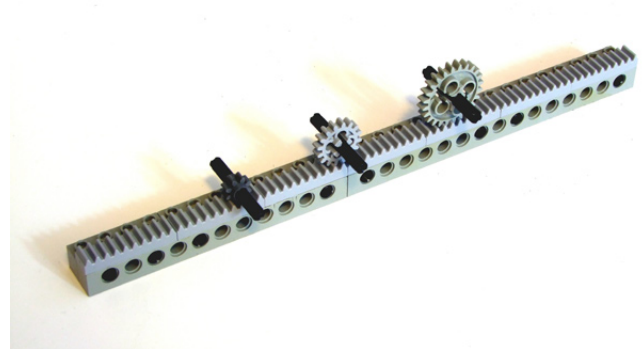

Building a rack is also possible using dedicated rack parts and Technic bricks. It can be of any size and driven by any type of gear.

A typical rack and pinion mechanism using a compact rack, used in many vehicles. Simple and effective.

A very useful feature of this system is its linearity, e.g. the fact that a given amount of angle of the pinion always corresponds to the identical movement length of the rack. Apart from vehicle steering, this is particularly important for various precision mechanics, robots or MINDSTORMS-based automation where

The main difficulty with rack and pinion mechanisms is their inherent size. For a rack to slide smoothly and accurately, the cradle needs to support it from all three free sides and it has to be long enough to prevent the rack from rocking too easily under strain. And of course, as with all systems involving meshing gears, it is prone to backlash.

Where even more precision is needed, one can benefit from the parts LEGO designed specifically for the purpose: linear actuators. Constructions made of standard beams, gears and axles can hardly rival their sub-millimetre accuracy of movement, and thanks to the low pitch angle of their internal worm gears they are capable of producing significant forces, especially the large actuator (part no. 61927c01). This has made them a popular choice with builders of construction vehicles, cranes and other models where plenty of force is involved, and their inability to be back-driven is an additional help in those cases.

However, the extent of their movement is limited to a couple of centimetres, and scaling them to something larger usually requires building a triangular structure or some type of a linkage. These, in turn, often imply the movement of the

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actuator itself during operation, requiring some additional mechanisms that transfer the rotation to them in any position. It is not difficult, but may take up some valuable space. The official crane and excavator sets are good examples of these mechanisms.
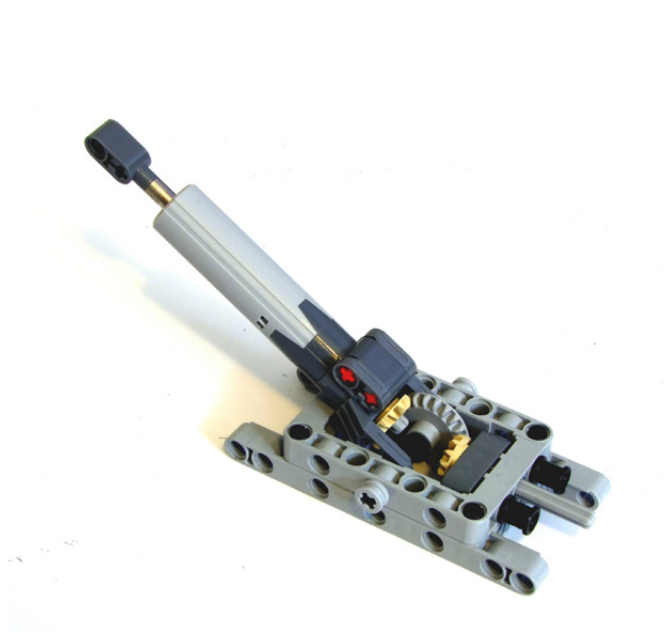
One of the smallest and the easiest methods to convert rotation to linear motion are the simple rotating liftarms attached to the linearly moving parts via an intermediate beam, like the pistons in the internal combustion engines. This approach requires some kind of a rail or a cradle to ensure the linearity of moves, similar to the rack and pinion systems, as shown on the picture. While easily built with just a few parts and allowing large extents, they have two drawbacks that limit their usefulness in practice: an extremely high transfer ratio (i.e. small rotations lead to large linear movements, often requiring gearing down), and furthermore, extreme dependence of this ratio to the position the liftarm.
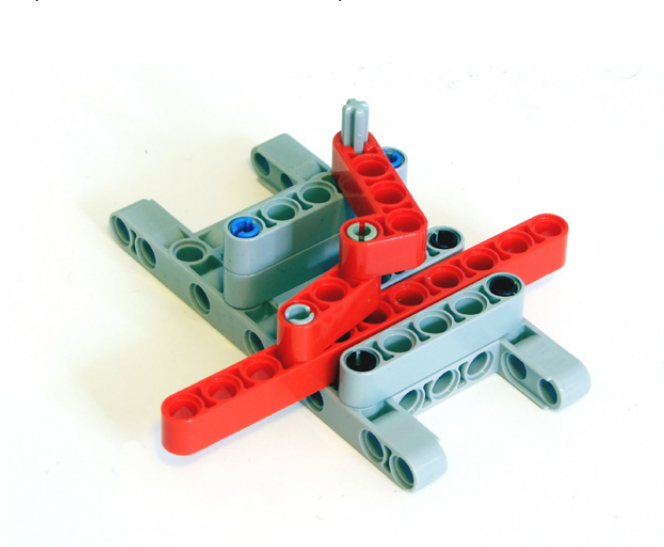
Liftarms are very simple. In this case, an axle turns and slides the long red beam via two arms.

If the length and the position of the liftarm is cleverly placed, it may serve as a protection against the linear parts moving beyond the desired extents: for example, in the aforementioned engine, the pistons never travel beyond their designated cylinder, even when the crankshaft makes a full circle.

Sometimes one can go even simpler: if it is necessary to provide force in only one direction, while something else (probably gravity) takes care of it moving in the other one when released, and the required railing is in place, a simple string spooled on the input axle can work nicely. It has a nearly linear transfer ratio, is highly accurate, and allows the input rotational system to be completely separate from the linearly moving parts: all that is required are some simple pulleys in between. Of course, we are all familiar with one very common application of this technique in the real world — elevators.
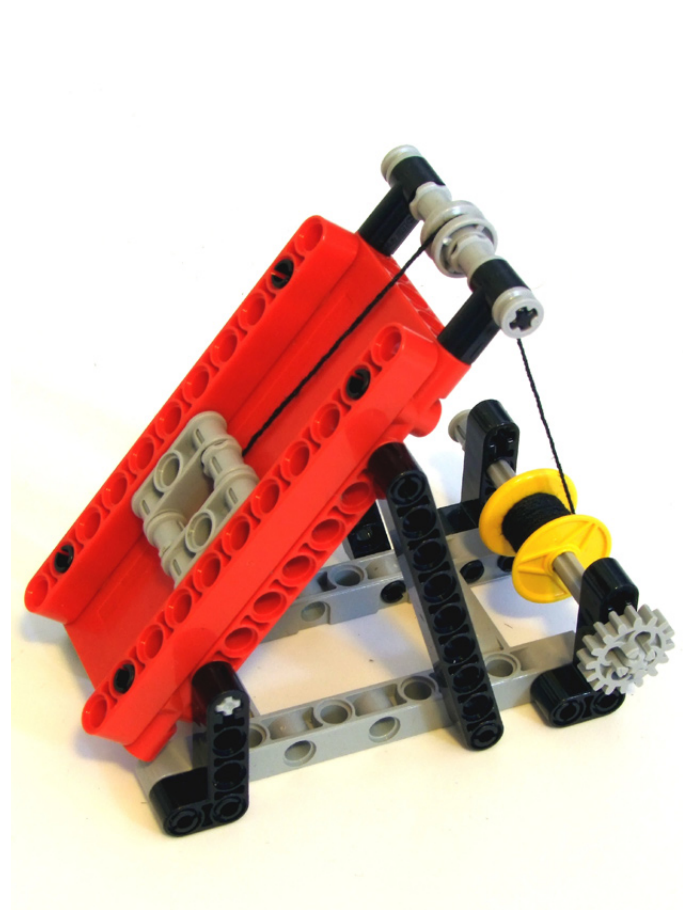

Where force in only one direction is needed (e.g. if the gravity takes care of the other direction), Strings can be a simple and accurate solution.

Besides the limitation to only one direction, this approach obviously does not work in reverse and cannot exert more force than the string can handle. But the LEGO® braided strings have a seriously high tensile strength, so it is usually enough for most models.

Another possibility is to use chains: for example, Technic link treads (parts no. 3873 and 57518) can be connected to 1x4 plates or Technic pins respectively. After spreading such a chain tightly over two sprockets, rotating any of them will move a desired link (or more of them) attached to a mechanism straight between the sprocket tangent points. This is a very accurate movement with a completely linear transfer ratio, especially if the entire chain is tensioned with an additional

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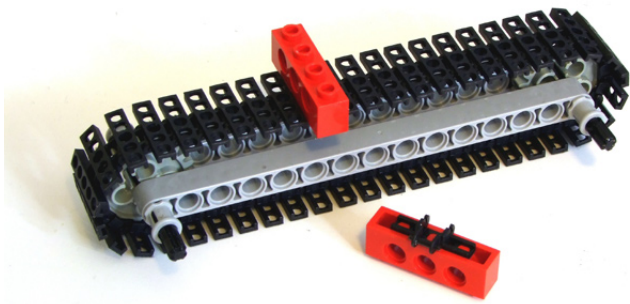
Some tread links can be connected to bricks: this one can support a 1x4 plate or a technic brick, as shown. They can also be used to slide a part in a straight.
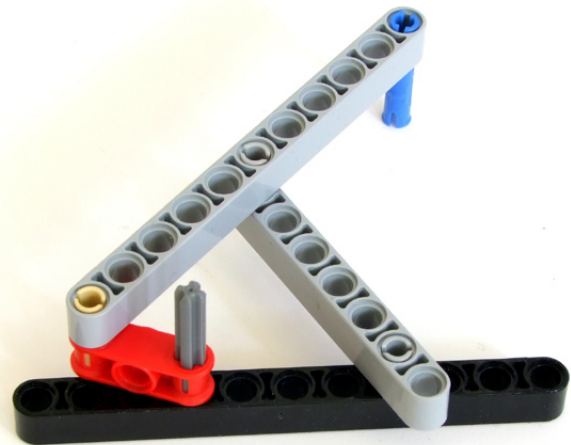
Hoekens linkage is one of many that provide linear or nearly linear motion. Here, turning the axle moves the blue pin almost straightly for a couple of centimeters.

sprocket as described in one of my previous articles, Quest for Technic precision. On the other hand, it can't be used where lots of power is required: it is only as strong as the chain itself, and as many have experienced, very high loads can dismantle it, especially the smaller 3873 link tread.

Furthermore, if one desires to pursue even more advanced solutions, there are many linkages that provide nearly or perfectly linear motion from a rotational one, which are not

difficult to build using Technic arms, can be built in virtually any size and have solid strength. For example, Hoekens and Watt's linkage are very simply built and create a motion very close to a straight line, and the Peaucellier-Lipkin linkage, while more complex, produces a perfect line. More information on these three and many other linkages would require a bit too much space for this article and stray from its basic idea, but it can be readily found around the Internet.
#

Converting circular to linear motion in a nutshell

- Rack and pinion offers good precision, strength and can be of virtually any size, but tends to get bulky at the larger scales. It is very common, and applicable almost anywhere.

- Linear actuators are very accurate and can produce significant force, however their control mechanisms can get complicated and they have a limited moving extents.

- Liftarms are simple, small, reliable and strong, but usually have inconvenient and changing transfer ratios (small changes at the input produce large movements at the output).

- If a force in only one direction is needed, and it is not very large, spooled strings and pulleys are a small, easy and accurate option.

- Chains with certain links connected to mechanical parts are very accurate, linear and not too difficult to build, but should not be relied on when dealing with large forces.

- Some beam linkages are simple but not perfectly straight, while others are straight at the expense of complexity and dimensions. However, they are all reliable and very strong.

POV-Ray Tutorial (III)

By Eric Albrecht

After reading the first two tutorials you should be to use LDView to convert an LDraw file to a POV-Ray file and do a simple render. You should also have a basic understanding of the contents of that LDraw file. This time, we will start trying to improve the quality and realism of the renders.

After the geometry itself, the most important part of making a realistic render is the lighting. After all, without lighting even the most magnificent geometry would only appear as a screen of black pixels! Everything that our eyes see appears the way it does because of light. Seeing and interpreting light is so innate that we can easily overlook just how complex the sources and results of light are. A single photon that hits your retina may have travelled millions of kilometers and been reflected, refracted, and filtered thousands of times. Our brains are extremely efficient at interpreting light, and are therefore also extremely adept at noticing when something looks wrong. Figuring out why it looks wrong is the hard part. The study of light is obviously far too complex a topic for this article, but there are some simple things we can do to make the default render look better.

For purposes of illustration I'm going to use a more complex model than the single red brick from previous lessons. I've chosen the 8110 Unimog because it offers a lot of shapes and colors for illustration. First let's render the model just as it is exported from LDView. This is what we get:

Notice how shadowed areas are totally black. For instance, the inside of the cabin has areas that are far too dark. Now look at the shadows on the ground. The shadows are sharp and distracting. The places where the shadows overlap look odd. So even though the model has reflection and shadow which makes it look better than the simple shading of LDView, it still doesn't look quite right. To understand why, let's look inside the POV-Ray file at the light definition.

```
// Lights
light_source {       // Latitude,Longitude: 45,0,LDXRadius*2
        <0*LDXRadius,-1.414214*LDXRadius,-1.414214*LDXRadius> + LDXCenter
        color rgb <1,1,1>}
light_source {       // Latitude,Longitude: 30,120,LDXRadius*2
        <1.5*LDXRadius,-1*LDXRadius,0.866026*LDXRadius> + LDXCenter
        color rgb <1,1,1>}
light_source {       // Latitude,Longitude: 60,-120,LDXRadius*2
        <-0.866025*LDXRadius,-1.732051*LDXRadius,0.5*LDXRadius> + LDXCenter
        color rgb <1,1,1>}
```

What we have here are 3 white point light sources distributed around the model. Point lights are the simplest types of light sources. They are the easiest to define and the quickest to render. The fact that the light comes from a tiny spot is what makes the shadows so hard. However, in real life there are no such things as point lights. Every light source, even a small one, is distributed over some finite area. Some lights, like the sun, are distributed over a very wide area. White (defined as RGB 1,1,1) is the simplest color. But in real life almost no light sources really emit every part of the visible spectrum, so white lights don't look right. Fortunately, both of these things can be easily changed. Let's replace the light definition with this:

```
// Lights
//front side light
light_source {
        <0*LDXRadius,-1.414214*LDXRadius,-1.414214*LDXRadius> + LDXCenter
        color rgb <1,1,0.9>*0.7
        area_light 100,100,3,3
        orient
        circular
        adaptive 1}

//back light
light_source {
        <1.5*LDXRadius,-1*LDXRadius,0.866026*LDXRadius> + LDXCenter
        color rgb <1,1,0.9>*0.7
        area_light 100,100,3,3
        orient
        circular
        adaptive 1}
//key light
light_source {
        <-0.866025*LDXRadius,-1.732051*LDXRadius,0.5*LDXRadius> + LDXCenter
        color rgb <1,1,0.9>*0.9
        area_light 100,100,3,3
        orient
        circular
        adaptive 1}
```

The most obvious thing I have done is to replace the point lights with area lights. The lights I have defined are circular with a diameter of 100 units (5 studs). The way POV-Ray creates area lights is by using a grid of points lights. In this case I have defined a 3x3 grid which means that each area light is really 9 point lights arranged in a circle. The next thing I've done is to reduce the blue in the light color by 10% (RGB is now 1,1,0.9). This makes the light a little more yellow like sunlight or incandescent light. Most professional photographers use 3 lights called a key light (the main front light), a back light, and another off axis light for highlights. I've replicated this here. I've also put a factor after each light that you can use to adjust the relative brightness of each. In this case I made the key light the brightest (0.9), but you might not always wish to do so depending on the effect you are looking for. You can also adjust the overall brightness by scaling all of them up or down the same amount. You can see how much difference this makes in the upper part of the next page.

Compared to the last render, this one has much softer and more realistic shadows. It also has a little better color. But the dark areas are still too dark. With only 3 lights, there is just no way to get any light into those crevices. One really easy trick is to add some reflectivity to the floor. This will allow some light to bounce up into the dark areas. The floor definition is at the very bottom of the POV-Ray file. Let's go to that section and add 40% reflectivity to the floor like this:

```
// Floor
object {plane { LDXFloorAxis, LDXFloorLoc hollow }
        texture {pigment { color rgb <LDXFloorR,LDXFloorG,LDXFloorB> }
                finish { ambient LDXFloorAmb diffuse LDXFloorDif reflection 0.4}}}
```

That last part in italics is what I added. Let's see what difference it makes.

What a difference! Everything looks much brighter and the underside is less shadowed. More can be seen in the wheel wells, for example. But there is still room for improvement. Some areas are still very dark. In the real world, diffuse light is all around us reflecting from the objects near us and causing changes in the filtered color of light locally. POV-Ray simulates this with a feature called radiosity. To implement it, I'm first going to put a sky sphere around the whole scene. A sky sphere is a very large sphere (radius = 10000) which surrounds the image. Our sky sphere will be the same color as our lights for now, but in future lessons we'll make it much more complex to more realistically replicate real world surroundings. Once we have a sphere of background color, we'll turn on radiosity. Add this to the beginning of your POV-Ray file:

```
#include "rad_def.inc"
    global_settings {
    assumed_gamma 1.4
    max_trace_level 10
    adc_bailout 0.01/2
    radiosity {Rad_Settings(3, off, off)}}
sky_sphere{ pigment {color rgb <1,1,0.9>} }
```

Radiosity has a lot of different parameters to set. Luckily for us, the file we've included (rad_def) comes with POV-Ray and has lots of different predefined settings that do all the work for us. If you right click on "rad_def.inc" you can open it up and see what's inside. The main thing to note is that there 10 different sets of parameters (or quality levels) defined, numbered 1 through 10. We'll generally be using either 1, 3, or 5. Level 1 is really bad quality but renders fast. Use it just to get an idea of how your lighting levels look while you are setting brightness of your other lights. Level 3 is what you'll use most of the time and looks really good. Level 5 is crazy, but awesome. It is described as "for patient quality freaks with fast computers about to leave on vacation" and they aren't kidding. This setting will take forever to render, but it may be worth it for very special images. You can choose which setting to use by changing the first number after Rad_Settings in the text I gave you to insert in your file. I've italicized this setting, and you can see that I've chosen setting 3. Let's see how it looks.

Now that's more like it! The lighting is much better. The dark areas are gone. Everything has at least some light. The transparent parts on the roof look much better. The shadows on the floor are less distinct because the diffuse light has hidden them. One new problem now exists which is that the flat color sky sphere has made the lighting look a bit flat. We'll address that next time with High Dynamic Range lighting (HDR) after which it will look like this:

I have to confess that I cheated a little. When I first added radiosity, the result was too bright so I turned the quality down to 1 and experimented by lowering the brightness of the other lights until I got a result I liked. Then I turned the quality back up to 3 and did the render pictured. This is a good way to experiment without taking too much time. You probably won't get the effect you want the first time you try. But that's the point of this lesson: the lighting makes all the difference and you have to experiment until you get it right.

