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BrickJournal

Issue 11 • July/August 2010

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THE MAGAZINE FOR LEGO® ENTHUSIASTS OF ALL AGES!

BRICKJOURNAL magazine (edited by Joe Meno) spotlights all aspects of the **LEGO®** Community, showcasing events, people, and models every issue, with contributions and how-to articles by top builders worldwide, new product intros, and more. Available in both print and digital form. Print subscribers get the digital version **FREE!**

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NEW! BRICKJOURNAL #12

"Back To School" issue, with looks at educational LEGO items, a review of the **WeDo** system, a list of **LEGO RELATED BOOKS,** and school sculptures by **NATHAN SAWAYA!** Plus, reports from the **LEGO IDEA HOUSE,** instructions to build a **SCHOOL BUS** for your LEGO town, minifigure customizations, and spotlights on LEGO **Design byME** models. And if you want to build for events, we'll have building standards used for the Moon-base standard for Space, Great Ball Contraption for Technic builders, and much more!

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This **FULL-COLOR** issue spotlights blockbuster summer movies, LEGO style! Go behind the scenes for new sets for **BATMAN** and **INDIANA JONES,** and see new models, including an **SR-71 SPYPLANE** and a **LEGO CITY,** plus how to **CUSTOMIZE MINIFIGURES, BUILDING INSTRUCTIONS,** a tour of the **ONLINE LEGO FACTORY,** and more!

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Event Reports from **BRICKWORLD**, **FIRST LEGO LEAGUE WORLD FESTIVAL** and **PIECE OF PEACE** (Japan), spotlight on our cover model builder **BRYCE McGLONE**, and interviews with **ARTHUR GUGICK** and **STEVEN CANVIN** of **LEGO MINDSTORMS** to see where **LEGO ROBOTICS** is going! There's also **STEP-BY-STEP BUILDING INSTRUCTIONS, TECHNIQUES,** and more!

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Features event reports from around the world, and the **MINDSTORMS 10TH ANNIVERSARY** at **LEGO HEADQUARTERS!** Plus a glimpse at the LEGO Group's past with the **DIRECTOR OF LEGO'S IDEA HOUSE**, event reports, a look at how LEGO toys ended up on **NBC'S 30 ROCK** television show, instructions and spotlights on builders, and more!

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Spotlight on **CLASSIC SPACE SETS** and a look at new ones with **LEGO SET DESIGNERS, BRANDON GRIFFITH** shows his **STAR TREK MODELS,** plus take a tour of the **DUTCH MOONBASE** with **MIKE VAN LEEUWEN** and **MARCO BAAS.** There's also coverage of **BRICKFEST 2009** and **FIRST LEGO LEAGUE'S WORLD FESTIVAL** and photos from **TOY FAIR NEW YORK!**

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BRICKJOURNAL #7

Focuses on **LEGO ARCHITECTURE,** with a look at the new sets designed by **ADAM REED TUCKER!** There's also interviews with other architectural builders, including **SPENCER REZHALLA.** Plus a look at a **LEGO BATTLESHIP** that's over 20 feet long, reports from LEGO events worldwide! **PLUS:** Our usual indispensable building tips and instructions, and more!

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BRICKJOURNAL #8

We go to the Middle Ages, with a look at the LEGO Group's **CASTLE LINE,** featuring an interview with the designer behind the first LEGO castle set, the **YELLOW CASTLE.** Also: we spotlight builders that have created their own large-scale version of the castle, and interview other castle builders, plus a report on **BRICKWORLD** in Chicago, ands still more instructions and building tips!

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BRICKJOURNAL #9

BrickJournal looks at **LEGO® DISNEY SETS,** with features on the Disney LEGO sets of the past (**MICKEY** and **MINNIE**) and present (**TOY STORY** and **PRINCE OF PERSIA**)! We also present models built by LEGO fans, and a look at the newest Master Build model at **WALT DISNEY WORLD,** plus articles and instructions on building and customization, and more!

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BRICKJOURNAL #10

BrickJournal goes undersea with looks at the creation of LEGO's new **2010 ATLANTIS SETS,** plus a spotlight on a fan-created underwater theme, **THE SEA MONKEYS,** with builder **FELIX GRECO!** Also, a report on the **LEGO WORLD** convention in the Netherlands, **BUILDER SPOTLIGHTS, INSTRUCTIONS** and ways to **CUSTOMIZE MINIFIGURES, LEGO HISTORY,** and more!

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Many thanks to the websites who have served as mirrors for *BrickJournal*:
www.LUGNET.com, www.Brickshelf.com, www.peeron.com, www.brickmodder.net www.rustyclank.com

About the Cover:
Arvo's prototype Porsche model. Photo by Arvo.

From the Editor:

Okay, I'm late. I apologize for the delay, but it has been busy. I have been traveling a lot, going to conventions, and even running one! So it's been busy.

But what's in this issue? Well, with the theme being cars, we have an article by some of the best car builders around, including Arvo, who wrote an article on building sports cars.

At Brickworld, I met another car builder, but in Technic. His name is Paul Boratko, and you'll be impressed with his building style. Another person (Tom Hohmann) dropped an article about a racing game based on Formula I racing. And another guy (Jay Kinzie) sent an article about his car, which uses an MINDSTORMS NXT and Power Functions motors to drive around!

That's just the beginning - the columns are still here, so there's info on minifig customization and miniland and micro building. Jordan Schwartz also wrote up a story about one of his models, which is a sight to behold!

And we have event reports from all around the world this issue, with FIRST LEGO League World Festival in Atlanta, the Idea Conference in Denmark, and displays in Japan and Portugal!

I guess I wasn't the only one that was busy...

Joe Meno
Editor

P.S. Have ideas or comments? Drop me a line at admin@brickjournal.com. I'm open to suggestions and comments and will do my best to reply.

P.P.S... Yes, *BrickJournal* has a website — www.brickjournal.com! Twitter? Yep, there too - http://twitter.com/brickjournal. Facebook? Yup - http://www.facebook.com/group.php?gid=58728699914&ref=mf

Glossary

AFOL (Adult Fan of LEGO)
NLSO (Non-LEGO Significant Other)
MOC (My Own Creation)
TLG (The LEGO Group)
BURP (Big Ugly Rock Piece)
LURP (Little Ugly Rock Piece)
POOP (Pieces—that can be or should be made—Of Other Pieces)
SNOT (Studs Not on Top)
LUG (LEGO Users Group)
LTC (LEGO Train Club)

BrickJournal *and its staff would like to thank the LDraw community for the software it makes available to the community, which we use for making all of the instructions and renderings in this magazine. We would especially like to thank Kevin Clague for his continued upgrades of the LPub tool that is a part of the LDraw suite. For more information, please visit http://www.ldraw.org.*

Rae McCormick: Building Painted Ladies

Article by Joe Meno
Photography by Rae McCormick and Joe Meno

Rae McCormick is a program associate in the University of Wisconsin System Administration, supporting the Associate Vice President for Academic and Faculty Programs. Along with web design, she does some writing both at work and outside. However, her most recent focus has been with LEGO building. Her large-scale models of Victorian homes (Painted Ladies) have been seen both online and at Brickworld 2009 and 2010.

She started LEGO building in 2001, to try to loosen up and learn to play. She was always craft-oriented and was an art major. She had a brief dark age, "a dark night of her soul" where she, as she puts it, "got burned out - mostly because of a bunch of LEGO sets I bought on eBay and spent forever cleaning and sorting and selling - and I sold *all* of my stuff off. Then, last November I bought some LEGO sets and started building again, as physical therapy. I have colorectal cancer and I was home on medical leave. I couldn't sit down and was looking for something to get me motivated and up. I could stand and build for a while at my drawing table, and then lay down again. It worked great."

Her first creations were "trivial — Tigger's Treehouse and Pooh's house in a stump." After her Pooh stuff, she started building houses, which led to building Victorians. Her initial houses she calls "glorified floor plans, based on *Better Homes & Gardens* floor plans." She also did a LEGO version of her grandmother's house and others from her imagination.

Rae's Victorian building began when she built a house based on a picture from *The Ultimate LEGO Book* of a house from the San Francisco section of Miniland in LEGOLAND California. "It [the photo] was too small to see details, so it's not like I could really copy it, but I did feel like it wasn't quite a real MOC (My Own Creation). So... that sent me out on the web looking for photos of actual buildings that I could use as inspiration. And that's how my Victorian series really got started."

Rae behind her model at Brickworld 2009.

Detail of the back stairs.

Her research is for the facades of her houses - she does the rest from her imagination. Her scale is not minifigure size, but larger, which allows for more detail. Building for her is building and rebuilding — her secret is, "I'm a perfectionist and when I get an idea on how a house could be better, I just rip it apart and rebuild it better...Most of them have been rebuilt a few times to get them 'right.'"

As for scale, she states, "My scale is based on my windows. I worked to get my windows just right. I wanted nice, narrow frames around them, and no gaps...Coincidentally, I think it must be pretty close to Belville scale, since their cabinets and bathtubs and sinks fit pretty well. Those are the only things that I don't build from scratch."

When asked about her building method, Rae replies: "I don't use sketches. I do the windows first, and then I outline the floor plan on the baseplates to fit the windows, and then I start building. Oh, after windows is probably the color scheme and then the layout. I have small plates and tiles of different colors and that's what I use to play with color schemes."

Rae's favorite color is sand blue - her model Victorian III is a house with a sand blue exterior. About that model, she mentions: "I rebuilt it several times...it took a long time and a lot of effort to get all those sand blue pieces. I also like the old discontinued light yellow,

but they never made the full range of pieces in it. Tan is good, and I've been collecting the dark tan too - it's nice to see more pieces coming out in the dark tan, but there's still not a whole building set. She talked to LEGO executives during Brickworld 2009, "asking for more of the nice, realistic, building colors. The kitchen floor in the pastels is my favorite, though I think a quilt done in that would be great as well."

As for future projects, she has some ideas. Her next project is another Victorian, but different. Unlike the San Francisco's Painted Ladies, the next model was inspired by a realtor's photo of a more modest Victorian home in Chicago. And as she notes,"the problem is, I'm hooked on building in the sand blue. I'm probably going to take apart Victorian III in order to build this one."

Kitchen from basement apartment.

Basement apartment living area with room divider on right.

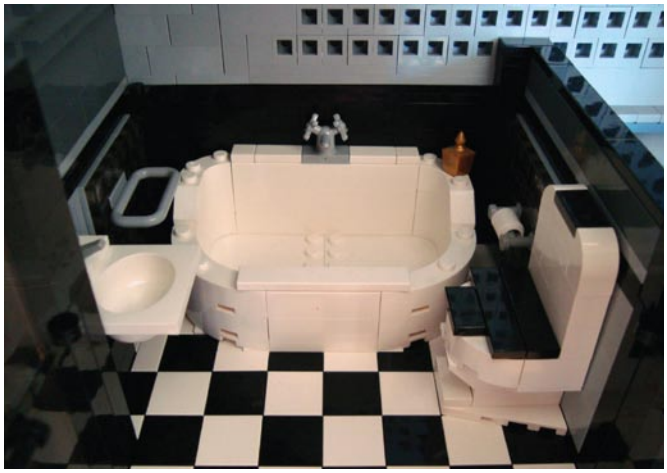
Kitchen from Victorian V, Victorian III's neighbor.

Main kitchen.

Living room in Victorian V.

Downstairs bathroom.

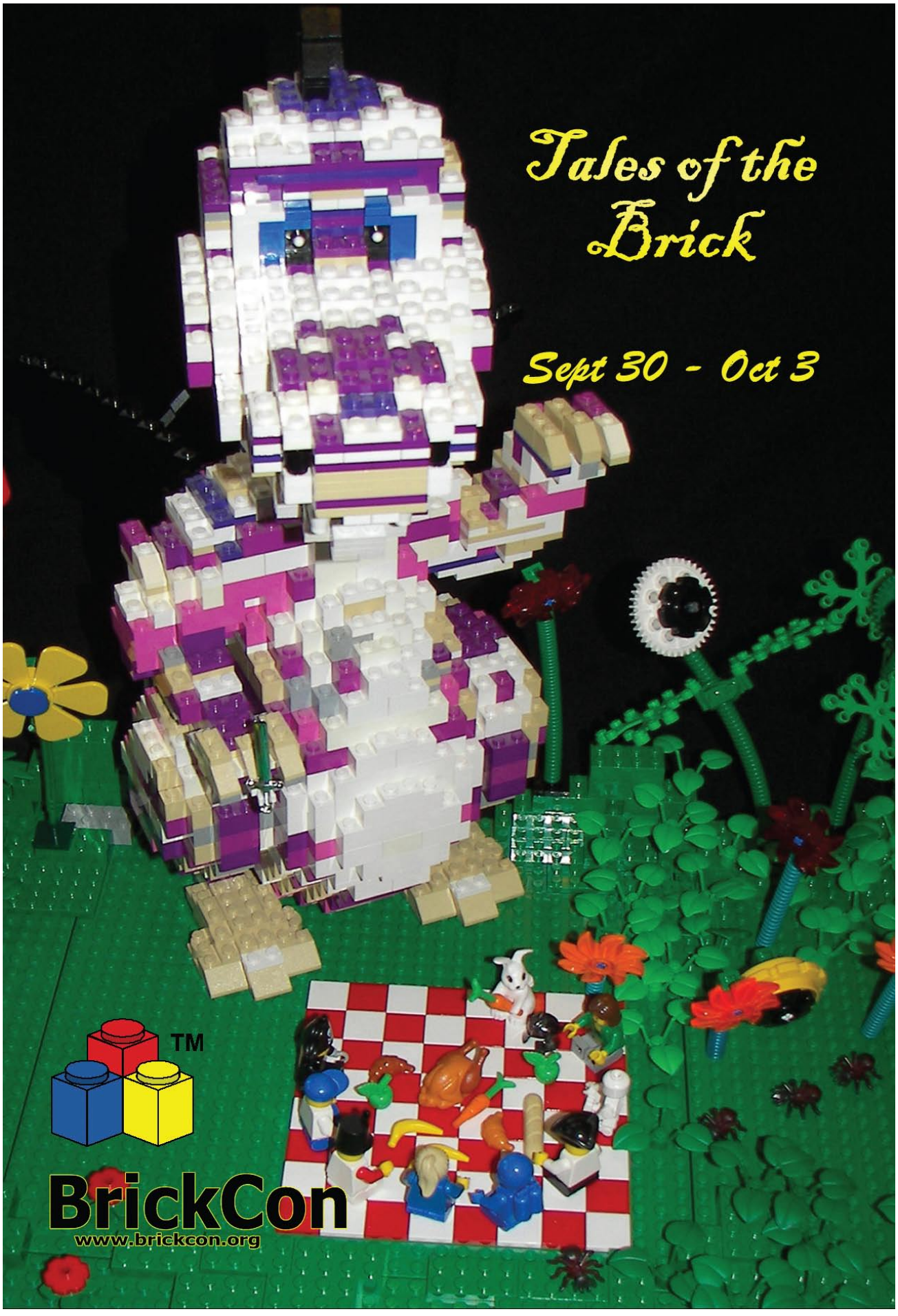
Master bathroom in Victorian V.



Upstairs bedroom.

"I'm also playing around with some ideas for movement. An amazing number of people asked if the garage doors opened, which they didn't. I just bought an NXT MINDSTORMS set and am experimenting with an automatic garage door opener. However, that is secondary to the architecture itself, and if I don't like the results, I'll leave that stuff off. "

This leads to the obvious question: what does Rae like most about building? "I think a bit of it is wish fulfillment. Like I've told some people, I'm ready to move into my sand blue Victorian! I also like LEGO as an art medium, because you can be a perfectionist and can take it apart and rebuild to get it right. At the end, you'll have something to show people."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Paul displayed Nathanaël Kuipers' Concept Car with his car models at Brickworld 2010.

Paul Boratko: Technic Sports Car Builder

Paul Boratko is a Technic builder of cars. His models have been online and at Brickworld 2010, where they were shown with other outstanding models. His are different, though — his models have working steering and transmissions! Door and hoods open to reveal detailed engines and interiors, and the cars can go into drive, neutral or reverse.

He's been a builder for some time, having gotten out of his dark ages, thanks to an AFOL who became a LEGO model designer. In that time. he worked as a kitchen manager, but left the field to work as his father's auto body shop. *BrickJournal* was able to interview Paul about his models and building.

You started building at the age of three with a super car - what got you interested in that set, as opposed to a simpler town set?
Well, my father owns and runs an auto body shop (where I currently work), so I grew up with an automotive background and always had a fascination with cars. My father also owns a 1967 Mustang GT Deluxe fastback and has attended various cars shows around the area, so I always got to see hundreds of muscle, high performance, and exotic cars when I was very young.

I played with some castle sets when I was younger, usually between the releases of the Technic sets. I was always tearing apart things around the house to see how they worked. When I witnessed the first Lego piston pumping up and down, I was hooked. Nathanaël Kuipers is the man who's work truly inspired me to start building again after my "Dark Ages."

What is your goal when you build a car model? Is it detail, mechanics, or something else?
My goals now are much different than they were 5 years ago. My main goals are to design a car that is not only recognizable and functional, but I am also trying to go more of an official LEGO designer route. I am doing this by cutting down on the part count, using pieces that are better suited for situations than others, and mainly having a lightweight but strong model in the end.

What is the biggest challenge in building for you? There is a mention on your black Gallardo about the lack of black parts..is that a problem you have to deal with constantly (color parts availability)?
Colors are definitely an issue at times. Especially if I need 4 certain pieces and I have to order them from 4 different people from 4 different countries. One of my personal challenges is to try and keep every model 'fresh' with new ideas. I always try and do every suspension, transmission, and steering mechanism different from the last model that I did.

Favorite sports car? And have you built it?
I always liked the last generation of Pontiac Trans Ams.

I have a 1996 Z28 which is a sister car of the Trans Am, but I would love to customize a 2002 Yellow Trans Am WS6. And no, I haven't built that one yet.

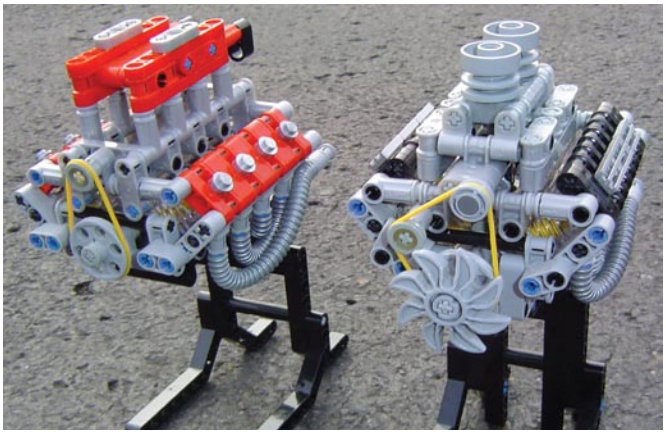
On your brickshelf gallery, you have a transforming car. What as the inspiration for it?
Someone actually e-mailed me asking if I was ever planning on expanding my limitations with building, and I always wanted to build a transforming car all out of Technic parts, and I had a TON of red parts, so I spent about a week tinkering around until I had something that actually worked pretty well and could be transformed without having to take anything apart and also in a timely fashion.

Any LEGO parts you wish existed?
Yeah, I would love to see a long Technic Friction Pin with Stop Bush that instead of having the whole end a pin, the end of the pin was an axle. I could have used this many times. I would also like to see a 1 X 2 Thin Liftarm in Yellow. With all of the yellow construction sets out there, it blows my mind that this part does not exist in yellow.

How long does it take to build a car?
I usually spend about 3 months from start to finish. My Gallardo took me about 4 months because I was trying to make it as good as I could possibly get it.

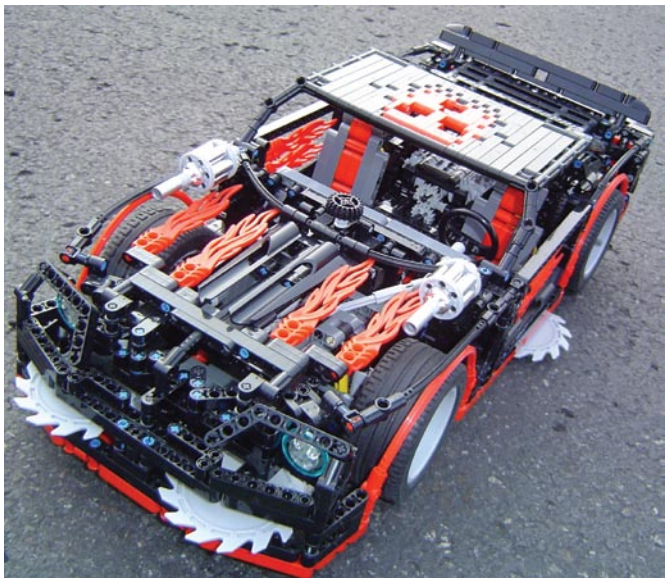
How do you design a car - do you plan it out on paper before you build, or do you just build it?
I just build. I normally start with the section that I think is the hardest part and work from there. When I did my Gallardo and Murcielago Models, I bought 1/18 scale die-cast models so I could get the scale and details as close as possible.

Why studless over studded building?
I prefer studless because to me it is more of a challenge, the end result is much cleaner and smooth, the models can be built stronger and with less weight. People still seem to have an issue with studless building though. When I attended Brickworld 2010 in Wheeling, Illinois, I heard many rude comments made by both guests and registered attendees that my cars weren't real LEGO.



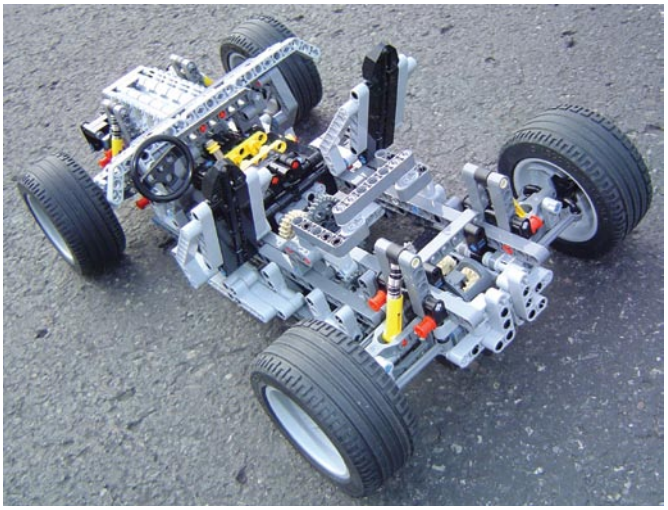
Ferrari F430 (left) and V8 with supercharger (right) ready to be installed.

1967 Mustang.



Death Race car, with working suspension, steering and 5 speed transmission. Weapons include saw blades, guns, and smoke screen guns.

Lamborghini Murcielago with suspension model.



Paul's modular model.

Tell me about your modular car project.
That was just a modular car chassis that I threw together to take to Brickworld to show people how things worked. I demonstrated how each component could be taken apart and put back together just by removing a few pins and how everything simply meshed together. I also wanted something to let the kids at Brickworld play with.

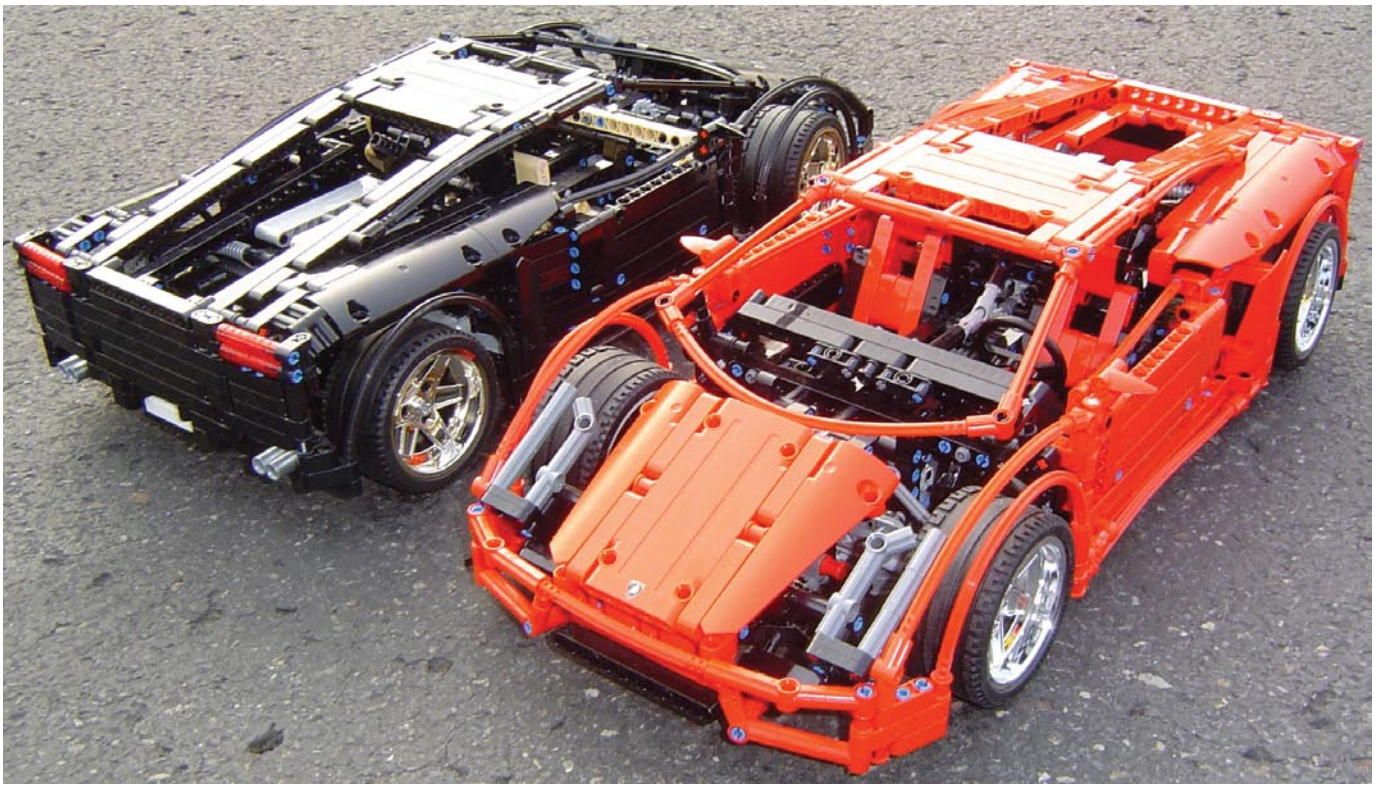
What projects are you planning to work on in the future?
I am currently in the middle of building a 1969 Camaro SS in black with white stripes.

