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BrickJournal

Issue 9, Volume 2 • January/February 2010

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Instructions
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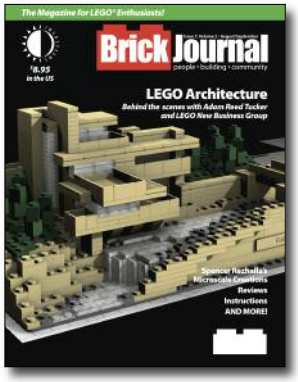

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Focuses on **LEGO ARCHITECTURE,** with a look at the new sets designed by **ADAM REED TUCKER!** There's also interviews with other architectural builders, including **SPENCER REZHALLA.** Plus a look at a **LEGO BATTLESHIP** that's over 20 feet long,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

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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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Right: Jordan Schwartz's *Partners* model.
Photo by Joe Meno

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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:
The Little Green Aliens gather to see what is in this issue.
Photo provided by the LEGO Group.

From the Editor:

While the LEGO Group only recently began creating sets with Disney, the LEGO fan community has been building Disney-inspired models and creations for years. This issue takes a brief look at both the fan models and the new sets being made by the LEGO Group.

This has been probably one of the most challenging issues we've done. Not because of content, mind you, but because the LEGO corporate articles had to get approvals from both the LEGO Group and the Walt Disney Company to get printed. (The approvals are for fact-checking and proper trademark and copyright use if intellectual property, not for editorial content) This was on top of the holidays wreaking havoc on deadlines. Things were definitely complicated by Thanksgiving and Christmas.

In spite of that, this was one of the *best* issues we have done. People from everywhere are in this magazine. We have builders from Europe and Asia, and models of Disney rides and characters. There's even stuff by me, because I wanted to build something Disney-related. You'll see what I built on page 39!

Have fun reading!

Joe Meno
Editor, *BrickJournal*

P.S. Have ideas or comments? Drop me a line at admin@brickjournal.com. Or go to www.lugnet.com and leave a comment on their forums! 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! You can check out the news there or look at the event calendar and see what is happening near you!

P.P.P.S..Twitter? Yep, there too - http://twitter.com/brickjournal

P.P.P.P.S..Facebook? Yup - http://www.facebook.com/group.php?gid=58728699914&ref=mf

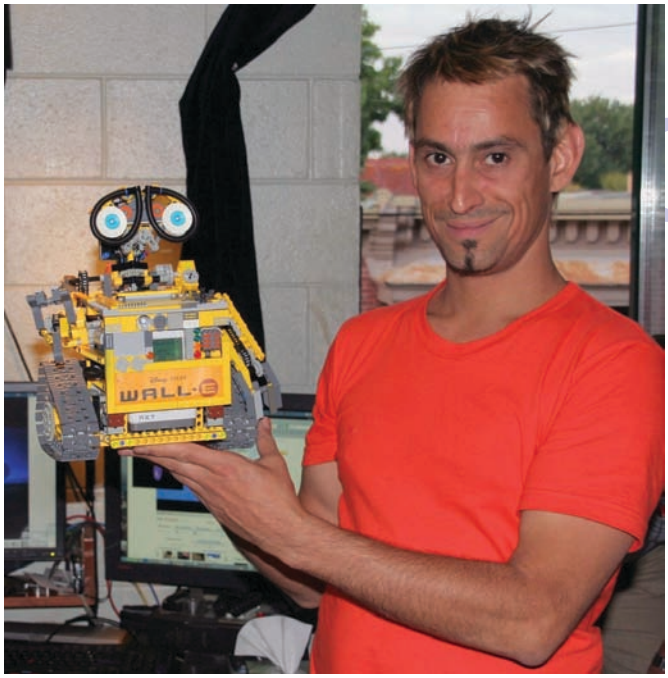
Many thanks to Aguido, S.p.a., the Walt Disney World® Resort, the Walt Disney Company, and the LEGO Group for their help with this issue.

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.*


BUILDERS WANTED!
UNIVERSE
MULTIPLAYER ONLINE GAME
Set to be the coolest Massively Multiplayer Online Game (MMOG) ever, LEGO® Universe allows you to bring your LEGO creations to life in an ever-changing virtual environment.
Using an abundant supply of virtual bricks, you'll not only be able to create things for your own personal space but add creations to the Universe at large and share them with other players. The amount, type and style of your creations is entirely up to you. Of the many building modes in LEGO Universe, two of the most dynamic are Modular and Free Building.
With Modular Building, players work with pre-defined modules that include 'baked-in' behaviors. Modules are selected and the minifigure moves them into position with normal game controls.
The Free Building mode essentially allows you to build whatever you imagine. Using bricks in your avatar's inventory, you'll build modules and models using the LEGO Digital Designer API. This puts a full featured brick-by-brick building experience at your disposal! The chance to populate new virtual worlds with your LEGO creations is coming soon!
www.LEGOUniverse.com



A bot and his builder.

Marc-A Bazergui: Constructing WALL•E® with MINDSTORMS

Article by Joe Meno

Photos courtesy of Marc-A Bazergui

A little about Marc-A Bazergui...

Marc is a Canadian who works in the information technology field as a technical support specialist. He's currently part of a team that supports corporate customers with software or hardware problems they may have with their system. Often, this entails taking calls made by the servers themselves... When the system thinks there might be a problem, it "calls home". His work consists of asking the right questions, finding solutions and ensuring customer satisfaction throughout the process. He also is a LEGO® builder who has built a robotic version of WALL•E®! Here's the story behind his LEGO building and his WALL•E.

Marc's LEGO building started much like many other LEGO fans, as he recalls...

When I was very young, I had my pile of LEGO. It was all I cared about: at Xmas or birthday I would shake the gift box and hope it made that LEGO sound! They always did! It wasn't complicated to get me gifts! I owe it to my parents for getting me creative toys — OK, my dad is an engineer and played Meccano all of his youth but I was not attracted to the ugly metal contraptions — I guess I took from my mom who's an artist and preferred the colorful and visually attractive LEGO. But then one day, LEGO became more technical and at 12, I received the coolest set ever: the new LEGO Expert Builder Auto Chassis - set #956 (The Expert Builder series was the forerunner to the Technic line - *Editor*)... from that moment it was the only LEGO I was interested in, and my dad thought they were pretty cool too! I could make all kinds of things... I remember making a 3-wheel sail buggy that would zip thru the courtyard during windy days. Then at around 17 I kinda of got bored, lost interest and ventured towards radio-controlled models. Everything from that point on was R/C. I even worked in a hobby shop for several years during high school. My new goal in life was to own one day a hobby shop — I guess having control power over things was just too fun! That's how I spent my "Dark Age."

What got him back to building was...