All this quality comes with a penalty. Interestingly, the size of your model does not have much effect on render time. Whether your model has 1 part or 1000 parts, either way the computer has to calculate the color of every pixel individually. A larger model has more parse time (the time to load it into memory) and requires more RAM, but not much more render time. On the other hand, lighting is a major CPU time factor. The first image with just the 3 point lights took 2.6 minutes to render on a very fast computer at 1280x960 pixels. The second image with the area lights took 14.5 minutes. This is not surprising considering it effectively has 9 times more light sources (each area light is 3x3). The final image with radiosity at quality level 3 took 45 minutes. If I had used Quality 5, it would have taken many hours. The largest model I ever rendered had almost half a million parts (the Klingon Bird of Prey below). Parsing took 15Gb of RAM, but it rendered in only a couple of hours. On the other hand, the longest render I've ever done (the tow truck below) rendered continuously for 48 days due to the many light sources and especially the ground fog. All this means you'll have to balance your patience with the quality you want to achieve.

Happy rendering!
#

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An introduction to Robotics with LEGO® MINDSTORMS (XIV)

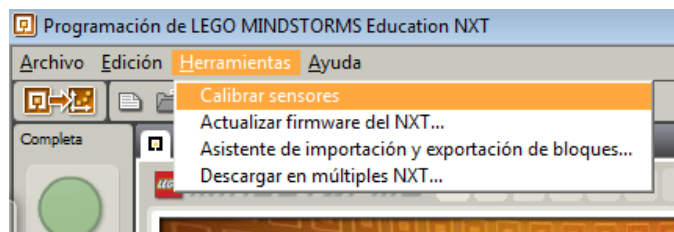## Multiple calibrations of light sensors

By Koldo Olaskoaga

A sensor (also called detector) is a converter that measures a physical quantity and converts it into a signal which can be read by an observer or by an (today mostly electronic) instrument[1]. These signals can correspond to light intensity, distance, acceleration, inclination, temperature, sound pressure...

In the real world, the environmental conditions can affect the readings of sensors and sometimes this can cause real headaches. In the case of light sensors, the light conditions can cause a robot that performed its task perfectly in the space where it was created, to be incapable of doing the same in another place: what the sensor saw as white in one place it sees as grey in another.

So, in the real working space it is necessary to tell the robot what is white and what is black, i.e. to calibrate the sensor.

Basic calibration of a light sensor

There are two standard methods of calibrating a light sensor in NXT-G. The first is by means of the **Calibrate sensors** option that can be found in the **Tools** menu of NXT-G and the second is to create a small program with the **Calibrate** block from the **Advanced** menu.

These tow methods allow for a single calibration for all light sensors attached to the NXT, so if we wish to use different calibrations for different sensors or two different calibrations for a single sensor we'll need to use a different strategy; we'll do so using the possibility the NXT has to store data in a file and read it later.

Before we get into this let's have a look at how files can be used.

Use of files in NXT-G

NXT-G allows you to store information in text files. These files can be read from the same or from another program and be transferred to the computer to analyse the data.

This data can be text or numbers, for example, the readings of a sensor...

In general terms, the steps to do this are as follows:

1. Write to the file
2. Close the file
3. Read from the file.

In each case the same block is used: **File access**, configured according to the need for each case.

Creating a file

The first step is to create a file. Since we are likely to run the program more than once, the first thing to do is to delete the file that was created previously, since otherwise the information will be added to the existing file.
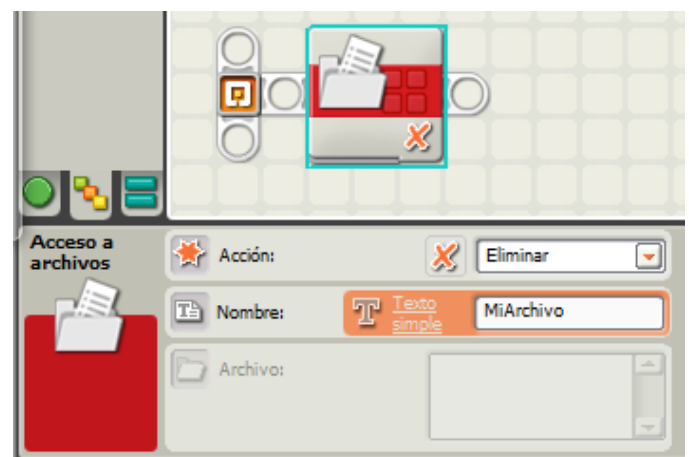
In the picture you can see a **File access** block that has been configured to delete a file named **MiArchivo**.

Once the file has been eliminated we can create the file again and start to write to it. There is no specific mode for creating a file: the file is created the first time you write to it.
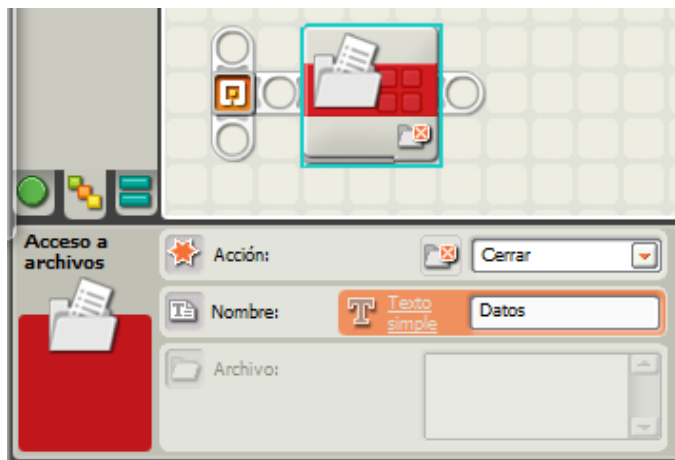
the data the file can hold can be text or numbers. The block in the following image writes a numeric value to a file named **Datos**.

[1] http://es.wikipedia.org/wiki/Sensor
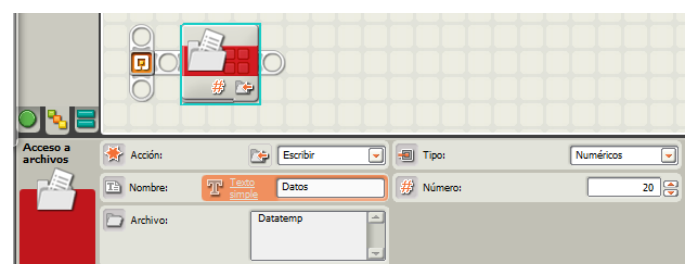
We'll use this file as many times as necessary to store new values in.

Closing the file

Before reading the data you need to close the file, configuring the File access block as you can see in the following image.


Example

Let's see how this technique can be applied with an example. The ideas is to register the variation of the temperature in time: during a heating or cooling process, room temperature... To do this we'll use the LEGO MINDSTORMS NXT temperature sensor.
After registering the values we'll transfer the file to the computer and convert it into a graph that makes interpreting the data easier.
This is something that can be dode more easily with the data logging mode of NXT-G Edu, but not with the Retail version. On the other hand, the use of a file allows for a more flexible data collection.

In the example, for which you can see the code in the following image, the temperature is measured every second during 100 seconds. This means there will be 100 values registered.
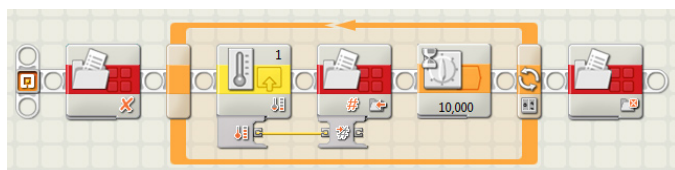
This program first deletes the file (named DatosTemp in this case). Then it opens a loop (Loop block configured with a counter) that will repeat 100 times. The loop reads the temperature sensor that is connected to port 1, writes the value to the file and waits 1 second before repeating the operation. After 100 times it closes the file and the program exits.
To transfer the file to a computer first you need to open the NXT window, clicking on the top left button in the controller.


In the NXT window select the **Memory** tab and inside that **Others** and you'll be able to see the files on your NXT, including the one created in this example.
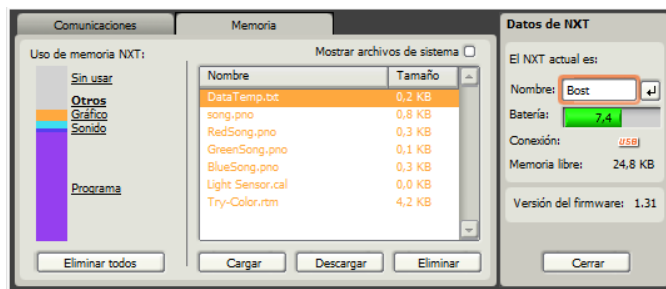
If you click on Load you can transfer the file (DataTemp.txt) to the folder of your choice on your computer.

After this you can open the file in a spreadsheet, in my case LibreOffice Calc. AFter opening the file you will observe that NXT-G uses a period to separate decimals, but the SPanish version of LibreOffice Calc will not interpret those values as numerical, so we need substitute the periods with commas (Find and replace). Using the Insert Graph tool you can get a graphical representation of the temperatures as can be seen in the following image.
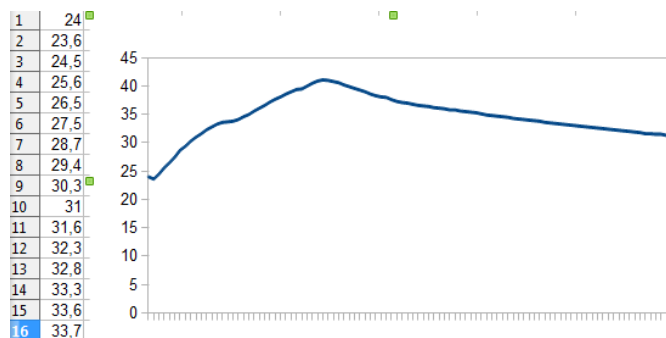

Reading the data

Now let's see how you can read data from a previously stored file. Before doing so I should point out that reading is done sequentially, so data is read in the order it was written: you cannot read the third value before reading the first and second.

You can read the values from a file in the same program it was created in or on any other program. In this case we'll do so from a second program; we will read the values that were stored in DataTemp and represent them on the screen of the NXT.

The program is as follows:

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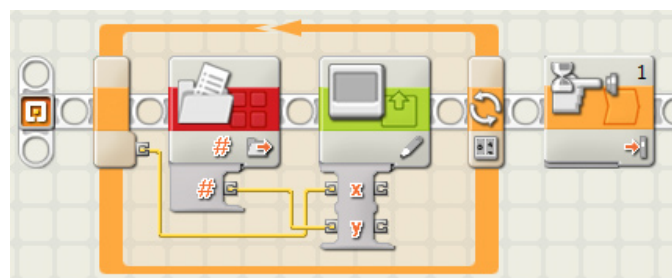
The program consists of a loop that is repeated as many times as there is data to read. To ensure the graph stays on the screen for as long as needed, a **Wait** block has been added, configured for a touch sensor. In fact none needs to be connected, as the program will not end until the grey NXT button is pushed.

The **View** block allows you to draw dots at any desired location, based on the x and y coordinates of the point. In this case the "x" will be the number of the order of the measurements and the "y" the temperature. The **File access** block is configured in read mode and the Number exit is connected to the "y" entry of the **View** block. The value for "x" will be obtained from the counter of the loop.
In this way we'll get the same graph we've seen earlier on the computer, displayed on the screen of the NXT.
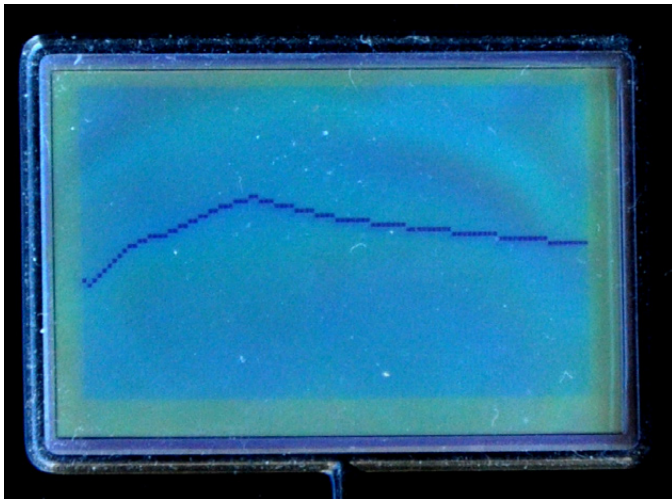
Calibrating more than one sensor

Now that we know how to use files in NXT-G let's see another way of calibrating a sensor.

In the calibration modes I described at the beginning of the article, the program automatically creates a file and reads it each time the light sensor is used without us noticing it. What we will do now is create a file with the necessary data for calibration and use it each time we need it.

Creating a calibration file

To create the calibration file we need to read and save the maximum and minimum values the sensor reads in the real situation. This is usually done by placing the sensor over first the lightest and then the darkest area, but in this case we'll do it differently: we will move the robot in the same way it does when it carries out its task and register the maximum and minimum values. Next we will save those values in the corresponding file.

First let's see what steps need to be taken.

1. Create two variables (**valorMAX** and **valorMIN**) to store the maximum and minimum light values.
2. Initialise the variables with valorMAX=0 and valorMin=1023 (in stead of using a percentage we will use the direct value with is somewhere between 0 and 1023).
3. Eliminate the calibration file (**Calibra1**).
4. Start the loop, which will run for 5 seconds, with the

following steps:
    a. read the value of the light sensor
    b. compare the value to **valorMAX**; if the value is greater, store the new value in the variable
    c. compare the value with **valorMIN**. If it is less than the stored value, save the value to the variable.
5. After closing the loop, write the contents of **valorMIN** to **Calibra1** and do the same for **valoMAX**.
6. Close the file **Calibra1**.

Now we have a calibration file stored on the NXT. This is a basic algorithm to which movement can be added, so that instead of the user moving the robot over light and dark areas, the robot itself can move (ensuring that the movement of the robot over the line is completely accurate).
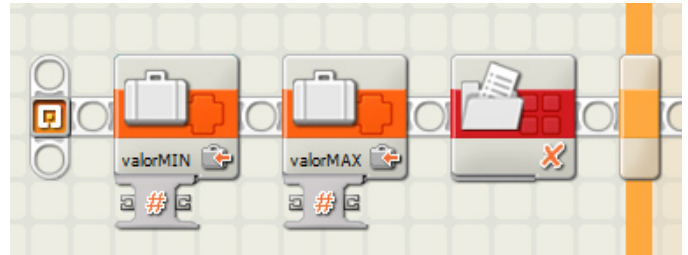

After creating the variables in the Define variables option of the Edit menu, we will execute steps 2 and 3 as in the previous image.
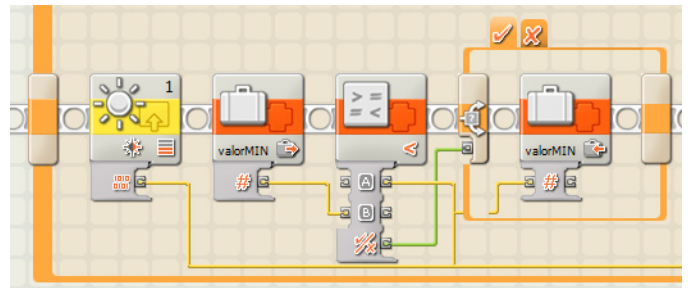
In this code fragment (steps 3a and 3b) you can see how the value of the reading from the light sensor on port 1 is obtained and compared to the value of the variable **valorMIN**. If it is less than this value it is stored in the variable, else it continues (the wiring is slightly mixed up due to the automatic wire organisation of NXT-G).
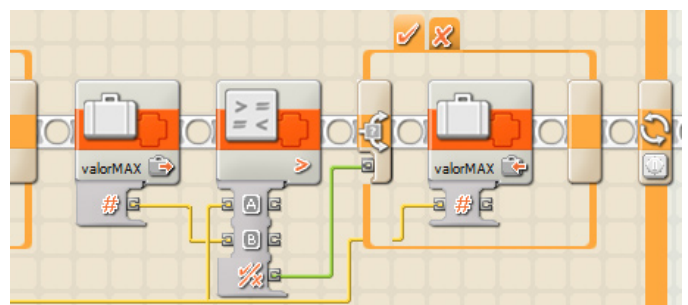
Next the program compares the reading to the value of **valorMAX** and if it is greater it is saved to the variable (step 3c).
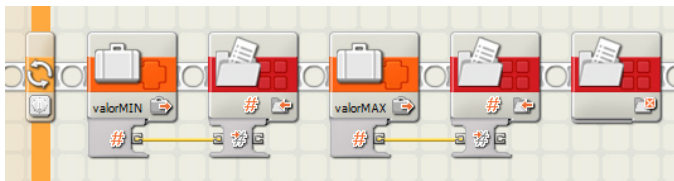
After storing the contents of the two variables in the file and closing it, this first part is finished.

The same could be done for sensors connected to other NXT ports. We would create a new calibration file for each sensor we would want to calibrate differently. As for the program that would use these calibrations, I have assigned the name **Calibra1** to the file corresponding to the sensor connected to port 1, **Calibra2** for port 2 etc.

Using the calibration file

Let's see how we can use the values saved in the file. We have save the maximum and minimum values that were read under specific light conditions. Now we are going to use some mathematics to convert these two values into 0 (corresponding to the darkest reading, or "black") and 100 (corresponding to the lightest reading, or "white").

We can do this in two steps:

1. After reading the light value with the sensor, apply a proportional rule to calculate the result in a range of 0-100.
2. The direct light value the sensor gives is somewhere between 0 and 1023 (and since we have used that range in the file we need to use it here also), but a value of 0 corresponds to high luminosity (white) and 1023 to lack of light (black). If we want to convert this to the standard used in NXT-G (from 0 for dark to 100 for bright) we need to subtract 100 from the previous value.

Let's see an example program that serves to test all this and that can be recycled for any other application. The program, as seen in the following figure, will show the calibration value of a read on the screen in real time.
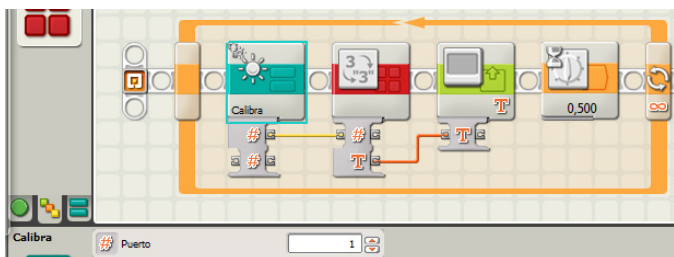
In the program in the image, the new block called **Calibra** reads the sensor that is connected to port 1 and returns the calibrated value. The rest of the code is to continuously show the readings on the NXT screen. So let's see the inside of the **Calibra** block.

This block takes a number as an entry that corresponds to the port the sensor we are reading is connected to. If you name the files as described previously, it can return the calibrated value of sensors connected different ports with different calibrations.