Finally, why do you like LEGO building?
I enjoy LEGO building because it gives me the opportunity to challenge myself with every new model I build. I can always improve and find new ways to make a simple design better than before. And, of course, "Studless" building is like chess as you must always plan 5 moves ahead.

You can see more of Paul's models at www.crowkillers.com. Instructions are included online for his Lamborghini Gallardo.

Lamborghini Murcielago

From left to right: Black and red Lamborghini Gallardo, yellow Lamborghini Murcielago



A closer look at Paul's black and red Lamborghini Gallardo.

Building

Article and photos by

arv

For many years, LEGO building basically consisted of creating cars. Today, it's one of our favorite pastimes. Although creating vehicles is one of the most difficult themes, it takes us back to that time when LEGO play was so simple...like building a car.

We wonder about the human fascination for cars. In our case (and for many others) the different stages of life are defined by all the cars a family has owned — until we become car owners.

Nowadays, there are many models and manufacturers, it would be almost impossible to talk about only one favorite car. In any case, for aesthetic reasons or technical specifications, some of these designs are so distinct, that they are able to mark an era.

We are "children of the '80s", having grown around the pop culture, full of computers, lights and sounds in 8-bit... we grew up watching "Face" from the *A-Team* flirt with his Corvette, *Starsky & Hutch* chasing after criminals in their Gran Torino, or Michael Knight inside KITT - in reality a Pontiac Trans Am.

Cars, cars and cars. There is always a story behind every one.

There are great cars, and most of them deserve a tribute. This is our tribute to the **Porsche 911**.

A car called *"Carrera"*

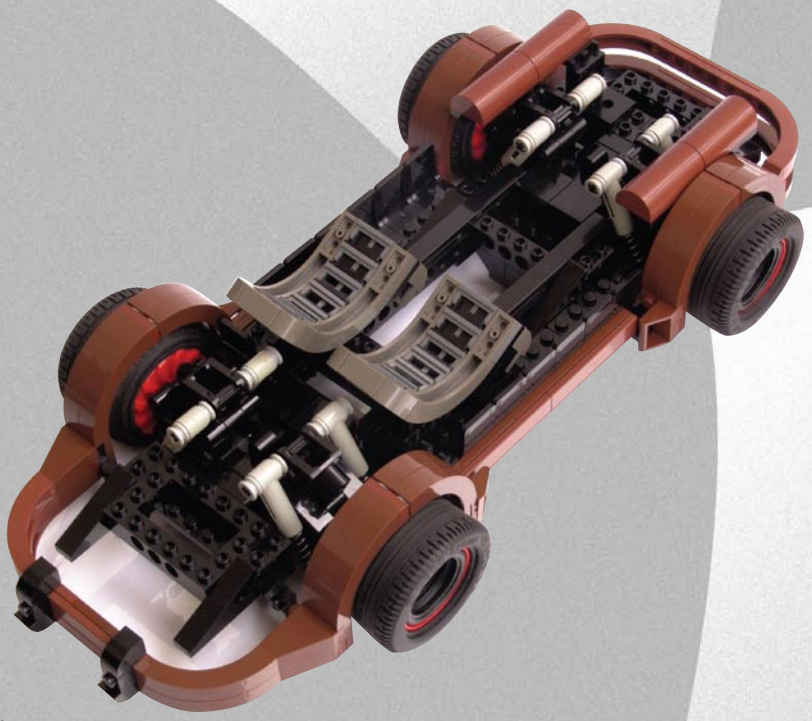
Despite being a car with a truly sophisticated design, the **Porsche 911 Carrera's** most characteristic form is based on very basic lines and is easy to reproduce. In addition, different versions of the Carrera model exist — including the arch-targa, one of our favorites.

In our opinion, the secret to get an "acceptable" result in building is based on accentuating all the "features". We underline those nuances that define the personality of the model (actually, this point is extended to any construction that reproduces a previous design).

Here are some of the areas where we have focused:

- **Silhouette:** The set of curves that draw the outline, especially those found in the front and rear of the car.
- **Headlight:** Slightly bowed, including the smooth lines that run along the side of the car.
- **Rear lights:** Where they combine and focus much of the color of the model.
- **Aerodynamics flaps:** There is a great variety of them, each more stylized, but generally the easiest option is usually the most "aesthetic" one.
- **Details on the bumper:** One of our favorite parts, where we can find different materials and textures.

In any case, as we said, the theme of cars is one that offers more challenges. The final result will be compared with the original. The slightest defect can ruin a construction full of good details, so care must be taken to replicate the car, which we will create through the magic of LEGO!



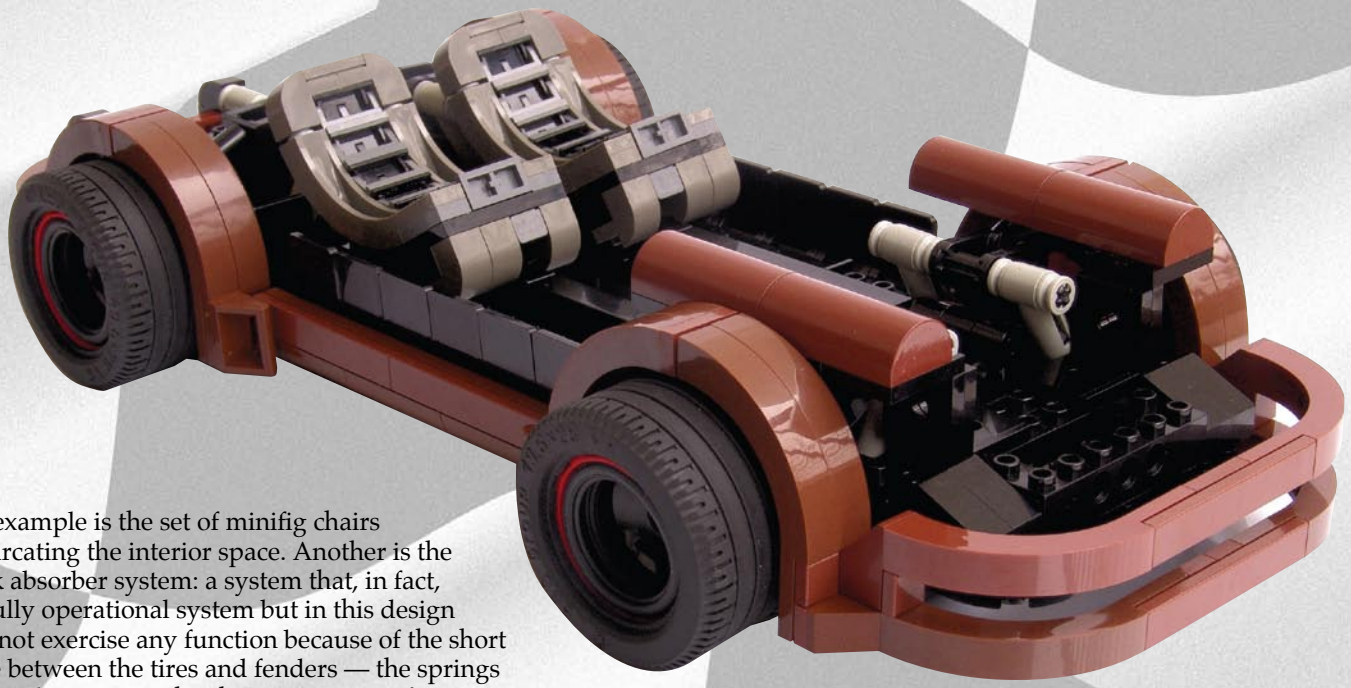
Let's go!

When we have built cars, we thought that the largest possible size would give us the best possible result. In practice it is not true. There is an optimal ratio between the average size of the parts used (wedge type, especially) and the model, which provides a better and more attractive result.

Our latest models have been built according to this discovery. Personally we like this size much more than larger ones. Once we have decided the size to use, we began to build with what has become an established procedure, beginning with building the chassis.

Building this model, we enjoy the advantage of being two builders. Each of us separated the building to different parts of the car. It was not the first time we built different parts of the same model to finally assemble. Generally, this split building often requires some planning, but it divides the labor, time and effort.

The chassis is only a "base" on which to install some technical details (structure and shock absorbers, basically). We also used it to outline contours, proportions and placement of all the most relevant elements within the overall design. Although we know that the vast majority of items that contain this base will disappear with the evolution of the building, we like to work in every phase of construction, using resources, techniques and textures, as if they were independent MOCs. In fact, they are.



Beginning of the process: the chassis of another Porsche 911

One example is the set of minifig chairs demarcating the interior space. Another is the shock absorber system: a system that, in fact, is a fully operational system but in this design does not exercise any function because of the short space between the tires and fenders — the springs are just decoration. The chassis is just a reference and a framework. It's also a reminder of the ideal that we pursue: a way to build the car with more order and organization.

In most of our models, we are extremely proud of the details that are often not the most noticeable. For instance:

- In the Porsche: the gasket around the headlights, aerodynamic flaps based on simple mini-fig chairs, the targa arch, the way the wheels stick out (gives it a more powerful and sporty look to the model, a detail we copied verbatim from our Majorette cars), and the contrast between the brown colour and red wheels.

It was great to discover the semicircular hole placement that the arch elements provide , and discover that one of our favorite wheels for this kind of sport car fits perfectly within that hole. For us, this arch is an essential part that hides imperfections well while simplifying the final image.

The Ford GT

We took three tries to make a GT we were happy with. We promised ourselves afterwards never to mention again "Ford GT" - to eliminate it from our vocabulary, but it's so tempting to build it in all possible colors!

Some details i n the Ford GT: the inclination of the rear arches, its size and proportions, the drawing that provided the arches to define the interior space, the thickness of the doors and air intakes, and inclusion of vintage stickers, in which we chose a very soft tan color, emulating an aged white.

The highly detailed interior of the Porsche 911 Carrera convertible.

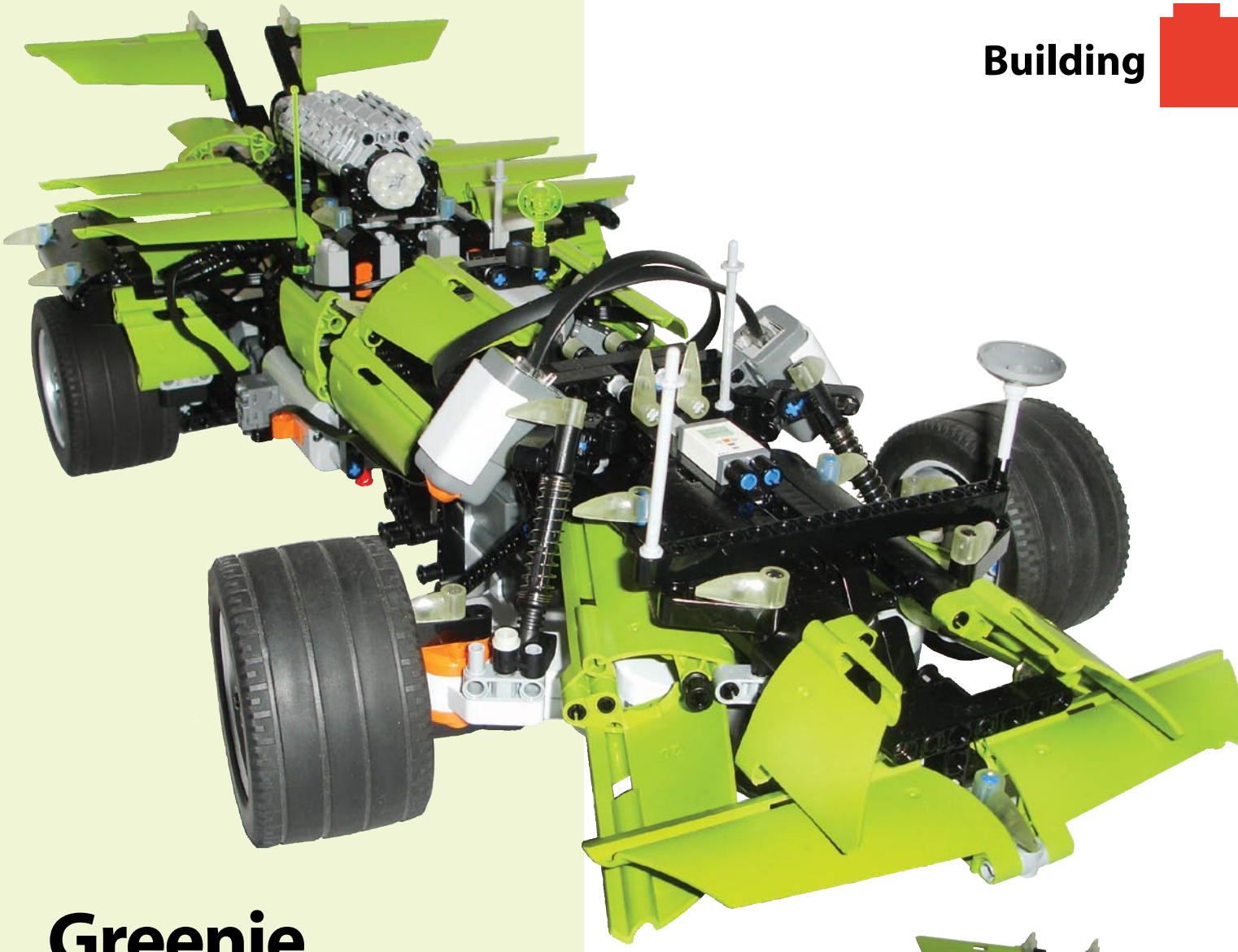
Below: some of the other finer details in the build of these great MOCs.

Give me an interior!

Every time we build a car, we find it more and more difficult to create a "new look" inside. Although this space is not very visible, we try to care of every detail: levers, gearbox, steering wheel, upholstery and in particular, the color choice. Building all of these details is exhausting. A project of this type usually takes one month (approximately). The interior space can take a week, and for us, that's too much. But we are victims of our own desire for detail and craftmanship! It's too late to change.

One part that we especially enjoy when we build cars are the tires. It is here when we become most relaxed and when we begin to enjoy the model. Actually the interior of the cabin is the only "original" part of the entire design work, and although the official wheels are really nice, it is a challenge to create them from minifig hands (seen as rims on the Ford GT) radar dishes (hubcap) or combination of the existing tires...

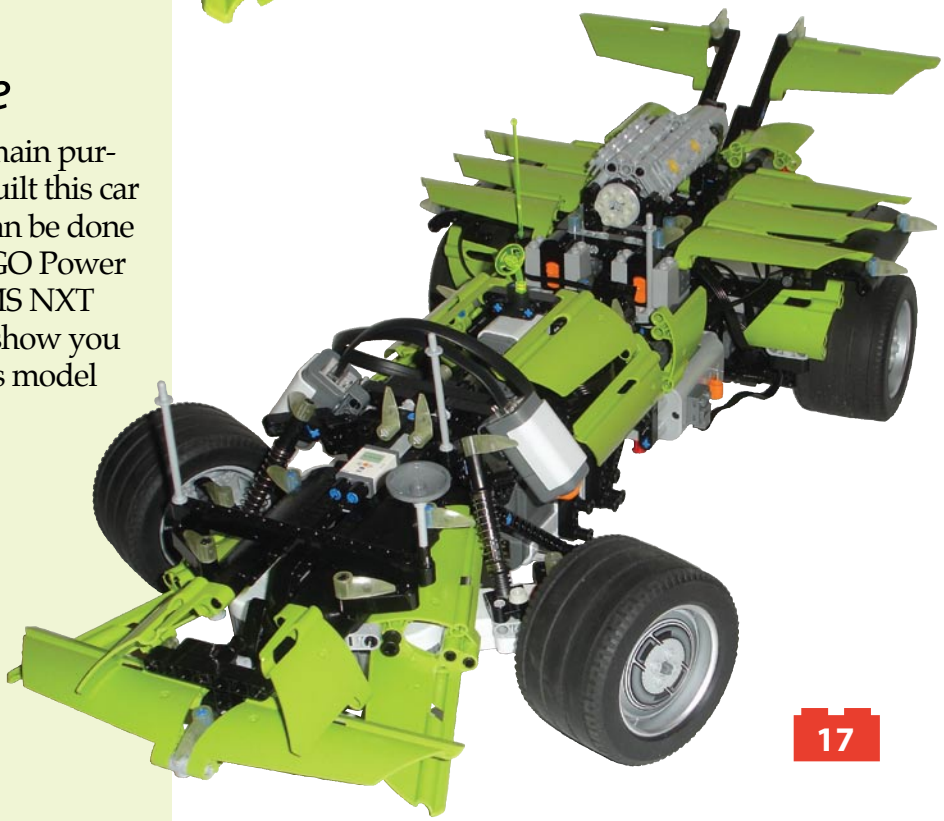
...not only because it is a lot of fun, moreover it also means the end of the project is near, and that always is liberating, as we complete the car and you behold — the magic of LEGO!



Greenie

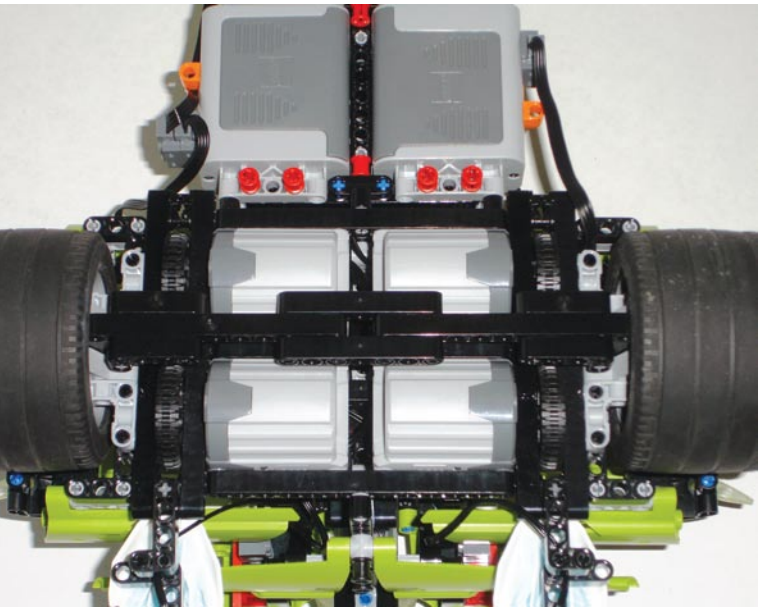
A LEGO car by Jay Kinzie

Greenie is a LEGO car that has two main purposes: to be fast and to look cool! I built this car to show off some of the things that can be done with LEGO electronics, from the LEGO Power Functions motors and MINDSTORMS NXT to third-party NXT controls. Let me show you some of the engineering that is in this model that make it so cool!



Rear Wheel Drive System

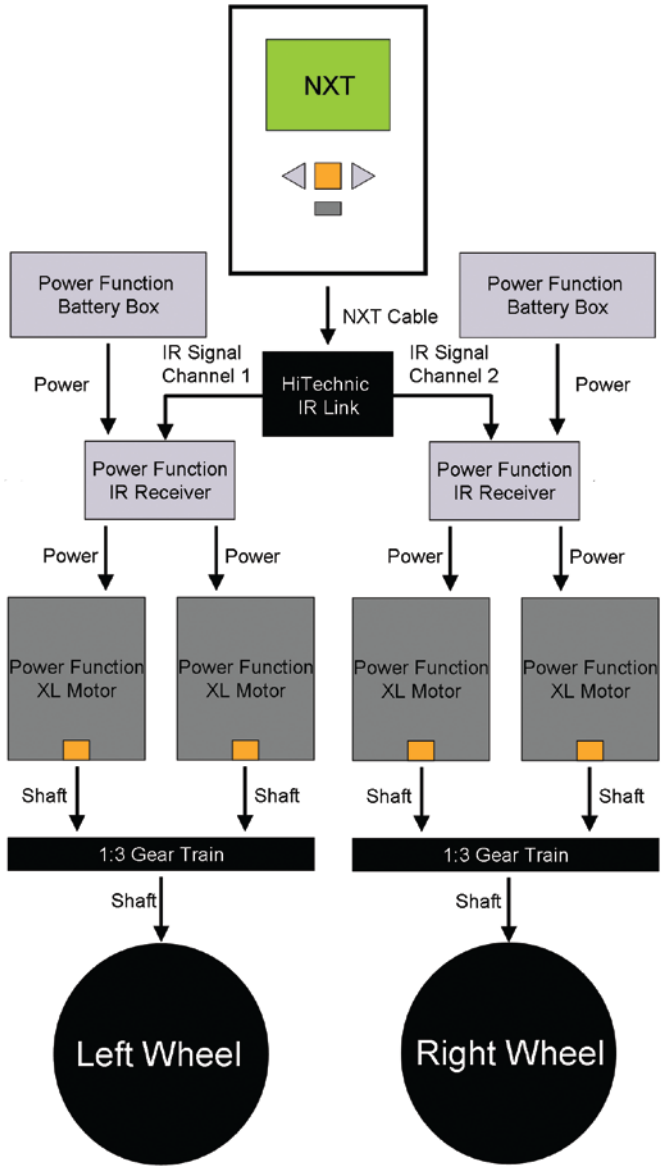
Having built some all-wheel drive systems, I find that my designs for all-wheel drive systems in the past that combined suspensions and steering systems tended to be heavy and complex in my own LEGO work. In this case, a rear-wheel drive solution reduced the complexity and weight of the car. I also like to use common Technic pieces so it's easier for others to recreate my work.



Greenie is propelled by 4 motors from the rear axle. These are XL Power Function motors, which are the larger of the two available Power Function motors. The motors are easy to integrate into a design due to the Technic holes that are in a cross-type formation around the output axle. The 4 XL Power Function motors also provide plenty of power for their size and weight, which make the them ideal candidates to be used as part of the drive train.

The gear train is required to be as efficient as possible so Greenie can maximize its speed. I played around with 3 gear ratios from the motors to the wheels. Given the placement of the motors, the gear-train needs to transfer the torque across four Technic holes. This makes the available gear ratios: 1:5, 1:3, and 1:1 for a single stage gearbox that uses two gears. First, I installed the 1:1 configuration and tested its performance. I found that the 1:1 was not very fast, but it gave Greenie plenty of torque. I achieved a 1:1 ratio using two 24 tooth gears. Given the chance that Greenie may need to operate on carpet at different venues, I kept the 1:1 configuration in mind. Next I moved to the 1:3 configuration. I achieved the 1:3 configuration using a 36 tooth gear meshed with a 12 tooth gear. The 1:3 configuration gave greenie smooth and rapid acceleration and a very high top speed. Greenie is so fast with the 1:3 gearing configuration that I had to rapidly jog after the car. I estimate that I had to quickly jog at least 6 miles per hour to keep up with Greenie! I have heard of the 36 tooth and 12 tooth gears referred to as "the Bionicle gears" because they were used extensively in the Bionicle product line. In my opinion, the mechanical design of the 36 tooth and 12 tooth gears is better than that of their counterparts. I really like the 12 and 36 tooth gears because the teeth are wider in comparison to the 8, 16 ,24, and 48 toothed gears. I have also found that the wider teeth may also lead to less rolling friction between the gears.

Due to space constraints in the gear-train, I was unable to fit the 5:1 gear-train configuration into the drive-train to test. Diagrammed below is Greenie's scheme to control the rear wheel drive. The NXT cannot source enough electrical power directly from its motor ports to drive the four XL Power Function motors adequately. To control the rear wheel drive, a HiTechnic IR link (available at www.hitechnic.com) is used to interface between the NXT and the Power Function system. Instead of the NXT sourcing the current, power comes from two Power Function battery boxes which are used in the system to power the motors. The IR Link allows the NXT to communicate to other infrared LEGO platforms such as the Power Functions system. Each respective side of the car has a battery box that is connected to a Power Function infrared receiver. Each IR receiver on a given side is connected to the corresponding XL Power Function motors. When a drive command is sent from the NXT, the Power Functions receiver sends power from the battery box to the motors. The motors apply the torque to the gear-train which drives the wheels. This scheme allows the rear drive to be powered by a source other than the NXT. Since the Power Function IR system does not have a built-in speed control, the NXT modulates the sending rate of the power-on command to the Power Function IR receiver. In this way, a simple pulse width modulation technique is implemented.



Above: Rear suspension going over terrain.

Right: View of rear suspension actuating to max deflection.

Suspension

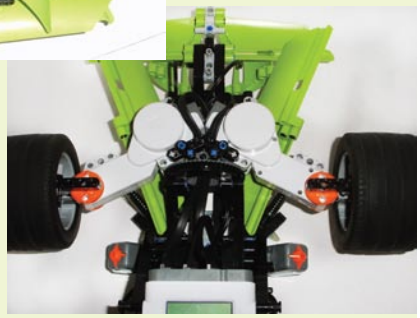
Greenie also has a simple suspension to help it drive over light terrain. The rear power unit is hinged on one central axis that runs parallel to the body. This allows the body to roll around the fixed point. When Greenie rolls over a bump, the suspension flexes to accommodate the terrain. The suspension has springs so that it returns to center after a bump in the terrain.