Well, first came the computer and a few years later the Internet. I was in university then and I became fascinated with the use of technology information in education. It was while surfing one day for fun I typed in "LEGO" and wow, I found a lot of LEGO-related stuff like links to all the catalogs I used to remember and most importantly this thing called MINDSTORMS. This was a turning point for me! I could play with LEGO again and mix it with my new passion, computers... We could say it's the Internet that took me out of my Dark Age. It was around 2005 that I got my RCX (MINDSTORMS first generation - Ed.) and took my old LEGO collection out of the attic! I remember bringing the robots I made to work and showing them to my colleagues. I loved the reaction of people when they realized the autonomous robot that was going from cubicle to cubicle was in fact LEGO! It didn't take too long until I got a second RCX. My coolest RCX bot was the FishTankBot, a webcam mounted on a robot that could be controlled to 'follow' the fish in my aquarium. I also made a rope climber and a step bot.

Then came the announcement of the NXT! As soon as it was available, I got one. This was also about the time YouTube was born and also the time that I joined the Quebec LEGO User Group that was just starting up and I positioned myself as the NXT guru in this group of AFOLs. The greatest part of being an AFOL was that now if a wanted a LEGO set I didn't have to wait — I could just buy it! My biggest set was the LEGO Power Function Bulldozer where LEGO introduced Power Functions and the new large threads. It was also at that time that PF IR (Infrared)-Link came out, which ran the PF by some commands sent from the NXT! Needless to say, This was no longer the LEGO stuff I had when I was a kid!

WALL•E, with NXT brick hidden inside.

The new sets and potential of the NXT and Technic parts led to WALL•E...

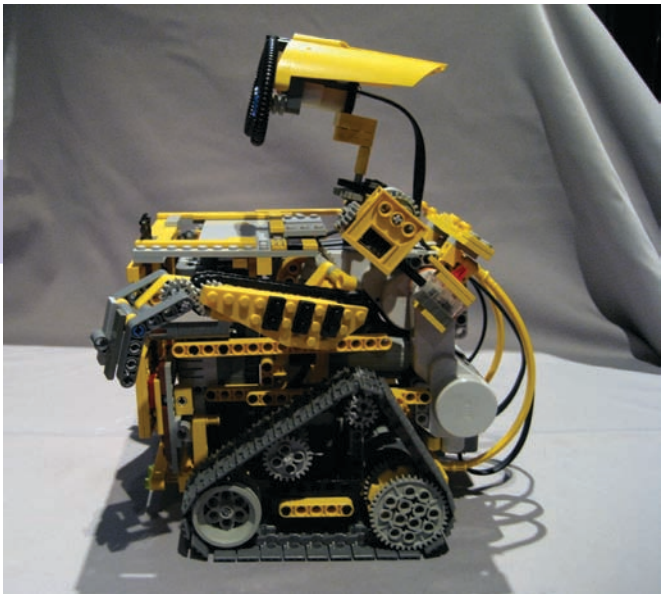
Playing around with the alternate bulldozer model posted on the web and also trying out the IR-Link, the possibilities were endless. Now, my NXT robots could have more than 3 motors!. It was coming back from work one day when I saw this poster in the subway for a new animated movie called WALL•E in theatres June 2008. The poster had this yellow square-boxed shape robot with big tracks and the first thing that came to mind was,"WOW this looks so much like LEGO — I had to try and make one of these!" Later that evening at the grocery store near the cash register was a pile of promotional sticker books of the WALL•E movie, so kids could stick inside their purchased pack of WALL•E stickers. I grabbed one and inside there was this folded poster of a WALL•E drawing. That was perfect, just what I needed to start working on my LEGO WALL•E.

Marc's WALL•E's functions have changed...

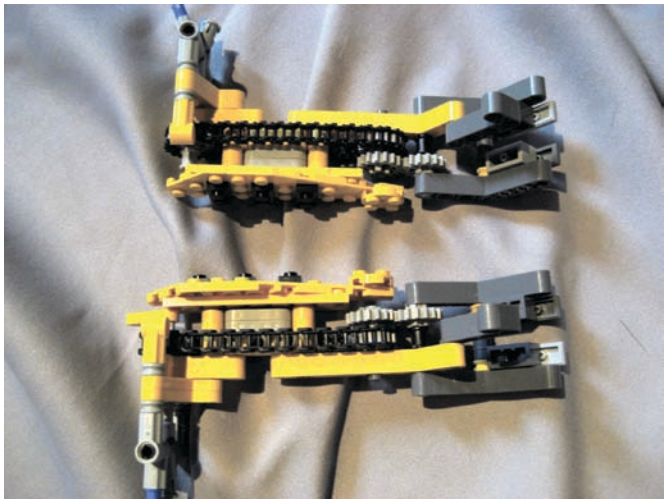
WALL•E moves forward and backwards and turns quite well, each of his arms can go up or down independently and his hands can open and close. Also, his head turns right and left and goes up and down and in a later version I even got his eyes to show emotion by widening like in the movie. I programmed him using NXT-G; nothing fancy, just a little routine that shows off all of his functions.

WALL•E was improved from one video to another. I would read comments from viewers and try and add things based on suggestions. The best one was, "Make the eyes move like in the movie!" The problem was that I had no more motor ports and no more PF components to add more movements. However, Mindsensors announced the NXTServo module that allowed to control R/C servos, so I just needed to get one of those. The timing was perfect as this sensor allowed me to add the emotion missing on my WALL•E. So all in all, there is one NXT in my WALL•E but every motor port

Side view.



WALL•E with front hatch open.


WALL•E's arms. The chain links allow the hands to open and close.


WALL•E's tread wheels. The motors (Power Functions XL) can be seen at the bottom of the photo.

and sensor port is used. One HiTechnic IR-Link controls 4 Power Function motors via two IR Receivers, the tracks are powered by 2 XL PF motors and the arms are driven by Medium PF motors. The hands move thanks to an NXT motor, The other 2 NXT motors were used for the head movements. Then I used the Mindsensors NXTServo so a mini-servo controls of the eyes when the UltraSonic sensor detects an object in front of it, Finally, a sound sensor was used to trigger the demo routine I had programmed WALL•E to do. So I pretty much used all the components from the bulldozer set and the NXT set along with some third-party sensors. Each of those use their own battery pack so a total of 16 AA batteries are found inside WALL•E. He is quite heavy.

WALL•E was pretty much made in 3 versions. The first had a modified 40 tooth gear and that was 'unacceptable' so finding a solution to make it unmodified was quite a challenge. The head was also pretty tricky as I wanted the ultrasonic sensor to be used yet still giving him his own cute eyes. Making all of the above components fit inside the chosen form factor, though, was the biggest challenge.

From this challenge, some things happened....