The algorithm is as follows:

1. Create a file name with a text operation: convert the port number into text and add it to the word **Calibra** so that if the sensor port is 1, the file will be **Calibra1**.
2. Read the first value in the file and store it in the variable **Vmin** that was previously created.
3. Read the second value in the file and store it in the variable **Vmax** that was previously created.
4. Close the file.
5. Read the value of the light sensor connected to the port that corresponds to the entry (direct value).
6. Convert the reading into a calibrated value between 0 and 100 to store it the variable Vcal, with the following formula:

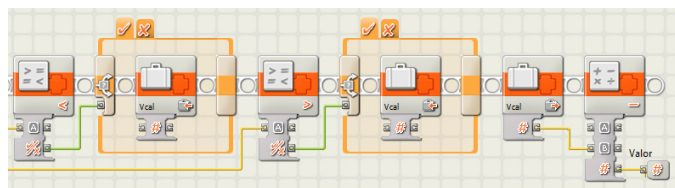$$Vcal=[(Lectura-Vmin)/(Vmax-Vmin)]*100$$

7. Check if the result is less than 0, in which case it becomes 0.
8. Check if the result is more than 100, in which case it becomes 100.
9. Subtract the previous value from 100 to get the exit value.
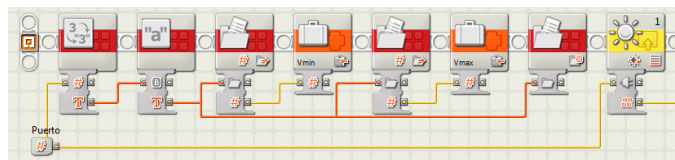
In this first image you can see the first 5 steps.
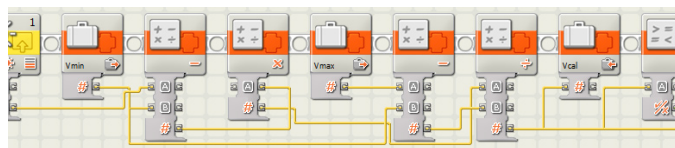
After that the calculation is made.

Finally, test to see if the result is in the normalised range.

Final remarks
From here each one can adapt the program to his needs: different calibrations for different sensors or different calibrations for the same sensor. This means you need to create as many files as you need different calibrations.
#

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Modular Integrated Landscaping System (V)

By Legotron (A. Bellón)

We now have many basic elements – modules - to build our dioramas. We can display many terrain features, but now we need to build more complex elements to get better terrain features. We want to get a more realistic display and to have new elements that are compatible with the MILS modules we built in past articles.
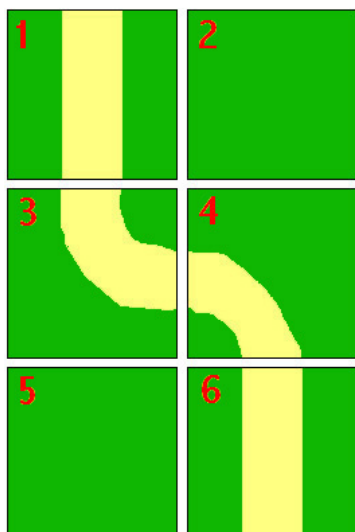
Modgrups

One of the main problems with modular landscapes is the final appearance. They look like a chessboard. This is critical with elements or features that need several modules to be carried out, as can be seen with roads or rivers. To preserve the simplicity of the MILS rules, the terrain elements must have very restricted dimensions at the borders of the modules. The more simple the rules are the less diversity of terrains can be displayed in a diorama. We can have a section of a road with many curves, but they are always 90 degrees. So we need a new element to confront this problem. That element must be compatible in some way with MILS rules, but with more options to display terrain features different from those described by our rules. So the idea is to join several modules, with many sides that are not compatible with MILS rules, to combine them into a bigger element, in such way that the final outer border is MILS compatible. Sets of modules with these characteristics will be called "modgrups". There is no size or shape to delimit a modgrup, but they must always be made up of multiples of 32x32 studs.

The main idea of a modgrup is that it is made up of different modules or elements of 32x32 studs. The outer border of all the modules packed in a modgrup have to fulfill the MILS rules. Internal border between different elements of the modgrup don't need to comply with MILS rules, they just must be consistent with the modules around them. When these elements or modules are taken out of their modgrup they are not consistent with the rest of MILS modules, because the have some sides with different measures for the terrain features on them, than modules built following MILS modules. In order to use these elements out of a modgrup you need to create a good design, so you can place them in corners or sides of the diorama, where this element doesn't need to have all its sides connected with other terrain modules. If the module has any side that is compatible with MILS rules, these sides can be faced towards the other MILS modules, and the other sides, with no MILS elements, can be oriented to the side of the diorama.

The modgrups are a set of modules, whose main characteristic is that the outer contour of the modules of that modgrup are compatible with MILS rules. The shape and size of a modgrup can be anything, but it must be made up of elements of 32x32 studs. A modgrup can be formed by only two elements, or may contain a multitude of modules with a very complex shape. Within the borders of a modgrup there is no limitation to its content.
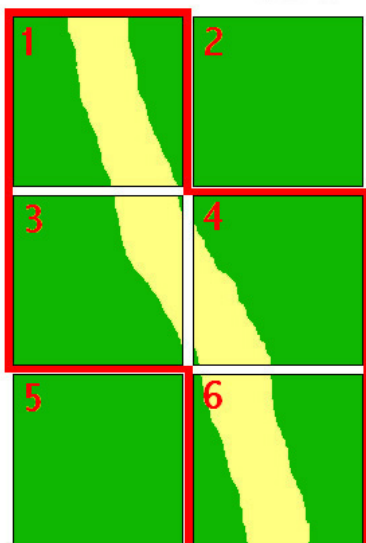
The modgrup is made up of modules 1, 3, 4 and 6.

The outer contour of the modgrup is compatible with MILS rules.

The sides between the modules 1 and 3, 2 and 4, 4 and 6 are not compatible with MILS rules

Modules number 1, 2, 3 and 4 can be taken individually in a MILS diorama only if they are placed in corners or extremes of the diorama.

Example of how to change a regular layout with a modgrup.

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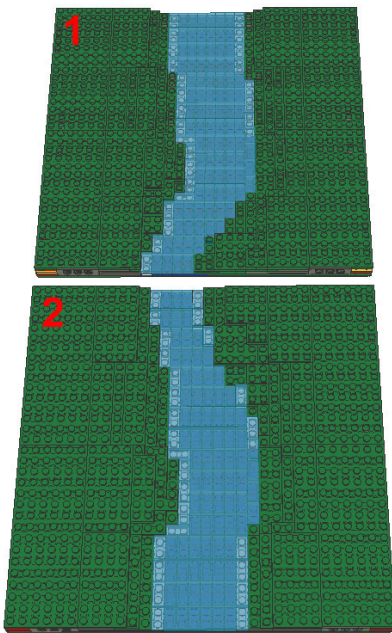
Modgrup

This a simple modgrup with two modules with a section of a river with different wide in the borders of the modules that the mandatory size of the MILS rules.
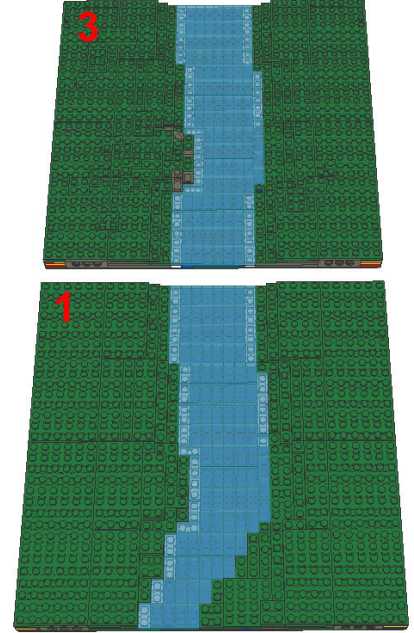
This river modgrup can be place between two other MILS river modules, because the outer extremes of the modgrup are compatible with MILS rules.

Incorrect conection
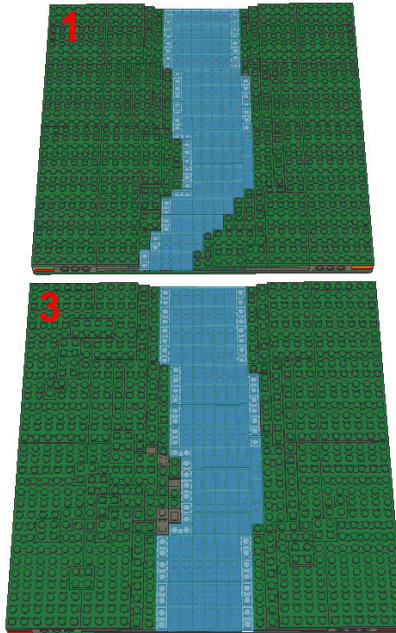
In this case, the module 1 can not be placed with another river section compatible with MILS rules because the have different wide, so they are not consistent.

Correct conection

Some of the modules of the modgrup can be used individually in MILS dioramas. If they have a side compatible with MILS rules, they can be placed in the border of the diorama, with the MILS side facing other modules. This is a way to have more way to build terrains with our modules.

The modgrups can be very useful if they are used to construct river sections or road sections with different width, or with a curved run that is too complicated to be built with MILS modules. There is a opportunity to use this type of elements to get a better appearance, with more realistic terrain features. The modgrups can be seen as an extension to the simplicity of the rules of the MILS system, that are intended to be as simple as possible, in order to get an easy way to have common terrain elements made by different builders for the same diorama.

You can use the modules of the modgrups individually with other MILS modules under some circumstances. They need to have a good design to do so. But they are not restricted to use within a modgrup.
#

Modgrups examples
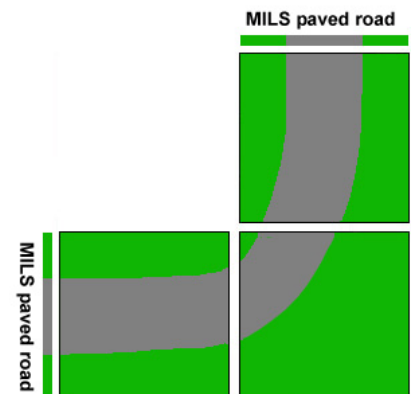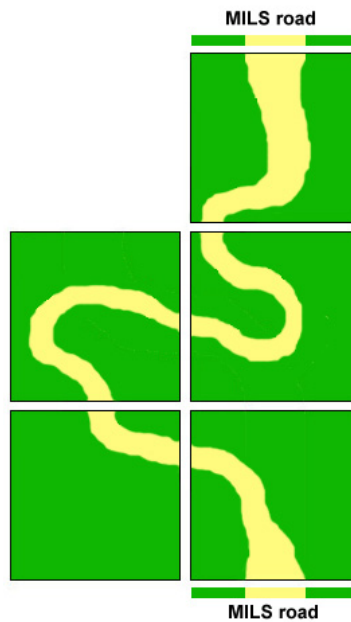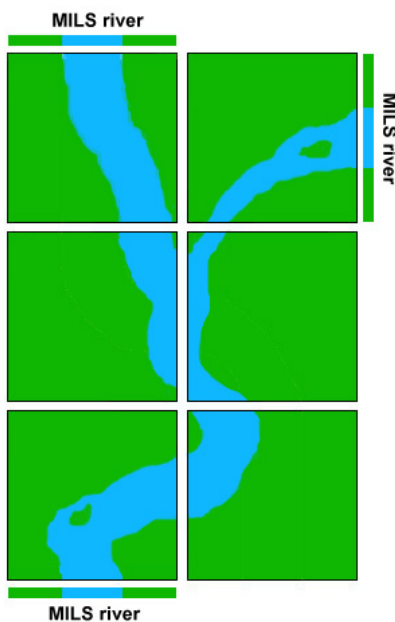
LEGO® event at the XI Collectors Fair at Mungia, Vizcaya

By Legotron (A. Bellón)

The Collectors Fair was held in Mungia, Vizcaya, from April 6 - 7. This year was the eleventh edition, organized by the Bitxikiak association (www.bitxikiak.org), in collaboration with the local municipality. Like past years we had a hall reserved to prepare everything related to the event of constructions with LEGO® bricks, where we held the exhibition and the activities that were planned for this edition.

The LEGO event was organized by HispaBrick Magazine®. The main part of the event was the public exhibition, in which several members of the Spanish LEGO user groups HispaBrick Magazine® and HispaLUG® were involved. Furthermore, there were several activities, like contests and games for the visitors, mainly focused on children. The exhibition consisted of several dioramas, thematic stands and different MOCs built by the participants. As always this was the favorite part for the visitors. Year by year, recurring participants make better constructions and bigger dioramas, full of details and awesome building techniques. Visitors could see some of

the dioramas that have been growing and have been shown in previous years, and other new constructions that were shown in this event for the first time.

In this event, contrary to the bigger ones, there is no need for any fence nor other kinds of physical separation between the visitors and the tables with the LEGO MOCs. Visitors are very respectful with the constructions and materials shown. This year the weather was really bad, but despite this many visitors came to see the exhibition, and we had the hall at full capacity several times, with queues to enter the hall, but things went very calmly.

In this edition we wanted to have more activities with visitors than previous years. Greater importance was given to activities for children, who could perform simple builds or test their skills with contests to build simple structures. The games with parts didn't require any prior knowledge about LEGO. This fact was very important for the parents, who gave a positive feedback of

this new type of games. We were told that this kind of activities was better than the ones done in previous years, in which knowledge of LEGO® or habitual use of parts were a great advantage for participants.

This year we tried out a new activity for visitors. We selected several collaborators among the visitors to build a mosaic. It was a vertical mosaic built with bricks, that depicted the medieval letter "M", that it is in the coat of arms of the city. The building process was entirely carried out by selected collaborators, and we provide the design, the pieces and some

advice. The design was simple enough so that they didn't have problems to build it. It took them 45 minutes to finish it.

In conclusion, it was a new opportunity to share our MOCs, to talk with other AFOLs and to show visitors the quality of the constructions made by the participants. It was a pleasure to get such a wonderful treatment by the organization, Bitxikiak Association, who made this great event possible, and who made a great effort to make us feel at home.
#
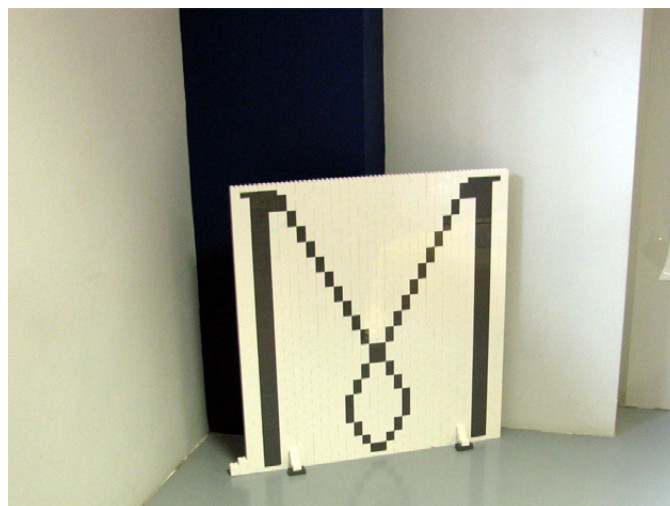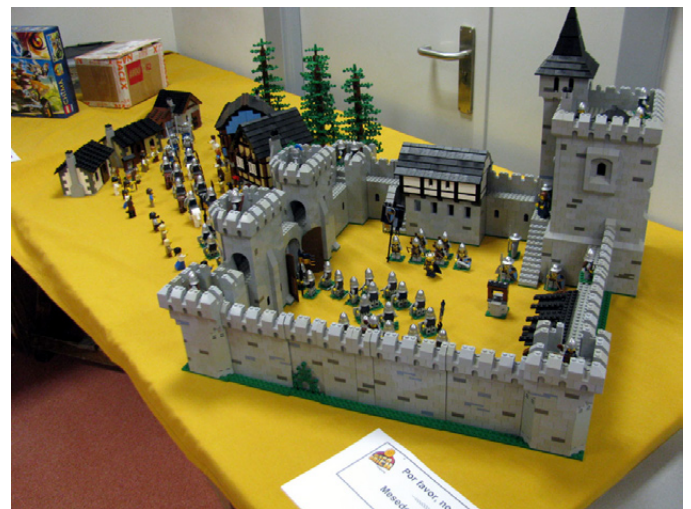
Pockyland

By HispaBrick Magazine®

Pictures by Pockyland

Since we started on this adventure of publishing a magazine about LEGO®, we have always kept an expectant eye on the download statistics of each issue and, mainly, the geographical distribution of our readers. From the very beginning our attention was drawn to the downloads from Taiwan, from a website we could make heads nor tails of even with the help of Google translate: Pockyland. Years later, by chance, I contacted Rack,one of the administrators of Pockyland and LEGO ambassador... and we got talking.

HBM: How did Pockyland get started?

Pockyland: Long long ago, there was a boy who lived in Taiwan. His name was Pocky. Pocky liked LEGO brick toys very much. When he grew up, he still liked LEGO toys very much. But he found there was little few information about LEGO available in Taiwan. So, he decided to make a LEGO brick forum in 2007. It would provide a lot of information about LEGO bricks, including LEGO products and activities. Fans would be able to share their collections or evaluations there. So, Pocky and his friends worked together to set up the forum. Its name was "Pockyland".

In 2008, Pocky met Rack. It changed their fate. Rack is a Doctor. He had no chance to play LEGO brick when he was a child, because it was too expansive for his parents.
When Rack was to be a father, he decided to buy a lot of LEGO bricks to play with his children.

Rack likes building his own creations rather than collecting LEGO sets. So, he posted a lot of his creations on Pockyland and it drew Pocky's attention. Pocky invited him to administer the forum. They became best friends and managed the forum together. Rack had a lot good idea for the forum, such as new forum software, a plan to have more activities for member, and he designed a calendar for our forum. Pockyland was updated in 2009 and did a lot of public displays. It attracted a lot of fans to join Pockyland and so it became a biggest BRICK forum in Taiwan.

In 2010, Rack became LEGO® ambassador for Taiwan. LEGO Co. invited him to cooperate with official LEGO activities several times. They wish to work with AFOLs to make the activities better.

Pockyland is like a big family. Anyone can be our admin if you have passion and are responsible. Of course, some active member can be close to us without to being an admin.
We share our life with each other, not only about LEGO brick. Especially when we see something new or interesting such as a funny video, new toys, new TV/PC games, or feel depression or lovesick, we will share on our forum. I have participated in a lot of forums, such as aquarium, 3C, movie or music, but I feel Pockyland is different from other forums. A lot of members are friends on our forum. A couple married due to our forum and we participated in their wedding. Our children play with bricks together. We even go on family trips together.

We often talk to our webmasters via online communication every week. We talk when something happens on our forum or if there are plans for the forum and find a way to fix it. I had remembered we had a financial problem regarding our server and rent of the forum in 2010. We placed a call for help in our forum and got much help from our members so that Pockyland can keep running.

So Pocky and me both feel Pockyland is a very good space for our life and we want to keep it for our members. We spend a lot of time to manage and look for some members to be our webmaster.

HBM: How many members do you have? How many events do you do each year?

Pockyland: According to the statistics in forum, we have 85479 members.

The age of our member is between 10 – 55 years old. About 60% of the children are boys but over 90% of the adults are men. Most women don't have a hobby in Taiwan. They like go to buy something new more than creating something new.

Most fans like the LEGO castle series and like to create castle MOCs. Star Wars™ series is always top 1 for Taiwan AFOLs but children like Iron-man more. I think this is because they never see the cartoon and movie of Star Wars.

We have 2 online brick creation games every year, there are 2 groups (adults and children) in every contest, I wish more children could join and win a prize.

We have 4 public exhibitions in Taiwan every year. We can see a lot fans take their family to join and share their creations and collections

Besides, there are some organizations (government, school, museum, department store) who invite us to do some brick shows.

We have many exhibitions, Taiwan fans are very good in city and castle creations. We build huge city scenes and streets. We have a plan. This is a fantasy story, just like LOTR. The name of this phantasy land is POCKYLAND. Several races live there, including humans, dwarfs, orcs, elves, etc.. The story is about them. War and peace is between them. We ask several builders to cooperate to make it. You can see several countries that were finish on our book. We plan put them all together in a large display. Then we will publish another book about the story. The creation will be 10M x 10M.