The front assembly also shares the same suspension concept as the rear, as the front is also hinged around one point. It needs to be very stable so the front assembly can support a steering system. However, the front structural solution also needs to be compact. As a result, the front structure is different from the rear. While the rear uses two pins and a "C" shape upper structure to support hinging action, the front uses a single turntable (pictured below)!

Front suspension going over terrain.

Front Turntable for Suspension

Front steering assembly in emergency stop (top view)



Front steering assembly (bottom view)

Steering

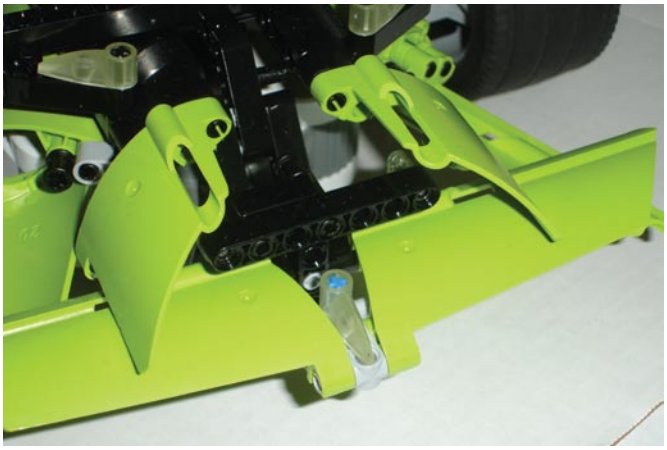
One NXT motor is used to steer each wheel. This mechanically simple concept allows a great deal of control system flexibility. For example, the program tows-in the front wheels inward a few degrees at all times to keep them from slipping off the axles during operation.

The wheels are very large. Over time, any outward traction on the wheels slides the wheels off the axle. The slight tow-in does not affect the speed, but it helps significantly to keep the wheels on the axles reliably.

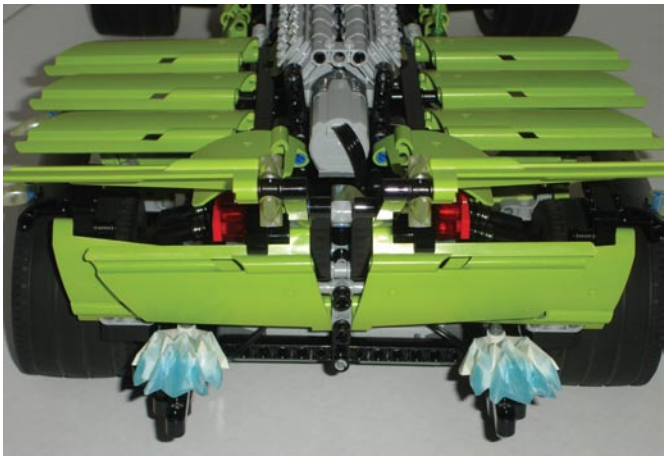
Having wheels with an independent tunable steering angle also allows for further performance tuning. In addition, there is an emergency stop mode that thrusts both wheels to the front of the car. Two touch sensors act as limit switches for initial steering angle calibration. Upon starting the program, both wheels roll-back to hit the touch sensors. When the wheels hit the touch sensors, they calibrate their position and then move back to a predefined neutral steering position. Using this process upon initialization of the program ensures that the steering system will be ready to perform consistently each time the program is started.

Wheel calibrating with touch sensor

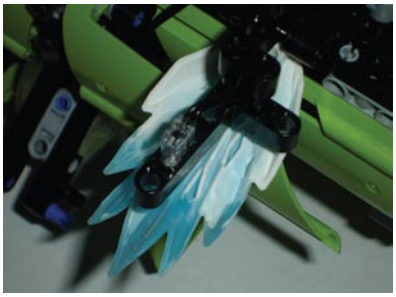
Wheel in neutral position

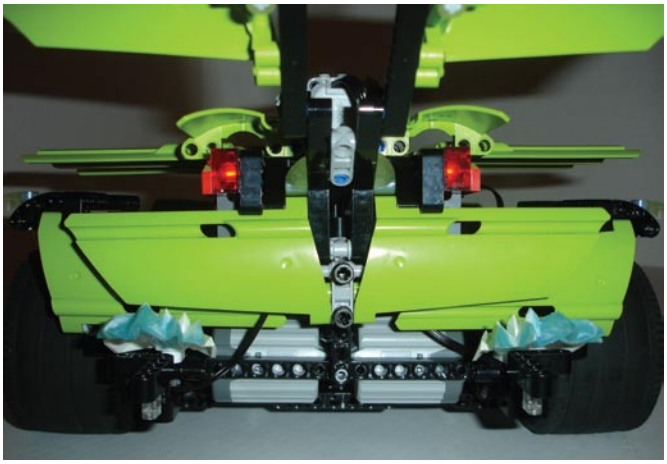


Aggressive paneling.



Flame illumination using Power Function lights (above and right).





Design

Greenie also has lots of cool aesthetic features. The body paneling is constructed from green Technic plates. Each one of the plates covers a lot of area, and they are an interesting shape. They are also fairly light which makes it easy to hang them in interesting places and from obscure angles.

One of the main aesthetic goals was to evoke an aggressive feel from the car to highlight its speed. Aggressive paneling helps create a sense of speed. The panels are mostly facing in the forward direction. This helps to visualize the car cutting through the air.

The paneling makes the car look like a race car because the front wheels are open but the rear wheels are covered. This helps to evoke emotions of racing cars to extenuate the emotion of speed.

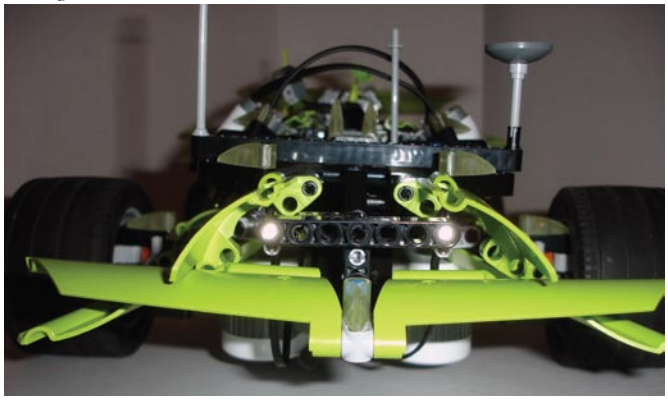
The car also has lots of glow-in-the-dark pieces. According to LEGO, the name of the glow-in-the-dark part that I used is called the "eye." The "eye" part originated in the Bionicle line, but it is now used much more widely. The "eye" that I used is a translucent glow-in-the-dark green, however, it comes in a variety of color configurations. It adds a fun level of hidden detail in both the light and dark! The glowing pattern that they "eye" parts create in the dark is intense which helps accentuates a scene of speed.

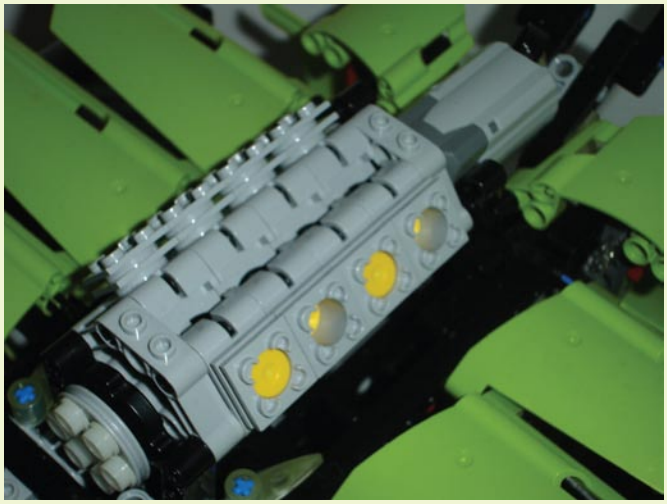
Greenie uses lights to show automotive features realistically. It is equipped with a lighting system that makes the rear flames glow. The lights that make the rear "exhaust" flames glow are connected directly to one of the motor ports on one of the Power Function IR towers. This makes brightnesses of lighted flames indicate the throttle setting of the car.

Brake-lights are also an interesting feature. The brake lights trigger when the car slows down and are red, just like in a real car. The lights have translucent red 2X2 bricks in front of them. The red translucent brick acts like a filter. When the brake-lights are engaged, they shine through the red brick, and it emits red light! The brake lights are hooked up to a NXT motor port. This allows the NXT to directly control the light's behavior. Since the lights use a Power Function connector, a series of LEGO adapter cables was used to convert the Power Function connector to a NXT type connector. This allows the NXT to directly control the brake-light behavior. Upon an emergency stop, the brake lights will flash!

Greenie also has headlights which help the user drive the car in low light environments. The headlights also add to the realism of being a car.

Headlights on.



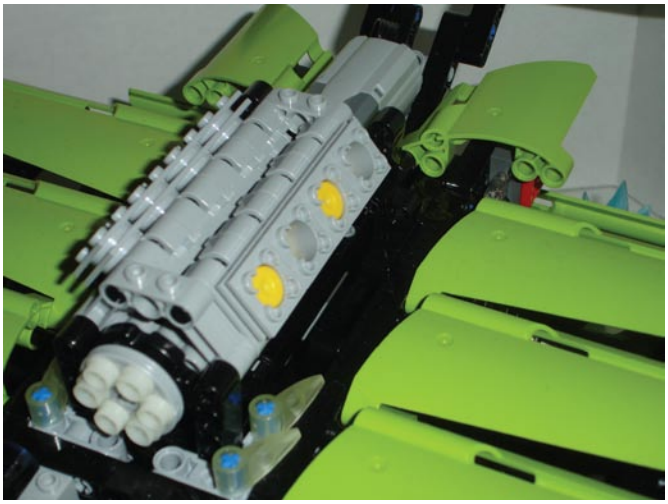


LEGO motor with Power Function motor mounted.

There is a LEGO engine that is mounted on the rear of the car. The engine is purely aesthetic. There is a medium Power Function motor that turns the engine. The medium motor is attached to one of the Power Function IR towers in a similar matter to the flame illumination system. When the car moves, the engine moves too! The engine also rotates at a proportional rate to the speed!

There are lots of other details in the car. For example, inside the wheels, circular dish plates were used to affect a wheel rim or hub. The dishes came from an AT-AT walker from the Star Wars LEGO line. They look futuristic and hi-tech. This helps to give a sense of cutting edge technology to the car. The car is also outfitted with some LEGO antenna parts. The antennas serve to add a bit of aesthetic interest by adding a slight bit of asymmetry.

A glance at the 'hubcaps' of the car.



A look at the motor detail, with glow-in-the-dark parts in the front.

Jay and Greenie.

I hope this creation sparks innovation and creativity in the LEGO community! If there are questions, please feel free to e-mail me jbotics@gmail.com. I read my e-mail several times a day so I am sure to get your e-mail.

Continue to push into the future!

Jay Kinzie

Twelve Questions: Andrew Woodman

Designer, LEGO Racers

Article by Hadley Scrowston

Photo provided by Andrew Woodman

Set art provided by the LEGO Group

Woodman at the wheel of a prototype Lamborghini Gallardo LP560-4

1. How long have you worked as a designer for The LEGO Group?
I have worked here now for around 6 years.

2. Did you always want to be a LEGO Designer and do you enjoy it?
I did when I was much, much younger, I even wrote to The LEGO Company to find out how. I still have the letter they sent me in return. But then as I got older and more into design I decided I wanted to be a vehicle designer and that's where I ended up. I actually turned The LEGO Company down the first time they approached me, it wasn't until two years later I accepted their offer.. I'm glad I made the choice to accept and yes I still enjoy the job and the opportunities I've had here. Also the people I've worked with, both in The LEGO Company and the other companies we have worked with.

3. What sets that you've worked on (and can tell us about) are you most happy with?
I'm actually really happy with all the sets I've been part of, but I love to see comments from people who buy them. That's the important bit, what do you guys think of the model? That's always entertaining.

4. **Given the parts that have been made in recent years are there any of your earlier sets you would like to revisit now?**
Maybe I can turn that around a bit. When I started at LEGO Racers my first task was designing the elements for the then new Tiny Turbos. My first model was 8644 Street Maniac which used a lot of them. At the time it was a challenge to convince people the elements could be used for anything other than that car, which surprised me. Since then it has been fantastic to see the thousands of ways

Woodman's largest Ferrari model - the 1:9 scale F1 (#8157), produced in 2008.

both Designers here and the fans in their models have used those, my first elements. I think that's the greatest thing about LEGO bricks, the way it makes you think creatively.

5. Do you ever look at the car models built by LEGO fans, if so do you have any favorite builders?
Yes I do actually, not often, but now and again. I organized a workshop a few years back and I brought all of my favorite car builders of the time from all over the world to Billund for a few days. It was a fantastic experience for me and the team and I'm sure the guys that came over had a great time too. So they know who they are! In the last few years there have been many more giving me a hard time, building Ferraris, Lamborghinis and many others in the 1.17 scale. I always love the 'comments' they give about my cars! I'd like to meet them one day, they have a lot of talent.

6. Are the steps that you take to design a LEGO car model different to those followed by other set designers, if so how?
We all work to the same basic principles and processes but of course we all adapt them in our own way. If I'm designing a model based on a real car then the first thing I do is get as many photos as possible, sometimes this is not so easy if it is a new unreleased model so 'unfortunately' I may have to go see a prototype somewhere. Once I have all the reference it's time to pick out the design elements that best define that car, we have to remember that in the size and medium we work we will never exactly reproduce every curve and detail of the real car. But when you look at the model you have to be able to say what it is and that's why it important to concentrate on the key features. As I'm sure you know some models are easier to capture in LEGO bricks than others. For example I'm really happy with the FXX, it's not correct by a long way, but all of the key details are built, on this occasion in existing elements too, so it just works really well. You also have to remember that all our models have to be a great building experience for you guys too, so we have to make sure we build in a way that makes it fun and easy to finish the model, no cheating or glue. But that doesn't stop us from putting in a massive amount of details. Look out for the oil filter for example among the many other details on my next model, released later this year.

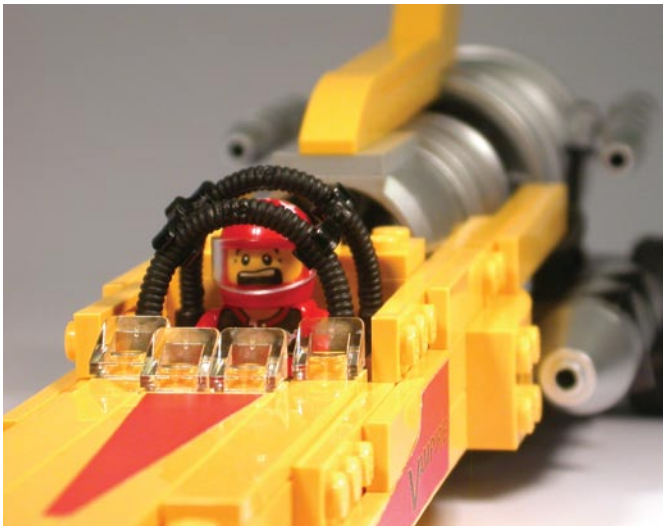
7. We've heard you have designed some 'real' cars (not made of LEGO bricks), can you tell us who for?
Yes that's true. I'd love to tell but that's not so easy in a world as secret as vehicle design, especially if I want to go back there one day. I can say that there are indeed a few elements driving around on real cars and trucks that I had a hand in and I'm really proud of them, but that's it really. Sorry.

8. Do you prefer to design for real cars or LEGO cars, and why?
That's not an easy one, it's a totally different process and world. I'm going to take the easy way out of this and say I like both but at least I can afford to keep a copy of the LEGO models I work on!

Woodman's first (and smallest) set design: the Street Maniac (#8644), produced in 2005.

Top Gear LEGO Style!

Woodman's rendition of the Richard Hammond's rocket car.



9. Do you have an ambition to build a car for LEGO Racers that you have not yet been able to?

I have actually built a lot of cars I would like to see as LEGO models but unfortunately they have not managed to make it to boxes… yet. So maybe it's not a good idea to tell you. But I can tell you I'm a massive Porsche fan so that might give you an idea of some of the models around my desk.

10. When a rocket car almost killed Richard Hammond from the *Top Gear* TV show you built a LEGO brick version and presented it to the whole presenting team at the Top Gear Awards in 2006, did they seem to like LEGO bricks? (And do you know who The Stig is?)

Yes I think they do, they loved the items the other designers and myself made for them. Also I'm sure you've all seen James (Mays') TV program where he built a full size LEGO brick house. So yes I think they like LEGO products. And the Stig, well that's easy… it's me! Well, it is on the designer ID board we have here. All designers are represented as a mini-fig and mine is a mini Stig. Actually I did meet the real Stig once, but now it's someone else so you know as much as me.

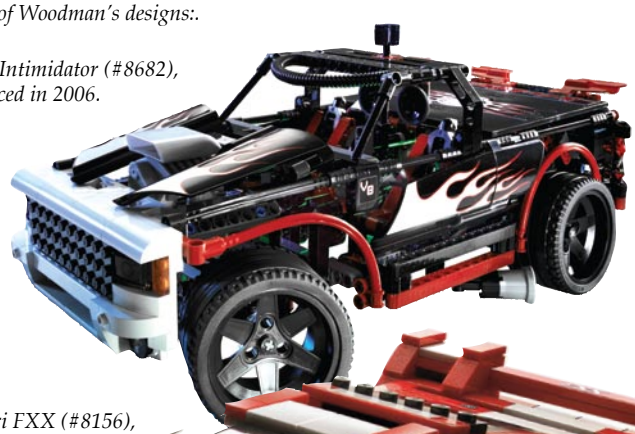
11. You are the lead designer for the LEGO Inside Tour, what do you get from meeting the lucky fans able to attend this unique event?
It's a great experience for me and the other designers who join the tour. Every tour is different, you never know who you're going to meet. I have met some very interesting people over the years, people with amazing jobs and stories. It's really funny for me when you are totally interested in them and you think they have a really awesome story or job but all they want to do is ask you about your job and the LEGO Group. Maybe the Inside Tour is a bit special because of the diversity of people who come, but it's always great to meet people and hear what they think of our product.

12. At The LEGO Group you get to build Ferraris and Lamborghinis, Formula 1 racers and Rocket cars, so can you think of a better car-related job?
Yes It's a pretty cool job, I know hundreds who would take it from me in an instant, so I'm very happy its mine.

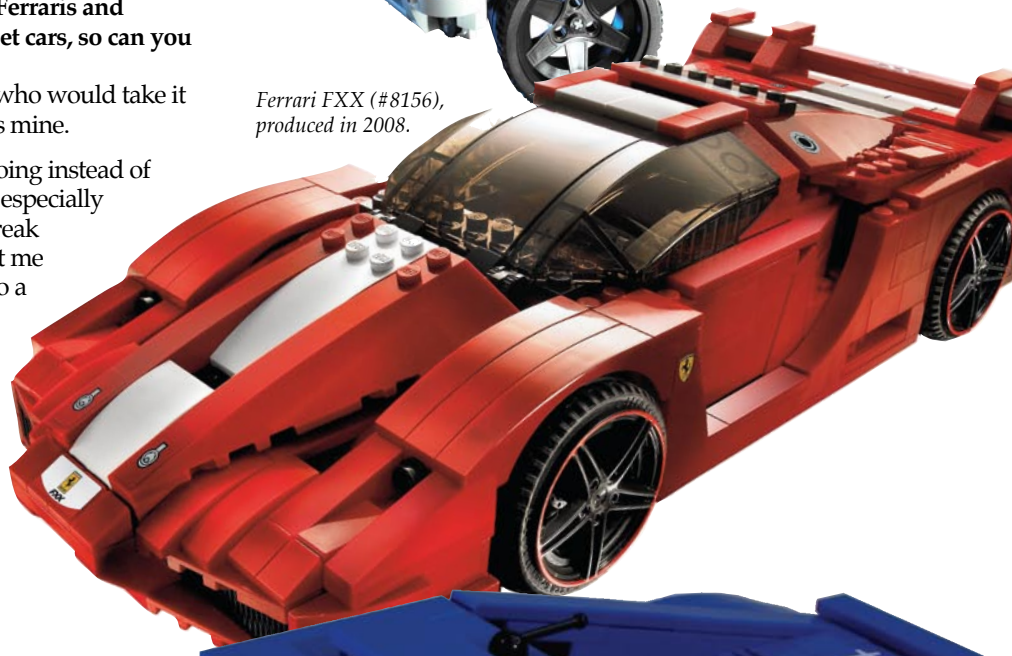
I think the only other job I could imagine doing instead of this would be that of a motoring journalist, especially for Top Gear or EVO. You see being a car freak living in Denmark is a nightmare! Don't get me wrong, I love living here and I'm married to a wonderful Danish girl, but even she agrees the car tax here is just way too high. (180%) I love LEGO bricks and working here, I just wish I could indulge in my passion for fast cars a bit more too. So any auto journalists out there want to try a part-time job swap?

More of Woodman's designs:.

Nitro Intimidator (#8682), produced in 2006.



Ferrari FXX (#8156), produced in 2008.



Lamborghini LP560-4 Polizia (#8214), produced in 2010.

LEGO® Formula One Racing!

Article and Photography by Tom Hohman with Mark Havens and Kevin Bennett

Your team operates with a 400 million dollar budget.

Your 800 hp engine will rev at 21,000 RPMs producing 3500-degree exhaust that would ignite the car's rear suspension without the cooling effect of your 200 mph slipstream.

Your chassis is designed to produce a downforce of negative four Gs... You could race upside down.

Your car's carbon-fiber-brake discs require an entire year to fabricate... They will only last for the next two hours.

During your fuel stop, it will take only six seconds to load thirty gallons of fuel into your car using pressurized rigs designed to refuel military attack helicopters in forward battle areas.

You're waiting on the grid...

Your engineers unplug the laptops from your car.

The starting lights bloom red.

Welcome to Formula One.

The outrageous statistics of Formula One racing may seem like science fiction, but the facts listed here have all been true of the sport in recent years. It's been called the most technically advanced pursuit of mankind after the space industry and since it's inception in 1950, it has been the absolute pinnacle of motorsport. Formula One ignited a passion in me and ultimately combined with my lifelong interest in LEGO to create a fantasy game in LEGO MOCs called LF1.

Ferrari fans. The Italians call them "Tifosi"

Ross Brawn with the Stig himself.

Juan Pablo Montoya with his Audi.

Kevin Bennett with father Mitch and the Quality/VGX Red Bull.

Pace Car and Medical Wagon.

Several years ago fellow LEGO and F1 fan Kevin Bennett and I began tinkering with the LEGO Racers board game. This simple but fun children's game got us thinking about the possibilities of what a realistic LEGO Formula One game could be.

We began with a few simple alterations. The game board's Pit space was converted to a function of strategy rather than a mechanism of chance. The Oil and Flat Tire spaces were turned into "Event" spaces. For these Events we created a deck of handwritten cards with a variety of realistic in-race occurrences such as "Missed the Apex" and "Massive Shunt". We purchased two additional games and combined the track pieces to create a track that was similar in length and configuration to F1.

Friends and fellow F1 fans Mark Havens and Steve Wright helped play-test the game. At first, we used reworked LEGO Racer board game cars to represent five F1 teams. In addition, a sixth car was based on the open-wheeled racer from LEGO's Shell Race Car Transporter 1253. We named our teams after existing F1 teams and appropriately reworked each car's livery or color.

We found that our additions to the game made it a real pleasure to play. The mixture of strategy and chance created an emergent narrative surprisingly similar in many respects to the real sport we all loved so much. We began to look for other

Action Figures refueling crew.

Arrows Team Boss, Steve Wright (note painted rims and custom face based on minifig head 3626bpb165).

Track Marshals.

Custom decaled Jaguar, BMW, and Ferrari cars represent the variety of designs possible within regulations.

Mika Hakkinen□s heap is cleared from the track after car contact.

Richard Burton leads Montoya at the Richmond GP.

areas to add Formula One realism. New sets of Event cards were created to better simulate both on-track and engineering challenges. Players were now required to field a single team of two drivers. Qualifying was set up to determine starting position. I worked the whole thing out in a 20-page guide and LF1 was born.

The game is one of team management rather than driver performance. As in the real F1, all things are *not* equal. While players continually make choices that can potentially affect the outcome of the race, they are nevertheless subject to events beyond their control. It is difficult for one car to pass another. One may find that an opponent's setup is virtually unbeatable at a given track. Mechanical gremlins are lurking everywhere. And then, there is the weather. We quickly became addicted to our creation. The four of us continually introduced new enhancements to make the game better.

This was a LEGO game after all, and showing up with our latest MOCs became as much fun as playing the game. Not content to stay within existing F1 teams, we created unique teams of our own, complete with fantasy sponsors and drivers. I formed a team centered around my creative consulting firm Action Figures with dream sponsor ThyssenKrupp Fördertechnik. Others launched outfits such as Audi-Deutsche Telekom and Qualitee/VGX Red Bull. Havens introduced the first custom decaled vehicle which became the new minimum standard of participation. Other players utilized existing or past Formula One outfits. In addition to constructing my own team, I built a series of MOC's for Ferrari which we established as our series' permanent guest team. This allowed the uninitiated to casually join in the fun.

Soon we were building grandstands, support and recovery equipment, and the teams' customized pit-wall control centers. An entire paddock full of the Formula One "circus" as it's called was beginning to take shape in LEGO bricks. The infield became crowded with a whole new cast of characters. Avatars of ourselves as team owners stood shoulder-to-shoulder with a mini-figure Bernie Ecclestone and Max Mosley, a Ross Brawn, and of course our drivers with their requisite supermodel girlfriends.