Soon after I posted my first video of WALL•E the great adventure started. First I received comments from all over the world, with many fans asking me how to make WALL•E. I was then invited to join Trossen-Robotics and post some tutorials on how to make WALL•E. I even won runner-up on their Robot Contest and they posted my WALL•E video on many non-LEGO but robot-related sites, The hits on my video started to soar! One day I received a personal message from Bram Vanderborght, who was working on the publication of a Belgium document called LEGO-NXT BINNENSTE- BUITEN. He wanted to use some pictures of my WALL•E to show youngsters what could be made with the NXT - I was very honored to see my WALL•E beside Daniele Benedetelli's Johnny 5 on the cover of this publication! Soon after I was featured on the NeXT STEP, The Mindstorms NXT reference blog — for me, this was the ultimate recognition! But that was not the end of it... I got an e-mail from Steven (Canvin, Marketing of the LEGO MINDSTORMS staff) saying how my WALL•E was great and if it was possible for me to build one for his office as he was collecting AFOL models for an exhibition he was preparing, for the 10th anniversary of LEGO MINDSTORMS. When I got to the end of the e-mail and found out where the writer came from, my jaw dropped. It was a letter straight from Billund, LEGO HEADQUARTERS!. After a few e-mail exchanges and some phone calls, it was agreed I'd send my WALL•E as-is to him in exchange for the parts needed for me to rebuild him. This is how my relationship with LEGO started. WALL•E was bubble-packed and shipped on time to be at LEGO WORLD 2008 where Daniel Wittenar (a member of the MINDSTORMS Community Partners) took care of him.

Today I'm proud to say that all of this led me somewhere I'd never thought to be... I've been accepted in the 4th MCP program.

His LEGO projects can be seen online...

My YouTube channel is dedicated to my LEGO projects, some videos are quite silly where I show how to build him or how I came up with certain designs. Others are better edited, but I was still new at doing video for YouTube: that

is a hobby on itself and I'm getting better at it.

as well as his later projects...

The next big thing I built was a Dalek® from the TV Series D*octor Who* and more recently *Torchwood*, both shows I'm a big fan of. Dalek NXTerminate turned out to be quite a challenge but not as popular as WALL•E. I guess a Dalek is not the most charming robot out there!

As for Marc's future..

That is a good question and I really don't know yet. My interest in the use of the NXT in Education led me to volunteer my time to ZONE01.ca, an organization whose mandate is to be an active promoter and partner in all robotic competitions in Quebec. I have since judged and helped organize many events. Furthermore, I have offered my services to our local LEGO Education reseller, Brault&Bouthiller, by hosting a pre Xmas event called ROBOTS INVASIONS to allow the public to find out hands-on what the NXT hype all about and help with sales. I also created a few French-Canadian blogs about the NXT, including NXTQuebec, to name just that one. I recently started teaching NXT in afterschool projects, got involved in local robotics competition and was implicated in Quebec's first attempt in FLL. All of these activities are pretty time-consuming so I have less time to build these days, but I get to work with kids now and sharing my passion with kids and seeing them learn while having fun is great. I guess I'd like to contribute in building our future generation of scientists!

WALL•E broken down.

And his WALL•E?

You can see some other WALL•E models built by others inspired by Marc:
http://bazmarc.blogspot.com/2009/08/diy-WALL•E.html

You can see WALL•E in motion here:
Marc's LEGO Youtube Channel:
www.youtube.com/bazmarc

Quebec LEGO User Group:
http://www.quelug.org

www.zone01.ca

WALL•E tutorial:
forums.trossenrobotics.com/showthread.php?t=2363

nxtquebec.blogspot.com

Dalek and WALL•E.

Let's Brick: Sachiko Akinaga

Article by Nathan Bryan, BrickZen.com

Photography by Sachiko Akinaga

Sachiko Akinaga is not only the most famous AFFOL (Adult Female Fan of LEGO) in Japan, but probably the most famous AFOL (Adult Fan of LEGO), male or female, in Japan. Her MOCs (My Own Creation) have been featured on The Brothers Brick website and many other sites but she is most famous in Japan for appearing on and winning two of the TV Champion "King Of LEGO" shows. The first show was in Japan on January 27th of 2007 and the second in the Denmark LEGOLAND on November 17th of 2007. The LEGO Group even invited her back to Denmark for one month to work on product design for some of the LEGO sets to be released in Japan.

When Japan broke the Guinness World Record for the tallest toy-brick tower with a 29.70 meter tower on April 3rd of 2009, Sachiko was there as the visual designer for the art sections of the tower. Recently, time allowing, she has been teaching various LEGO workshops around Japan, increasing interest in LEGO bricks and showing people the many wonderful things that can be built with them.

When Sachiko was a child, her mother bought her some Nintendo-blocks to play with. She often created space ships and robots, but since there were no mini figures, she didn't think to make houses or buildings.

When she was 15 she happened upon a LEGO display in a department store, saw the town and city sets and fell in love. Being born and raised on Tokyo, she espe-

cially was enthralled with the minifigures and immediately wanted to make a whole LEGO city! Then she came across the LEGOLAND Idea Book (#6000) and really was hooked!

From growing up in a big city, she did run into some discouragement. The LEGO Post Office (#6362) did not look like the huge Post Office Building that she was used to. Even after buying four of five of the LEGO sets, she wasn't able to recreate her local one.

When Sachiko started studying computers to become a graphic designer, she made a decision to put away her LEGO blocks in boxes and keep them until after she retired.

Computers and work kept her busy enough that she didn't touch her LEGO for over 15 years. Then in 2001, when she wanted to merge some boxes to make some storage space, she opened up one of her boxes of bricks, and couldn't resist putting a few together. Needless to say, after the first click she was hooked again!

From studying being a graphic designer, she started looking at and building with LEGO in a completely new way from when she was a child. One of the first things she noticed was with working on computers, one common technique for making designs, especially icons, was creating a picture with a series of pixels, also called dot pictures.

In re-encountering LEGO, she realized that building with them is similar to creating dot pictures, but it could be done in 3 dimensions not just the 2 that she was used to in designing with a computer.

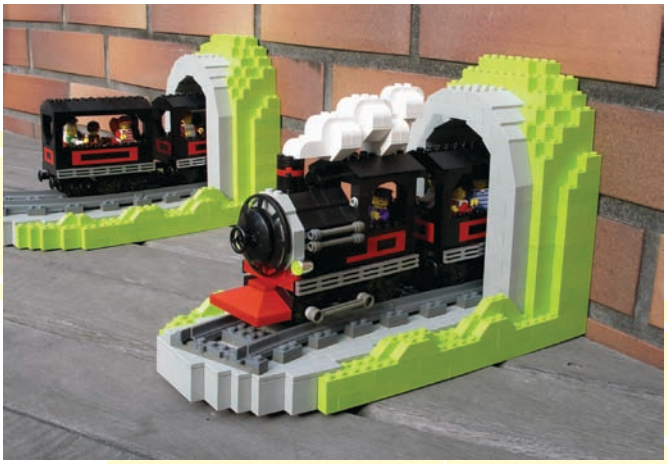
She started her home page "Let's LEGO" (http://www.lets-brick.com/) to show people, children as well as adults, how many interesting things can be built with LEGO and how fun it is. With each MOC she creates, she tries to make something will entice people to get interested in and start playing with LEGO. She tries to create models that people will look at and start thinking of a story. A good example is her MOC "A Big Puppy." She hopes that people will look at it and imagine the minifig trying to take this gigantic dog for a walk. Or maybe it is the dog that is taking the minifig for a walk! Or they might start to imagine what would happen if the dog saw something of interest and started to chase after it. The MOC itself is a story waiting to be discovered.