We collect wonderful pictures of creations to publish a calendar every year.
Members can buy it as a souvenir.

HBM: How popular is LEGO® as a toy among children in Taiwan?

Pockyland: I believe there is no one who doesn't know LEGO in Taiwan. LEGO is equal to Brick. LEGO is best quality in Taiwan but it's the most expensive toys.
So, a lot of parents can't buy the LEGO sets due to their price.

HBM: Now that LEGO has marked countries with emerging economies like China, Russia, etc. as market objectives, have you noticed a change in attitude from LEGO towards the fans in your country? Has there been a change in the availability and price of the sets?

Pockyland: After publishing the minifigure series, a lot of fans complained about their poor quality and irritable smell. We also found they were marked "made in China".

If "made in China" makes the retail price go down, most fans think it's all right. But we didn't find any decrease in price in recent sets.

Many fans complain the price is up and quality is down. Even some fans refuse to continue buying new sets.

I found only a few themes were made in China. Not all themes. But to be honest, I found the new themes are designed very well. Good themes, like LOTR, module building, etc.

So, if someday all themes are made in China I think it will be a hard decision.

Because there are good themes and good designs, but poor quality and poor prices. It makes us hesitate to buy.

HBM: How did the idea for the book come about?

Pockyland: I build a lot of MOCs. Many people ask me to how to start building. To be honest, the question is hard to answer. There are some brick idea books in online bookstores, but they are all in English. There are no books in Chinese. So we decided to make a tool book for the beginner.

Besides, our builders think if our creations could be in books, it's very cool for us and it's a memory of our BRICK time. Book publishing will make some money, the money is all for the forum foundation. You know, it costs a lot of money to keep a forum working.

About the book

It is always difficult to express your opinion about a book, especially because you have to maintain a balance between your personal opinion and what the book offers objectively. Well, all of this is even more complicated when the book is written in Chinese and you don't speak the language. So my opinion in this case must be based only on the images in the book and the feeling these transmit.

The book is a 190 page paperback in full colour. It is divided into three parts and in the first of these there is a series of photographs showing the main types of LEGO® pieces and some different construction techniques, including SNOT. This is the shortest part of the book.

In the second part you can find a collection of magnificent MOCs, made by the collaborators of the book. As a note of interest, some of the models come with building instructions. There are MOCs of many different themes and instructions for models of different levels of difficulty.

The last part is dedicated to the different dioramas that make up the collaborative project of Pockyland. A fantasy world you can read about in the preceding interview. Some of the dioramas are really spectacular.

The book is interesting, its contents varied and it includes good quality building instructions. Unfortunately I cannot evaluate the text that accompanies the images.

Acknowledgements: Rack for the book and his collaboration. #

Searching for a minifig

*Interview with Christoph Bartneck and a look at some of his books*

By HispaBrick Magazine®
Pictures by Christoph Bartneck and Brickset

Christoph Bartneck has been so kind as to send us some of his books for review. After having a look at the books we wanted to know more about this gigantic project of investigation data collection and taking pictures, so we asked him a few questions:

HBM: How did the idea of the books come up?

CB: The books got started out of a research project on the analysis of colours in products. We were looking for example of products that exhibit clear colour variations. Minifigures seemed a perfect example. I tried to get photos from LEGO® for this project, but all my attempts to even get in touch with the right person failed. At that time I did not know about the existence of the LEGO Community Managers. By now I am pretty certain that they do not have such a collection of photographs. I started to look for collectors and visited several AFOLs. I was blown away by their collections of LEGO and Minifigures. I previously worked for LEGO in Billund and I also used Mindstorms for my university teaching, but I completely underestimated the dedication of AFOLs and the depth of the LEGO cult. I had no idea how many minifigures there are and I also learned about Bricklink (BL) and other online resources. The problem with Bricklink was that the photos available were often very small, blurry or really just bad photographs. I was always interested in photography and I concluded that the minifigures deserve a better representation. I started photographing, not even knowing how this would all end up.
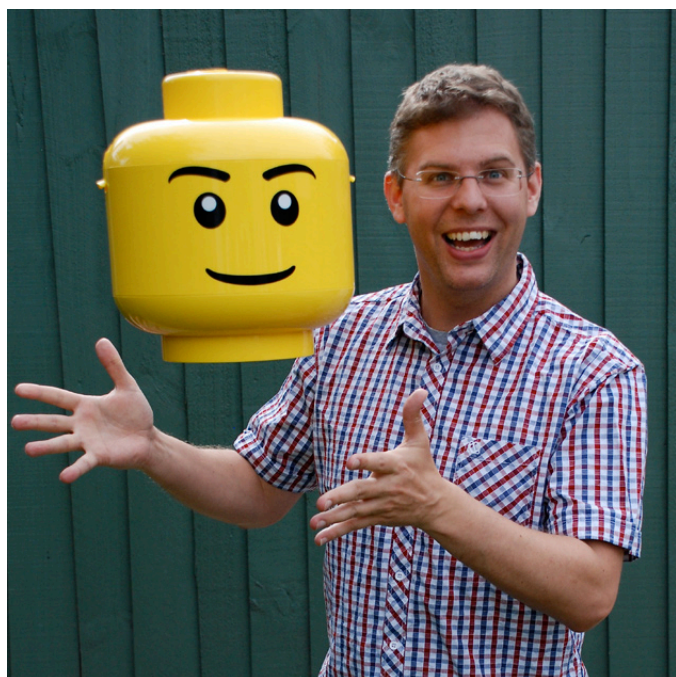
HBM: Why did you choose to publish these books yourself?

CB: I started to contact publishers to discuss the idea of a Minifigure book, including DK and Fantasia Verlag. Most publishers discourage authors and on some of their web pages I even read that they do not even want any unsolicited manuscripts. I was disappointed about the peculiar publishing world in which authors only get a meagre 5% of the sales price as royalties. The publishers' negative attitude towards authors and their unfair conditions made me look for alternatives. In my view, the publishing industry is going through change process that is as dramatic as the process that the music industry already went through. The internet and computer technology are moving us to new publishing processes and business models. Authors and musicians can now free themselves from the traditional publishers and offer their works directly to the fans. You can write a book or record a song and then publish it directly through online platforms such as Amazon or iTunes to an international audience. The key to the publishing revolution is in eBook readers and Print-On-Demand services. The latter prints the book only when it is ordered. This enables authors to publish a paper book without having to invest thousands of dollars into the print of a full edition. I compared many print-on-demand publishers and decided to go with CreateSpace, a daughter company of Amazon. We live in amazing times in which each and every one of us can write a novel and bring it directly to an international market of millions of readers. The technology is all there, the only constraint is our imagination.

HBM: How you collect all the information for your books?

CB: Besides photographing all the minifigures with the help of collectors I also had to gather all the meta data. The big online databases were the starting point, but I still had to edit many entries. Sometimes even BL has errors in its database. For correcting all the names of the Minifigures I used the CrowdSourcing platform Mechanical Turk. I collected all the information, including the photographs into a large database. Maintaining this database is my biggest task. It certainly takes more time than photographing all the minifigures.

All of the catalogs have only come to life through the help and support of the AFOL community. Without their help I would have never been able to bring together all the data. The catalogs are therefore an example of the true AFOL spirit. It is a project from a fan for the fans. I am grateful for all the feedback and suggestions I received and I hope to be able to share my appreciation for the amazing beauty of Minifigures with the AFOL community.

HBM: What are your plans for the future?

Christoph
Bartneck

The
Unofficial
LEGO®
Minifigure
Catalog

About the books:

The most important one of these, both in size and in the wide range of its contents is "The Unofficial LEGO Minifigure Catalog". This paperback, of almost A4 size and 390 pages, includes pictures of all minifigs from the 70's till 2010 (there are complementary books for 2011 and 2012.

The minifigs are classified by theme and each one is accompanied by its name, number of pieces, Bricklink code and author's own classification code.

The pictures are large and detailed enough to appreciate all the details of each minifig without difficulty.

In the final pages there is a series if indexes with cross-references, minifigs organised by year and a lit of minifig heads with a reference to the minifigs the heads appear in. These indexes are very useful, keeping in mind there are about 3600 minifigs!!

CB: There are several improvements that I would like to make in the future. Although print-on-demand has many advantages, it suffers from the high costs of printing. The books only get printed once they are ordered. These individual prints cannot compete with the production costs of traditional printing in large editions. I would also like to improve the design and usability of our catalog App. We made a good start, but the app is currently very functional. Users of iOS in particular are being spoiled with beautiful interface designs against which our app looks a bit simple. I would also like to explore new digital representations of Minifigures. We already experimented with creating 3D models of minifigures based on visual reconstruction software. This project is still at a very experimental stage. We are also working on a software tool to automatically identify minifigures. Beta testers are very welcome.

About the author:

Dr. Christoph Bartneck is an associate professor and director of postgraduate studies at the HIT Lab NZ of the University of Canterbury, New Zealand. He has a background in Industrial Design and Human-Computer Interaction, and his projects and studies have been published in leading journals, newspapers, and conferences. His interests lie in the fields of Social Robotics, Design Science, and Multimedia Applications. He has worked for several international organizations including the Technology Centre of Hannover (Germany), LEGO® (Denmark), Eagle River Interactive (USA), Philips Research (Netherlands), ATR (Japan), Nara Institute of Science and Technology (Japan), and The Eindhoven University of Technology (Netherlands). Christoph is one of founders of the LUG 4/2 and also one of the organisers of New Zealand's biggest LEGO event: The Christchurch Brick show.
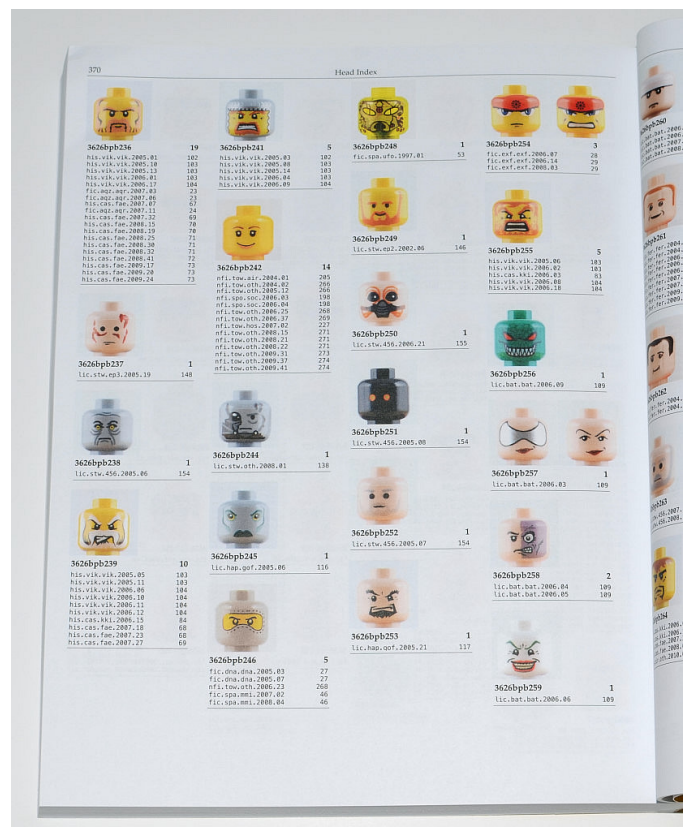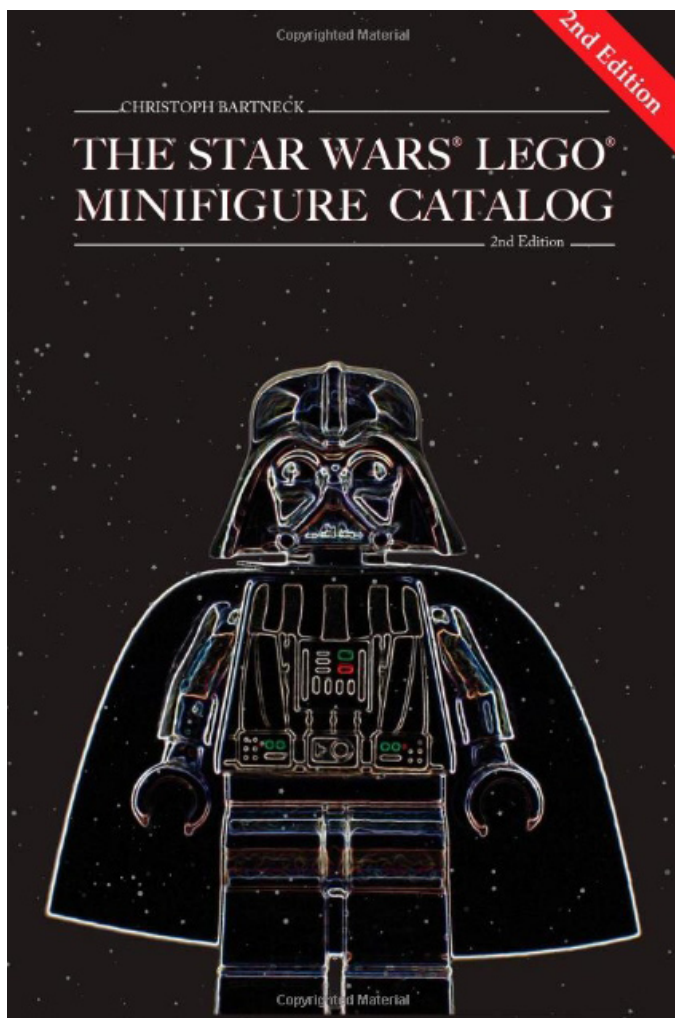

73

Star Wars

Old Republic

Satele Shan
lic.stw.ore.2012.01

		Bricklink	sw389
		# Parts	4
		Price New	
		Price Used	
		Head	3626cpb635
		Sets	9497-1

T7-O1
lic.stw.ore.2012.02

		Bricklink	sw390
		# Parts	15
		Price New	
		Price Used	
		Head	
		Sets	9497-1

Jace Malcom
lic.stw.ore.2012.03

		Bricklink	sw391
		# Parts	4
		Price New	
		Price Used	
		Head	3626cpb769
		Sets	9497-1

Personally I believe this is fundamental material for any fan of these little characters. The main problem is the cost of the book, but if you have read the interview you will know about the efforts made by the author to publish it.

Like satellites turning around the main work, there are other books about minifigs that extend the information around some of the most successful themes with exclusive minifigs. For example "The STAR WARS™ LEGO® Minifigure Catalog" or "The Harry Potter LEGO Minifigure Catalog". In these books

the information about each minifig is much more detailed, including images of the back of the minifigs and the different expressions of their faces. In addition there is data concerning pricing in the secondary market or the sets the minifigs appear in. These are undoubtedly fundamental for fans of these themes.

Finally I'd like to mention a book that is a little different in this collection of books: "The Complete LEGO Figure Catalog". It is a tribute to the other figures that populate the various LEGO themes that have been available since the 70's until 2011. Duplo, Belville, Fabuland, ... all have their place in this book, making it a kind of journey through the history of the "other" LEGO figures.

The author has certainly made a commendable effort to collect and make available these fabulous sources of information.

As a final note, Christoph has started a project to get funding for a card game based on minifigs. You can find more information here:

http://igg.me/at/lego-minifigure-quartet-card-game/x/3878995
#

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Review: The BrickGun Book

By Legotron (A. Bellón)

Pictures by No Starch Press

The BrickGun Book
Author: Jeff Boen
Pages: 232, paperback
Publisher: No Starch Press

In the last few years many of the most renowned LEGO® fans and builders have decided to publish their techniques or constructions in book format. In this case we are reviewing a book related to the building of 5 different handgun models with LEGO® parts in a real 1:1 scale. We know that some readers are not comfortable with this subject, but we will focus in the fact that we are talking about constructions with LEGO® pieces, not real weapons, and a lot of effort and work has gone into creating these MOCs..

The writer, Jeff Boen, is known for running a website where he sells the kits and building instructions of his 1:1 scale guns. He has done a very good job describing the building process of these five models: the BG22, Beretta 92FS, Magnum Desert Eagle and the M1911 guns and the MAC-11 submachinegun. This book is a must have for those fans of LEGO looking for realistic weapons to build.

This book has 232 pages, and five models are described in its pages, so you can expect to find a very complete description of the five models and lots of images of the steps for building every gun. The book starts with a small introduction by the author, in which he makes a brief description of the origin of the models. The author also gives some building tips and clarifies some details of the pieces used in the models. After that we have a section with the 5 models. Each model has a detailed parts list, with the nomenclature used by Bricklink. Then comes the part all fans of weapons of LEGO® pieces are waiting for: the detailed instructions to build the model step by step. The parts used to build the models are mainly black, but this is not a problem to follow the instructions, because all the images are very clear and detailed. The building process is described carefully with many steps, so it is not necessary to be very skilled to complete your own gun.

One detail that stands out is that the models depicted are not static replicas, each of the models has a number of mechanisms that allow you to operate the trigger, the slide or cock the hammer. The first four models are guns that have these features. Furthermore, the BG22 also has a magazine which can be removed from the weapon. The models are increasing in complexity, and although it is not necessary to be an expert in LEGO construction techniques, some steps in which rubbers bands are included must be performed carefully in order not to spend the day collecting the rubbers on the floor. The last model, the MAC-11 submachine gun, is designed to fire rubber bands. It has more playability than the other guns but has a less realistic appearance in order to attach the system for firing rubber bands.