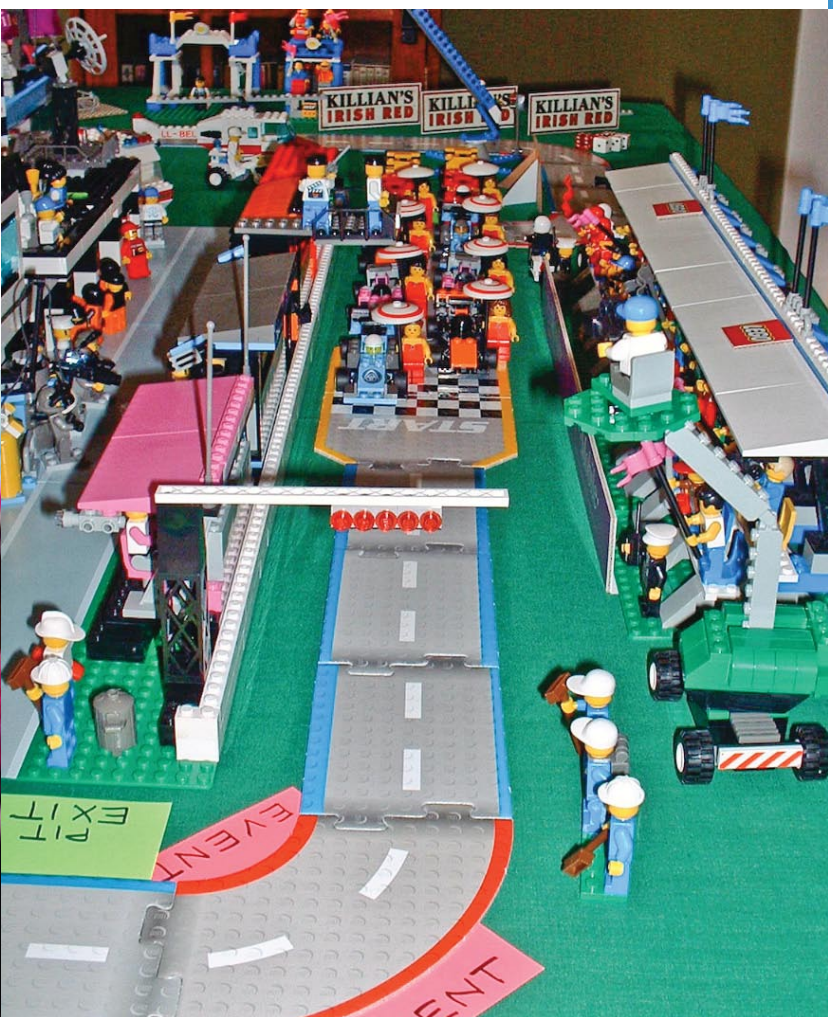
The field takes position on the starting grid.

Pit Lane at the Arlington GP.

Our continually-expanding diorama quickly took on the quality of a scale campaign-game, like Warhammer or Brikwars. We soon abandoned the puzzle-piece track spaces of the original LEGO Racer game, and instead created custom track parts that lent themselves to a larger area. Our car designs, however, were still hampered by the three-stud-fixed-wheelbase of the cars from the board game. That unrealistic motif was locked into LEGO part 2441(Car Base 7 x 4 x 2/3). We soon changed LF1 regulations to the five-stud-wheel-base that remains in place today. These regs specified a width as well, LEGO part 6157 (Plate 2 x 2 with Wheels Holder Wide). This combination produced derivatives that looked increasingly proportional to Formula One cars and prefigured what LEGO would later offer in 2008, with its Ferrari F1 Tiny Turbos series.

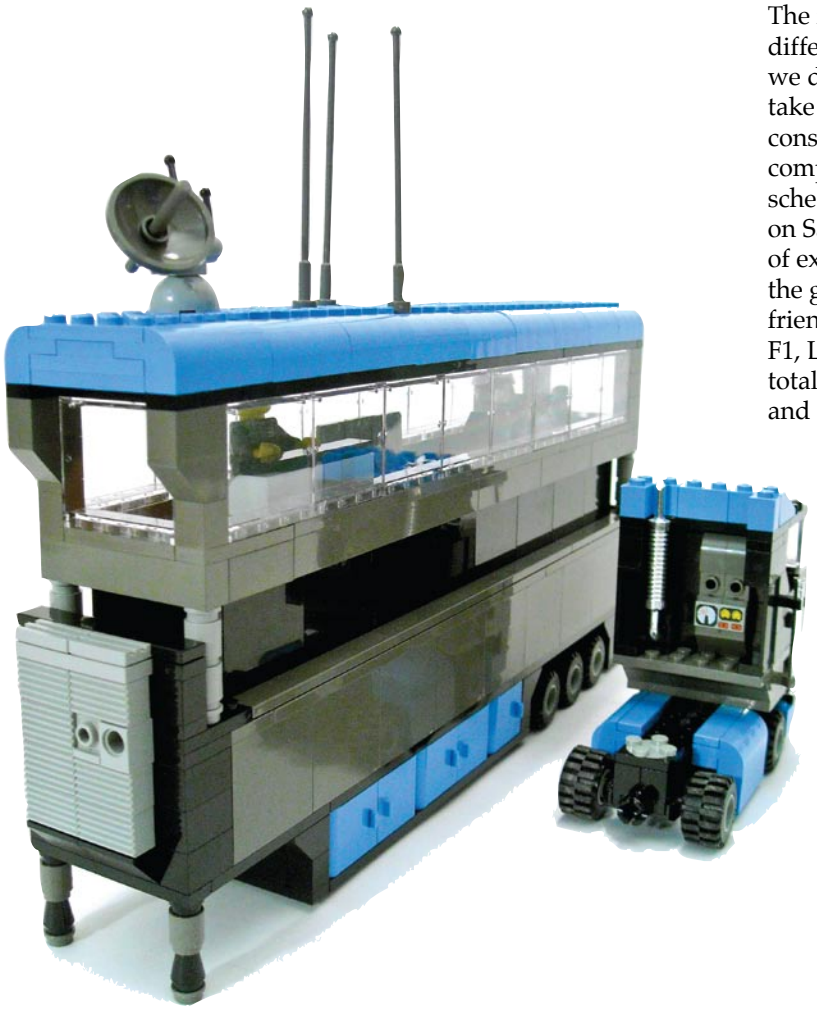
The trajectory of LF1 reached it's zenith as we took the scale of the teams to our financial limits, and the pace of design to unsustainable heights. Mark issued a DVD to celebrate Audi's unveiling of its new contender and I built a fleet of transporters for Action Figures that hauled cars and transformed into the teams media center and hospitality suite. I built a large garage complex for the collective pit-lane, as well as new grandstands to place along the straights. Detail was taken even further in the form of debris fencing and trackside advertising on the barricades and billboards. Mini-figure souvenir stands offered team-colored swag like flags, caps, water bottles and more.

The corks are about to pop as the podium celebration kicks off.



We found ourselves thinking about LF1 every spare moment. This obsession gave rise to our fictitious magazine called SPEEDBrick. Sent to each other via e-mail, SPEEDBrick announced our events and had in-depth recaps of the gaming action, but the stories of our off-track exploits stole the show. We showed off our new MOCs, and wrote stories that struggled to be as absurd as the "silly season" of real-world F1. News of the various characters and organizations warranted bragging rights that exceeded victory in the actual game.

Umbrella girls preside over the starting grid. Note our event placard at the end of the main straight. The puzzle-piece track spaces were the last remnant of the original LEGO Racers board game.



The fact that our group of four players all lived in different states made things difficult to say the least. So we decided to we emulate the excess of the real F1 and take the show on the road. We conceived a season which consisted of a race weekend at each of our four primary competitors' homes. The entire weekend followed the schedule of real F1 with practice on Friday, qualifying on Saturday and the race at 1pm on Sunday. That series of exhilarating, exhausting weekends were some of the greatest we've had together in our many years of friendship. In a final parallel to the insane world of real F1, LF1 had demanded bankrupting commitment, and total fanaticism, a roller-coaster ride of enthralling hilarity and total exhaustion.

In preparing this piece for Brick Journal, we've all found ourselves smiling at the suggestion of a reunion LF1 event. In addition, the promise of others using the guidelines to create their own racing series is exciting. I think it's time to get back to Action Figures headquarters and continue the secret development, further the ridiculous interplay of our series' characters, and continue the story of the glamorous and absurd realm we call LF1.

For additional images and to download a copy of the rules so you can play LF1, go to www.brickjournal.com/lf1.rules.

Action Figures Haulers: Media Center and Hospitality Suite above. Car Transporter below

Mini Racing Ambulance

Design and Instructions
by Christopher Deck

Hello everybody, I'm certainly glad to join again for this wonderful issue of *BrickJournal*. This issue is about the Racers theme, so it's my pleasure to contribute to the theme and the journal.

You can see Tiny Turbo Racers chasing like crazy through the LEGO® catalogues for many years now. But when you're chasing like crazy many crashes will also occur. So, speedy police cars (e.g. sets 6111, 8152, 8665) were added to prevent them from racing, and to secure the crash scenes. Garages (e.g. sets 8681, 8186) were added to repair the broken cars. Tow trucks (e.g. sets 8195, 30034) were released to bring them to the repair facilities. But who takes care of the crashed drivers? No one… yet! Thus it's about time for a quick response emergency vehicle.

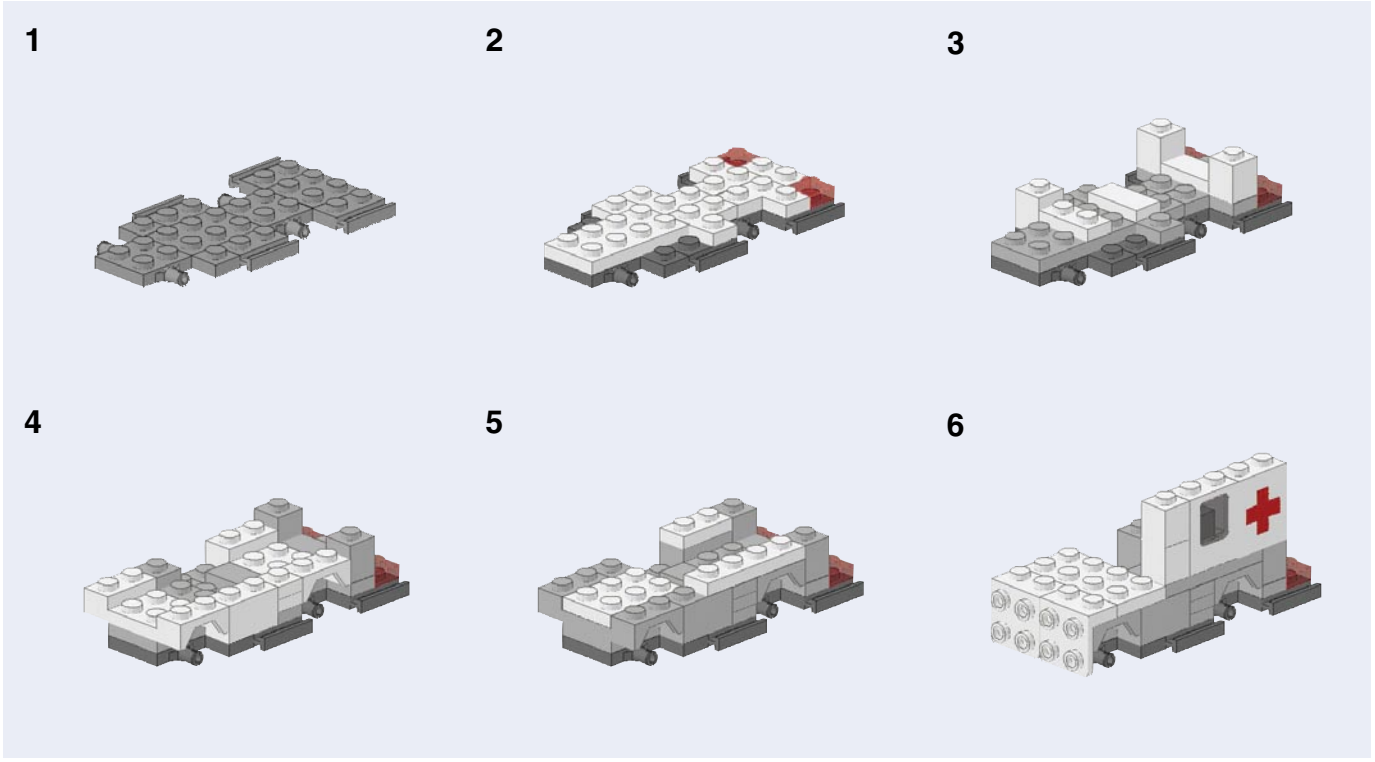
Please find below the instructions on how to construct an ambulance van in the scale of the Tiny Turbos to rescue your crashed drivers. It's as realistic as possible in this small scale, complete with a double swinging door at the rear and a side entrance on the right side. Many flashers on all sides let it shine brightly like a comet so that everyone will make way for the emergency vehicle. Don't leave your crashed drivers in their cars, call the ambulance!

With this I am done for this issue. I wish you happy building, and see you next time!

Yours, Christopher Deck.

Parts List

#	Color	Part	Description
2	White	44728.dat	Bracket 1 x 2 - 2 x 2
7	White	3005.dat	Brick 1 x 1
1	White	3004.dat	Brick 1 x 2
2	White	3788.dat	Car Mudguard 2 x 4
3	Trans-Black	4036.dat	Glass for Train Window 1 x 2 x 3
1	Trans-Black	4862.dat	Glass for Window 1 x 2 x 2 Plane
2	White	4864ap02.dat	Panel 1 x 2 x 2 with Red Cross Pattern
1	White	2362b.dat	Panel 1 x 2 x 3 with Hollow Studs
3	White	3024.dat	Plate 1 x 1
2	Trans-Red	3024.dat	Plate 1 x 1
3	Trans-White	3024.dat	Plate 1 x 1
2	Stone-Gray	3024.dat	Plate 1 x 1
3	White	3023.dat	Plate 1 x 2
1	Trans-White	3023.dat	Plate 1 x 2
2	White	3794.dat	Plate 1 x 2 with 1 Stud
4	Stone-Gray	32028.dat	Plate 1 x 2 with Door Rail
1	White	3710.dat	Plate 1 x 4
1	Stone-Gray	3022.dat	Plate 2 x 2
4	White	2420.dat	Plate 2 x 2 Corner
2	Stone-Gray	4600.dat	Plate 2 x 2 with Wheels Holder
1	White	3021.dat	Plate 2 x 3
1	Stone-Gray	3021.dat	Plate 2 x 3
2	White	3020.dat	Plate 2 x 4
1	White	3032.dat	Plate 4 x 6
2	Trans-Black	3039.dat	Slope Brick 45 2 x 2
9	Trans-Red	3070b.dat	Tile 1 x 1 with Groove
2	Stone-Gray	2412b.dat	Tile 1 x 2 Grille with Groove
2	White	3069b.dat	Tile 1 x 2 with Groove
3	White	4035.dat	Train Window 1 x 2 x 3
4	Black	50945.dat	Tyre 11 x 6
4	Black	50944px1.dat	Wheel 11.2 x 6.4 with Five Spokes and Chrome Pattern
1	White	2377.dat	Window 1 x 2 x 2 Plane



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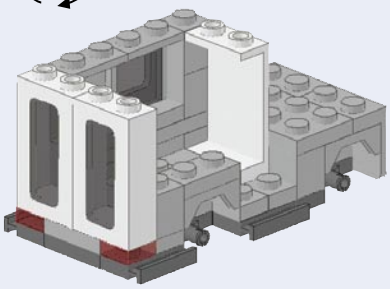

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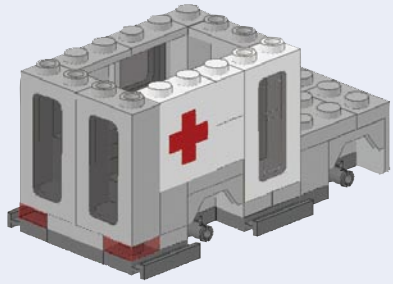

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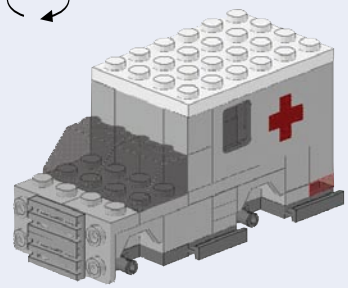

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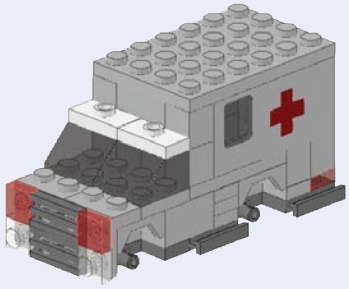

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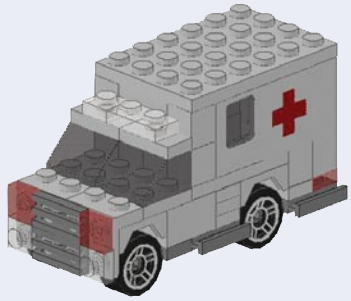

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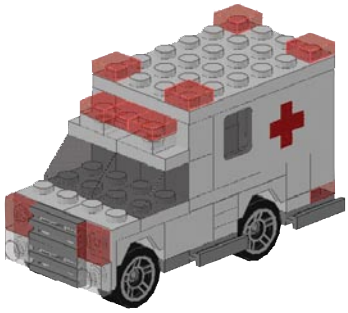


13

Tractor with Log Loader

Article and Photography by Geoff Gray

Photo courtesy of The LEGO Group

Item #: 8049
Ages: 9-16
Pieces: 525
Price: USD 59.99
Models: 2

NOTE: The set includes instructions to add motorized compression with 8293 LEGO Power Functions Motor Set

I have had an opportunity to review many different TECHNIC sets for BrickJournal in the past. While all of those sets are large and relatively expensive, the new "Tractor with Log Loader" set is a really nice set that offers some of the advanced TECHNIC features in an easy to build and less expensive set. This is a great set for learning about basic building techniques, the use of TECHNIC elements to simulate real world construction (like the shape of the cab on the tractor), and designing a model to allow easy changes so different functionality can be added (like changing the pneumatic pump to a motorized compressor).

The tractor

The tractor model has a really nice form that incorporates mirrors, adjustable steering wheel, a realistic exhaust pipe, and body panels. The light green color mixed with black and white frame pieces accentuates the overall appearance. The one thing I would have liked was to make the seat the same green color as the body panels, or to make it black.

Functionality in the tractor is centered primarily on the steering. It uses a rack and pinion setup [diagram 1] driven from a knob on the back of the cab roof. The steering rod assembly uses the typical TECHNIC interlaced gearing (the elements are called "knob wheels") to transmit the motion through a 90 degree turn [diagram 2]. This style has replaced the older TECHNIC style of standard bevel gears in many of the newer sets.

There is not a simulated engine in this model, and I think it was a good decision. The tractor is too small to realistically fit the standard TECHNIC engine pieces, and I think it would have driven the price point up too much. Overall, the tractor is a solid and well-designed model that could easily have been released as a standalone set.

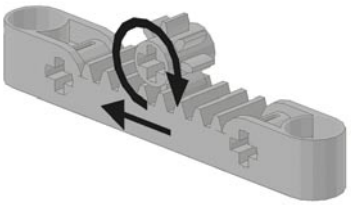


Diagram 1: Rack and Pinion elements

Diagram 2: TECHNIC knob wheel 90 degree coupling

Figure 1: The pneumatic switches.

The log loader

This part of the set is where you really get to play with some of the advanced TECHNIC features and elements. The coolest part (to me) is TECHNIC pneumatics (see the sidebar on the next page). Also included are examples of a worm gear [diagram 3], a technic turntable, a bevel gear [diagram 4] for moving the turntable, and a design that allows for the addition of a motorized compressor.

The pneumatic pump is connected to a "T" adapter which feeds into two pneumatic switches [figure 1]. Each switch feeds to a pneumatic cylinder [figure 2] and allows the cylinder to be raised or lowered. As with most LEGO sets that incorporate pneumatics, this set uses 3 different colors for the hoses feeding the system. Not only does this make it easier to follow the instructions while building, it also lets you see the different circuits involved. For instance, a black hose is hooked to the high side of a switch, and is also hooked to the high side of a cylinder. This lets you know that turning the switch to the gray side will force air through the black hose, causing the cylinder to retract. For more information on the workings of the TECHNIC pneumatics, see the sidebar on the following page.

The claws that pick up the "logs" are controlled by a simple worm gear that opens the arms when you rotate the knob on the claw. This mechanism also demonstrates how applying motion to only one side of the claws can still cause the other side to operate by putting interactive gears on each side.

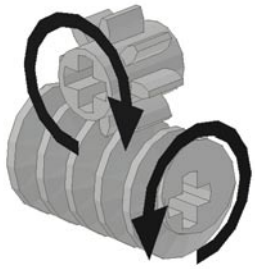


Diagram 3: TECHNIC worm gear. The turning motion must be applied to the screw. Trying to turn the gear will not provide any motion.

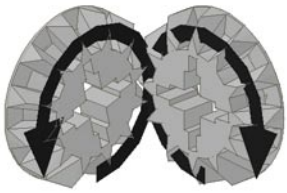


Diagram 4: TECHNIC bevel gear. This acts just like the knob wheel gearing in diagram 2, but the elements are more indicative of real world beveled gearing..

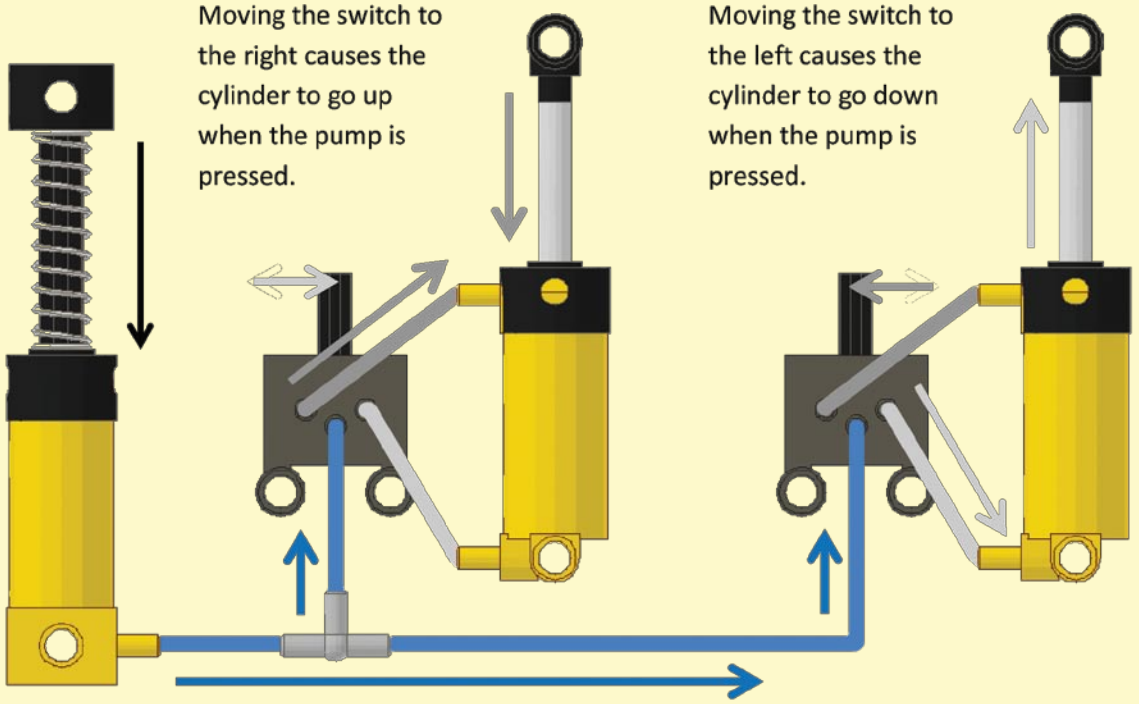
Figure 2: The pneumatic cylinder.

Overall

I find this set is very good at showing off many great TECHNIC features without being overly expensive or complicated. While I still love sets like "Crane Truck" (set #8258), I think this set provides a great value for people who do not want to spend $150 USD for a set.

Pneumatics

Pneumatic equipment works the same way hydraulic equipment works, except it relies on air to form the pressure instead of fluid. Pneumatic devices are cheaper and often easier to build and operate than hydraulic devices, but hydraulic devices can offer much higher amounts of force since the liquids are much less compressible than gases, allowing more of the initial compression to be transmitted to the external device. While equipment such as log loaders, backhoes, cranes, etc. usually are hydraulic in the real world, they are better suited for pneumatics in toys because you do not have the risk of fluid messes.



66.5° North

"Eighteen-Hundred and Forty-Six,
'Twas March of the 18th Day.
We hoisted our colors to the top of the mast,
And for Greenland bore away!

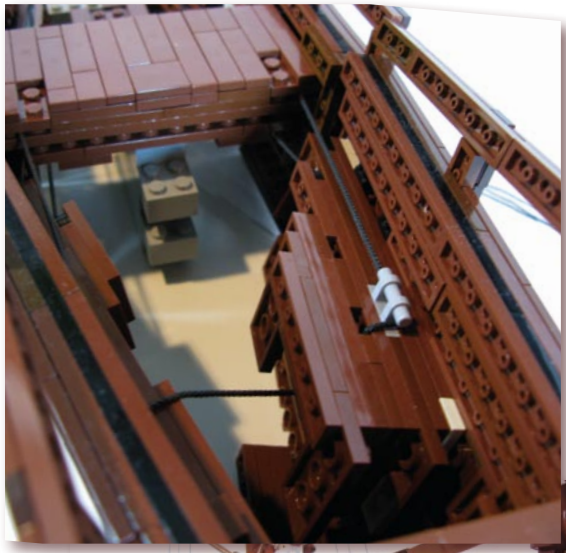
Now Greenland is a barren land,
A land that bears no green!
Well there's ice and snow and the whale fishes blow,
And the daylight's seldom seen."