She basically likes to build with standard blocks as much as possible, but is a big fan of hinges and enjoys creating models that have something hidden in them.

She also creates MOCs that change depending on which way one looks at them. She likes to surprise people and also keep things fun, building like the she has the heart of a child. Sachiko's characters are very whimsical and cute, and their big shining eyes often make them look like characters right out of a Japanese manga.

As well as her own MOCs, she has created many models for the TV Champion ship shows and MOCs for various LEGO contests. Sachiko has also created models for Andersen Park (in Tokyo), Travel Posters, Model Houses for construction companies and even a Sheng Shi Auto Liner car and truck carrier ship.

She generally doesn't plan out her MOCs in advance or calculate how many bricks she will need (and usually over purchases), she just pictures what she wants the final



Some of the many models created by Sachiko Akinaga.

creation to look like and starts building. One of the other aspects of building with LEGO that is very similar to using a computer for design she found, is that at any point one can "undo" and go back a few steps to make changes if the model is not turning out as expected. Often she will do many "undos," sometimes even restarting from scratch, before she finishes a MOC.

Along with posting pictures of her models, she often creates a story built around her MOCs and puts that up as well. PDF instructions of several of her models can also be downloaded from her site. Information on LEGO events, contests, and LEGO on TV is also posted. As much as possible she creates English pages for the International LEGO community to mirror the information on the Japanese portion of her site.

From August of 2005, in the "Friends" section of her site, she started an entire section based around a cute round character she named "Manmarl" (Japanese for "very round"). The main idea is to show people how round objects can be created with square LEGO bricks. Using just the pieces from a Blue Bucket set (#7335) she created a basic round head character, and provided PDF instructions so that anyone can make the basic character. She then encouraged people to add-on, modify or recreate their own "Manmarl" and send her a picture.

Currently there are over 130 various "Manmarl" characters that people have sent into her site. Everything from cows, birds, kettles, bats, baseballs, to many very original creations!

Sachiko Akinaga and her fabulous LEGO creations have introduced the World of LEGO to many people in Japan. She is certain to be a main pillar in LEGO events in the future. As you look at her creations, let your mind create and see the hidden stories and let your inner child come out.

Links:

Sachiko Akinaga's Home Page:
http://www.lets-brick.com/

Sachiko's BrickShelf:
http://www.brickshelf.com/cgi-bin/gallery.cgi?m=Sachiko

Also see:

AFFOL Sachiko Akinaga: *BrickJournal* Issue 6 Fall/Winter 2006 (now in print in the *BrickJournal* Compendium 3)

LEGO Records Tallest Tower: *BrickJournal* Issue 6, Volume 2 Summer 2009

Vibeke Brogaard

Interview and photography by Megan Rothrock

What is your name?
My name is Vibeke Brogaard.

What is your age?
I am 56 years old.

What country are you from?
I am from Denmark, where I live in the countryside with fields and forests around.

What hobbies do you have?
I like building with LEGO, knitting, bicycling, active in the Methodist Church where I am treasurer, enjoying nature and my family (that is not a hobby, but I spend much time together with my family).

Do you have a website or Brickshelf gallery?
No, I don't have a website, and my gallery is only on my PC, but perhaps I will make my own website later.

How long have you been building or collecting LEGO?
I started when I was about 4 years old. We - my sister and I got the bricks from our parents, and we collected them in a big bag. On birthdays, I often got more LEGO. Once we got the church (shown in photo at right) and the small houses. They are from around 1957. I would also spend my money, which I earned by cleaning dishes.

Church set from the '50s.

What percentage of your spare time do you spend building with LEGO?
I have don't have much spare time, perhaps 2 hours in a week. I would like to have more time with my LEGO, but at the moment I don´t have the time.

What is your favorite LEGO theme?
I like sculptures in big scale. The biggest I have is the Eiffel Tower. I have found many sculptures on the internet. I make instructions and then I pick the bricks in the shop in LEGOLAND or perhaps I already have them from all my sets.

In 2008 I became a member of the "Byggepladen" which is the Danish Club for adult LEGO-fans. There I became interested in buildings. I have made the design of a two story House, which I displayed at the Lego World 2009 at Parken in København. At the moment I have a big project in mind. I am going to create a big office building which the company I am working for is building in full scale. It will be exciting to make the building instructions, but most exciting is the actual building.

Minifigures play on a skate ramp by Vibeke.

What is it that inspires you about LEGO products?
I like the LEGO products because the bricks have nice colors and they are so clean to handle. It is nice to touch them, and when you build with them, you have so many possibilities. By building you learn to match colors. Your sense of colors and your creativity is sharpened. I have always been fascinated by the LEGO products.

If you could design any new parts what would they be?
That is difficult to say. I don't know all the parts in the LEGO production, and I can't think of any new parts.

Art museum.

Matchbox model.

A house built by Vibeke.

How is it being a female in the AFOL community?
It is fine to be a female in the AFOL community. All the men are talking to me as they do to anybody else. We have fun together and best of all we have the same interest for LEGO.

Can you think of any ways to encourage other girls to build with LEGO?
I hope all parents will give their girls LEGO and build together with them. Play with the bricks. They can build a doll's house, furniture, and so on and play together with the girls instead of buying complete dollhouses. Perhaps, when they grow up they will think about all the hours they have spent together with the bricks and maybe some of the girls will continue building.

How relevant do you find the products LEGO makes that are aimed at girls?
That depends on the girls. If they like to play, there are many things they can do. The City-series is very good, and they can use their fantasy. They can play together with other girls, make stories about families living in the LEGO City. They can build different houses, shops, riding school, playgrounds and all that is in a city, and then just play. I know that girls have a good imagination, so for me it is easy to think of what to do.

Do you have any other comments you would like to share?
I am so lucky, that I am living close to LEGOLAND. I can go there, when I want, and I always find something new. LEGOLAND inspires me, and I look for details in the city.