This is a very interesting book for all those AFOLs or TFOLs who like the world of weapons. It is a compendium of instructions to build the five different models of guns

The BrickGun Book © 2013 Jeff Boen
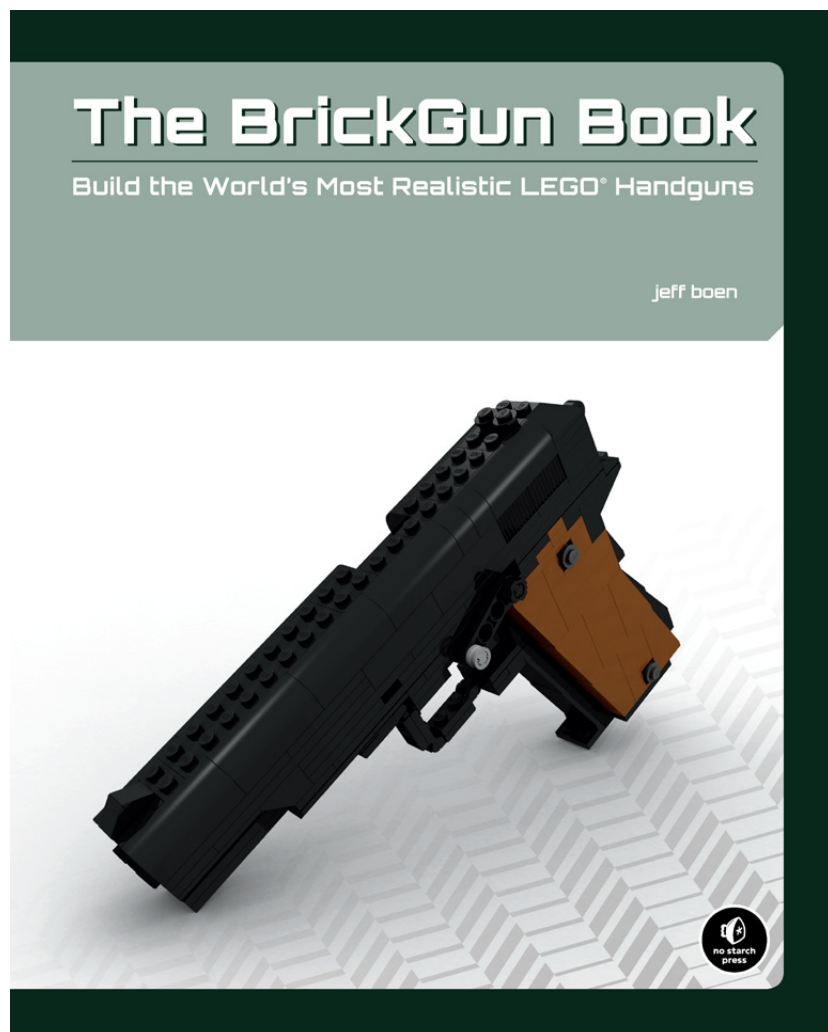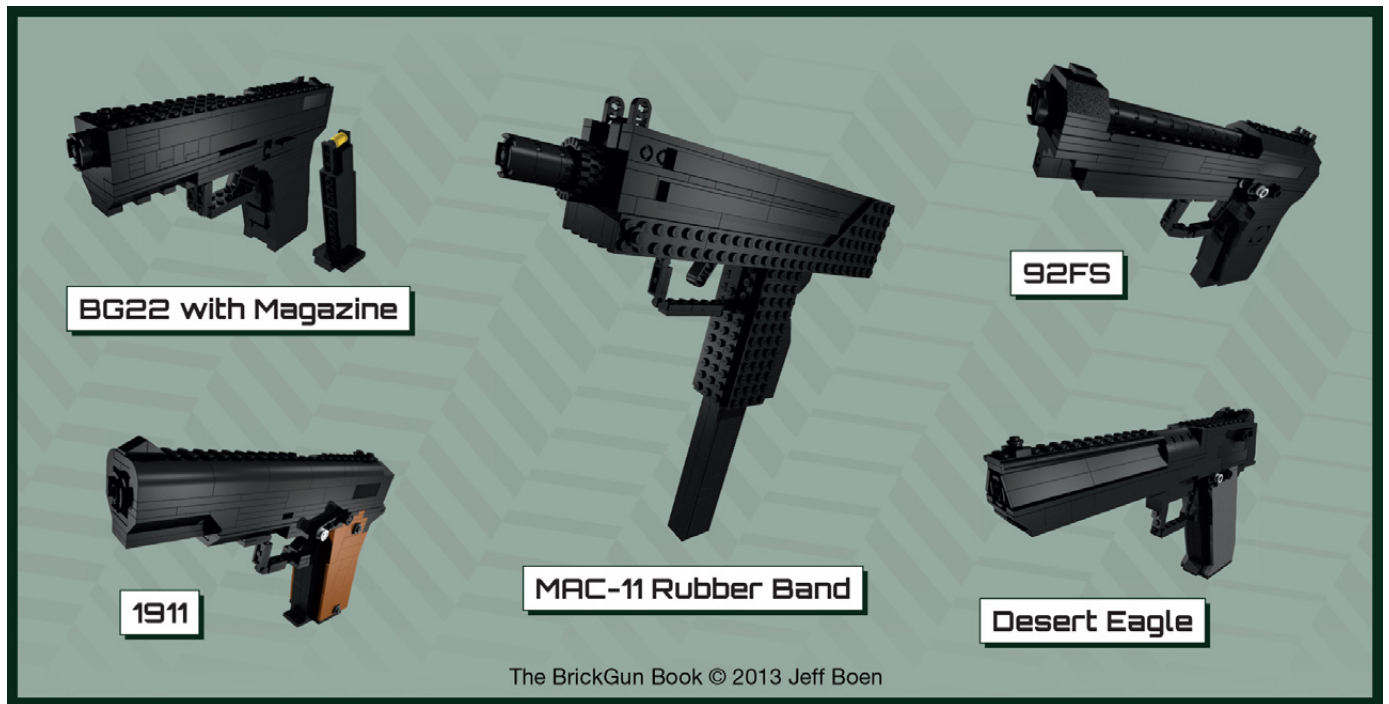
mentioned before in 1:1 scale. The building process is very well documented and it is easy to follow. So, if you are a (LEGO®) weapons fan, start collecting large amounts of black pieces to build the realistic models described in the book.

Acknowledgements: No Starch Press for the sample of the book.
#
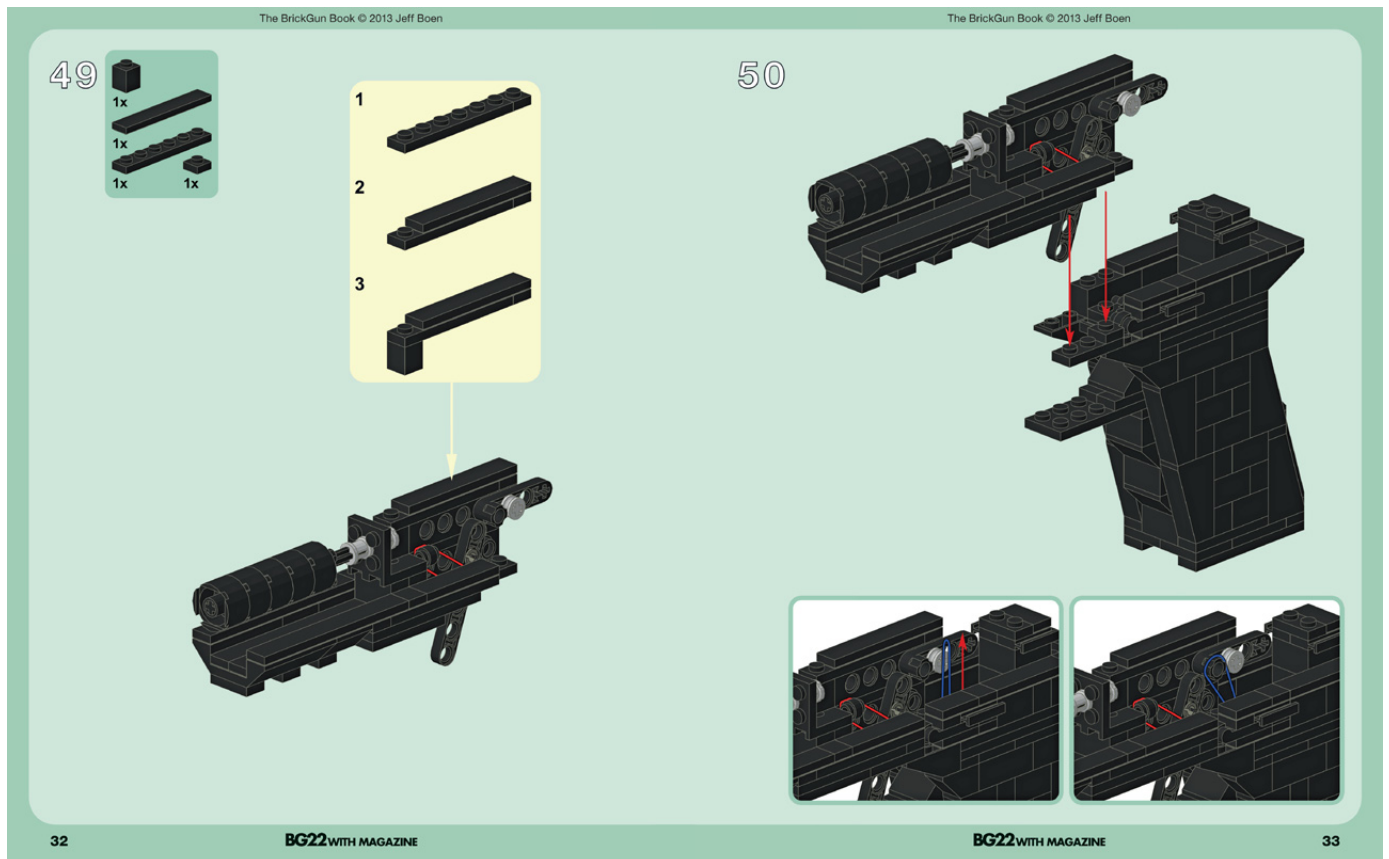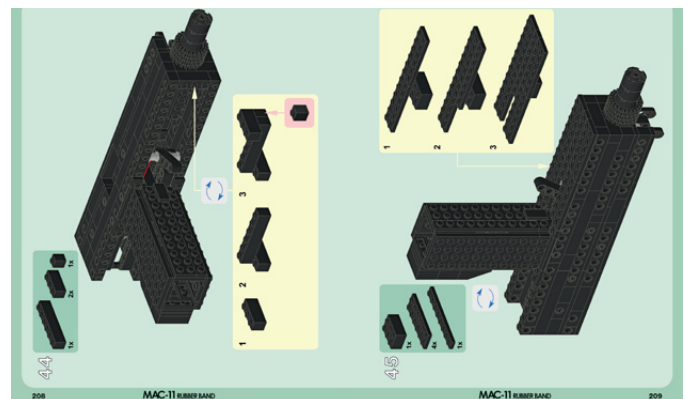
Review: The LEGO Build-It Book: Amazing Vehicles

By Jetro

Pictures by No Starch Press

Review The LEGO® Build-It Book: Amazing Vehicles
Author: Nathanaël Kuipers and Mattia Zamboni
Pages: 136
Publisher: No Starch Press

Have you ever felt that you would like to get more out of a box of LEGO than the one, two or even three different models you get instructions for? Virtually any AFOL will have at some point reused parts from different sets for his/her MOCs. Large collections, built up over years of collecting, and a never ending stream of orders for individual parts from BrickLink or LEGO have resulted in MOCs of all shapes and sizes, but there is an art to building with a limited set of elements at your disposal, especially if those elements are mainly "standard" pieces.

It is exactly this challenge that Nathanael Kuipers addresses in "The LEGO Build-It Book: Amazing Vehicles". Using a single Bill Of Materials (BOM), Nathanaël presents 10 inspiring models that look every bit as finished as the official models these parts were packaged for; possibly even better. But his book is more than just a collection of instructions for building cool models. In addition to showing how he puts these creations together, Nathanaël has prepared explanations with tips & tricks and techniques he uses to get the results you can see in these models. Concepts like building in different directions, making strong connections and building at different angles are explained and then implemented in the models so you learn how to make it work in a hands-on way. At the same time, it is a delight to build the models due to the easy to follow high quality instructions prepared by graphic artist Mattia Zamboni who has done an excellent job both at the instructions and at the renders that show the finished models.

Have you ever felt stuck when trying to work with a limited amount of parts? The LEGO Build-It Book: Amazing Vehicles is clear proof that the limitation is not so much in the parts, but rather in how you manage to use them. So whether you simply want instructions for 10 great alternative models or need a hands-on guide to improve your creative skills, this book is a valuable addition to your LEGO Library.

Still not convinced? HispaBrick Magazine® talked to Nathanaël Kuipers, author of this book, about what prompted him to write it and how it was created:

HBM: You are well known for your alternate models built with the pieces of a single set (see HispaBrick Magazine 009). What made you take things one step further and write a book about it?

NK: It seemed like there was as sudden increase of interest for my alternates; more people requested instructions and several persons contacted me with the suggestion to make a commercial book/ instruction booklets. Even though I had considered this before, now I also started to believe in this idea myself. When graphic artist Mattia Zamboni contacted me very enthusiastically showing some of his work that he had been voluntarily working on based on my alternates, I was convinced that this book concept about alternates had potential. Considering

Mattia's work and effort, I thought it was best to combine our skills to develop something of high quality. He agreed, and that's when things really took off...

HBM: Who is this book primarily aimed at?

NK: First I'd like to highlight that we've tried to make this book interesting for as many as possible. For LEGO® enthusiasts both young and old: collectors, builders, for people appreciating graphic design and CGI,... However if we have to narrow it down, this book is perhaps not so much for the highly skilled LEGO fans, but more aimed at those who like to build the LEGO products, but are looking for a bigger challenge, eager to learn more about the LEGO System, to improve their building skills and hopefully get inspired to design more MOC's.

HBM: So what differentiates this book from the rest?

NK: I think the keyword here is accessibility. The problem is that some of the other books show some very inspiring material, but often can be a bit intimidating as well, because you need loads of pieces, very specific ones, and/or mad skills to be able to replicate something similar. To me this can actually become counter productive and more frustrating than motivating.

In contrast, this book covers step-by-step how to build very unique and differentiated models, by using only a common set of pieces, not that many in quantity and quite easy to obtain (if it's not already part of the average collection). In my humble opinion this is the concept that shows how one can be truly creative, when you have only so much - or in this case little - to work with.

HBM: Why did you place all the building tips in two large blocks rather than throughout the building instructions?

About the authors

Nathanaël Kuipers
Model Designer

Nathanaël Kuipers is a Dutch design professional who worked for several years as a product developer for the LEGO Group in Denmark, where he was mainly responsible for engineering LEGO Technic models. He is the mastermind behind models like #8261, #8271, #8272, #8292, and #8674. He has also collaborated on the creation of many other models. Check out his work at http://www.nkubate.com/.

Mattia Zamboni
Graphic Artist

Mattia Zamboni is a fan of graphic design, photography, and LEGO, and he has a degree in electrical engineering. Based in Switzerland, he pursues his passion of graphic design, showcasing his talents within the world of 3D computer graphic arts. Check out his work at http://www.brickpassion.com/.

01 OFF-ROADER

Complexity
Functions
Pieces

OFF-ROADER

Design notes: wide wheelbase, high clearance, exposed shock absorbers, front-bumper winch, spotlights

Technical specifications:
Dimensions (l × w × h): 20 × 10 × 10 studs
Wheelbase: 11 studs
Axle width front/rear: 10/10 studs

Features: hinged hood, V4 engine, rear accessory clips

NK: We actually thought about that option, but concluded that it wouldn't be beneficial in our case. I had a chance to build through the first series of the Master Builder Academy (MBA) sets that are normally exclusive to the US market. While the books that accompany the sets are very thorough and have a high quality finish, I felt that the tips at the bottom of virtually every page somehow took the pace out of the building experience. Furthermore, by keeping the building tips in 2 large blocks we avoid repeating perhaps similar explanations throughout the instructions. In addition, our goal was to make the book as appealing as possible to an international public, and therefore we decided to keep the text simple and short.

HBM: Was there a special reason why you chose the #5867 Super Speeder as your starting point?

NK: To be honest, not every set provides the proper materials to get easily creative with. Some offer way more possibilities for rebuilds than others. Creator in general seems to be a good line, but even here some sets are much better suited than others. In that respect #5867 is a real gem; even though the main models are perhaps not the greatest, the parts inventory is just excellent. Once I started to get the hang of it, this combination of elements offers an incredible amount of potential, giving you the possibility to build pretty much any type of wheeled vehicle that you can imagine. I'm aware that this model is not officially available anymore, which is a pity, but this book's focus is not so much on #5867, but more about stimulating creativity in general by using a limited amount of pieces. And once again, the elements in question should not be that difficult to obtain.

HBM: The models that are used in this book were all published on Brickshelf / MOCPages / Flickr. Did you make them with the book in mind or was that just a happy coincidence? And to what degree do you believe the book adds to the models that you published?

NK: It's just a happy coincidence, really, although admittedly I never presented the internal structures publically for a reason. On one side it offers a nice creative challenge for those who want to try to replicate the models, and on the other I do not give all my secrets away for free. However, some people didn't really understand this concept and have at some point published their own versions of my models, including the internals, and presented them as my solution. So with this book I also hope to show and prove that my models are actually quite sturdy and to a certain extent playable, despite the unusual building solutions. But what this book should mainly add is getting my work known to a larger audience, outside the LEGO® community.

HBM: Can you tell us anything about the second volume?

NK: It's pretty much more of the same, covering how to build another 10 completely different models from the same pieces, with some additional tips and tricks. However, the biggest news is that there will be 2 new models, which have not been published before, and were specifically designed for this book! For those with a keen eye, some teasers can already be found with the information available. So stay tuned, because more details should follow on those models, when we get closer to launch...
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Review: 70003 Eri´s Eagle Interceptor Breakout

The sky of Chima conquest

By Legotron (A. Bellón)

Set: Eris' Eagle Interceptor
Set number: 70003
Parts: 320
Contains: 3 minifgs

This is a medium size set of the new theme Legends of Chima which we presented in our last issue. It depicts the struggle between two of the races of the Chima world: the Eagles and the Ravens, in their battle for the domain of the sky.

The first thing that is striking when you start buiding this set are the minifigs. The three minifigs that come with the set represent the tribe of the Eagles, with one minifig, and the Ravens, with two minifigs. They are profusely silk-screened with large amounts of detail on the torso and legs. They have helmets with the shape of animals head which they give them a fantastic appearance. As they are minifigs representing flying creatures, two small wings can be attached to this armour. They also have characteristic colour patterns for each tribe, the white, blue and yellow to represent the Eagles, and black and grey to represent the Ravens. It is easy to assume that Eagles are the good and Ravens the evil.

The first element to build is the small ship of the Ravens, which can be clearly identified by its black color, characteristic of his tribe. It is a simple construction. The wings are the most notable feature, because they can have a variable geometry. Continuing with the instructions we begin the construction of the interceptor of the Eagles, the big bird-ship. First we have to build the cabin, that seems to be a spacecraft cabin. It is made with light and colorful pieces as opposed to the small ship of the Ravens. The next step of the ship is the main body, and this part is where things change. The body of the ship consists of a cargo area that can be opened to transport objects and many attachment points. At one end of the cargo area the ship cabin fits. The main structure of the body has joints to assemble the legs, wings and tail elements. These joints allow spins and rotations, which make it possible to put all these elements in a myriad of different positions. It is not a very complex construction, but while you are advancing in the building process you can see the great playability of this set. The edges of the wings and tail are made with "soft" pieces, that simulate the plumage of birds, and which in turn can be moved and placed in different positions.

But there is a final obstacle, when you are adding the last details: the stickers. Yes, you have heard many times that we complain about the stickers, but we never say why. Well, it is time to talk about them. The main reason is that we have to put them on the pieces correctly, and we have to confront the great powers of the cruel Stickerox, an evil magical creature whose only obsession is to thwart our attempts to apply the stickers in a correct way. When we manage to put the borders of the stickers parallel to the edges, they are not centered, and if they are centered they are not parallel to the edges of the pieces. Everyone uses a multitude of tricks, and applies them with care, but the more care you take the more cruel Stickerox is. He always manages to ring the door or the phone in the worst moment, so you have to stop when the glory of a well put sticker was just a matter of seconds away... So I have a rule, I only try twice, if the second attempt is a failure I leave the sticker as it is placed or I take it off, because they lose their properties and deteriorate at every attempt you make.

When the ship is finished we can see the great size of this construction, it is bigger in real life than it seems in the picture. The playability of this flying bird-ship is amazing, it can be posed in many ways, and it was much fun to play with these features when I took the pictures. There is a large amount of joints in the legs, wings and tail, that allow you to put the bird-ship in many different positions. It can be played in flying position, standing on two legs, landed, etc. You can also use the claws of the legs to pick up minifigs, like a bird of prey. If you add the great colour scheme of this flying bird-ship you have a really nice construction.

If we have a look at the parts of the set we can see that there are a lot of very interesting pieces, like the brackets and bricks with studs on side. These pieces are very interesting for SNOT constructions. Of course, there are a lot of joints for the wings and the legs. Another very interesting part that I have seen for the first time is the modified plate 2x2x 2/3 with 2 studs on side. I need to think about the possibilities of this part, as it has a very important property: its side studs are placed at a perfect height to put tiles in a SNOT way, without the little gap that exists when you try this with bricks with studs on side. There are also some modified tiles 2x2 inverted, with amazing printed details of propellers. I'm sure these parts will be very useful for spaceship MOCs and everything related to propulsion and rocketry systems.