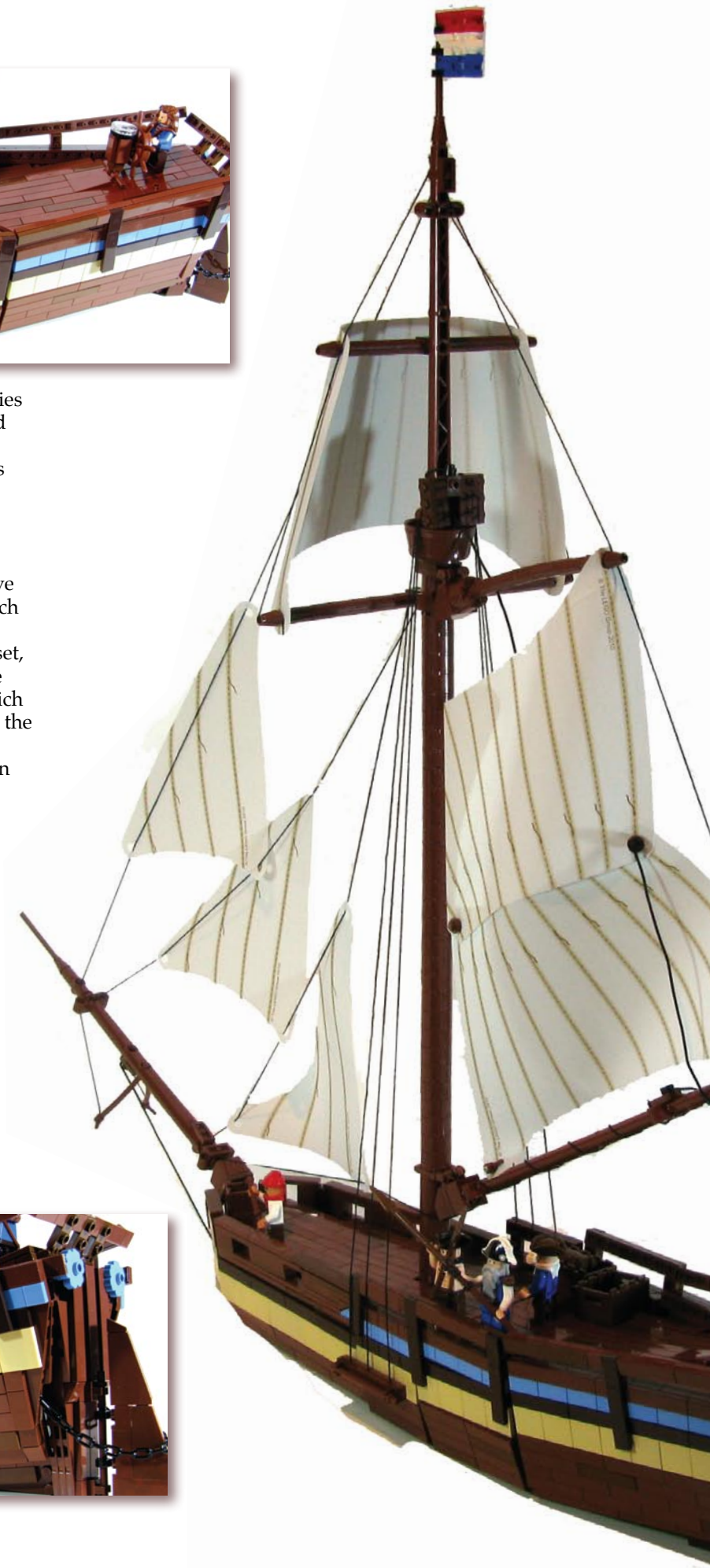
Article and photos by
Jordan Schwartz

Those are stanzas from the classic sea shanty "Greenland Whale Fisheries", whose origins trace back all the way to the 18th century (although it was most typically sung in the 19th.) I am very interested in whaling throughout the 18th-20th centuries, so it made sense for me to try my hand at yet another ship, even if I had built one based around arctic whaling before.

Specifically, this ship is a topsail sloop, characterized by its sail configuration. To be even more particular, the ship as a whole (sails, color, shape, etcetera) is heavily based on the *USS Providence (1775*), a replica of which is docked at the Port of Providence, a place I drive by almost on a daily basis. The beauty has been shouting to be built, so it was high-time I tried. Technically, was this type of ship used by the Dutch while whaling? Frankly, I do not know. As much as I love history, I am no expert – it looks like it would work, so I ran with it!

I have built many ships before; in fact, my heart truly lies in the sailing vessels of centuries past. I have employed pre-fabricated hulls, which have never conformed to what I wanted. I have sculpted hulls before, which was too much work. So why not try something completely new? The hull can be separated into two major parts (the left and right halves) plus the five bow segments and the stern section. Each half is built with old finger hinges that allow the four divisions of each half to curve inward horizontally, and allow the three sections of each of the four divisions to curve inward as well. You may also notice that every other division has a 1/2 stud offset, apparent when looking closely at the tan stripe. On the interior, the hull keeps it shape with official string, which forces the hinges to keep their position when placed in the proper spot. It is a surprisingly tight connection and I believe that the technique could prove practical in other applications.





The courageous crew of the whaling sloop MOC

The two masts, sails and most of the rigging are kept together and separate from the rest of the ship. (The very simple reason for this method is that it is exceptionally easier for me to disassemble the model for transport. I have done this with other ships in the past, and it works like a charm. The main mast is basically a peg that fits in a 2 x 2 hole in the deck, and it slides right out with great ease. I highly recommend the technique to my fellow shipwrights.)

The sails are all official, coming straight from set #10210 Imperial Flagship. A little folding yielded the most accurate result possible for the mainsail. It certainly is not a dead-on representation, but given the limits of the official sail spectrum, it works quite well.

Colors, again, were based on the *USS Providence*. A classic brown for the majority of the hull is broken up by dark brown railing, a classic tan stripe down the middle, and a fresh splash of medium blue squashed in between - a relatively atypical scheme as far as MOCs go, but classic to be sure!

The last touches were my minifigure crew and a narwhal. I wanted a dynamic, rag-tag team – this is not an imperially commissioned endeavor! All have their own personality, especially the captain, who hosts *Woody's* lofty legs and *Jessie's* lanky arms from the *Toy Story* line. The reason behind those choices is that the captain needed to be an almost unreal character; we have all heard of seemingly mystical historical figures (I.e., he was seven feet tall and could catch a bullet between his teeth!) Same deal here. The narwhal uses a dark-bley pre-fabricated airplane cockpit bottom for the head, which coincidently has a hole in it making for a nice blowhole. These touches finish up the MOC nicely I would say.

"The harpoon struck, and the line played out.
With a single flourish of her tail,
She capsized our boat, and we lost five men,
And we did not catch that whale!

The losing of those five jolly men,
It grieved our captain sore,
But the losing of that fine whale fish,
Now it grieved him ten times more, brave boys.
Now it grieved him ten times more!"

The lion at LEGOLAND®.

Mariann Asanuma: Building a LEGOLAND Lion

Article and photography by Mariann Asanuma

The lion completed.

If you've been to LEGOLAND California and strolled through the Miniland Las Vegas you might have noticed this little guy. At around a foot tall, he's not the biggest of LEGO models, but he's definitely complex. This is my MGM Lion that I created while I was still at LEGOLAND California. Even now, over two years after I built him, I still think he is one of my best LEGO models ever. Recreating the iconic bronze statue with all its smooth curves was quite a design challenge.

Although I would have loved to have built the model in bronze, LEGO just doesn't make that color. So I had to settle for a yellow lion instead. I spent hours going over dozens of images of this sculpture, both pictures I had taken on our research trip and all the internet images I could find, until I knew every bump and curve. I probably had a total of at least 50-70 images that I studied. One of the hardest sections to build ironically was the back because it is against the building so naturally I couldn't find any photos. What I ended up doing was using Google Earth and looking at the statue from the fuzzy satellite image.

If you'll notice, my lion is looking straight ahead while the actual sculpture has his head turned slightly. Don't think I didn't want to do that, and if I'd had all the time in the world, instead of the two to three weeks that the model actually took me, I might have considered it. Now, when I say it took me about three weeks, I'm talking about making not one, but two lion models. First I built the prototype, and then I built the glued final model.

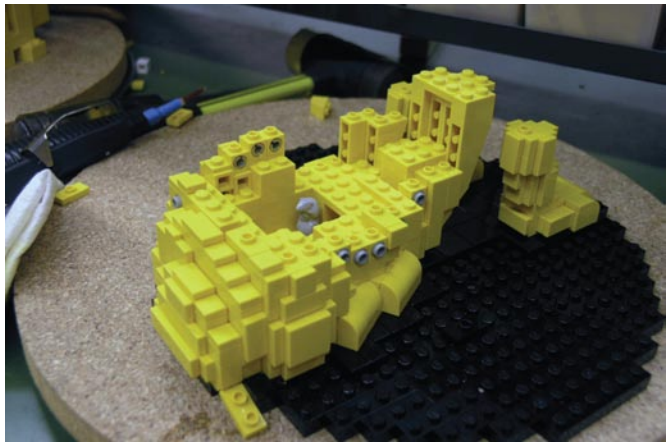
Normally to save time (and cost) Master Model Builders don't make a full prototype of a model, they only design what they need – a half or even quarter prototype is very common. In this case however, I needed to design the entire model. The only section that was a mirror image was the head. The lion also took every LEGO technique I knew and some that I had to invent to look right. And for those that are wondering, I didn't "cheat" anywhere on this model. The prototype is completely unglued and all of the LEGO bricks are attached to each other in some way.

What you might find even more interesting is that there was a one and a half year gap between those two to three weeks. We were working on Miniland Las Vegas when we got word from "above" to stop work on that project immediately and begin work on what is now Pirate Shores. You have no idea how hard it was to pick up where I'd left off on my half designed model a year and a half later! A lot of people say that they can't figure out

how I build the way I build. Well, frankly, I can't always figure it out myself.

A distinctive feature that makes this model different than most LEGO models is that there are only a handful of studs visible. I know that many people feel that a LEGO model has to look like LEGO. I disagree. In fact, I love making LEGO models with as few studs showing as possible. I feel that the less studs the more it looks like the actual subject, especially in this case, where it was a sculpted bronze lion.

When building a model, Master Model Designers like to add their own "signatures" to the model. Sometimes it is obvious; they build their name into a sign or build



A peek inside the model during construction.

themselves into a Miniland scene. Other times it is something more hidden – signatures on the inside of a model or additions to the model that can't be seen by the public. These hidden elements are only ever seen by other Model Builders.

While I was building the final model, I added my own bit of whimsy. I added a LEGO mouse element in the lion's stomach. Even though you can't see it, it doesn't matter, as long as I know it's there. Plus, it helps to have a picture. Also, on the inside of the head I also signed my name and wrote the date I finished the model.

With the year and a half gap in between, the MGM Lion probably took the "longest" of all my models to make while I worked at the park. Even though it doesn't look quite as stunning today, due to all the water damage from the fountain at its base, I am truly proud to say that I made this intricate model that is the centerpiece for the MGM Grand Hotel in Miniland Las Vegas.

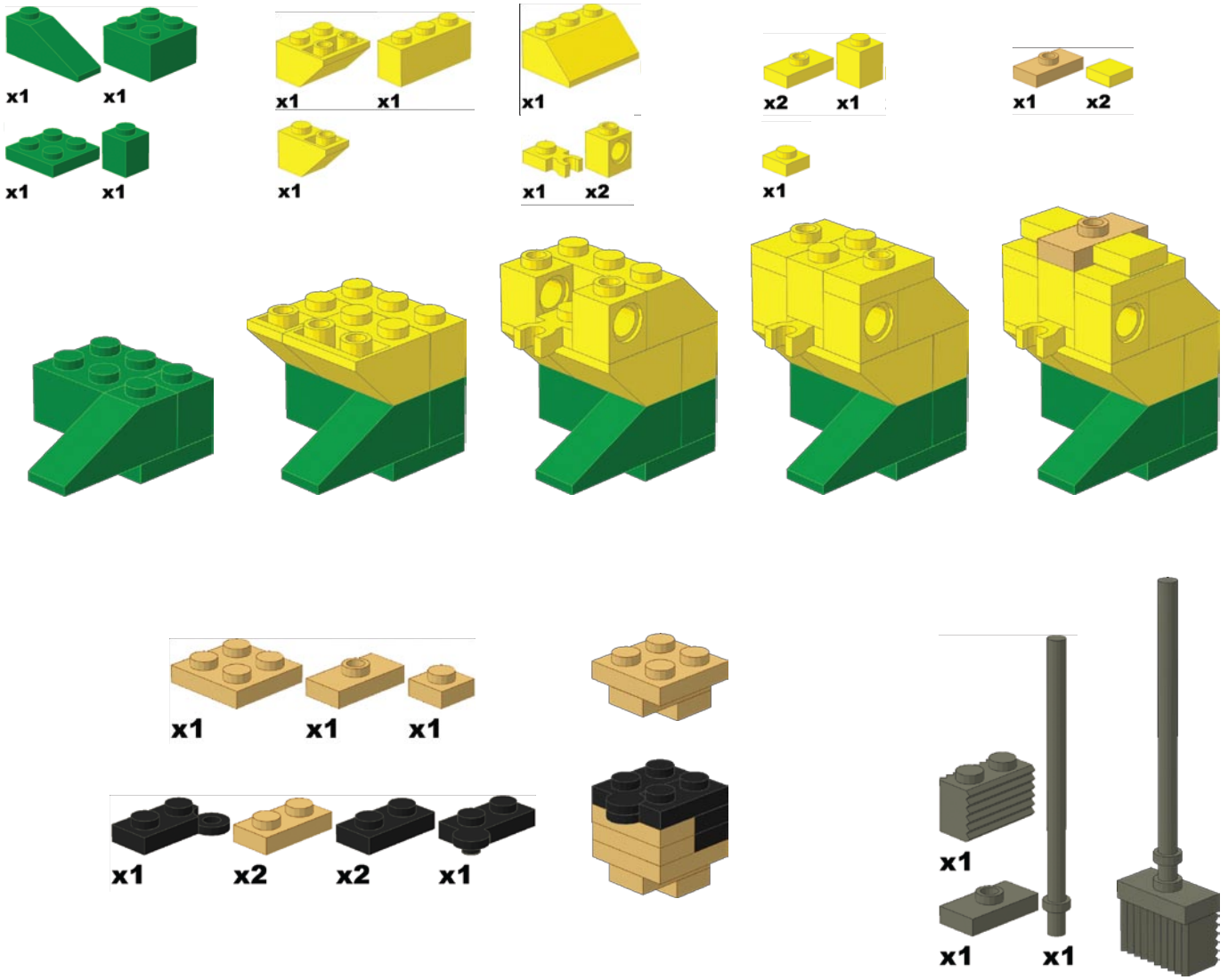
Tail detail.

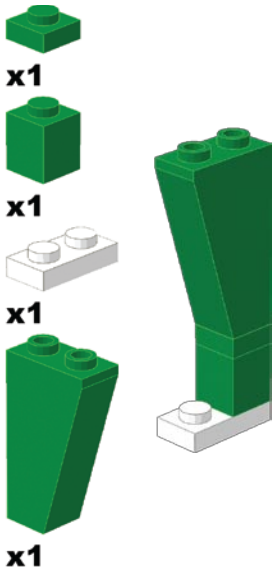
Another view of the lion.

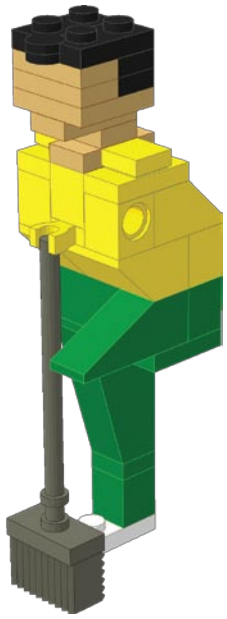
You Can Build It:
Pals at Work

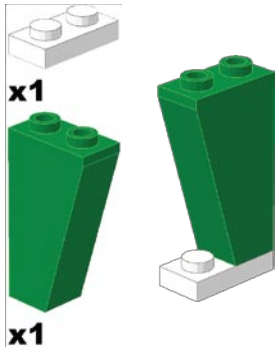
Article and photography by Didier Enjary

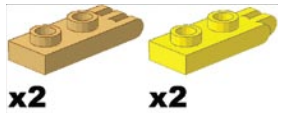
When we work hard we need a chitchat and some rest. That is what these two pals seem to think. Or should we say twins, as they would look the same if weren't for the yellow-green element swap. With this, we are going to kill two birds with one stone, and create two guys with one build.

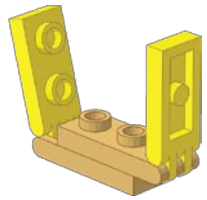










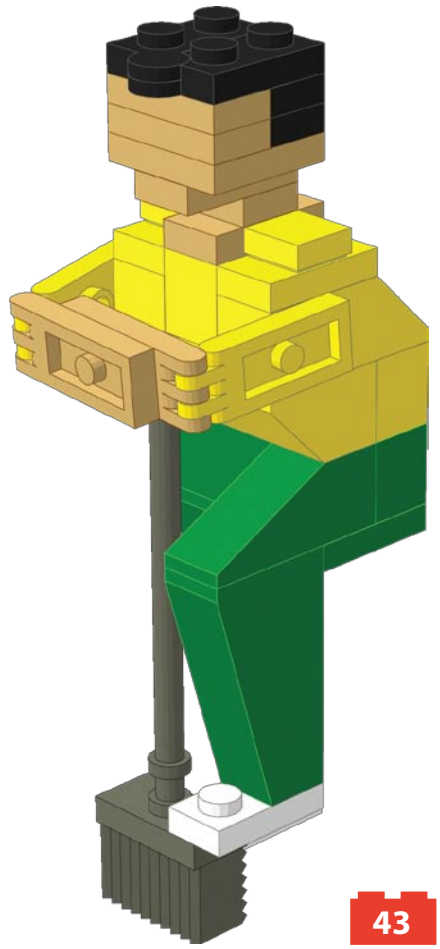


The torso build is typical, with the use of slope bricks suggesting the character's posture and general look and feel. There is something unusual though: the 1x1 plate with clip inserted in the chest. It is there only to hold the broom made of one brick with grill, a jumper plate and a bar with stop. The left lifted leg rests directly on the broom, side by side with the broomstick.

The arms are connected to the torso in an unusual way : the studs are inserted in the shoulder holes. The connection is very strong, and that's fortunate because, when you consider the size and dimensions of the arms and torso, you understand that the building is stressed. The hands actually don't fit on the broomstick, but are positioned in front of the broomstick and hide the clip.

The green color parts are pretty hard to get. Some of them simply have not appeared in any released set ever - for instance the tall inverted slope*. You still can purchase them as spare parts at BrickLink.com but even in MINILAND, LEGO designers use alternative colors. Red and white, green and yellow. Whatever, even the rarest parts are available in 10 different colors or more, so it's your turn now to free your creativity!

*Slope, Inverted 75 2 x 1 x 3



Minifig Customization 101:

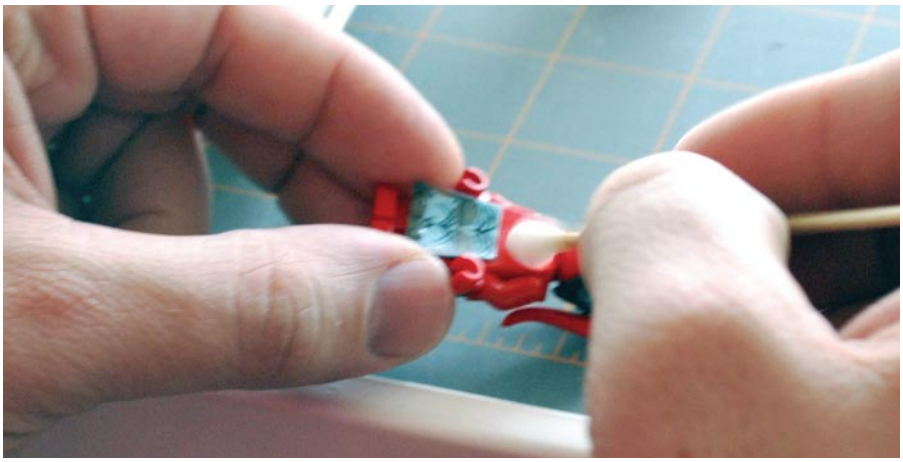
Q&A?!?

Article and Photography by Jared K. Burks

Hello all, in this issue of Minifig Customization I will answer many of the questions I have received since starting this series as well as several of the more recent questions. Several questions emerged during my recent trip to BrickMagic, which was a great event. The questions I have received are in regards to every aspect of the hobby, so please hold on for the ride.

Decal Application:

When applying decals do I dip or soak the decal in the water?
The purpose of getting a decal wet is to solubilize the glue holding the decal to the backing paper. The longer you place it in water the more glue you can remove from the decal. The proper application is to dip the decal in distilled water for 1-2 seconds, not to soak. The next most critical step is to allow the proper amount of time for the water to release the glue, which is about 60 seconds. Many people likely soak try soaking a decal to speed up the wait period. This is not best for the long term application of the decal. Please refer to the back issue of *BrickJournal* or my site (www.fineclonier.com) for the rest of the method.



What is the easiest way to slide the decal from the backing paper onto the figure?
This is really a personal preference. I have heard several stories about people trying many different techniques. If you have a technique that works for you stay with it. The approach I prefer uses a wooden stick cotton swab, actually I use two. I get one cotton swab soaking wet and the other barely damp. Once the decal has released from the backing paper I use the wet swab to wet the figure part and to slide the decal off the backing and onto the figure. Once I have the decal on the figure I use the damp swab to position and soak up any extra water on the figure and decal. Once the bulk of the water has been removed I roll the damp swab across the surface to "squeeze" the water out from under the decal along with any trapped air. By removing the excess water the decal bonds more rapidly and by removing the air, silvering is avoided. Silvering is an issue that arises when air is trapped under decal and makes a mirror like effect.

Paints:

The guides mentioned Testor acrylics, but all I could find were the tiny little bottles of hobby paint (like you use to paint metal soldiers) and they were labeled "enamel". Is that the same thing as acrylic?
Acrylic and enamel paint is very different and you need to fully understand what you are using or you could destroy your part and your brushes. Acrylic paints are water-based, this means that the paint will clean up with water, so long as the paint hasn't dried. Enamel paints are oil based, meaning that mineral spirits or paint thinner is required to clean them up. Enamel paints can sometimes be cleaned even after they dry. There are some other differences that need to be kept in mind when painting with these two types of paint. When an acrylic is dry, it is dry, if you apply new paint over existing paint, it will merely be a new layer of paint. This is not the case when using enamel paint, because enamel is an oil based paint applying a new layer over an existing layer can "re-wet" the existing. This means that you could repair an application error like brush strokes, but it also means that painting in layers is much more difficult. Also drying time of enamels is also longer than that of acrylics.

I picked up some Krylon gloss clear finish spray for a final coat... Is that the kind of thing you'd recommend? The only other product that looked promising was a very small can of gloss spray; I don't remember the exact name but it was some sort of sealant.
For the final clear coat I prefer Model Masters Clear Semi-gloss Lacquer. This gives a slightly thicker finish coating for a slightly better protective finish. Multiple coats of clear gloss acrylic, like Krylon, can achieve a similar protective finish. Remember to use light coats as opposed to heavy coats that can pool or run ruining the finish.

Cloth:

What is the easiest way to create a new cloth part?
Well this is a tricky question; you could merely start with trial and error with cloth. This can waste a lot of cloth as well as a lot of time. What I typically do is to use paper and create a template for the design. Paper is easily cut and can be used to create a prototype cloth part. Once you have the prototype piece you can scan this into a computer to replicate it. Once replicated you can use old fashion carbon paper to trace the pattern onto cloth, or merely use the pattern to cut the cloth.

Sculpting:

For the clay experts out there who've tried this, how has boiling Sculpey still attached to a piece of LEGO worked?
I've heard boiling cures the clay just as well as baking, but assuming the LEGO piece can survive being boiled; I'd prefer this method to melting my pieces in the oven.

This is a complex question so I will do my best here and present all the options. Any time you combine clay and plastic it gets tricky. Curing the clay without melting the plastic is always a fear. Take your time curing the clay, why rush this part when you spent days or more sculpting the part. Oh and remember if you melt the plastic a touch and it doesn't fit tight anymore, you can always tighten it back up with the addition of a little clay in the joint.

Sculpey can be baked longer at lower temp and still be cured. 190°F will make the LEGO element soft which will inhibit the click ability of the joint. So the part won't stay as tight. You will have to play with the alternate lower temp to see what works best. Take a glob of clay about what you are going to end up with and run some tests. Boiling works well, but again, it is too hot. Boiling is 212°F or 100°C which is actually hotter than the 190°F. So again use the lower heat method for longer if you are going to use this approach. I sometimes use this in combination with the hair drier. Just use care.

Personally, I prefer the hair drier method, but this can melt LEGO too.
What I have found that works best is surface curing. Use the hair drier on a lower setting and heat the part for 5 minutes, wait 30 minutes, heat the part for five

minutes, wait 30 and then a final 5 minutes. This makes a pretty stable part for display and more importantly sanding, but not regular use. Just be careful, doing this over days could eventually cause the clay to over dry and crack. If the surface cure method is used I would then recommend you take and mold and cast this part for your final piece.

A method that has worked well for a member of my forums, Jamie Spencer, is below:
-- Fill a tupperware (or any container big enough to hold your clay piece) with water
-- Microwave the water by itself for 4-5 minutes
-- Take the heated water out and drop your clay piece into it
-- Let it sit in the hot water for 15 minutes
-- Drain water, take the piece out
-- Set on paper towel and let it dry (anywhere from a few hours to overnight, depending on the piece)

That worked really well for him. The important thing is *don't microwave the clay*-- you just want to heat the water by itself. Microwaving clay is bad. One caveat is that, ideally, you should be able to separate your clay sculpt from the LEGO base (assuming you're working over one) before dropping it in the water. Heating the LEGO like that can cause it to become brittle, cracked, or very loose for jointed parts.