Lighting Buzz Lightyear®

Article by Joe Meno
Photography by Rob Hendrix

When the LEGO *Toy Story* sets came out, Rob Hendrix, known to the LEGO Fan community as Brickmodder, could not help but to think about lighting a Buzz Lightyear® minifigure. After a few hours of drilling, soldering, and wiring, he created a minifigure with wingtip lights and a laser light.

The laser is lit here.

The wingtip lights blink from side to side and the laser works by pressing a button on his backpack - seen as the gray button in the photo at the bottom right. Wiring is composed of a slide switch, 11 wires, and a battery, all in the torso. The head has a microchip for the blinking. The lighting system is completely self-contained.

If you are curious about Rob's custom lighting designs and kits, you can go to www.lifelites.com!

The red wingtip light can be seen below.

The controls and battery are in the minifigure torso.

The backpack has the laser's button.

A closeup of the Buzz Lightyear® constructible figure.

LEGO® Brand Disney Sets: Another Toy Story

Article by Joe Meno

Preproduction photography and art courtesy of the LEGO Group
Other photography by Joe Meno and Mark Stafford

Matthew Ashton is the Creative Senior Director of PG2 at the LEGO Group, and behind the designs of the new LEGO® Brand Disney sets that are now coming out based on the *Toy Story* ™movies and *Prince of Persia*™. *BrickJournal* was able to talk to him about the new sets.

When did you start working on the Disney sets, and what theme was first to be designed?
Gosh it seems so long ago now! I guess it must have been around August last year (2008) when we really started Model Development. Classic *Toy Story* (1 & 2) was the first thing we started on, as it was the one that required a lot more work, firstly because there was a bit of uncertainty internally at LEGO Group as how we would translate a movie about toys into real LEGO toys in a convincing way. We have to go through a series of internal gate meetings, throughout the year to check on the development and the business behind each LEGO line and it was vitally important that we executed *Toy Story* in the right way.

I'm personally a huge fan of PIXAR®, and the *Toy Story* movies (especially *Toy Story 2*) are some of my favorite movies of all time, and were one of the reasons I was inspired to become a Toy Designer. So I had a personally vested interest getting this through, it was an absolute dream project for me! So much so, that I penned a resignation letter just in case it didn't go through ;)….I don't think I would have actually used it, I just wanted to keep management on their toes! He he!

The DUPLO® team also started on *Cars*™ around the same time, and *Prince of Persia* was quite a bit later as we had to wait on reference material, as and when the movie was being filmed and it was scheduled to have a later retail launch date.

Were you given any directions as to where to start on the designs? What was Disney pointing to initially?
It has very much been a two way dialogue with Disney, in the sense that we both build on and respect each other's strengths. We have a good understanding of what makes a good construction toy, with the right building experience, the right level of play value and what sells well and what doesn't from a

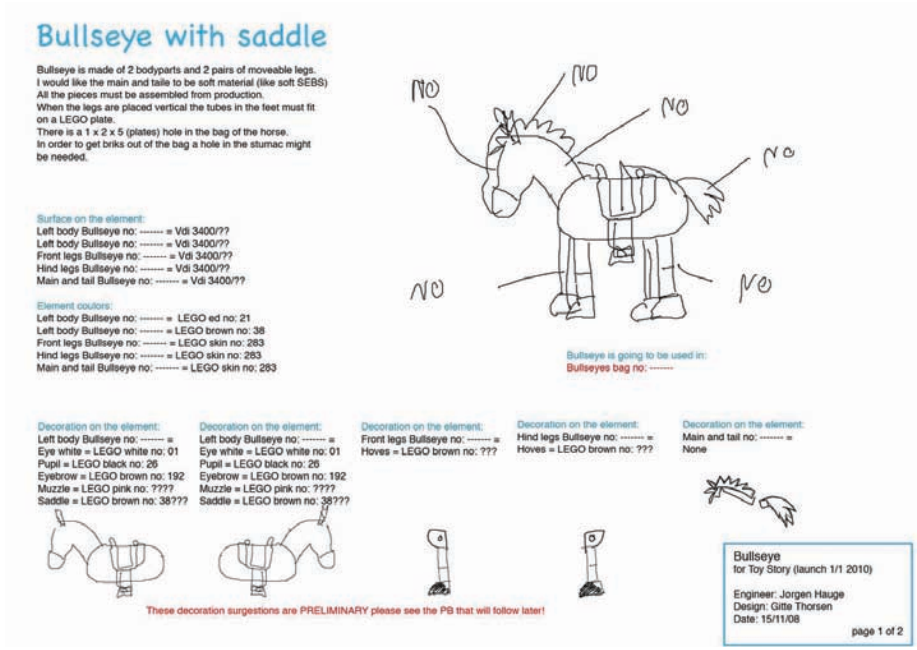
LEGO perspective. Disney obviously has a huge knowledge of their properties, the appeal of each of their characters and what makes a successful Disney item.

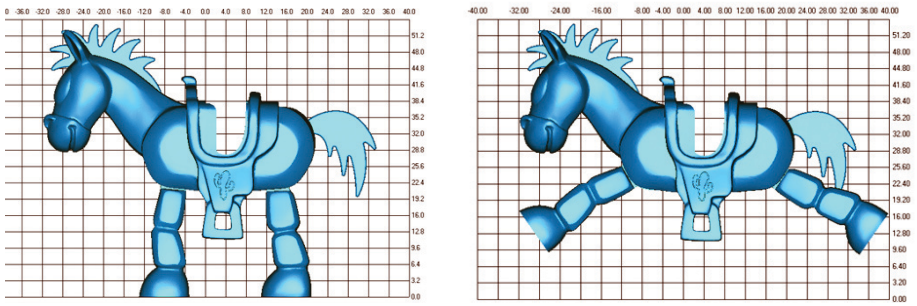
With all of the properties we have worked on with Disney, we have had joint brainstorms on initial product concepts to kick the project off. Then we go away and work on developing a sketch version of what we feel will make the ideal LEGO assortment based on each property. We present the products to Disney and then take each item through their approval process, which covers every aspect of the product, from character sculpts, models, stickers and decos (printing on figures), packaging layouts, product photography etc. to really optimize the products from both our perspectives.

What were the initial challenges you had in design?

There are different challenges with each IP (Intellectual Property) we undertake. In many respects, the good thing about *Toy Story* was that there were already two existing movies which featured all the core characters and reference material we needed, this made it so much easier as everything was available there and then, so we could get straight to work on the classic assortment (similar to how we worked with *Indiana Jones*™, a Lucasfilm property).The biggest challenge on *Toy Story* was, I guess, deciding on the character direction and how exactly we were going to execute Woody™ and co, making them clearly identifiable as Disney/PIXAR characters while still retaining a LEGO identity.