In short, I believe that it is a quite well thought out set that offers innumerable play and building possibilities. It is easy to assemble, but it has lots of details and very interesting elements. Are you ready to conquer the mastery of the skies of Chima?

Review: 10240 Red Five X-wing Starfighter

By satanspoet

Pictures by LEGO® System A/S

Set: Red Five X-wing Starfighter
Set number: 10240
Parts: 1559
Contains: 1 minifigs

For those of us who didn't get the opportunity to get the UCS 7191 Fighter X-Wing, LEGO® now gives a chance by re-releasing this emblematic ship.

At a first glance of this 10240 Red Five X-Wing Starfighter we see it is a large model, with 1559 pieces and many details. Unfortunately, the only minifig that comes with this model is R2-D2 and the pilot is lacking.

The construction of the set starts with the central part of the ship and the mechanism with which you can move the wings. For this construction phase you need bags 1, 2 and 3. This part of the construction is very entertaining, not at all complicated and allows you to discover the new Technic Axle Connector 2 x 3 Quadruple. After building the mechanism I realised the knob for opening or closing the wings has no stop for the start/end, so unlike in the 7191 you can continue turning in the same direction and the wings will open and close, avoiding damages to the gear because of excessive torque.

The next step in the construction is the front of the ship and its cabin. For this you need bags 4 and 5. I would like to highlight the large amount of detail on the inside of the cabin, like the pilot's seat, the different pedals, the control lever, the computer screens and the orientation system with the targeting system.

This part is where most of the stickers are used and it is the most complicated phase of the construction of the ship. Especially complicated are the transparent stickers for the cabin for which you need to be very careful not to leave any bubbles, which can be difficult. LEGO, aware of the difficulty, provides a second sticker sheet for this part. I miss the inclusion of the landing gear, which would have been a great addition to the model.

Next you proceed to build the console for exhibiting the set and which holds the sticker with the technical data of the T-65 X-Wing Starfighter. As a negative point, I miss the possibility of placing the ship vertically. The only option available is placing the ship at an inclination, simulating take-off.

Now it is time to build the four wings, These are built in identical pairs. First you build the lower left and upper right with bag #7. Then you build the upper left and lower right with bag #8.

The Technic construction that is used the combine the wings and the ship is quite interesting, as well as the "X"-shape you get with the wings in attack mode.
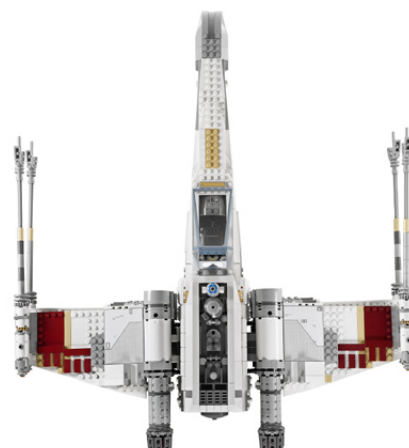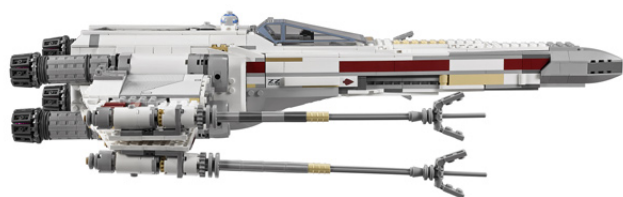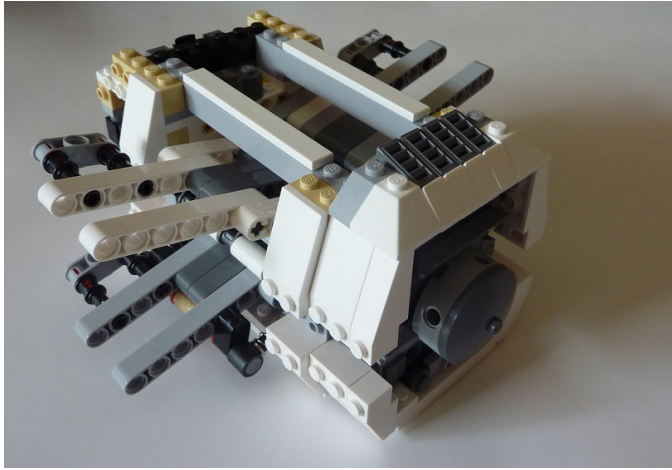
The next part of the construction consists in the motors and turbines with the pieces in bag #9. Just like in the case of the wings, the process is based on repeated constructions,

You can see that in contrast to the 7191, the exhausts have been redesigned, giving them an improved appearance, and Trans-Dark Pink elements have been added to simulate the light of the motors, adding realism compared to what you see in the films of the saga.

Finally, you build the ship's cannons, using bag #10 and without any complicated construction you get four canons to add to the wings.
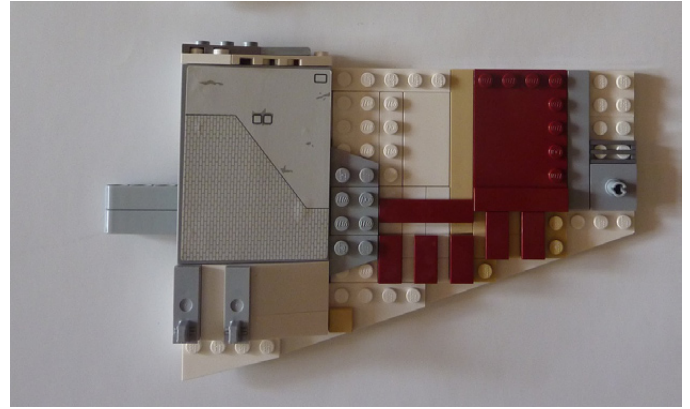
In conclusion, this model is quite an interesting and entertaining build and gives a fan of the Star Wars™ saga an opportunity to have a more than acceptable recreation of the mythical X-Wing, in addition to owning a UCS.

Acknowledgements: To LEGO® SYSTEM A/S and Jan Beyer for the set, and the official pictures.
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Review: 10237 The Tower of Orthanc

By Jetro

Pictures by LEGO® System A/S

Set: The Tower of Orthanc
Set number: 10237
Parts: 2359
Contains: 5 minifigs and one eagle.

Happy as I was to see that the LOTR theme was continued into 2013, the line-up seemed to be missing something. The pirate ship is a really nice set, but it didn't quite feel like the flagship for a theme. So when the Tower of Orthanc was announced, the theme felt more complete and I was excited to see that what some had hinted at from an office pic with lots of sets in it that was "out there" last year actually came true: a large black tower in the LOTR theme.

A bit of background

For those of you who haven't seen the film (or read the book), the tower of Orthanc, in the centre of Isengard, is the abode of Saruman the White, head of the white council and immediate superior of Gandalf. It was not, however, Saruman who built it. The tower was carved out of the living rock by the Númenóreans of whom Aragorn and the people in Gondor are descendants. J.R.R. Tolkien described it as follows: "A peak and isle of rock it was, black and gleaming hard: four mighty piers of many-sided stone were welded into one, but near the summit they opened into gaping horns, their pinnacles sharp as the points of spears, keen-edged as knives. Between them was a narrow space, and there upon a floor of polished stone, written with strange signs, a man might stand five hundred feet above the plain."

The film version of Orthanc was based on the design of illustrator Alan Lee who has made many beautiful LOTR related illustrations over the years. This tower was one of the two referred to in the title of the second volume and second film of the trilogy "The Two Towers". Tolkien eventually decided the second tower was that of Minas Morgul the city of the king of the Nazgul, but Peter Jackson, director of the film, made it Barad Dûr, the abode of Sauron. Does that mean we can hope for a LEGO® version of that tower too? I doubt it, since none of the physical action in the films takes place there, but only time will tell.

The contents

The set contains 2359 pieces, and as indicated on the box, rises to a height of 73 cm with a base of 21cm. If the number doesn't help you to imagine it, the tower contains 6 lofty levels plus the pinnacle and roof. In addition to a large assortment of black pieces, some of which new like the arches used for the windows (also used in the Rivendel set in the same theme),

the set comes with a brick-built Ent – Treebeard – an eagle, and 5 minifigs. Other special elements include a zamor-sphere type ball, cast in two colours – yellow/green and black and a light brick to light it up.

Building the tower

According to the box, this set is aimed at ages 14+, but unless that is because if the length of the building process I cannot find any reason why the age should be so high. No very complicated building techniques are used. As a matter of fact, there is only a little sideways building, mainly to cover the base of the tower with the typical rocky profile as seen in the film and the four pinnacles.

The tower is (of course) built from bottom to top, and the first steps include several bright coloured bricks that are used to

reinforce the inner structure. Fortunately these are out of sight, or almost… There are a couple of orange 1x2 bricks that peep through the tolerances of the grey bricks that form the back of the bottom floor of the tower. You really have to know they are there to notice, but I know, so I changed them in order to be able to sleep again.

Since the tower is pretty tall, parts of the tower are built and then added to the whole. This means you can more or less work at table height instead of having to stand up to be able to reach. Initially I was hoping for some tiles to be used in order to make the tower modular, but the tower is built as one large construction, which is good for stability, but less so for easily storing it somewhere.

Back to the colour scheme. Fortunately, higher up no aberrant colours are used. There is some occasional Dark Bluish Gray for floors and some decorative elements, but the outside of the tower is mostly black. That takes me back to the base of the tower: the first two floors: dungeon and main floor. These are covered outside with plates, which in turn are covered by curved slopes to simulate the stony shape of the lower levels of the tower. The effect is very realistic. I would have preferred if in the underlying structure the 2x2 corner bricks had been black instead of DBG. Yes, they are mostly covered by plates, but in the inner corner opposite to the one that holds the stairs and door you can still see the DBG between the coverings. Again, you need to know what you are looking for, but since this type of brick is also used in black further up the tower, I feel extra sorry black wasn't used here as well.

So now I've got that off my chest, let me just say WOW! The overall effect of the tower is to leave you impressed and intimidated at the magnitude of the construction. There isn't a dull moment in all of the 73 cm of the tower: each level has its own specific decorative relieves and elements and even though it is (almost) completely black it is a feast for the eyes. Especially attractive are the four "horns" of the tower, which are built sideways and attached with hinge bricks. To add to their detail there are 3 small sculpted elements – built with slopes on hinge bricks – that enhance the base of each horn. The centre of the spire is built with panels, but this hasty building technique is almost completely masked by the majesty and size of the pinnacle. The platform at the roof of the tower is large enough to hold several minifigs and play out the scene in which Gandalf is rescued by an eagle or the one in which Saruman appears with Grima Wormtongue after Isengard is overthrown.

Of course all these characters are included in the set. Before starting to build the tower, the 1st of the 4 instruction booklets shows you how to assemble Treebeard. Although I am not a big fan of the family of bricks modified with ball/receptacle etc. in this case they are the perfect solution for a realistic Ent action figure. The ent has nicely detailed fingers (four on each hand) and its right arm has a mechanism that allows it to throw… an orc, or anything else you fancy. The size is perfect compared to that of the minifigs. When I built the Ent, the Technic builder in me gritted his teeth upon seeing the amount of friction the gears for the arm had, but after completing the Ent I realised that this is the only way to create an arm that will stay up and not be dragged down simply by gravity.

The minifigs in this set – 5 in total – of course include Saruman, for whom we get a robe and a pair of legs, Gandalf the grey, Grima Wormtongue, an Uruk Hai and an Orc. Another character that comes with the set is Gwaihir, the eagle who rescues Gandalf. Whereas the Ent is brick-built, the eagle is a moulded piece with hinges for the wings. These are very

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nicely detailed with dark brown flight feathers on the brown wings, but as far as size is concerned the eagle is a bit of a disappointment. If you have seen the film you will remember he bears away Gandalf with his claws, but the LEGO® version neither has claws nor is big enough to carry Gandalf (or Frodo) in such a way. I found an easy solution to this problem in the 31004 Fierce Flyers set. Curiously the scale of that eagle is very close to what we are shown in the films, but of course that does come at a cost: 166 pieces and longish legs.

Moving on to the interior of the tower of Orthanc, there are 6 decorated levels and they are full of details. The tower starts with some kind of dungeon. Since the front part of the tower is taken up by the construction that holds the stairs in place, it only makes sense that it is covered with a large panel. And this is where the stickers come in. Now I'm not going to give you the usual rant on stickers; yes, there are many and yes some are large, and of course I would have preferred printed parts, but that always comes at a price. The stickers included in the set some make sense (the pack of wargs in the dungeons is a nice touch). It is a pity there are only two stickers for Saruman's banner, since the set includes a third banner (partially hidden) behind his throne. It is a little funny to find pictures of all 5 wizards on the 5th level – I didn't take Saruman to be the type to hang a picture of himself on the wall – and the picture of Barad Dûr on the 6th level, including the eye, is definitely weird, but the maps, book and rug certainly help making the tower a little more homely.

In addition to two banners, the entrance level hold a statue (a microfig) and a chandelier which is connected to the mechanism for the light brick. This chandelier hangs from an axle that is inserted into the light brick and a bush is used to keep it in place. Given the level of detail and attention that is given to this set, I was surprised to see the bush was Light Bluish Gray, when Black would have been so much more appropriate as well as less visible. There is also a trap door that opens up the floor to the dungeon, and of course the entrance to the tower.

Aside from the fact that it is on the 3rd level of the tower, the elements of Saruman's throne room are very similar to those in 79005 – The Wizard Battle, except for the fact that the Wizard Battle is an action set and the Palantir in the tower is absolutely perfect, especially when illuminated with the light brick. The balcony is essentially an exterior element, but is also on this level.

The next level (with the barred windows) holds a lab for creating the explosive device that was used in the battle of Helm's Deep. It also holds the third mechanism in the tower: a kind of cauldron or melting pot on a moving pedestal.
The 5th level holds Saruman's study, with maps, the pictures of the five wizards I mentioned earlier (which are stuck on the inside of the slopes that make up the wall) and a book are the main features. Hidden behind the lectern that holds the book are another two of the five skulls in this set.

Level 6 is accessed by a trap door in the ceiling with a foldable ladder, the last mechanism in the tower. In this "hidden" attic you can find the staffs of the remaining three wizards and two keys … for the two towers, in clear reference to the dialogue

between Saruman and Gandalf in the film. It also contains a full set of armour for an Uruk Hai (except the breastplate).

The verdict

The tower of Orthanc is a great play set, mainly because the tower is really iconic (and well replicated) and the rooms are very detailed. The mechanisms add to the playability, as do the minifigs (and maxifig) that come with the set. Each level is different, both inside and outside, but while this prevents the set from becoming boring, there is also an internal harmony between the parts of the tower. The build is quite enjoyable and the set is an absolute must-have for die-hard fans of the theme.

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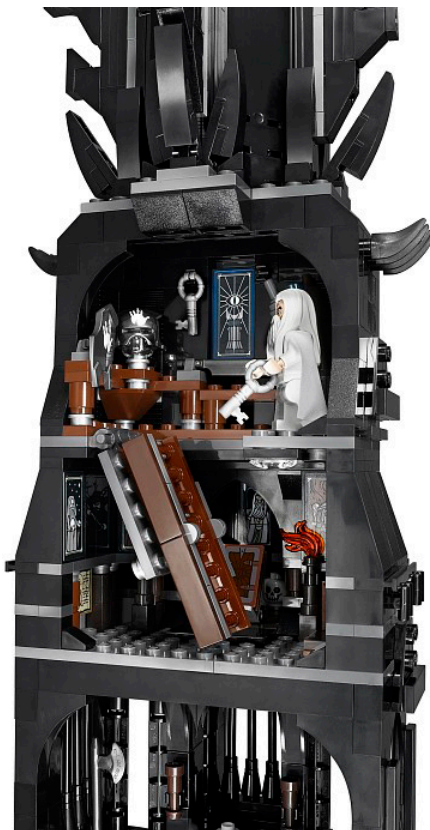
Lone Ranger

By lluisgib

Pictures by LEGO® System A/S

Those of us who are of a certain age, remember watching a TV series called "Lone Ranger", the story of a masked Texas Ranger, who galloped to set straight injustices with the help of his astute and iconic aid, the Potawatomi native called Tonto. In 2013 Disney brings out a film based on this character and LEGO® has taken advantage of the licence it has with Disney to launch 6 sets and 2 polibags related to the film. In this article I will present some of these 8 sets to give you an idea of what you can find in the Lone Ranger boxes.

Unfortunately I cannot make reference to the film in this review as it will première on July 3rd, after this edition of the magazine has been closed, so I'll stick to describing the sets.

The smallest set is the 79106 - Cavalry Builder, a battle pack with Lone Ranger, Silver (his horse) and three cavalry soldiers. The set also includes accessories like a cannon, a fire, and a protective wall to hide behind when the cavalry fights the enemy. In this set you can see that there will be a new, more stylised model of the revolver used in Western sets.
It is an interesting set if you want to make a cavalry army, or if you want to get your hands on Lone Ranger and his horse for a reasonable price.

The second set in the series is the 79107 - Comanche Camp. In the case we change "sides" and join a group of Comanche Indians, specifically with one of their typical teepees. It is built on a plate. Some bricks to make the round shape of the base and some bars placed in X which connect to the 2 plastic sides that make up the cloth covering the teepee. Both sides are the same and have an opening by way of a door. You need to try not to open the door on the rear side so the back wall will remain closed. In addition to the cabin there is a canoe, a stand for the bow, arrows and a spear, other tools, like a hatchet or an oar, and a small hill with a mechanism that reveals a scorpion.

The set includes three minifigs: Lone Ranger and the Comanches Tonto and Red Knee. The Comanches are very complete and each one has his own characteristic hair, which

is a special piece for each minifig. It is the first set to feature Tonto and it is curious to see a crow can be fitted to his head (also a new piece).

Continuing with this review, the 79108 - Stagecoach Scrape is a precious stagecoach with a strong box with silver ingots that the bandits will try to steal. In this case I want to start with the 5 minifigs. They are extraordinary. Especially the one I have mentioned before that represents Tonto, and the one of Red Herringdon, a spectacular lady with a large hairdo, a cape and a hat. The two bandits are differently dressed and also their legs are decorated.

The stagecoach is in no way less spectacular. Pulled by two horses, it is a precious red and contains some interesting building techniques, like the rear axle, which is very much like the real thing visually, although quite fragile functionally. Inside there are two couches for the passengers, and on the roof there is a strong box to transport silver. In addition to this precious cargo there is sack with mail. The rear luggage carrier holds a suitcase and has a mechanism to make it jump out. This is the first Western stagecoach and I think it leaves the bar very high.

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One of the largest sets in the theme is the 79110 - Silver Mine, which reproduces the mine where the silver comes from that the bandits try to steal. Again there are 5 minifigs. Aside from Lone Ranger and Tonto, in this case dirty with dust, we find an Indian Chief, Chief Big Bear, Butch Cavendish and the bandit Skinny Kyle. This is a real play set. It is very detailed and has many mechanisms to promote play.

In the mine there is a hut for the bandit to hide, cook and drink. It has a nice fireplace inside with chimney outside the cabin Outside there is a skull of a cow that can be used as a weapon as it can be launched. At the top of the mine there is a crane to lift stones (or people) from the floor. There are different moving elements for play, like a lever to move a rock, a slide that allows you to go down from the inside of the mine to the trolley, moving stairs, catapults, explosions... There is a lot of play opportunity in this set. I would like to highlight the possibility to simulate explosions, that is, placing a dynamite cartridge in the right place, using mechanisms that push this dynamite, you can make the wall crumble, simulation an explosion.