Is there any other material that can be used to sculpt parts for use with LEGO?
If you are planning on molding and casting then superior results can be achieved using sculpting wax. Sculpting wax can actually take higher levels of detail than clay and doesn't require any curing. The biggest difference is sculpting the part is more of a subtractive carving method than sculpting. This means there is a slightly different learning process to using wax than that of clay. You can repair errors made by merely warming chips of wax and attaching them to the site of the error and re-sculpting the area.

Well I hope you have found this article helpful. I have found that several people share the same questions and I hope that I have answered them here. If you have further questions or are not sure what to do with the information presented here because you missed the earlier articles please check out the back issues of *BrickJournal* or visit the forums on my site (www.fineclonier.com).

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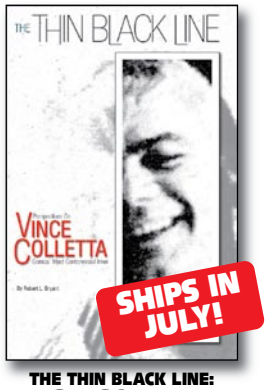

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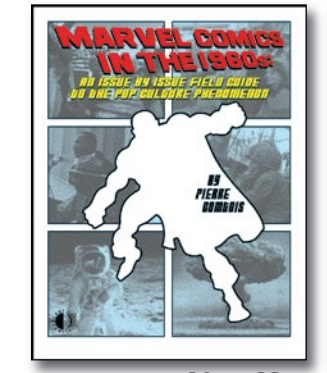

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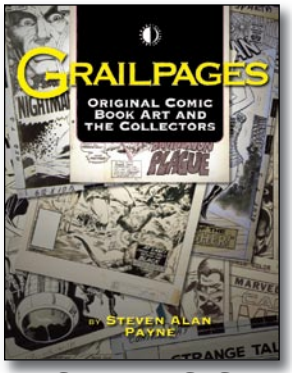

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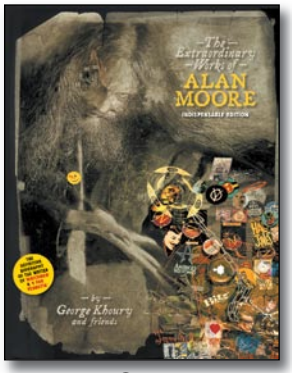

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In Her Words

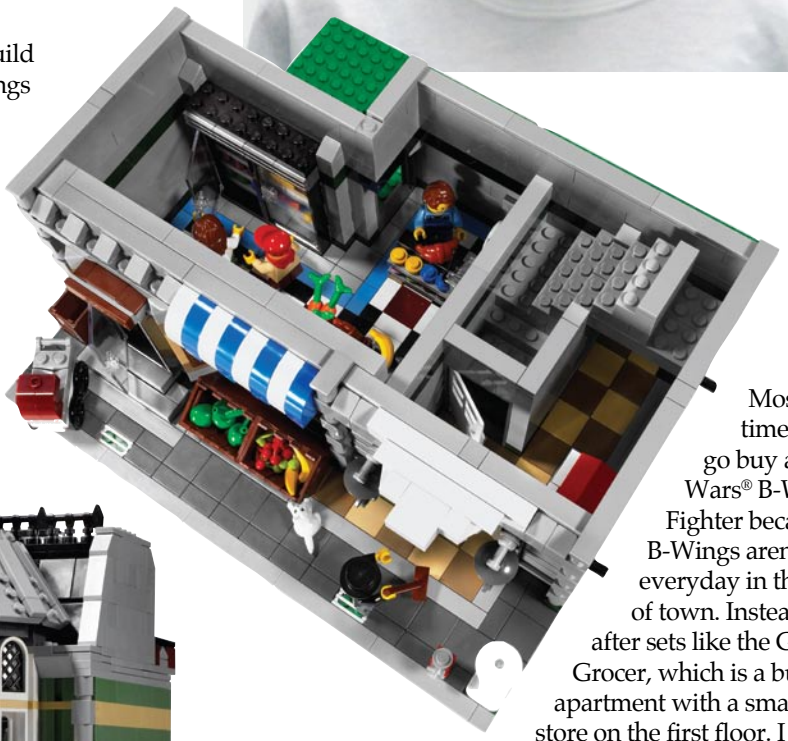
Building for Girls

Article by Olivia Donahue
Art provided by the LEGO Group
Photography by Olivia Donahue

For several years, the LEGO® Group has been trying to come out with great sets for girls. Unfortunately, it has not been meeting this goal very efficiently. I am a fourteen-year-old girl that loves to build and play with little plastic bricks. I know what I like and what I don't like about LEGO sets for girls. I would like to share my ideas and opinions so that LEGO can become more successful in making sets that appeal to girls.

When I play with LEGO bricks, I usually build buildings, like houses, shops, and other things you would find in towns. Most girls who are my age build similar things. This is because girls really like things that are very realistic. I like to use a mnemonic acronym to remember this:

Girls are
Interested in
Real
Life
Stuff



The Green Grocer is decorated with interesting architectural details ("greebles") on the front, and the back incorporates a realistic fire escape!

Most of the time, I won't go buy a Star Wars® B-Wing Fighter because B-Wings aren't found everyday in the middle of town. Instead, I go after sets like the Green Grocer, which is a building/apartment with a small grocery store on the first floor. I use this set as an example very often because of its realism. The fridge, the staircase, the mailboxes, and all the other little things are all very realistic and cutesy, and therefore, very appealing.

Along with realism, another thing I like are small architectural features, often called "greebles". The Green Grocer has a lot of greebles as well. The windows, railings, door, and sides of the building are all very intricately decorated with small architectural ornamentation. These are extremely realistic because many buildings all over the world have accents like the ones on the Green Grocer.

Another thing that girls like are interiors. The Green Grocer has an interior as well. Like I said before, the small grocery store is very fun, cutesy, and realistic. And there are pieces in the upper floors, like a clock and a fireplace, that make the set even more appealing.

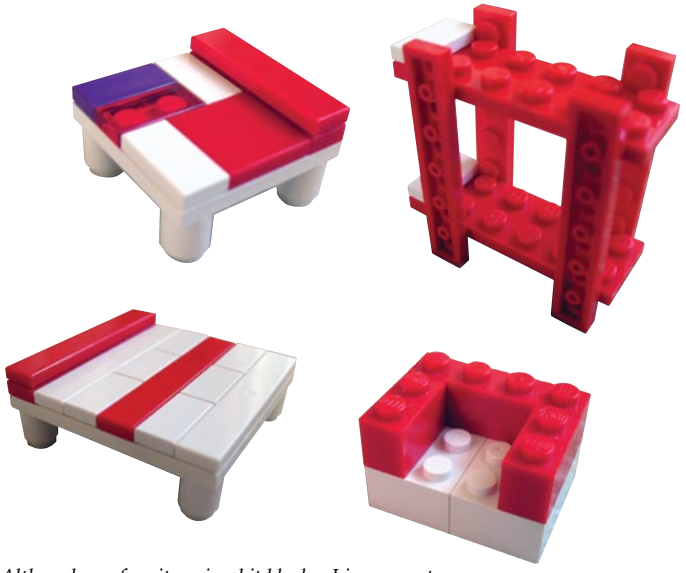
So, overall, the Green Grocer meets just about all of my criteria. Except one: The Green Grocer has no furniture. Furniture is something that you find in a building everywhere you go. But how are you supposed to live in a building with no furniture or appliances? Part of realism is being able to make realistic things happen. Girls like to create minifigures and families to go inside homes and buildings. They create realistic scenarios. It's fun to set up Mom cooking on the stove while the children play outside and Dad drives home from work. Girls play with a lot of things as if they were dollhouses, because dollhouses are very real.

To solve my furniture dilemma, I make my own furniture. A lot of times it ends being pretty blocky, but it definitely works for me. The main point here is that parents should buy sets for their daughters with lots of accessories and cutesy pieces. Having LEGO make more sets with accessories and interiors would certainly be helpful as well.

One thing LEGO makes especially for girls are pink buckets. Pink buckets are great for fun, little, hard-to-find pieces. But pink buckets have a problem: They only give you a handful of the same kind of piece. For example, I have 3 clear pink sparkly bricks, which are really fun to have. But I can't build a clear pink sparkly house if I only have 3 of the same kind of bricks. So the trick is not to have a lot of pieces, but to have a lot of the *same* pieces. If I have 30 different kinds of windows, that's great because I have a lot of window styles. But I don't want to build a house that has a gazillion different windows, because that won't look very realistic. In real life, houses usually have the same type of window. Now, if I have 30 of the same kind of window, that's extra great, because I can successfully build a house that won't look weird. Instead, it'll look realistic. I appreciate LEGO coming out with things for girls, but, in truth, pink buckets don't help me build what I want to. Why? Because girls like real life stuff.

LEGO has also come out with things for girls by making Belville® sets. Belville is a larger scale, more doll-like line of sets made for little girls. But Belville has the same problem that the pink buckets have: You don't get a lot of the same pieces. Belville pieces are certainly fun and colorful, but they do not offer a lot of the same piece. Also, Belville dolls are not to scale with LEGO minifigs. My dolls and minifigs can't share the same world! Once again, I appreciate LEGO coming out with these sets for girls, but for someone like me, Belville isn't very helpful.

Besides coming out with sets for girls, LEGO has also provided us with girl minifigs. I know that minifigs are expensive to make, and that this topic has been discussed a bajillion times, but I think that just about everyone agrees that girl minifigs could have some more creativity. LEGO does a great job with creating cool dude minifigs with different torsos and faces, but not as well with girls. I think



Although my furniture is a bit blocky, I incorporate arms for a chair and supports for a bunk bed. The beds also have different patterns to represent bedspreads.

This underwater mermaid castle is tons of fun for Belville dolls, but everything is gigantic for minifigs because of Belville's larger scale!

To make girl minifigs that are shorter, I use a 1x2 brick that looks like a skirt. This way, she is the same height as her brother. If LEGO can make printed 1x2 bricks with patterns, that would be awesome because she could have a fun print on her skirt.

Belville sets have figures that don't fit the minifig scale. This results in babysitters that can scare the children!

The Horse Trailer is a great set. It includes an impressive automobile and a horse to ride, both of which are lots of fun for girls!

The Camper is another fabulous set. This includes not only a van, but a bicycle and surfboard as well. Along with this, the girl minifig is awesome, with a neat shirt and newish style of hair.

that more girl faces for minifigs would be helpful, as the girls usually get stuck with the plain smiley face. In real life, there are many different people, and just as many as girls as boys. LEGO is certainly doing better with this, especially in sets like the Medieval Market, but I thought I should mention it as something that still has room for improvement.

LEGO makes regular-sized minifigs, shorter minifigs, and, now, with the Toy Story sets, extra tall minifigs! But I think that having very miniature minifigs to represent babies and toddlers would be realistic. When I create a family, I like to have a mix of ages of kids, because families can have all sorts of ranges of ages. I make my own infants out of 1x1 bricks. They don't have any arms or legs, which is still okay because babies don't hold things or walk around much anyways. But my kid-os have a problem because, without their limbs, they look a bit like Veggie Tales characters. Once again, they are good enough for me, but I would really enjoy realistic toddlers.

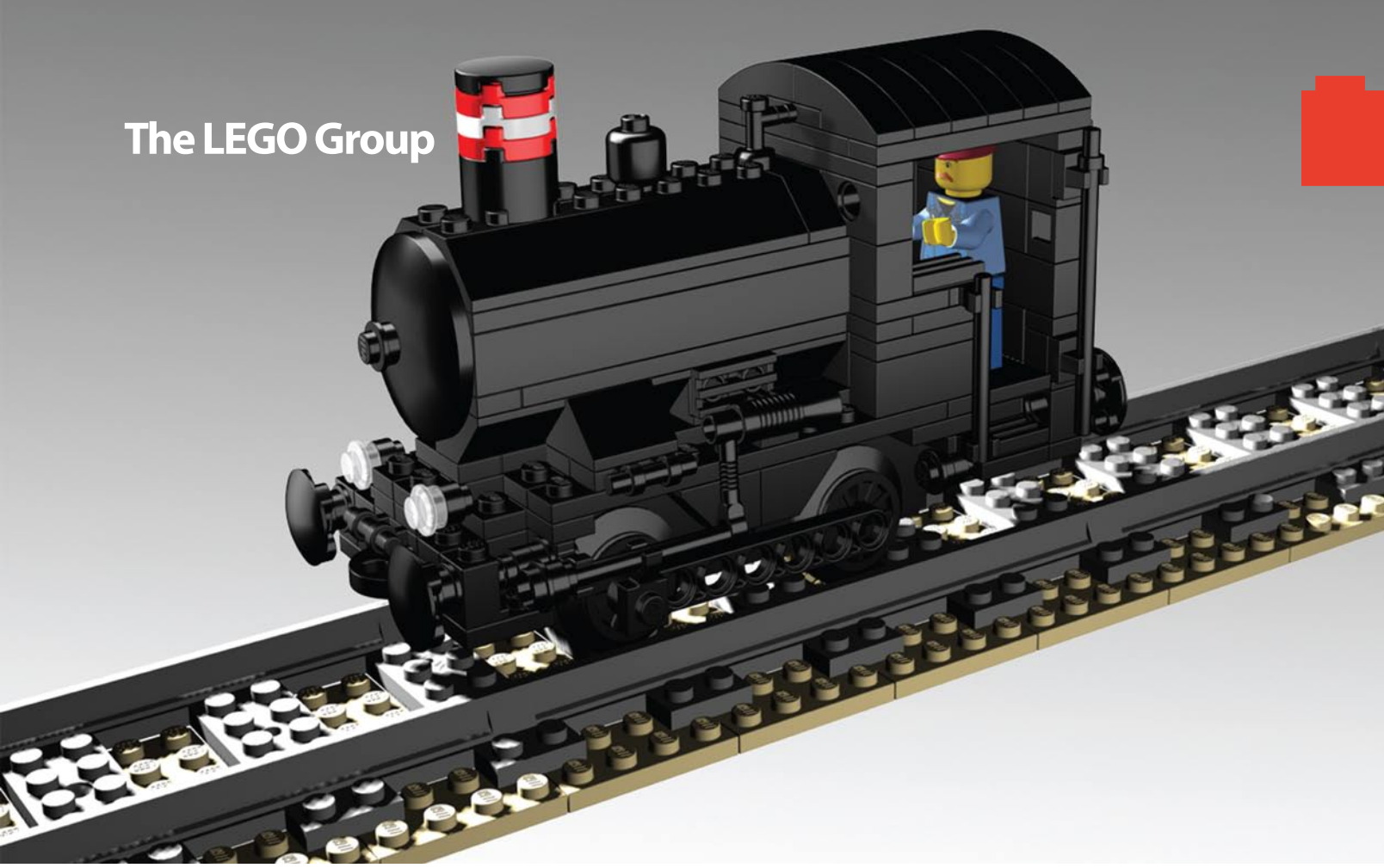
Besides realism, another thing that is important to me is playability. LEGO doesn't do this much anymore, but they used to make sets that had "playability" because there wasn't a back to the model. Yes, it is easier to reach inside something and play when there is not a backside, but this is not a very realistic feature. I don't think I've ever driven down a street and seen a nice house without a back. So, to incorporate playability into my sets, I build with a roof that can easily come off. This way, I can have playability and realism.

Something that I think would appeal to girls all over the world would be multifunctional sets. If LEGO could make a set that included a house, furniture, a car, a family, and possibly even a pet, that would be wickedly awesome! You could play with the family by having Dad drive to work while the dog runs around and Mom makes pancakes. This would be incredibly realistic. Everyone would go berserk over a set like that!

Girls also like little animals. Having more sets with small vehicles would appeal to girls as well. Everybody loves vehicles, whether they be a boy or a girl, young or old. The Horse Trailer has both a horse and an SUV, and is a great set without a doubt, because it includes both a vehicle and an animal.

I've been sharing my thoughts about how LEGO can improve their toys, but I would like to compliment them on some of their sets that I really like. The Market Street, Green Grocer, and Cafe Corner are all great sets because of how realistic they are, their neat pieces, and their accessories. The Medieval Market came out a while ago, but is still an awesome set because of the cows, chickens, apples, fish, cheese, frog, and unbelievable girl minifigs. Inside, there are pictures on the wall and a small interior. For me, the Medieval Market is a dream come true. Making more sets like these would really appeal to girls all over the world.

So, to sum it all up, sets with interiors, furniture, people, cutesy things, animals, buildings, vehicles, and playability for the inside would just be phenomenal all around. I hope that my opinions are mutual with others that are my age. I also hope that sharing my ideas has helped LEGO become more successful. Girls are interested in real life stuff!



One of Steen's many digital models.

LEGO® Virtual Building: From Bricks to Bytes

Article by Megan Rothrock

Images provided by Steen Sig Andersen

In the LEGO timeline of things, building LEGO models virtually with a computer CAD program like LDD (LEGO Digital Designer) or MLCAD (Mike's LEGO CAD) or LDraw is relatively new. While some LEGO AFOLs have embraced the endless bricks of virtual building to most it is still a no-go zone.

I recently had the chance to sit down with LEGO Designer Steen Sig Andersen and talk with him about how he began with the LEGO Group as designer in the early 1980s and the benefits and enjoyment he has discovered in recent years building LEGO models with a computer!

How long have you been a Designer for LEGO? Which LEGO toy lines have you helped to bring to us?
I have been with the LEGO Company for 29 years now. My education was actually in Chemistry, but I always built and played with LEGO as a child. Then one day there was an advertisement in a Danish newspaper that said-"Do want to build with LEGO bricks for eight hours a day?" I was very excited, so I put together an application and applied. They sent a bag of bricks to my house, I built some things (can't remember what) and sent them back. They must have liked it, because they asked me in for a meeting. I was hired as a LEGO model builder (we didn't call ourselves designers in those days).

My first boss was Mr. Erling Dideriksen (he created the head-light brick, and internally at LEGO that brick is still called an "Erling'!) He was a 'Chief Designer" today that is the Creative Lead role. I was in the LEGOLAND Town department that today is LEGO CITY. Then I moved into Shows and Events and got to build the BIG LEGO Models (you see in shops and at events) and that was a lot of fun too. I was there for three years,

Color variations on a CAD model.

and then moved to Space, and Castle. I worked on many sets then, but some of my favorites were the Forest People, the Dragon Castle, Bat Castle and the first Ninja sets too! Around the year 2000 I moved into what would become Creator, and did the final models for the Monkey and Bat set #4094 (with the power box and functions). I still belong to the LEGO Creator Team, am a model coach for new designers, I guess you could say I'm some sort of consultant too. I have designed several sets for LEGO Shop at Home Volkswagen Beetle #10187, the Grand Carousel, the new Shuttle Adventure, and I also help out with LEGO Design byMe projects as well.

How long have you been building virtually?
I began to build virtual LEGO models when our department introduced a new LEGO CAD building software (Easy Building Tool, or EBT) to us. This is software that we developed around 2005 so we could build LEGO models with a computer. It is based on the 3D software program Maya. This is a great program, but takes a while to learn. Then later we came up with LEGO Digital Designer (LDD), a CAD based building program that anyone can download free from the LEGO Design byMe website, build their own LEGO model and then order the LEGO bricks from LEGO Design byMe (formerly LEGO Factory). I started with version 1.6 and today we have version 3.1! There have been a lot of changes to LDD, and now we have a lot more elements to build with.

Do you now primarily use 'real' LEGO bricks or LEGO DIGITAL DESIGNER (LDD) to design LEGO models?
It depends on the task, for a big Shop at Home Model (VW Beetle or Carousel) I would use real bricks, for a smaller task I begin with LDD or EBT.

What caused you to switch to building virtually?
I could see opportunities to building virtually. One of the advantages to building with a virtual model is you can change the color very fast. We have to build many copies of a model for our market team. In the earlier days we had to build a copy for our project support, and they would take the model apart, and enter the pieces into our database. When you changed a piece or took some out, they had two cups with a plus and minus and you would have to be in constant contact and tell them what you have added, and what you took out. Now we save a lot of time being able to click on an element and change its color, rather then taking off a piece and changing out the color, or having to spray-paint a piece, wait for it to dry and then change it. There is also the advantage of printing out all of the different colors of the models on large boards and then presenting them to the rest of the team. Another great thing about building LEGO virtually is it's easy to try new things, you can test something out in the computer, and then you can build the final one physically. Of course being able to quickly duplicate sections can save a lot of building time. We can also make a new element in a 3D modeling program like Rhino and then import it into our 3D program and test it out. This saves us time and is a good way to see how a prototype could work. I see the virtual world as a new tool you can use to bring inspiration to your LEGO models!

Do you actually prefer building on the computer or with conventional bricks?
It depends the task really. If there are a lot of functions for example I prefer to build with real LEGO bricks.

Do you like to build LEGO models for fun at home, either on the computer or with LEGO bricks?
Sometimes I like to build Trains with LDD. I like to replicate

several cars and play around with color and shape and detail, it helps to have a clear picture of what you want to build. I used to build with real bricks with my children when they were younger, but they are older now and not really into LEGO at the moment. I used to tip out 3 large boxes of loose brick and we would all sit on the floor and build, I really liked the old train with the blue tracks. I think I still have it.

Are there any essential skills or tips you could share with our readers for building in LDD that could develop or enhance our virtual building?
It's easy to start with LEGO Digital Designer! We have added a lot of extra tools now so you can build a lot more advanced models. If you are building with a model and have a lot of hinges at different angles you can build some really nice stuff. There are also filters that allow you to use all of the 1,581 elements that now make up the building palette. I have to say that we have spent many hours to decide weather a LEGO part is good for building in the LEGO Design byMe palette and it's really good now. All I can say is you won't know what you can build virtually until you try it!

Has building virtually changed your personal design approach to building a LEGO model?
When you work virtually in my case I have access to 'all bricks' not just the ones I'd have on my desk or in a drawer, this allows for a good overview of the parts and lots of experimenting too.

You sometimes work with LEGO fans to develop the factory models, how are they to work with compared to other LEGO Designers?
I find that LEGO AFOLs are very open to feedback, but that is also the same for LEGO Designers. We work in groups, and share with each other along the way so there is not much of a difference really.

Do you have a similar time frame for developing a digital model as standard one?
No, the time frame is much shorter for a virtual project, but that is ok because you can build fast, and make changes. Again it does depend on the task. When I worked on the Custom Cars Garage we built in LDD from the beginning so it was easy to communicate with the fans involved in the project, make changes and they could send them back quickly.

Is there anything else you would like to share with our readers about building in LDD?
I consult the LDD software programming development team regularly about building. If you can do a step with a real brick then you should be able to do the same with a virtual one. However we had put in the 'LEGO rules' of building because that is how we build. With other CAD programs you can 'cheat' and do all sorts of crazy moves. I think it's just as important for people to be able to build a nice model with details as a simple one.

Please try to use LDD and give us feedback, we learn from our consumers so if you have input it can always help to shape the program in the future.

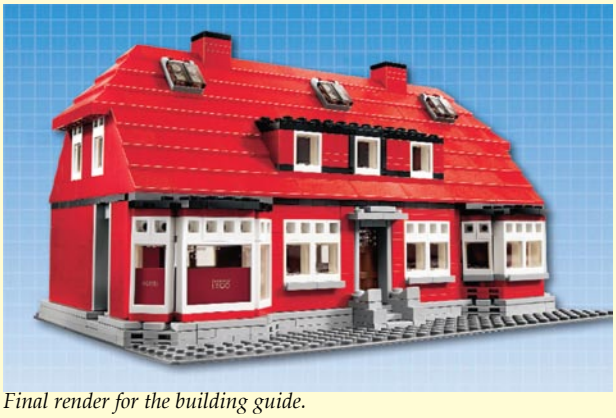
As a virtual builder myself, I'd like to thank Steen and the rest of the LEGO Design byMe team for creating such a great tool to build with and to explore virtual LEGO models and building techniques. Who knows what they will dream up next for the future LDD!

You can download LEGO Digital Designer FREE at http://designbyme.lego.com/

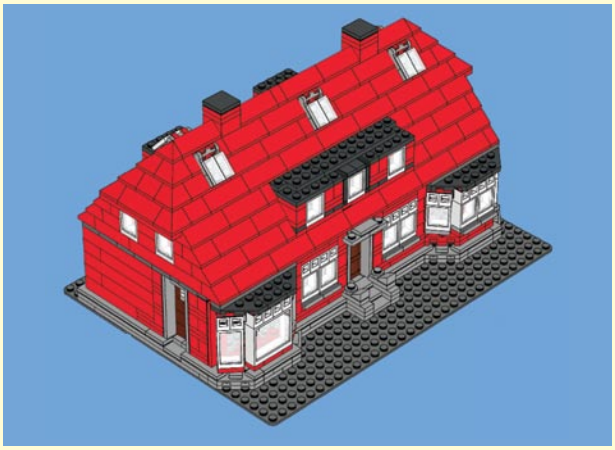
Modeling the Idea House

Steen Sig Andersen designed a model of Ole Kirk Cristiansen's house, now the LEGO Idea House, for the 2009 LEGO Inside Tour. Only 32 were made.

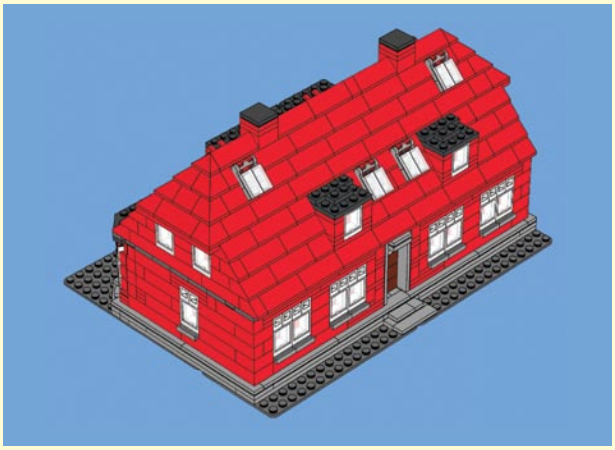
An early sketch model (screenshot from LDD).