With *Prince of Persia,* as with many of the live-action movies, we have a slightly different challenge in that the movie is being made at the same time we are developing products. From a production point of view, we have to finalize our retail assortment way before the movie is actually finished itself. So there is a lot of back and forth getting photos and reference material sent from the sets of the movie. The movies themselves are ever-evolving and slight changes are made here and there throughout filming and post-production… so it is about staying on top of all of this and getting the sets we make as close as we possibly can to what the final movie will look like. It is definitely a challenge, and we have to work fast but it is also an extremely exciting process to be involved in.





Making a Bullseye

Since Bullseye, Woody's horse , was a distinctive character, a distinctive design had to be created. The top graphic is a rough sketch of construction and color scheme. From there, models are sculpted and then digitized, as seen above. From there, prototypes are made and adjusted to make the finals, seen below.

Jessie

Jessie appeared in *Toy Story 2* and has a head sculpt (seen above) as well as longer minifigure arms and legs. The hat is part of the head, so unfortunately, it cannot be removed. The dots on the sculpts are for a 3-D scanner.

Woody

Woody is like Jessie, with a sculpted head (above) and the longer minifigure limbs. With the printing, Woody's figure becomes a very good likeness of the character.

In seeing the *Toy Story* minifigures, the arms and legs are longer than standard minifig arms and legs. What was the process behind changing the limbs and creating the heads, which are also different from minifig parts?
This has definitely been a big talking point internally, as there are so many pros and cons to whichever way we could have executed the *Toy Story* characters.
The standard LEGO minifigure is used to represent the LEGO form of any 'human being' character, whether it is a Fireman in City or *Indiana Jones*. If the character has real human proportions it is executed using the standard figure. With many of our IPs and some of our own lines we require characters that may have non-human shaped heads…. like some of the aliens from *Star Wars*™. Characters can also vary in scale like Yoda™ and the Ewoks™, where LEGO Group has used shorter legs (called stubbies by LEGO fans) to differentiate them in height from the regular characters.

Working with an animated property is very different to how we work with live action, as the characters themselves have such a strong and unique visual identity. It is easy to execute a LEGO minifigure to represent a human character — by giving a minifig a fedora, a whip and decorating him with the right clothes and colors, he automatically becomes Indiana Jones and you don't lose any appeal of the original character. It's a cute blocky version of Harrison Ford. However, with cartoon and animated characters, they already have exaggerated proportions, features and details which make them unique and gives them the character and the personality that makes people love them. If you take too much of this visual expression away, you can lose what makes them appealing in the first place.

We had to deliver products for two audiences with *Toy Story:* there are our loyal consumers, who love and buy LEGO products all the time and who like us executing things the way we do at present, and there is also a huge Disney/PIXAR fan base who love the movies and the characters, but may never have bought a LEGO product before. We of course want new kids and adults to give LEGO toys a go, and that is why we use IPs — they give us the opportunity to draw attention to our products and encourage new consumers to experience the brand. If someone loves a movie and sees a LEGO set based on it, they are more likely to try the set than

a traditional LEGO set. That's why we had to be so careful about striking a balance between original character appeal and LEGO identity. We are, of course, aware that we may risk falling between two chairs, and not pleasing either, but we feel we have done the right thing and are confident that we will get a good mix of LEGO fans and *Toy Story* fans buying and enjoying the products…..my fingers are crossed!

When deciding on the actual art direction of the characters we had to look at many different factors, firstly scale was a major factor! When you see the lineup of *Toy Story* characters there is a big difference in height between Woody and Buzz Lightyear, let alone before you start throwing Green Army Men into the mix too!

We looked into doing Woody as a regular minifigure, but his proportions really didn't work as he is so tall, gangly and floppy, his facial graphics also didn't work at all on a standard minifigure head size, as he has such a long head and a very dominant, pointy nose. When we made his head the right size, it completely dwarfed the standard minifigure body, so we looked into making him taller. When we embarked on this task we dug out all the different style LEGO characters that had ever been done in the past, some worked quite well (Hagrid™ from *Harry Potter™*) some clearly didn't work at all (Jack Stone™). Jack Stone was entirely preassembled which we didn't want, and his LEGO identity was quite weak as his legs and torso etc were all rounded off, with pockets added and he had no straight geometric lines. We decided that like with the minifigure short legs, we just wanted to extend the standard legs by one module, and lengthen the arms slightly retaining the same minifigure torso and straight sharp lines of the minifigure. This meant the body and legs would remain as close to the true LEGO identity as possible, giving us the some freedom with the characters heads, and facial expressions. With the heads we then worked on them case by case and with the core cast, Woody, Jessie and Buzz, we simplified their head shapes removing their lips, etc., giving us the opportunity to decorate different facial expressions on the same head.

Buzz Lightyear's body is using all existing minifigure body parts, with a detachable head, breast plate, helmet and individual wings. He was probably the most difficult character to execute as

Stinky Pete

Stinky Pete uses normal-sized minifigure arms, but shortened legs. His head sculpt is above.

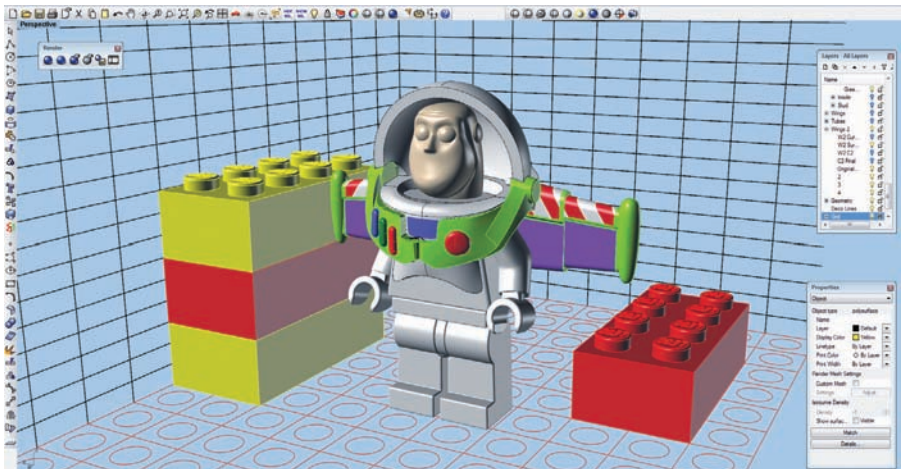
Little Green Alien

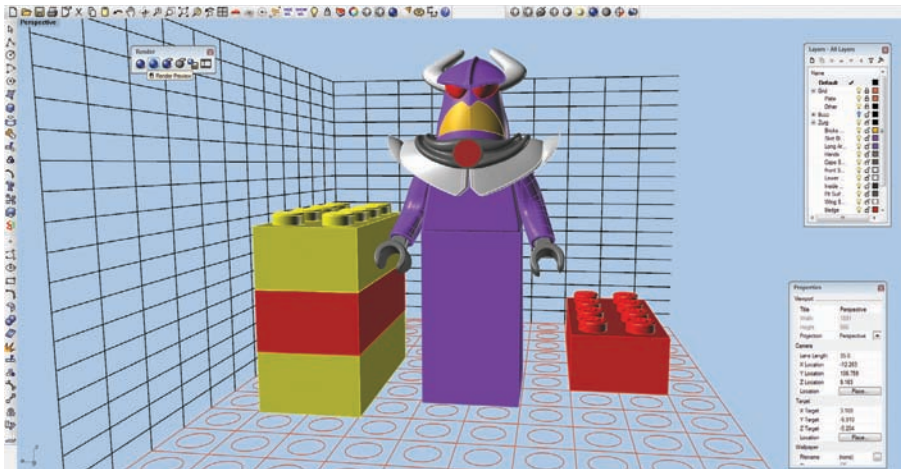
The aliens are perfectly captured in the head sculpt above and the minifigure. Again, the shortened legs are used.