As far as decoration is concerned the set is also very interesting. LEGO® hasn't simply piled up a couple of BURPS, but tens of slopes of different colours and sizes have been used to simulate the shape of a mountain. The result is fantastic. In addition, there is a river that passes through the mine, made with transparent tiles and cheese slopes on light blue plates. To simulate the waterfall there is a plastic piece that is like a curtain and can be traversed. From the centre of the mine a railway track comes out that allows two wagons with ore to come to the surface. The interior of the mine is full of silver crystals.

In my opinion this is the best set in the entire theme. If you want just a single Lone Ranger set, get the kine!!!

The star of the Lone Ranger theme is the 79111 - Constitution Train Chase. It includes 7 minifigs. Lone Ranger, Tonto, Rebecca Reid, Danny Reid, Butch Cavendish, Latham Cole and Captain Fuller. It is a typical Western steam train. The engine and the tender are designed in a combination of green, light grey and black. The engine has a 2-3-0 configuration and has quite some details, like the headlight, the chimney from the boiler, the bell to announce the train is leaving the station or the typical cow catcher on the front. Inside the cabin there is no decoration, except for the door that gives access to the burner. The boiler is 4 studs wide and looks a little small in comparison to the rest if the engine. The three driven wheels turn freely. In my opinion that is the worst part of the engine. Since the wheels are not connected by rods they turn freely. What's more, the centre wheel is fictitious as it doesn't touch the rails and so doesn't turn. The effect is a little strange. I believe LEGO could have used axles as well as connecting rods. It would have improved the looks of the set no end.

There isn't much to say about the tender, except that it has a little trap door that hides the coal and where also a treasure or a minifig could be hidden...

The train has 2 wagons. The first on is open and has a turning machine gun, with a mechanism that allows you to simulate the turning. The other wagon is closed. Inside there is a door that separates the free access area from the "jail". This closed area has a mechanism that, like in the mine, simulates the explosion of dynamite and makes the rear wall fall out so the captive can escape.

The set includes railway tracks to build a 0, and also some elements that include the "explosion function". One of them is the water deposit. It has a movable tap that allows you to move it close to boiler of the engine, or retract it after the filling operation has been finished. The entire structure is fixed to a plate with 2 hinges, so after the explosion of the dynamite, the deposit falls onto the train to create the desired effect. There is also a little mound with the explosion function. The idea is that when the train is about to pass, it explodes, filling the rails with stones.

The Lone Ranger sets have been designed to maximise playability. They all have some element to simulate actions or explosions. In addition they have been carefully designed and there are no sets with great minifigs but poor design. The film has been a good excuse to enjoy the Western theme again and, forgetting the Hollywood characters for a second, there are some great models for a generic Western diorama.

Interview: Jan Beyer

Community Operations Manager EU/Asia
CEE Community Support

By HispaBrick Magazine®

Picture by Jan Beyer

A few years ago we interviewed Jan Beyer, of the CEE Team (Community, Engagement and Events) to take the pulse of the AFOL community (see HispaBrick Magazine® 005). After this time there have been changes in the department and in the way it works with the communities so we have contacted mister Beyer again so he can explain the changes.

HBM: Can you give us your assessment of the AFOL community at this moment?

JB: The AFOL community is in very good shape and growing – I see an increase in the number of LUGs (especially in Eastern Europe, Asia and North America) but also the member count of most LUGs is growing.

Unfortunately the number of active AFOLs seems not to have the same growth rate – mostly the same AFOLs have been active over the past years and the number of new very active people is not very high so we all together need to find ways to increase the number of actively participating AFOLs.
I have seen several LUG anniversaries over the last couple of years and more are upcoming so it is nice to see that more and more LUGs have been around for 5 or even 10 years and to celebrate this.

Eventwise I see a growing number but more because we work with more and more LUGs – I think there will be a limit somewhere soon – but it is an extremely nice feeling that you – if you have plenty of time and money – could visit an AFOL event around the world every single weekend!
Finally I must admit that I am very proud to see the growth in size and activity level but also the increase of cooperation and interaction between the LUGs on an international level over the past 10 years I have been around with the LEGO® Group and involved in working with all of you around this fantastic hobby.

HBM: The crisis is affecting many markets, like the South of Europe. Does the support you give to communities depend on the market conditions of each country?

JB: Luckily I cannot see the effect of the financial crisis so much among the AFOLs yet – and I certainly hope this will stay like it is but of course it makes it not easier to finance an expensive hobby or organizing events if the financial situation is not good – but until now it has been going surprisingly well. The support is not dependent on the market conditions but on the size, impact and activity level of the LUG/Event that will get the support.

HBM: You are the LEGO representative for the communities in Asia. What can you tell us about the fans in Asia?

JB: In general the AFOLs in Asia are not very different from the AFOLs in the rest of the world – some LUGs are incredible big (the biggest we know has over 75.000 members) but they also do physical gatherings (with smaller portions of members) and build MOCs for display and also like special LEGO products as all other AFOLs.

But of course there are some slight differences – the building style is sometimes very different – in Asia a lot of people build more from inside to outside instead of bottom to top and also in a smaller size due to limited space, the forum life is very important due to the large number of members – same with online contests.

The Asian AFOLs are all very friendly and extremely active and involved – they love to talk about the LEGO hobby, their MOCs and a lot of activities around the LEGO products – so in general I not see huge differences.

HBM: South Korea is probably the country with the largest number of LEGO fans in the world. However, the communities there are mostly unknown to the rest of the world. Why do you think that is?

JB: My immediate idea about this would be that South Korea is a very proud but also very closed culture due to the heritage and the history of the country – also the amount of AFOLs who speak English fluently is still fairly low. But I am working a lot with the AFOLs in South Korea and our local LEGO office to get them more interested and integrated in the worldwide AFOL community and increase the interaction with them – I see a big chance and advantage for both sides in this.

HBM: How are things going in China. The country is a huge market, but there is a lot of competition from clone brands.

JB: Things are going well in China – it is true that several clone brands are produced and also sold in China but the Chinese people are very much (if they have the money) into high quality Brands and that fits very well for the LEGO Group. The competition situation seems worse in other countries – so the Chinese produced toys get transported to foreign countries and sold there – but of course you can get the clone sets in the country too.

China is a huge economy with big potential for the LEGO® Group.

There are not so many AFOLs in China – mainly in the 4 biggest cities – and they are not really organized so much yet – lately LUG China was founded and has around 15 very active members but the number is growing. Overall I would guess that there are around 1000 – 1500 AFOLs in China – mostly organized in an online forum.

HBM: What characteristics must a fan community have to be recognised by LEGO?

JB: The LEGO Group has no special rules yet so for the moment we work with all Fan Groups who want to work with us and are willing to cooperate. But I would say that as a minimum for being a LUG I would expect a group of 10 members and at least a form of online presence like a website or forum (not only a Flickr or Facebook group) so a certain serious effort can be seen. Also the will to organize or participate in a physical exhibition of MOCs would be certainly expected.

HBM: One of the first changes in the relationship between the LEGO Company and the fans was the Ambassador program. What were the reasons behind the change in the selection method, from LEGO taking the decisions to the communities choosing their Ambassadors.

JB: The Ambassador program is still considered as a very important group of representatives from a lot of LUGs around the world and has still a lot of relevance for our team and the LEGO Group. Due to the nature of the program (represent your community/LUG to the LEGO Group) we felt it was wrong that

the LEGO Group choose the representative of a LUG instead of the LUG members choosing their representative so that got changed.

HBM: In this change it seems that the Ambassadors lost "weight", no longer participating in more or less secret projects and reducing their task to being the liaisons between the company and the fans. Why was this change made?

JB: I would not call it that they lost "weight" but the issue was that at the beginning the Ambassadors had to sign an NDA (Non Disclosure Agreement) to be able to tell them any "secret" things and this NDA made most of the Ambassadors silent to their LUGs so they were not talking with their fellow members anymore and though they could not represent them properly anymore. So that was changed but without NDA we cannot unveil the "secret" things.
Also the Ambassador forum changed slightly from a discussion space to a permanent question and answer session and that is not the main focus of the program – we would rather like to see high level discussion among the Ambassadors to bring forward the crucial points in the Community and discuss potential solutions.

HBM: What is the current state of the program? What are the expectations for the future?

JB: Current state is that we have close to 100 Ambassadors in the program and from those around 80 participate actively and regularly in the forum. So the Community is well represented but not as active as we would like to see it. Discussion wise I would say that I would like to see – as mentioned before – more discussions among the Ambassadors around the

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Community and relevant topics rather than asking a few questions and waiting on input from the LEGO® Group but I must also admit that we in the CEE team have always struggled with putting enough time into the program to participate from our side but we can all only use our time once and we need to get better to prioritize and find a way to ease the workload but also be involved more in the program as we have been.

For the future I still see the relevance of the program but we are currently looking into a change in setup and also into new technical solutions to make the program better and even more worth to participate.

HBM: How does the LEGO Company view the considerable increase in events and conventions organised by fans we have seen in the last couple of years?

JB: Of course the LEGO Company is very pleased to see this increase due to it is a very valuable activity and inspires a lot of kids and adults and show to a broad audience what is possible with LEGO bricks. Also the LEGO Company has significantly increased the support for events over the past years to help all AFOLs to organize the best possible events. But as the Operations Manager in charge, I also see the little downside of this because I see an increase in Events which compete with each other in time, resources and/or location and also I see that the pressure on the most active AFOLs is growing – nobody has unlimited vacation and money.
So overall it is great with the little issue we all need to be aware of and collaborate on to find solutions for the future.

HBM: Can you explain how the new support system for fan events works?

JB: Of course – first of all let me say that we now have split up the support into LUG support and Event support. All LUGs can ask for support – if they do events or not which gives the LUG loose bricks and sets according to size of the LUG and their activity level. That is new and have not been done before. Event support also gives some loose bricks and sets as support depending on various criteria around the event and some offers (loose bricks, LEGO sets) that can be bought in addition to the free support. The event needs to be announced to the CEE team at least 3 month before the date with the complete filled in event support form because we need to have some time to agree and process the support. This all is running as a test and we will take all feedback we get into consideration to tweak next year's support program.

HBM: Compared to previous years, have you noticed an improvement with this system?

JB: Yes, it is much more structured and now the Event organizers have a good idea about what support they can get – also similar sized events get similar support worldwide so there is an improvement in this too.
The only disadvantage is a slightly bigger workload for the CEE team and also that some of the LUGs are not clear how to organize this. Especially the 3 month in advance timeline has given some headaches but we look into improvements for next year.

HBM: How does LEGO assess the use communities are making of the new system?

JB: I think for the moment it works fine – we have given LUG support to almost all LUGs we work with (a very few could not manage or didn't wanted to fill in the form) and also we have

given a lot of support to events (some LUGs have been very good in sending the Event support forms – others a little less good) – though I had expected more event support requests – but the year is not over yet.

HBM: What feedback have you received from the communities?

JB: Until now the big majority has been very happy with the new structure so it is very positive – only the 3 month in advance announcement of the events has been for some event organizers a slight issue but we need the time to fulfill the order of materials so there is not really any chance to change that in this running year.

HBM: LUGBULK has become essential to the communities. Is it available in all countries where there are fan communities? If not, are you planning to make it available for all in the future?

JB: It is available for the whole world so every LUG fulfilling the criteria is able to participate.

HBM: Are you happy with the results?

JB: As far as I can see all AFOLs are very positive about LUGBULK and also putting the bricks they get to good use. However, internally it is still a very manual and heavy process so I constantly need to fight internally for the needed resources and work to solve problems which suddenly arise like VAT issues, shipping rules, customs issues – but luckily my colleague Kim and I have been able to pull this off until now.

HBM: The LUGBULK rules are clear and binding. Are they respected?

JB: Beside that some people never read any rules and are suddenly surprised about things that were clearly stated in the rules everything is fine and as far as I can tell well respected. We all want to see this program continue so I recommend all to stick to the rules.

HBM: Will there continue to be LUGBULK in the coming years? Will there be changes?

JB: We decide each year if we do LUGBULK again but for the moment I see no issue why it should not continue next year. There might be slight changes – especially the growing amount of participants and participating LUGs as well as the growing order size gives us issues regarding packing and delivery. So we might need to put some changes in place here but we decide first after this year's round of the LUGBULK program. #

Great creators of the world: Simon Liu

By HispaBrick Magazine®

Pictures by Simon Liu

Science fiction is one of the most attractive themes because of the freedom to create without any kind of rules. Today bring you a creator who uses this freedom like few others.

HispaBrick Magazine®: Name?

Simon Liu AKA Si-MOCs on Flickr/Eurobricks etc

HBM: Age?

SL: Old enough where it's fun to make people guess.

HBM: Nationality?

SL: I am Canadian, eh.

HBM: What do you do normally?

SL: I'm an IT Consultant… specializing in everything and nothing – so I can go in and basically fill any role.

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

SL: When did I not build with LEGO? I really have no idea, I've always built as a kid. I have an older brother so I've always had bricks LEGO somewhere.

HBM: When did you start posting your models online?

SL: I started posting my builds around Jan 2011. I collected and did some newbie building before that. But I didn't really start to build seriously until a chance meeting with Iain Green who pushed me to post more on Flickr and get involved in the online community.

HBM: What is the last set you have purchased?

SL: As of the time of this writing, it was a Friends set to draft at Brickworld – Though we didn't start till display tear down, so I actually had to get someone to draft for me – missing out the fun.

HBM: What is your favorite commercial LEGO building theme?

SL: Anyone that knows me knows I'm big into Sci-Fi/Space (hence the common miss spelling of my user name haha). So anything Sci-Fi is great… So all the classic space stuff, the recent Alien Conquest wave was great. Galaxy Squad is really cool, but I really loved the feel for Alien Conquest - I wish they extended that a bit longer.

HBM: What is your favorite theme for building?

SL: Sci-Fi. It just suits me. My build style can be described as … messy … so greebling (adding superfluous texture) is something I do well and easily. I also really like the fact that Sci-Fi literally anything is possible and I don't have to build things perfectly. I don't have to spend too much time inventing solutions to recreate life, I can build what looks 'cool' or what makes sense in my mind. Sci-Fi gives me that extra freedom to build.

I look at town builders – like the incredible firetrucks that Isaac Mazer does – the amount of time and effort town builders put into recreating real life objects scaled down to minifig scale is beyond me. I could not build like they can, I don't have the patience or the ingenuity to replicate life, instead I just make it up as I go– thus Sci-Fi!

HBM: What is your favorite LEGO element and why?

SL: The 1x2 2/3 slope with grills, or the "grilled cheese" or "cheese grate" depending on who you're talking to.
This was one of the greatest new pieces when I came back

into the hobby – it's the perfect transition piece between greeble and sleek. It's a Sci-Fi builder's dream piece – it allows you to smooth out greeble sections, or add a bit of greeble to smooth section. It also is a new angle slope pieces So it really is a fantastic piece – though over the years I've over used it a bit too much, the most glaring example is when I used it for roofing cause I was too lazy to think up something else.

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

SL: Some sort of snot plate where studs are on BOTH sides with a thickness of a plate to allow for two halves to be joined. I don't think it'll ever happen – there are already some solutions out there, but this would be nice…
Then again they came out with inverted tile… so who knows?

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

SL: It depends on what I'm building … it's surprising that when I'm not building towards a contest or to support an event (convention or online), I don't actually spend that much time building … but when I have deadlines or in a contest I shift into that Iron Builder gear and go basically 4-7 hours a night… and double that on weekends which was the pace I spent most of the first half of 2013 doing…
Though when I'm not building, I'm usually thinking about what I could build J

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

SL: They know it keeps me out of trouble so they're okay with it – and often times I try to include them where I can – so for sets I am about to part out I might lend it to them to build before parting … so they get that enjoy building.

HBM: Do you draw or pre-designs before you start building?
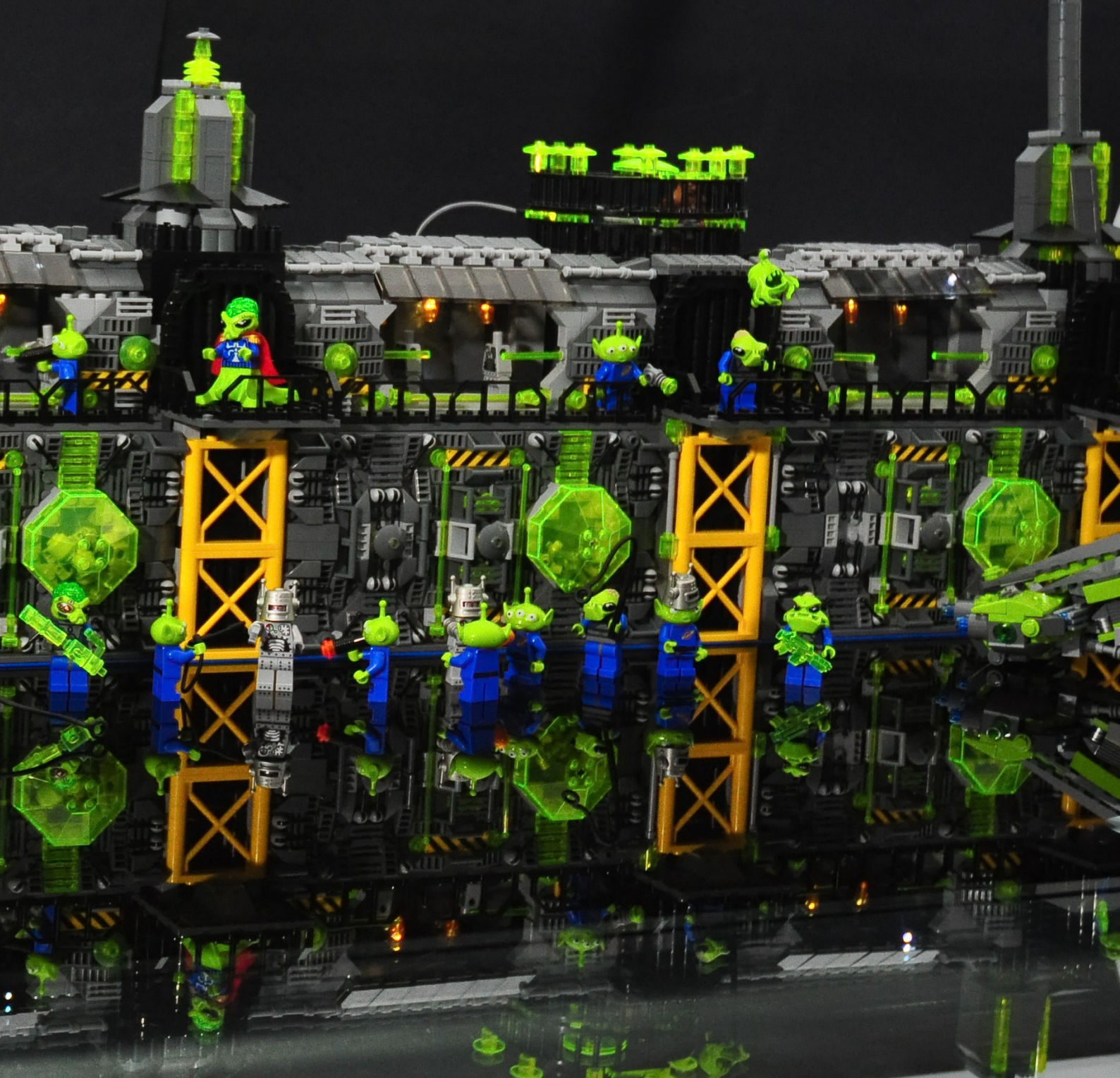
SL: I never draw things out or pre design in LDD. What I will do is think about the general shape of what I want to build prior to starting – I typically walk to work which gives me a lot of time to 'pre visualize' in my head. So when I actually do sit down I can put together things fairly fast as I kind of thought about how the certain pieces fall together.