Final render for the building guide.



Front and back side of the building, from the building guide.

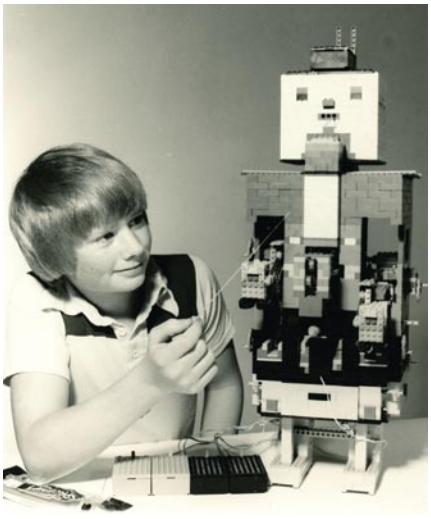


12 Questions with LEGO Star Wars Designer Olav Krøigår

Article by: Megan Rothrock

Photography provided by Olav Krøigård and the LEGO® Group

Ever wonder who the people are behind LEGO Star Wars sets? Here, BrickJournal *talks to the designer behind the Power Functions operated AT-AT Walker, released in 2007.*



A Spaghetti-Eating Robot that Olav built when he was 15 years old:

The robot could drive forward and backward and turn to both sides. It could move the arms up and down, in and out and the hands could grip things. The eyes, nose and teeth had flashing lights in different colors. Finally it could eat spaghetti! In the mouth it cut the spaghetti into small pieces and then it fell down into a little vehicle. Behind the robot, a track could be folded out and the vehicle could drive out and down and unload the spaghetti pieces. Everything was done with motors.

The black and white photo is first generation and the color photo on the next page is a modified one.

How long have you worked for The LEGO® Group (and how long as a LEGO Designer?
I started as LEGO TECHNIC Designer 15 September 1987 so I have worked for the LEGO Group for almost 22 years.

Why did you want to be a LEGO Designer?
I got my first LEGO set (Art nr. 330) as a Christmas gift when I was 3 years old and from that day, my life changed for the next 15 years. For every birthday and every Christmas my only wish was to get more LEGO bricks. I got a lot of the LEGO battery train products with the blue tracks, and I had a big room only with the LEGO train. When the LEGO gearwheels were launched, it became clear to me that I was very interested in technical things, and I tried to build all the machines and tractors from the small farm where I lived together with my parents and my little sister.

When the LEGO TECHNIC product line was launched, I wanted all sets, and I started to build human robots.

In 1984 I was apprenticed to a blacksmith and two weeks after finishing that apprenticeship, I started as LEGO Designer. During the years as a blacksmith I did not touch my LEGO sets at all, I only saw my future as a blacksmith, but today I am very happy about that change of profession.

What do you enjoy most about working as a LEGO Designer?
I very much enjoy the challenge of giving children good, buildable, exciting and stable models that are fun to play with. It is very important that children really can build and play with our LEGO models.

What themes (that you can tell us about) that you worked on are you most happy with?
That is a difficult question. The first twelve years I built LEGO TECHNIC and I loved it, but I wanted to try something else. So I tried different LEGO SYSTEM themes, but I always dreamt of joining the *Star Wars* team, so eventually I did, and we are truly a family here. You can always ask yourself: Is there anything better in the world than *Star Wars*? Or you can ask: Is there something better in the world than LEGO? Yes, there is LEGO *Star Wars*, so I can't imagine a better place to be.

Do you find it challenging to translate a *Star Wars* model in to LEGO bricks, always having to make it like the reference images?
Of course it is challenging, especially very organic ships can be difficult.

What is it like to work with George Lucas and his team?
We are very proud of working together with Lucas Licensing, and I believe that we have a perfect collaboration. Lucas Licensing also has a very good understanding of

the LEGO style, and what is possible with LEGO bricks. We also have some LEGO fans at Lucas Licensing.

How different is the LEGO design process now to when you first began your career with the LEGO Group?
When I started we sometimes went on trips to collect inspiration for the next models/products. Today we also collect inspiration from the internet, and of course we get reference directly from Lucasfilms. Now we also have concept designers working on sketches, drawings and finished concepts on for example a new product line, and we often arrange building boosts where all designers work on the same concept for a day or two to come up with a lot of different models.

Do you have any hobbies outside of work?
I have an old house/small farm from 1912 in the countryside with 3 hectares of land and half of it is forest. Here I live with my wife and my 3 children two boys and a girl between the age of 7 and 12. We also have two cats, four birds and a rabbit. It is my hobby to make it all work - the forest, garden and the house.

I hear that you are responsible for the LEGO *Star Wars* walking AT-AT. Are there any interesting stories about the development of this model you can share with us?
Actually I took over a prototype done by mechanical engineer Jesper Nielsen, and I think that he did this to show us what was possible with the new motors. At that time he was a part of a new functions group that developed all LEGO [Power] functions.

It was a very big challenge to make the model work, keep the balance, to make it simple, and buildable without using too much battery power.

LEGO model built by: Olav Krøigaard.

How did you realize the AT-AT needed a handle?
Jesper Nielsen built it into the first prototype, after it walked off his desk and smashed apart! It is a very good idea indeed for this model to have a handle, I was able to avoid such accidents as I was developing it.

Does the walking AT-AT have any relation to The Mindstorms Dark Developer's Kit AT-AT?
No, not at all, but I think that some of us within the LEGO Group always dreamt of making a machine really walk. I of course also had that dream when I made the human robots as a child, but they were too heavy, and I did not know how to do it at that time.

Is there anything that you would really like to make, but have not had a chance to?
I would love to make the three-legged AT-AP Walker or the six-legged AT-TE Walker really walk with a motor inside. But I think I will leave this task to the readers of *BrickJournal.* Enjoy!

Thank you Olav for taking time for us.


"RUNAWAY TRUCK"
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Jet Ski Race
WHO CAN STOP IT BEFORE IT CRASHES INTO THE NEW POLICESTATION!?
6335
Formula 1
Transporter
POLICE
598
olice Headquarters
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NEW
LEGO SYSTEM
©The name LEGO is a registered trade mark. ©1996 LEGO Group. 924809/96
924809/96

Jesper Jørgen

is an Advertising Photographer who has worked with LEGO® products for Advance agency since 1984.

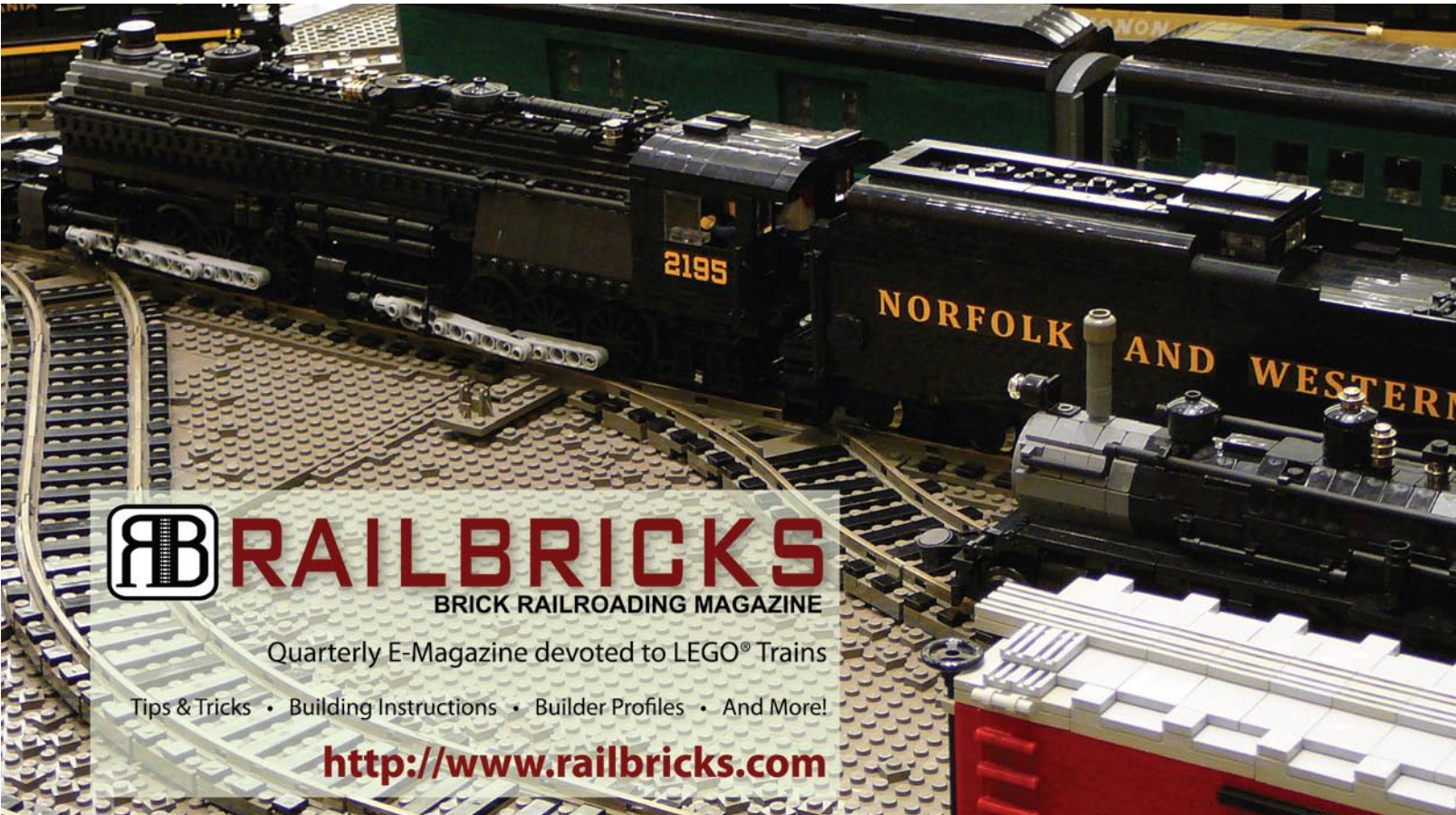
The Runaway Truck Poster was the first computer composite we made for the LEGO Group.

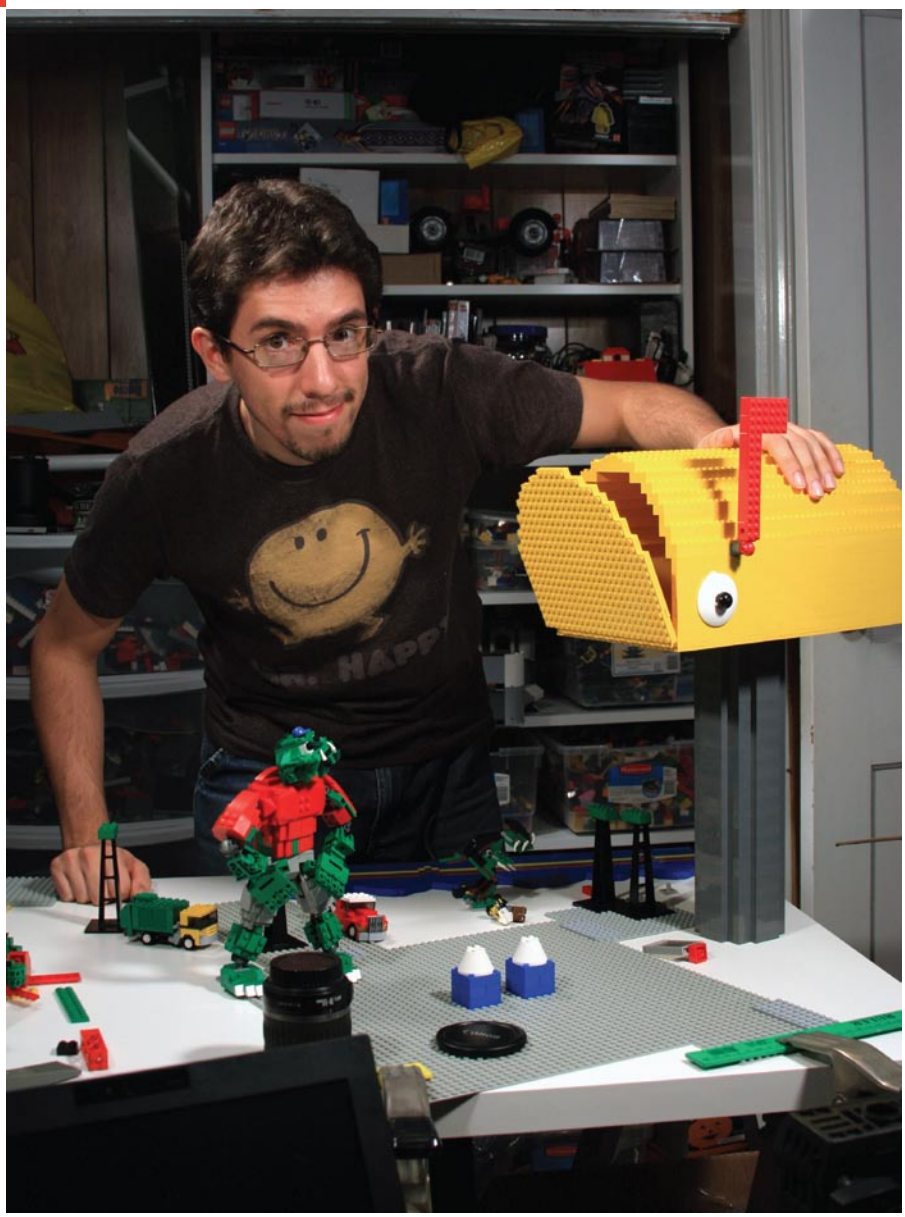
Setup:
24 individual Photo shots on 4"x5" film in June 1995
Mountains built in Oasis (green stuff for flower decoration), then painted in grey tones.
Beach made of plaster and painted yellow
Water simulated with German rawglass (typically used in bathroom windows)
Truck hung on tungsten wires.....(extremely thin wire)
Light: approx. 50 small tungsten spots

Computer Work:
24 individual part elements scanned high-res on a ScanView 5000 drum scanner from the original chromes.
all images where cut out and color-corrected in Photoshop.
All elements were converted CMYK to RGB IVUE format and composited in the program Live Picture.
Final composites in many format variations where rendered from Live Picture to 8bit RGB high-res targa files.
The files were then output on a Cymbolic Science 2000 DPI Color Plotter in 4"x5" format film.

The poster was printed in 1996.

Set building and Photo: Jesper Jørgen
Agency: Advance
AD: Alex Stougaard
Composite: Martin Moos, The Color Club.





David Pagano of Paganomation.

CG or Not CG?

Commentary by David Pagano

With the ever-growing prevalence of LEGO animation on the internet, the announcement of a feature-length LEGO film has sparked some interesting discussion among online community members. I've seen and talked to many people who are having powerful reactions to this film – based solely on the first press release!

The main point of contention seems to be that the "LEGO movie" has been announced as a mix of live action and animation. The live action portion is obvious and acceptable; in terms of profitability, it might be a gamble to create a LEGO feature that's 100% animation. But a legion of filmmakers who have been cutting their teeth on LEGO stop-motion are taking offense to the fact that the animated portions of the film will most likely be computer generated. I think the reason for this strong response has to do with what LEGO is as both an artistic and a cinematic medium, and what it has come to represent to the fans.

As a film school graduate, I can attest that there is a certain animosity towards CG. It often crops up when comparing computer graphics with more old-school methods like stop-motion, or classic hand-drawn animation. The glut of awful CG films in recent years has done little to change this viewpoint. (It's as if for every "Wall-E", we get nine of "9".) These movies fail where studios like Pixar have succeeded: telling a wonderful story with wonderful characters that is complemented by an equally wonderful CG world.

But here's the thing: CG is not LEGO. Even if you render out a completely believable, beautiful looking LEGO sculpture, it's still just a rendering. This is akin to a computer generated rendering of a human being. Maybe it can move and a look like a human, but it's not a human, and it will never replace human beings in terms of the emotional nuance and feeling that they can convey. CG characters will develop their own ways of doing this, but it won't replace the way humans do it. It'll be two different forms of expression, which both have a place in the film and animation world.

Now, the whole appeal of a LEGO

film – or any LEGO art, for that matter – is the wow factor. It's the whole notion of "jeez, someone really built and animated all that stuff by hand. Every character and set existed somewhere, even if only temporarily, and every single frame was physically touched by an artist." This sense of the tangible is something that has always existed in both stop-motion and LEGO art. The main reason a park like LEGOLAND draws in so many visitors is because of the awe-inspiring artistry of the creations within.

If, for example, the numerous large-scale sculptures in a LEGOLAND park were made of wood, but designed and painted to look like LEGO bricks, it simply wouldn't be the same. Some visitors might not know the difference, while die-hard enthusiasts would probably be bothered by it. Either way, this work wouldn't degrade the craft of the carpenters. The problem in this scenario would be that the sculptures were presented to the audience as something they weren't. The work might still be beautiful, but to LEGO fans, it would seem transparent and fake.

As a fan myself, what I want to take away from a LEGO movie is, "hey, that's cool how they built that." I want to be inspired to build my own creations, and the thought that much of what we'll see in this film may not be actual LEGO is disappointing. As with the park analogy, this is not to say anything bad about CG. But it's because of this disconnect that I sympathize with the frustration of many LEGO fans online.

Unfortunately, all we can really do is keep making our LEGO films, and just wait and see what this "official" film turns out to be. The important thing to keep in mind is this: nothing about the existence of this movie will stop us from making the films we want with the real-life plastic building blocks we love. So get back to work!

Photos from an assortment of David's films, including films for the LEGO Club and LEGO Space Police. To view all of David's LEGO work, visit http://www.paganomation.com

Sachiko Akinaga (center) shows building techniques to a family.

Event Report: Design Cruising KOBE 2009

Article by Nathan Bryan
Photography by Takuto Harajo
www.brickzen.com

On October 16th of 2008, the city of Kobe, Japan was named a UNESCO City of Design. To celebrate the first anniversary of this event, the city held a "Design Cruising KOBE 2009" event at the Meriken Park October 16-18.

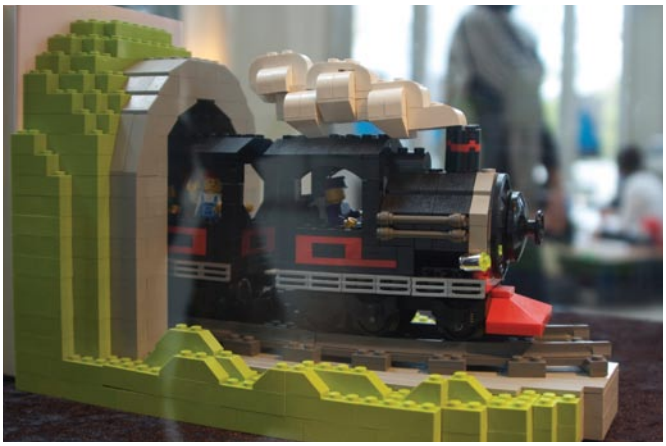
It was a beautiful autumn weekend and there were many people enjoying being outside and at the event. There were various live musical performances, design and art exhibits, talks and workshops about how design can be seen in and affect various aspects of life; food, town planning, the environment, education and manufactured products.

Of course no event that talks about design would be complete without a workshop using LEGO bricks!

The LEGO venue was at the Fish Cafe in Meriken Park, Kobe. The normal cafe tables and chairs were put away and low tables and chairs set up so that people could build as they listened. There was also a open "free building area" where anyone could jump in and build from many boxes of LEGO pieces there.

Sachiko Akinaga, the winner of the TV LEGO Contest Show "TV Champion," came down from Tokyo to host a two workshops on Education and Design.

She also brought down several of her large LEGO MOCs for people to look at. Many people that have never seen large LEGO creations, or those that thought LEGO were just for kids, were amazed at the beautifully created MOCs she made. One could hear many comments such as: "Wow! Is that really LEGO!?!" "I didn't know you could



One of Akinaga-sensei's models on display.

do that with LEGO!" "Incredible!" and other exclamations of amazement.

The workshops were 90 minutes long. Akinaga-sensei talked about her experiences as a brick creator and how LEGO is wonderful for helping children learn about design and pick up a good sense of design. She also spoke about LEGO as a communication tool and how it is wonderful for bringing parents and children closer together.

As she talked, she taught a model that everyone got to build. Each model was created with only the pieces that are available in a Blue LEGO Bucket (#7615). For the first workshop she taught a "Ladybug Car" MOC and for the second one an "Propeller Boy" MOC, both original creations of hers. Akinaga-sensei walked around the room as she was talking and helped groups that were having trouble and also spotlighted people that were building extra MOCs or customizing their creations.

Each workshop was limited to 20 "parent-child" groups and the cost of 2,000 yen (approximately US$20) included the Blue LEGO Bucket (#7615) to take home, and printed instructions for the model built. Getting to take home the MOC that one just built, plus a bucket with extra blocks to build more really made for a lot of happy faces of parents and children alike!

It was really wonderful to see LEGO bricks being used part of a large event like this and the reactions of people seeing LEGO used in a way that they have never seen. Hopefully there will be many more chances like this for people to build with and get to know LEGO bricks better!

Links:

Propeller Boy: http://www.lets-brick.com/eng/my/blue_bucket05/blue_fra.html

LadyBug Car: http://www.lets-brick.com/eng/my/blue_bucket02/blue_fra.html

Building, building, building.

Families build at the Fish Cafe.

Akinaga-sensei's "Propellor Boy" model (above) and "Ladybug Car" (below)

BILd: Building in Lawndale

Article by Karl Paulsen
Photography by Shaun Reeves Gary

It's a bitter winter night on the far west side of Chicago's inner city. The wind howls against the bricks of a former church. Deep in the basement little boys hunch over tables stacking plastic cubes. They are silent for now, the only sound coming from the clicking of the bricks. Nope, it's not a sweatshop, it's a new education concept called Building in Lawndale (BILd)!

The genesis of BILd occurred at Brickworld 2008. Spurred by Bryan Bonahoom's call to use the LEGO hobby to serve the community, and melding that with his concern for the youth of his own neighborhood, Karl Paulsen approached Beth Weis, Mark Larson, and Shaun Reeves Gary with the idea of a volunteer program that would use LEGO building to serve the youth in the Chicago Westside neighborhood of North Lawndale. Based on data showing that elementary school boys were lagging far behind girls, and taking the observation of author Jawanza Kunjufu that inner city boys begin to have negative associations with learning between 3rd and fourth grade, the team targeted 3rd grade boys in North Lawndale with a ten-session weekly program of learning, team-building and character development.

A project proposal was created, letters of support were secured from other North Lawndale community groups, and with the financial support of the Northern Illinois LEGO Train Club (NILTC) and other AFOLs the BILd program recruited its first 10 students and had its first season during the winter and spring of 2009.

The first season was largely based on the Brickology® activities of Beth Weis. With activities based primarily around team building and personal challenge activities, the classes also taught about math and art. The program was a success with an average attendance of 90%. As per the "Volunteer" aspect of the program, every cent raised went to buy snacks and LEGO elements for the participants, with the result that every student left the program with over 60 dollars in LEGO product. This is of particular importance, since in a community with a median income of under 19,000 dollars/year LEGO sets are a luxury. It didn't seem at all proper to invest the boys with LEGO knowledge if they

couldn't continue to be enriched with LEGO products once they left the program.

Appearing at Brickworld 2009 with a dedicated table and a fundraising plan, BILd was honored with the "Brickworld Inspiration Award" for service to the Community by AFOLs. Karl and Mark conducted a class about BILd and with the help of other AFOLs led a roundable about community service with LEGO bricks. The AFOL community was very supportive, but also offered good critiques as well as inspiration to make BILd more educationally focused.

BILd went through radical changes in its second season. For the Fall 2009 session, Beth's schedule didn't permit involvement, and Mark was hired away by LEGO to be a Master Builder at LEGOLAND California. Karl and Shaun sat down and created a new more educationally-focused syllabus and with the help of some student volunteers, conducted a second session of BILd. Focusing on addition, subtraction, multiplication, simple machines, architecture, design, neighborhood building, and ending with the assembly of LEGO sets chosen by the boys, Karl and Shaun conducted the most educational BILd yet.

BIld took the Spring 2010 Semester off due to a possible move by Karl that never occurred. Karl and Shaun are currently fundraising to raise the necessary $1200 for conducting BILd classes in Fall 2010 and Spring 2011 and adjusting the syllabus to pack in even more educational content.

If you'd like to contact BILd about becoming a sponsor, team member, or even coming out for one session to show your particular LEGO skill to the boys you can contact Karl at buildinginlawndale@gmail.,com. A fledgling website is located at www.gobild.org.

Event Report:

FIRST LEGO League World Festival 2010 - What a Scene!

A bird's eye view of the Georgia Dome, with 12 tables set for competition.

Two and a half minutes.

150 seconds.

Any way you look at it, it's not a long stretch of time. For a FIRST LEGO League (FLL) team, though, it's an eternity. Nowhere is that more apparent than at The FLL World Festival, which took place at the Georgia Dome in Atlanta, Georgia April 13 - 16, 2010. Here, the best teams worldwide compete for the FLL championship. But that's only part of the story.