Matthew Ashton speaking at Brickcon 2009, Seattle, Washington.

Hero and Villain

Final steps in creating a minifigure involve using computer renderings to make any final adjustments. Below you can see Buzz and Zurg onscreen and at the bottom, as produced.





there are so many components attached to him that all need to be engineered to fit him. Buzz Lightyear himself, is very different proportionally from the LEGO minifigure, as he is extremely top heavy with a huge chest compared to his lower body. We couldn't go as big as that as proportionally it didn't work on the minifigure and it also restricted the posability of Buzz Lightyear's arms too much.

What has been the most fun so far about the Disney/Pixar sets?
I think, as a team we have really enjoyed working on the new characters, it has been a lot of fun (and hard work) as it is something entirely different to anything we have really done before.

For me personally, being given the opportunity to visit PIXAR and to see the development of *Toy Story 3* as work in progress was amazing, and like a dream come true. I have experienced this on other properties we have worked on, but this was so special for me as I am a huge *Toy Story* fan.

What should we be looking forward to with the themes?
Oh, there is so much, and it will be different from consumer to consumer, and theme to theme .

With *Toy Story*, I guess there are some really simple things like the re-introduction of purple (thanks to the Evil Emperor Zurg™) is a bonus for a lot of adult fans. Also the Green Army Men, and the Aliens are perfect for army building and collecting. For Western fans, the Woody based sets could provide some bits and pieces that could inspire new buildings. And we have tried to use decos wherever we were able to, rather than too many stickers, so there are quite a few unique pieces in these sets.

With *Prince of Persia*, there is a lot of fun stuff that will really appeal to our adult fan consumer base. Firstly of course there are the new animals that are being introduced, the camel (in two colors), the super cute new ostrich,(yes I can't really believe it either….if you asked me a year or two ago. which animal do you think the LEGO Group would make next? I don't think an ostrich would have even been on the list….. This is just one of the nice things about IPs is you never know what is going to come up next), and there will also be a new Persian-decorated version of the LEGO horse. There are also some new building elements that we needed to give the models more of a Persian identity and a few new wigs and weapons, not to mention some fantastic new minifigures.

When should we be looking for the new movies?
Prince of Persia is out in the US on May 28th …. and is slated to be a big budget, epic, action packed Jerry Bruckheimer spectacular starring Jake Gyllenhaal, Ben Kingsley, Gemma Arterton and Alfred Molina (who will be executed for the 3rd time as a LEGO minifigure….beating Harrison Ford now!). You can see the trailer here
http://www.youtube.com/watch?v=Z8EA7EbFX4k
for a sneak peak at the movie and to give you a bit of a flavor of what the new LEGO sets contain.

Toy Story 3 is out in the US from June the 18th, and looks absolutely amazing! I saw the original animatic last year. On my way to PIXAR I was like, 'Please be good, please be good, don't let me down…. fingers crossed!,' my biggest fear being , like with many sequels it just wouldn't live up to the standard of the previous movies. Then Lee Unkrich, the director of Toy Story 3, took us through the whole movie, which at that stage was edited together in sketch form, with a mixture of pencil work, interjected with sequences of animation and rendered artwork… it blew me away! (I don't know how much of this I should be saying, because the last thing I want to do is overhype the movie!) I was supposed to have gone into this screening all cool, calm collected and professional because at that stage we were still negotiating the contract with Disney, but by the end of the movie I was literally sobbing (being the slightly emotional person I am)….OMG, that was awesome, we have got to do this!'

Toy Story 3 Trailer can also be seen on Disney.com
http://disney.go.com/toystory/#/videos/ts3_trailer

Animals, Animals, Animals

For the *Prince of Persia* sets, camels and ostriches were designed and produced. Here is a glance at the sculpts and final pieces.

Prince of Persia Peek

While the *Prince of Persia* sets are set to be released in Spring 2010, the minifigures from the upcoming sets have been shown in various events. Above is a look at a few of the figures coming!

LEGO® Model Builders and Disney: Character Building

Erik Varszegi is a Master Model Builder at the LEGO Group and has designed many different models used by the company for events and displays. For the past year, he has been working with the rest of the Model Building Team creating displays using Disney/Pixar characters. Here, he talks about not only the Buzz Lightyear and Woody display sculptures but some other Disney projects that were done.

"I'll have to say that the Buzz Lightyear model was one of the most enjoyable designs I've worked on in my 14 years with the LEGO Company. He's such a fun colorful character — 17 different LEGO colors to be precise. I was first asked to design and have him ready for the Licensing International Expo in Las Vegas back in June of 2009. It was there the new partnership between Disney and the LEGO Group was first widely publicly announced. And in fact, at the time, very few Disney execs knew that we were producing the model. We kind of wanted to surprise them with it. I hope they were happy with him.

I did have help from my new friends at Disney Consumer Products though. They set me up with the very same wireframe 3D models of Buzz Lightyear used to render the films. Except the 3D models were a bit too high-res... the first couple attempts to work with it in Maya and transform it using our BrickBuilder software crashed my workstation.