Most of the time the end result is similar to what I had thought about – but always as you build you kind of see how you can do things better, or you find better bricks to use, or sometimes you don't have as much brick as you thought so the design changes slightly and organically evolves as you build.

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

SL: I think my favorite build is probably the robotic hands I did for Iron Builder. From a piece usage perspective using the little microfigs as fingers was (I thought) pretty clever, but I really loved how accurate to real life the hands turned out- the fingers bend and can be posed in very realistic ways. I spent a lot of time playing with those hands.

Though one of my favorite builds was "Operation Oscar" – the build itself was isn't overly impressive – but it had a lot of significance to me. It was a tribute to some of the builders that has inspired me – I recreated bits of some of my favorite builds/style elements and incorporated it into a single micro build.

It was also a 'Thank You' to Brickworld attendees for voting me Brickworld Master in 2012. The previous BW Master – Arthur Gugick had given out a bunch of LEGO® scorpions in 2012, so I devised Operation Oscar to follow in his footsteps and I designed the little "FrogPods" to invade everyone's displays at BW 2013.

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

SL: It's really up to the builder – the LEGO hobby is just that, a hobby, some call it art, but really it's up to people how they want to build. I generally use all stock LEGO parts, but I do use 3rd party a lot for lighting, and if there are megablock parts that aren't made in by LEGO I have no problems with it. But since I tend to build for contests or bring my mocs to conventions I try to avoid certain companies just cause I don't want to deal with the drama.

As for the custom third party guys – I actually have a lot minifig accessories from various vendors – I I just typically don't get a good chance of using them.

Stickers – both official and unofficial, is something that I don't do, but I want to do more of. I see a lot of the Spacer these days using them to great effect and it's just something I haven't learned how to do yet.

HBM: You build models at different scales, which is the more difficult for you to create at?

SL: I think all scales have their own set of challenges, so there aren't ones that are that much easier or harder than the other. But if I had to choose one, it'd be the Brick built fig scale, sometimes known as Bricks of Character. The objects at that scale are actually really easy to do, but it's building the actual character itself, and especially the facial expressions that I think is difficult. I've only done it well once, the other times I've attempted it I gave up and decided to use a featureless head.

**HBM:** Recently you have faced Andrew Lee (onosendai2600) in the Iron Builder Contest. How do you face this kind of

Sleeping with the fishes...

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Si-MOCs
SCRAP FLEET

COMPUTER
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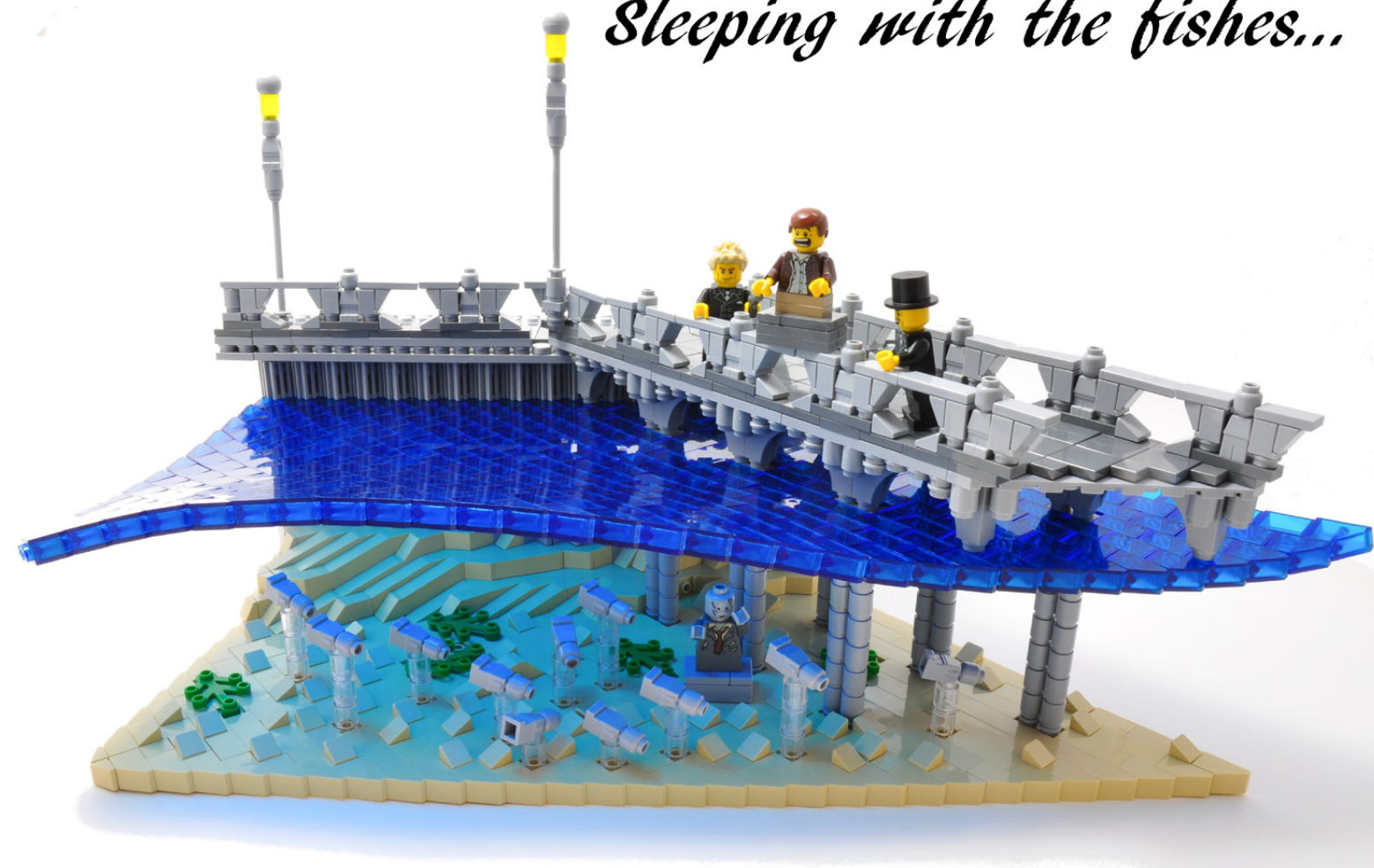
competition? Is it hard not to draw on opponent models to find new uses for the part chosen for the challenge?

SL: Well like most competitions you try to prepare. Prior to the start, I sorted my bricks, stocked up on junk food and tried to clear my calendar as best I could. I knew who my opponent was ahead of time, so I did do a bit of research to see how I could best build against – not that it really made a difference.
As the builds started being posted I tried not to build anything similar to Andrew, and would try to go for a new take on things – so if he build something I was thinking of or have already started, I would have ditched that build. There were a few times where we did play off each other's builds – when he built a swiss army knife to open beer, I built a corkscrew. After I built my Klingon dagger, he built a full on Klingon sword :P
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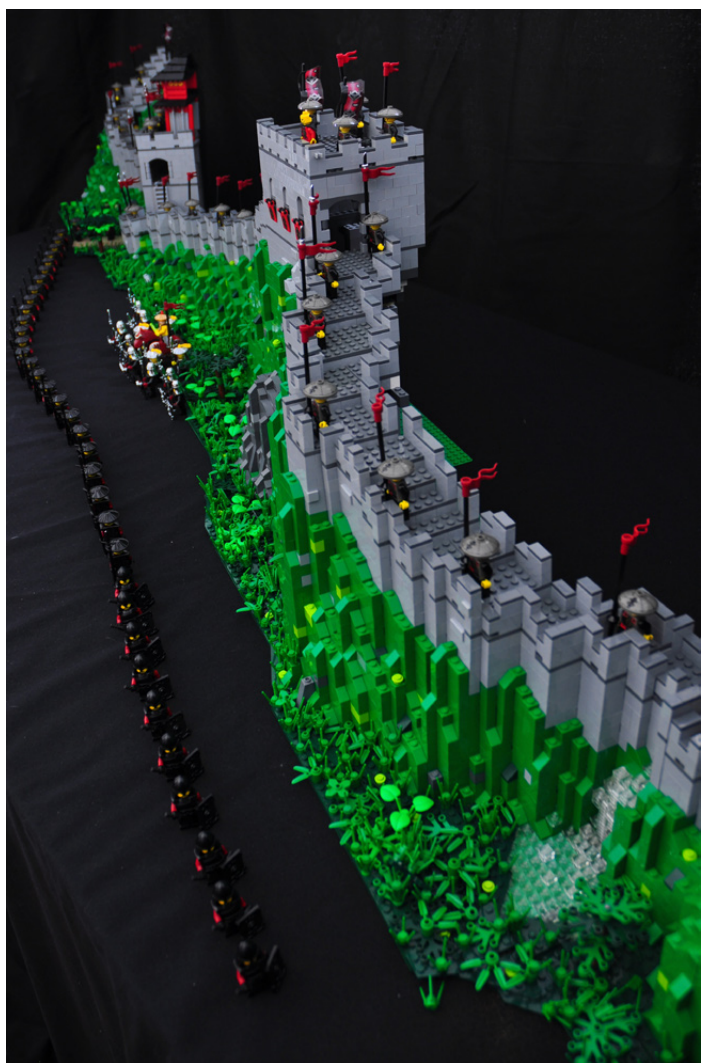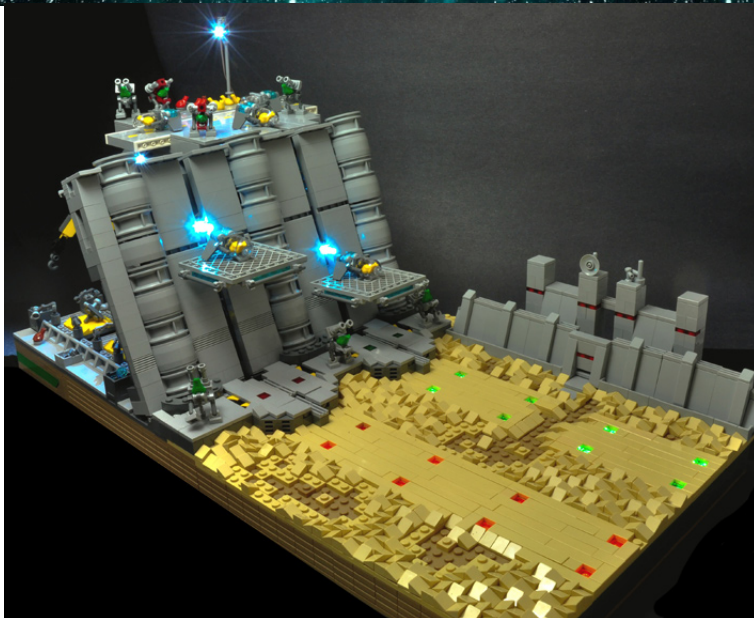
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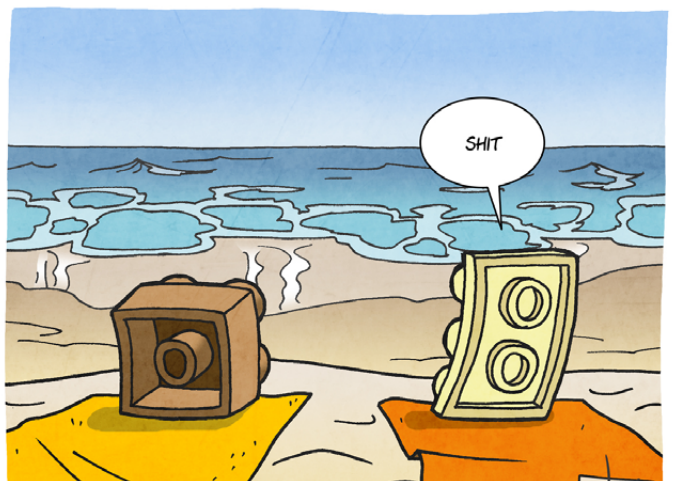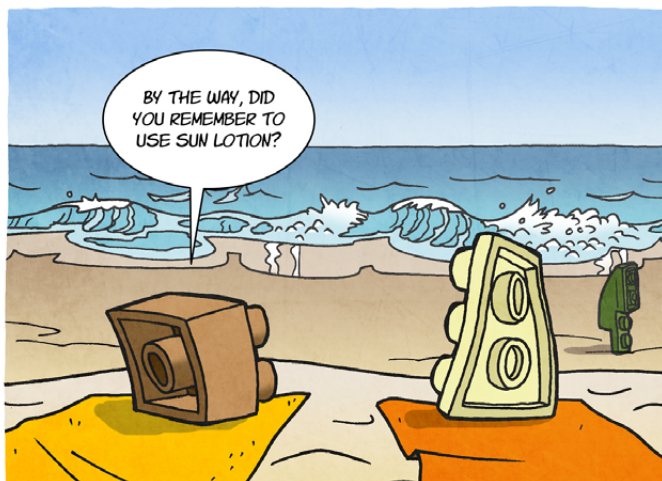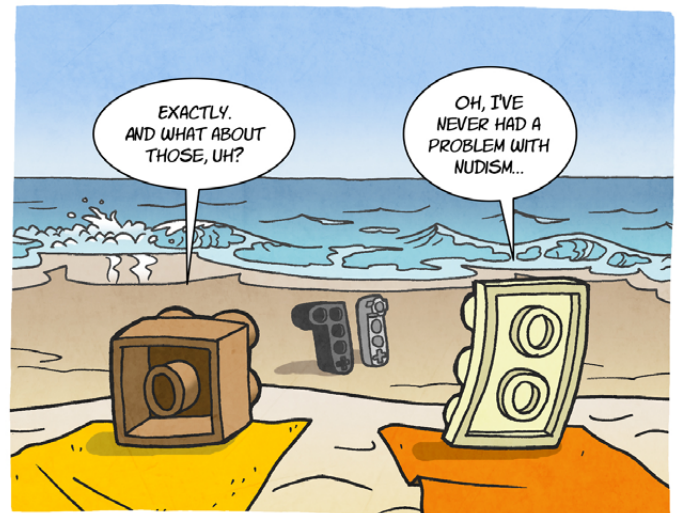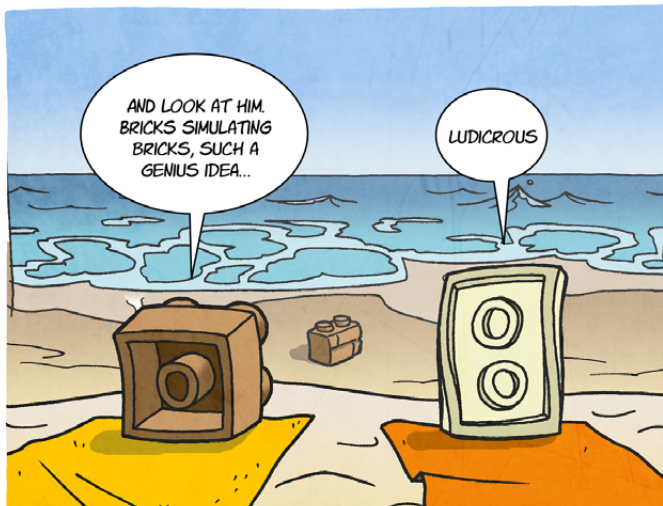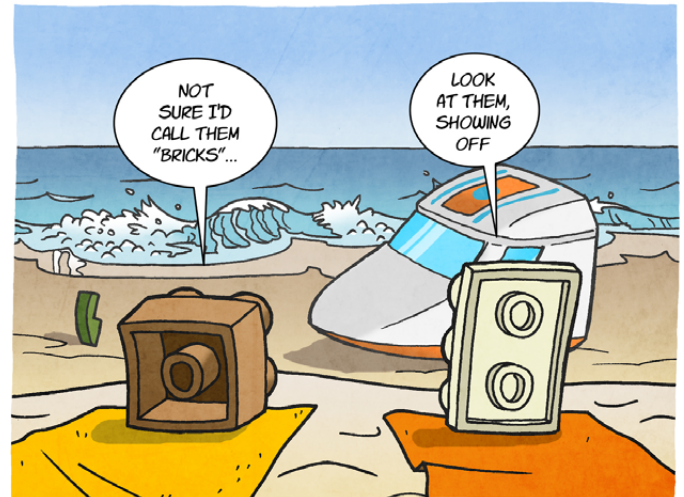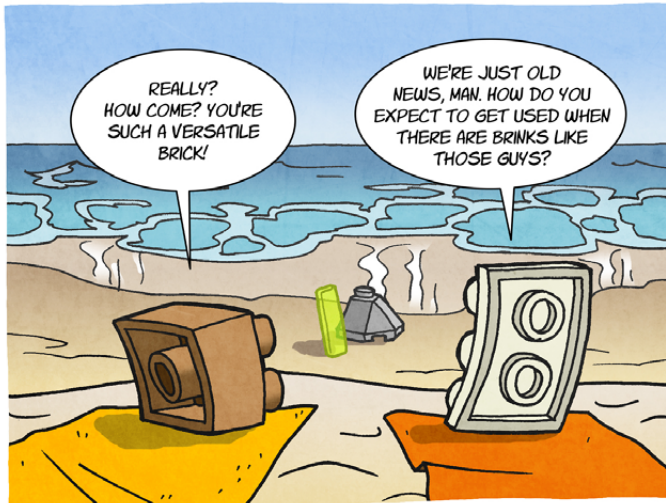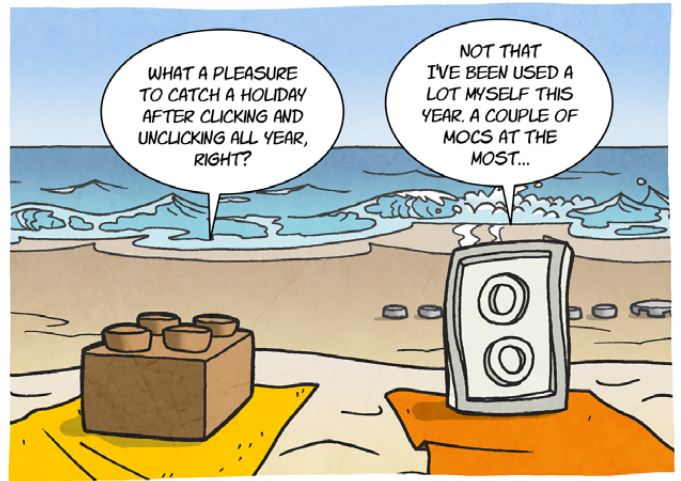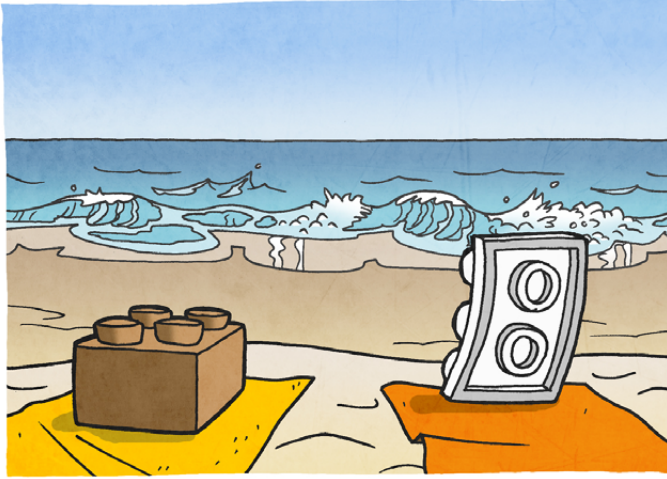
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