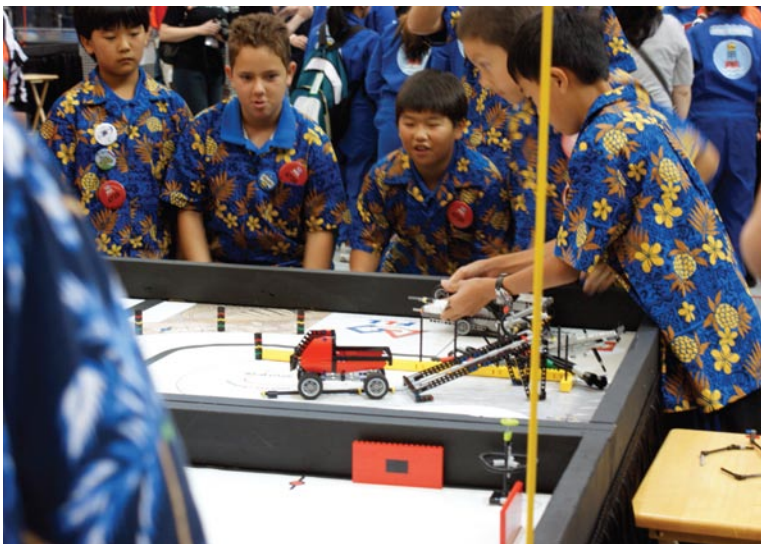
The Seen

From the Thursday where practices are done to Saturday, where the awards are presented, the World Congress Center and the Georgia Dome are full of activity as teams set up their work spaces and run their robots.

The activity isn't just work, though. Because of the international selection of teams, there's a lot of meeting and greeting. For many of the team (who are middle school aged), this is the first time they have traveled out of their country, so it's a time to explore as well as practice, and play as well as work. The workspaces, as seen to the left, are not workshops at all, but booths that show a team's project and also a little bit about the team's home.

The Haitian team, The Fantastic Rebuilders, worked hard, but also played hard and captured some of the energy of the event by dancing to and from robot runs.

A bird's eye view of the Georgia Dome, with 12 tables set for competition.



A team goes through its robot run.

The runs were done at practice tables at the work area in the World Congress Center (called the Pit). Here, teams tested, adjusted and programmed their robot to make sure that they would perform inside two and a half minutes. The tables were surrounded by team members as they rehearsed and ran their robots.

Two and a half minutes. This is the amount of time an FLL robot has to complete their course, which is a set of tasks inside a 4 foot by 8 foot table. Every year a theme is selected by FLL, and the robot game reflects the theme. Each task is a challenge that the robot has to complete, and this year the list of tasks is long. To make it even more complex, the robot cannot be assisted by a team member. The robot has to be programmed to finish the course with a maximum of 400 points.

As a result, every team has a unique robot. While there are some similarities in solutions, the robots, which are made of LEGO MINDSTORMS sets, are very different in appearance and complexity. Some run doing a few tasks at one time, others do quick single runs with different modules set up to do a task.

For many teams, this is the tough part. For the spectators, this is the part they get to see. The Georgia Dome is open for this event, and the stands are filled with the families and supporters of all the teams competing. The games and scores are also seen at the Pit on screens that are above the organized chaos below.

Above: A team, the Data Dragons, makes its robot run. Only two team members are allowed by the table during the run.

Left: A member of the Flaming Rubber Chickens with their robot. Photo by Brandon Newendorp.

The Unseen

What is not seen are some other things that play a part in the competition. There are meetings to be evaluated as a team and also have a technical judgement of their robot. There's also a project done based on the theme of the competition which each team does.

This year's theme dealt with transportation and was called Smart Moves. Projects dealt with looking at the challenges facing transportation for people, from public transport to national transportation systems. Teams presented their projects to a panel of judges in a closed session.

What is also unseen but felt was what is called in FLL as Gracious Professionalism. The teams did not compete against each other...for the robot games, it was the time that needed to be beaten. The team projects were judged on research and merit. Sportmanship and learning were emphasized as well as community involvement in the research projects

As a result, the teams worked to be their best and also help each other. From the teams, the event created a community that celebrated the creativity and enthusiasm of the teams and their supporters. The energy was overwhelmingly positive, and there was a feeling that grew thoughout the event: a feeling of optimism.

And that will last much longer than two and a half minutes.

FLL World Festival will be in St. Louis, Missouri in 2011. For more information about FIRST LEGO League, you can go to: www.firstlegoleague.org

LEGO® Displays at FLL World Festival

This year, the LEGO Group had a group display with MINDSTORMS and LEGO Education. For the MINDSTORMS display, some of the leading MINDSTORMS builders from the US and Canada came to display their models and show spectators some building, as seen above.

Also showing was a group of AFOLs from the DixieLUG (a LEGO Users Group from the Georgia area,) the Northern Georgia LEGO Train Group (NGLTC) and the Greater Florida LEGO Users Group (GFLUG). GFLUG brought a train layout of landmarks from Tampa Florida, and DixieLUG showed some space-themed models.

Arte em Peças
"Art in Pieces"

Article by Américo Verde
Photography provided by Comunidade0937

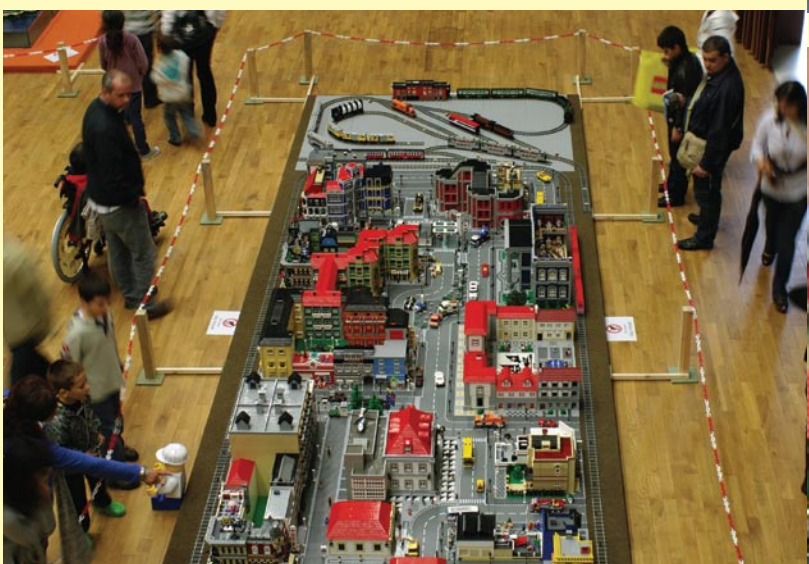
The third annual event of Comunidade0937 was held June 7-13, 2010. For the first time the festival was held in the town of Paredes de Coura, northern Portugal. Due to the proximity with Spain, the exhibition caught the eye of many visitors from across the border, as well as domestic visitors from all corners of Portugal.

Because of the change in venue and the redesign of the event, it was given a new name – "Arte em Peças" [Art in pieces], and that was exactly what was to be found at this exhibition. In accordance to Comunidade0937's philosophy, the display of original works by members had precedence over official LEGO sets, which are known and can simply be purchased.

The displays

For the first time in its history, Comunidade0937 organized a Star Wars® display. It depicted a famous scene from "Episode V – The Empire Strikes Back", and it greeted visitors with a very recognizable sight.

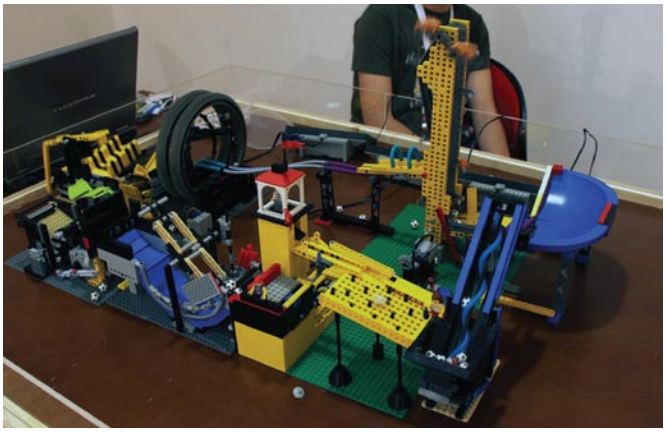
The City display, known as Metropolis, has already become a classic. Once again it has grown in size and quality from previous years, and this year it featured a number of working trains, a see-through museum, and realistic city blocks. A wind farm added a touch of environmentally-friendly color to the background.



The medieval display, made up of 100 48x48 stud baseplates, was perhaps the one with the highest concentration of details and hidden surprises. It included a battlefield with hundreds of warriors, and a city surrounded by a strong wall. Farms and forests were a fitting contrast with the 82,000 part cathedral of St. Macarius.

The Pirate display once again had a jaw-dropping effect on visitors. Instead of the usual stands, the club used large glass tanks full of water, which were first introduced at the show last year. Amazement quickly turned to disbelief when the water was gently made to wave.

Technic had the biggest size increase when compared to the previous event. With 30 sq.m., this display was divided in two different zones: a trial track (with real obstacles and rules) where remote-controlled vehicles were regularly put to the test, and a construction yard where Power Functions controls ensured the machinery behaved realistically. Next to the Technic display, the already traditional GBC was luring more enthusiasts with its gadget-y looks; but it had to share the attention with a number of NXT robots, all of which could interact with visitors. The hands-on approach was a plus which was greatly enjoyed by all.



Whatever wouldn't fit gained a place in the stand-alone MOC display. Numerous cars and cooperative endeavors could be found in this section, which was complemented by a number of glass-encased dioramas (including a "what if?" exercise of LEGO Architecture, a Clone Wars layout from Star Wars, and a Steampunk repository).

Finally, there were a couple of historic displays. This year's major historical exercise was achieved with the Space display – it had so many ships, they couldn't fit entirely! Also, sets from the seventies were at hand for the all-generation factor.

For the first 3 days, access was reserved to groups, which could enjoy guided tours by Comunidade0937 members. This was a rewarding experience for both members and visitors, which (true to LEGO spirit) included pre-school children and senior citizens. All were given detailed explanations and invited to ask questions. There was good humor all around, especially when someone was able to find a hidden detail before the rest. In the end, all groups were invited to play with LEGO bricks and try their hand at a masterpiece.

The exhibition hall had two separate play zones, and that was where true magic happened. Children were ecstatic, and grown-ups let their imaginations roam freely. Everyone built a little bit of everything, in a true brainstorming atmosphere. A very rewarding moment for us came when seniors were given a chance to build: despite some impairment of motor skills, they endured and succeeded in building small monuments to the power of will.

A number of activities were held during the event, some of which awarded prizes. There was a daily building competition in the play zones, and the activity became very popular. We also launched a couple of photo challenges.

The first challenge consisted of looking for 8 prisoners which had run away from the city's prison; "Wanted!" signs were all over the exhibition hall – and a reward could be claimed by people who found the fugitives.

The second challenge invited visitors to find and photograph 8 cows which were all over the grounds; the cows, however, were not common LEGO cows – they had been given custom paint jobs, unique mementoes of this event which mirror a very popular street art initiative. All photos had to be published online, which increased the reach of this event.

What was not apparent during this event is what makes us a unique group – the bonding between members. From the youngest to the eldest, we all became a family so the end of the event was the hardest part.

So next year, we'll do it even bigger and better… promise!

Event's official website: http://www.arteempecas.com
Flickr Gallery: http://www.flickr.com/photos/0937

Comunidade0937's official website: http://www.comunidade0937.com

Idea Day was opened by a speech by Mads Nipper of the LEGO Group. He reflected about how the company has progressed in the past few years.

LEGO® Idea Conference 2010:

Celebrating Creativity and Innovation

What do you do when you are a construction toy company that wants to celebrate creativity? For the LEGO Group, creativity is something that is as ingrained as the logo on each brick, and something that needs to be celebrated and to a certain extent, refreshed.

Every year, the company holds the LEGO Idea Conference in Billund, Denmark, within walking distance of the company headquarters. The event is arranged by the LEGO Idea House (home of the archives of the LEGO Group) and the LEGO Foundation (the philanthropic branch of the company). The conference shows the most topical aspects within creativity, learning and innovation with presentations and workshops.

Attendees to the conference included most of the LEGO Leadership Team, including Chief Executive Officer Jørgen Vig Knudstorp, owner of the LEGO Group Kjeld Kirk Kristiansen, and Executive Director for CED (Community, Education and Direct) Lisbeth Valther Pallesen. Also attending were some European LEGO Ambassadors (fan liaisons to the LEGO Group) LEGO Serious Play facilitators from Europe and the US, and LEGO Certified Professionals. What made the conference special, though, were the people who presented, as some of them came from outside the company.

Among the people who came from outside the company to demonstrate new technologies and innovations was David Merrill, who presented his Siftables.

Siftables look like small square tiles that have a screen on the top. These tiles are 'smart' though, so they can sense being tilted, sense other Siftables close by and can transmit data wirelessly to each other. This allows users to play with data as if they are 'real' - photos in the tiles can be grouped and tagged by piling the tiles together, for example. Games can also be developed using the tiles as displays, playing pieces and scorekeepers, such as a maze game where the tiles represent a player and his or her field of vision. By attaching other tiles to different sides, walls and paths can be found. There's a similarity to the LEGO brick in a Siftable: both can be assembled and manipulated to create larger models, and both are fun to play with. The big difference is that a Siftable can contain files and information, which can lead to new ways to work with data.

Another presenter was Kohei Nishiyama of CUUSOO, a company in Japan who partnered with the LEGO Group. His company develops products on demand by literally making wishes come true. Users create a design and submit it to the website for public consideration. After 1000 users vote for the design, it is produced. Currently, there are over 200 entrepreneurs who have posted wishes and one wish has reached the 1000 vote threshold and being sent to production. You can join in by going to their website: http://www.cuusoo.com/LEGO/

Other speakers included Bjarke Ingels of BIG, and architecture firm based in Copenhagen, Richard Stephens of Boeing, and Ray Almgren of National Instruments.

Dirk Denoyelle, a LEGO Certified Professional (LCP), spoke about the program and introduced nine of his fellow LCPs. He ended his presentation memorably by shooting a video of the entire crowd singing "Happy Birthday" to his daughter, who turned 17 that day!

The workshops were split for the morning and afternoon, and the final meeting was set aside for the film "Being LEGO," and the presentation of the LEGO Prize, which is presented to individuals and institutions who have made an extraordinary contribution on the behalf of children and young people. Founded in 1985, past recipients include Astrid Lindgren (author of Pippi Longstocking and other children's books), Paul Newman (actor and founder of the Hole in the Wall Gang Camp, an international residential summer camp for seriously ill children), John Feierabend (a leading international authoritiy on music and movement development in early childhood, using folk music to help children understand and enjoy classic music) Mario Lodi (an Italian writer and educator) and such institutions as Associacão Santa Therinha in Brazil, The SaekDong Organisation in Korea, and Papalote Museo del Niño in Mexico City. The previous recipient of the LEGO Award was Dean Kamen for his creation of FIRST and FIRST LEGO League.

David Merrill talks about Siftables.

Kohei Nishiyama presents the history of CUUSOO, which is Japanese for "wish"


Other activities included programming an NXT robot to stop as close to a minifigure without tipping it over - it's not as easy as it sounds!

Nicolas Negroponte (second from right) receives the LEGO Prize from Kjeld Kirk Kristiansen (right).

This year's award was given, with great fanfare from the LEGOLAND Marching Band, to Nicolas Negroponte, founder and chairman of the One Laptop per Child Foundation. With the LEGO Prize, he also received $100,000 USD and a unique glass bowl crafted by Steffen Dam, a Danish glass artist from Ebeltoft.

The event was brought to a close after the band departed. Contacts were made and goodbyes were said, and the Idea Conference was soon empty, except for the model displays. Creativity remained, but as sculptures from LEGO Certified Professionals and LEGO Ambassadors. And by midnight, all of those were packed away.

Until next year.

LEGO Talent on Display at the Idea Conference

The Idea Conference was a showcase for the LEGO Certified Professionals. Here's a glance at the LCPs and their work.

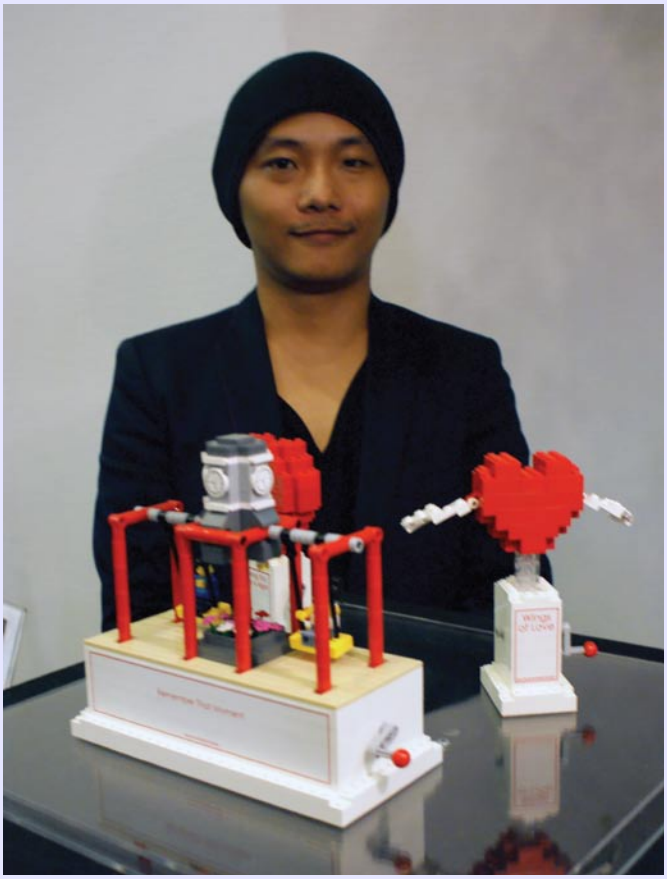
Sean Kenney with his bust and sculptures of William Shatner.

Dirk Denoyelle and a couple of self portraits.

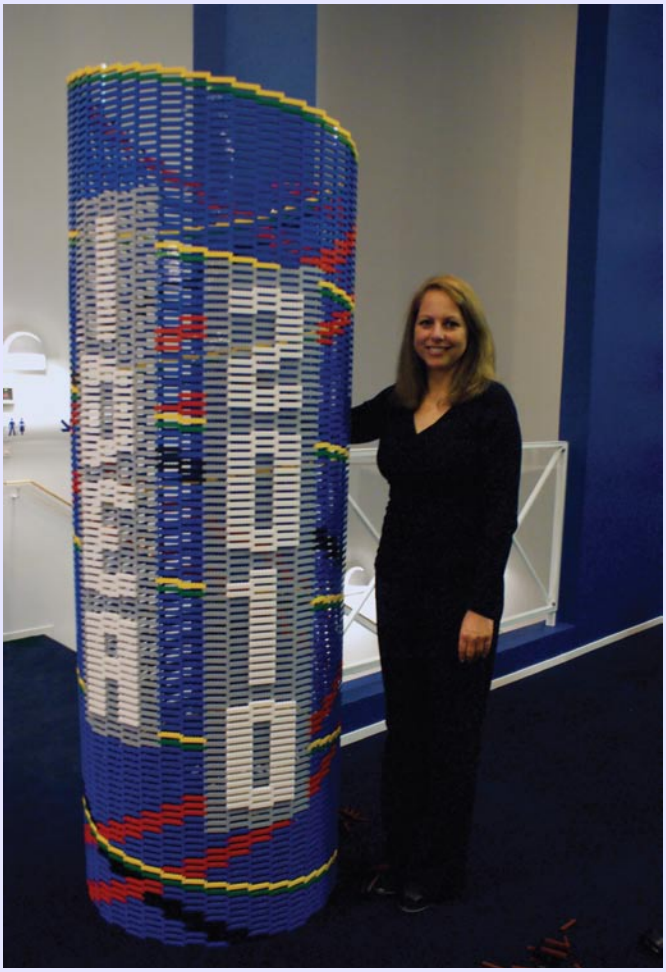
From left to right: Robin Sather, Beth Weis, and Dan Parker.

Adam Reed Tucker and his architectural models.

Duncan Titmarsh's larger than life toothbrush.



Nicolas Foo's hand-cranked models (called automata).



Beth Weis with her trademark custom columns.

Car models and trophy by René Hoffmeister. Einstein mosaic by Dirk Denoyelle.

A gift bear by Nicolas Foo (online name: blackbulb), which can hold a heart or a photo frame.

A bust of Elton John, built by Dirk Denoyelle.

A minifigure scale model of the Croatian National Theater, built by LEGO Ambassador Matija Puzar.

Theme: Highlanders
Designer: Daniel Krentz
Year: 1994
Description: Scottish castle theme based around a loch, featuring a big castle, a whiskey distillery, bagpipe players and the hunt for the monster!

From the Designer's Desk

An exclusive look at past ideas and present models on desks in Billund!

Article by Mark Stafford

Photos courtesy of the LEGO® Group and Mark Stafford

Found packed in the LEGO basement, we don't know who built this samurai or when it was made (it has old gray parts), but's very cool!

Inspired by '80s television, this van is by LEGO Designer Michael Fuller.

Community Ads

As a service to the LEGO Fan community, we are now providng advertising to community-specific vendors. Those interested in advertising here can contact Joe Meno for rates at admin@brickjournal.com, title: BrickJournal Advertising,

Last Word

It's midnight or so the night of deadline (well, this one anyways) and it's usually about this time that I get either my second wind or I pass out on my keyboard.

It's exhausting sometimes being in the community. Events may have public hours, but the socializing goes on at all hours of day and night. And if you're a volunteer, you're running on even *less* sleep. And building....

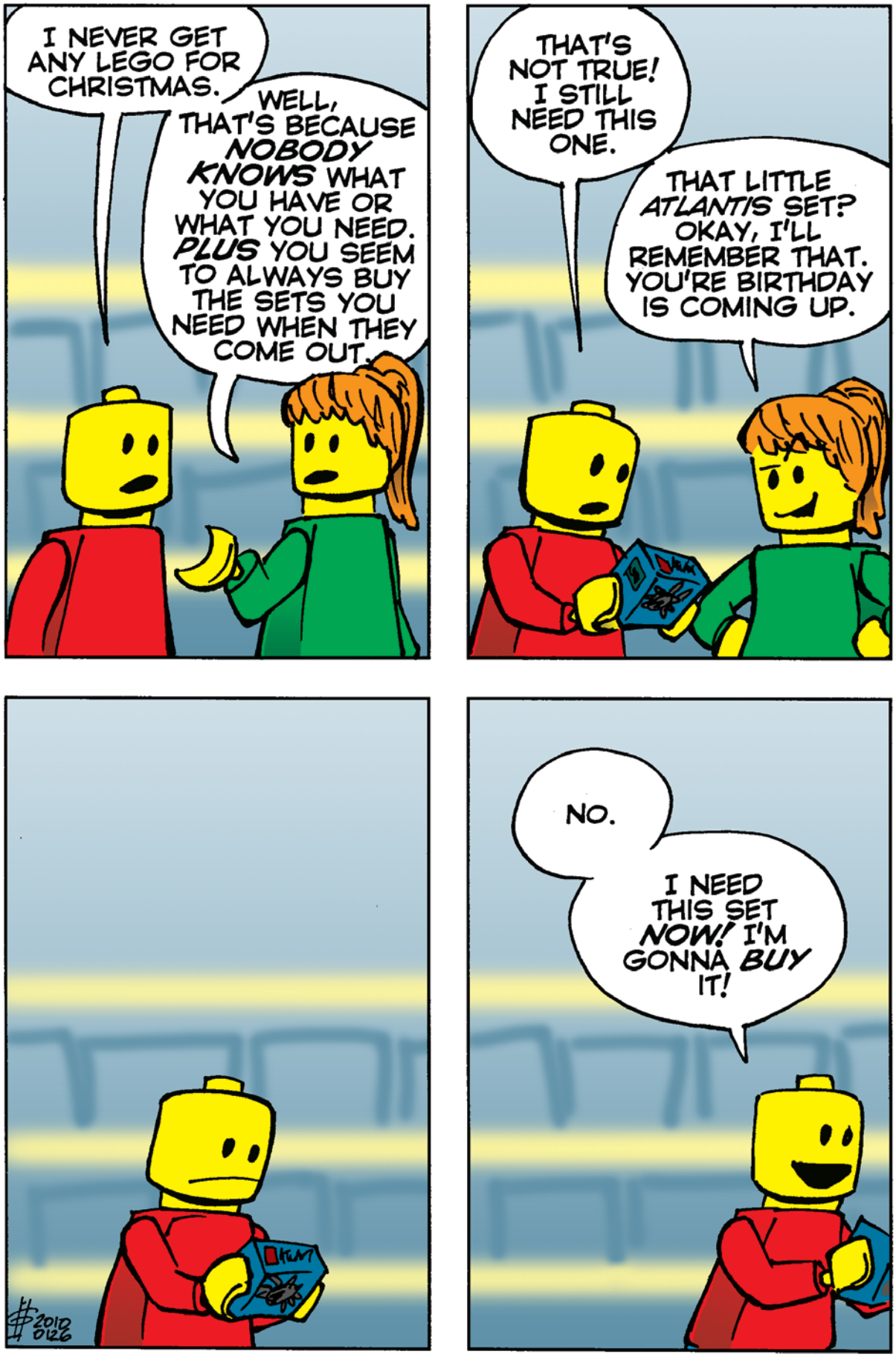
But the time lost on sleep is made up for in the good company, fun builds, laughs and stories and models shared. Or in this case, a magazine made.

So if you see any of us a little bleary-eyed at an event, you'll know why. It's a good thing.

We're just having too much fun.

So 'til next issue, laters!

Joe Meno
Editor


I NEVER GET ANY LEGO FOR CHRISTMAS.
WELL, THAT'S BECAUSE NOBODY KNOWS WHAT YOU HAVE OR WHAT YOU NEED. PLUS YOU SEEM TO ALWAYS BUY THE SETS YOU NEED WHEN THEY COME OUT.
THAT'S NOT TRUE! I STILL NEED THIS ONE.
THAT LITTLE ATLANTIS SET? OKAY, I'LL REMEMBER THAT. YOU'RE BIRTHDAY IS COMING UP.
NO.
I NEED THIS SET NOW! I'M GONNA BUY IT!
2010 0126

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  Philadelphia Convention Center
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