Article by Erik Varszegi and Dan Steininger

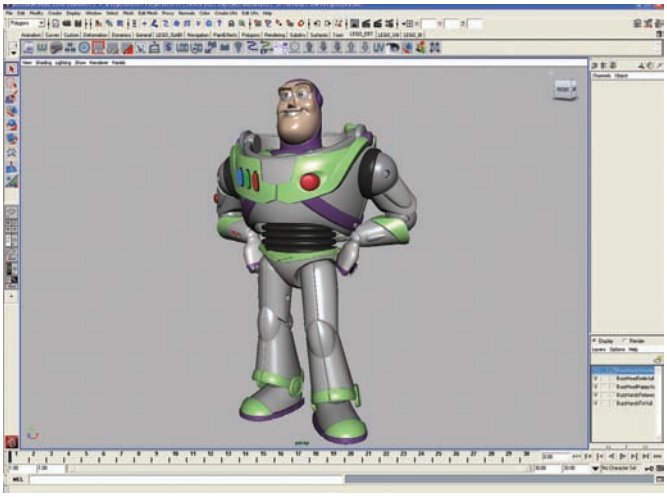
Photography courtesy of the LEGO Group, Dale E. Chasse, Jr., Erik Varszegi, and Joe Meno

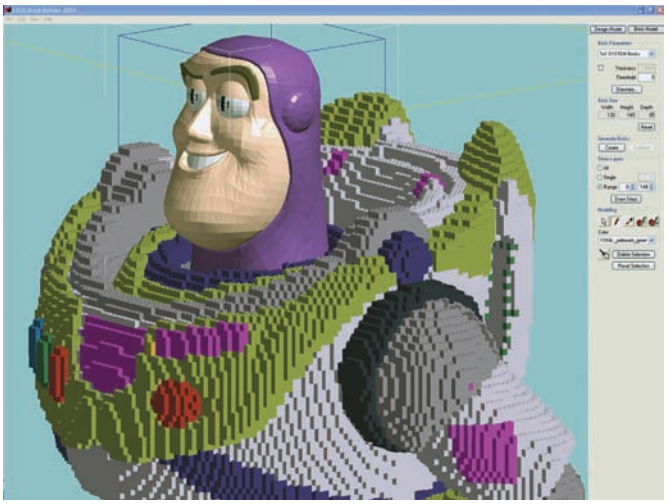
Above left: 3D renderings of Buzz Lightyear as seen onscreen.
Above: The model completed.

But the low-res file was of an unposed Buzz Lightyear, arms outstretched and staring straight ahead. It would take some work to make the 3D file suitable to import into LEGO's BrickBuilder software. First, I rewatched the film to get a sense of how he carried himself and try to bring out his over the top personality. I then added a virtual skeleton to him in Maya grouping all his joints together like a real toy. He was a lot simpler to work with than Woody as his shirt and pants were a mesh and took some time get him to bend the way I wanted realistically. Well... as realistically as a talking rag-doll can be.

The model's pose had to reflect the character yet be simple enough for us to produce in the tight deadline we had. The legs were bent just enough for a straight run of inch and a quarter steel tube needed for the armature. For more complex models we can weld the steel to accommodate whatever form we need. But as we would be building the model at the same time as our fabricator was welding the frame, we had to keep it simple. Also due to his massive shoulders and his hands being interlocked into his hip, his arms would be strong and not require the framework.

That decided, it was time to work in BrickBuilder. What that program does is to combine the 3D model with a gridwork of virtual 1x1 LEGO bricks or plates. Where they intersect is mapped out and a rough version of the model can be calculated. It's not perfect however, about 50 to 60 hours was needed to fix any holes in the model and tweak the colors. Scale also was a key factor. We needed Buzz "life-size" but as he would eventually be displayed with a Woody model that wasn't yet designed, we had to make sure they would be in proportion with each other. Woody, we decided, could only be about 6 and a half feet tall before the model would be too awkward for normal shipping. That meant Buzz would need to be 5 foot, 2 inches if they were going to work together.





The design phase finished it was time to pass the model on to the build team. BrickBuilder breaks the model down layer by layer kind of like a CT scan and the model builders can move on up the model fairly simply. Each Buzz takes about 200 man-hours to construct with his chest being particularly challenging due to the sheer size of his barrel chest and the multiple color changes.

We made the deadline and as stated above he made his Vegas premiere. Soon after he would also be seen in San Diego during Comic-Con and at the D23 Fan Expo (a new Disney fan convention) in Anaheim, California. Currently the Enfield model shop just finished our third Buzz model with 6 more being worked on. The model facilities in the Czech Republic are also building dozens of them at this writing.

Top: A reposed render of the model.
Center: A closeup on BrickBuilder.
Right: Erik working on Buzz Lightyear's head.

“Woody had his own challenges. Being such a skinny character it was difficult to figure out exactly how the steel frame would fit. We ended up with just a single rod running up the left leg and into the head, his right leg kind of wrapped around the other. If you look closely you can even spy Andy’s name written on the bottom of his boot.

Even though Woody is so much taller than Buzz we can finish him in just about 100 hours of building time. Woody was first seen in public during the 66th Venice Film Festival in September 2009.”

Working on Woody.

Above: Construction on Woody’s torso. The monitors show different layers on the model to build.

Woody’s head takes shape.

Adding the hat - unglued parts are used to support the hat as it is built. The support bar for the sculpture is also seen here.

Completed and together!

Mosaics: Painting by Brick

The LEGO Model Shop also did mosaics for events. However, they had a unique twist, as Erik describes.

"The "Mystery Mosaics" have been pretty popular and successful events this year. What we do is create an mosaic image often using computer programs to break down the artwork into pixels that closely match the LEGO pallet and then divided the larger image into 6x6 stud plates. We then ask percipients to fill in the colors, paint by numbers style, without them knowing what the final image will be. We then take those random finished plates and rearrange them on a pre-prepared baseplates.

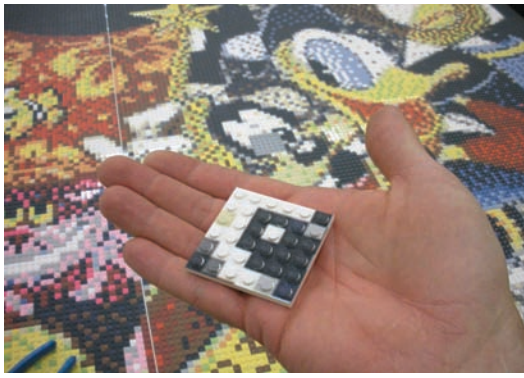
The concept was first developed for an internal company event back in late spring 2008 and we decided to further refine the process as an interactive BIONICLE themed building event for the 2009 San Diego Comic-Con. For that mosaic we had printed out a color guide and prepacked all the colors needed to fill a 6x6 plate. Everyone who stopped by our Comic-Con booth had a chance in helping out.

It was a pretty labor intensive process packing all those elements with the printed guides, so for D23 we tried to skip the middleman so to speak and try something new. What we did was to create the finished baseplates with the 6x6 plates already attached. We then ran those baseplates through a giant flat bed ink-jet printer at a off-site vendor. With the finished artwork now on the 6x6 white plates they were pulled off, marked with its coordinates and tossed in a box only to be reassembled in Anaheim.

We didn't know what to expect once we got to the Anaheim Convention Center as it was Disney's first fan expo but we knew we wanted to impress. Knowing it was a four day event we scaled the mosaic up on the larger size, 8 feet tall by 14 feet long to pace the event out. The image was inspired by the D23 Fan Expo key visual by Tim Rogersonn flanked by portraits of Walt Disney and a child meant to represent the youthful imagination in us all.

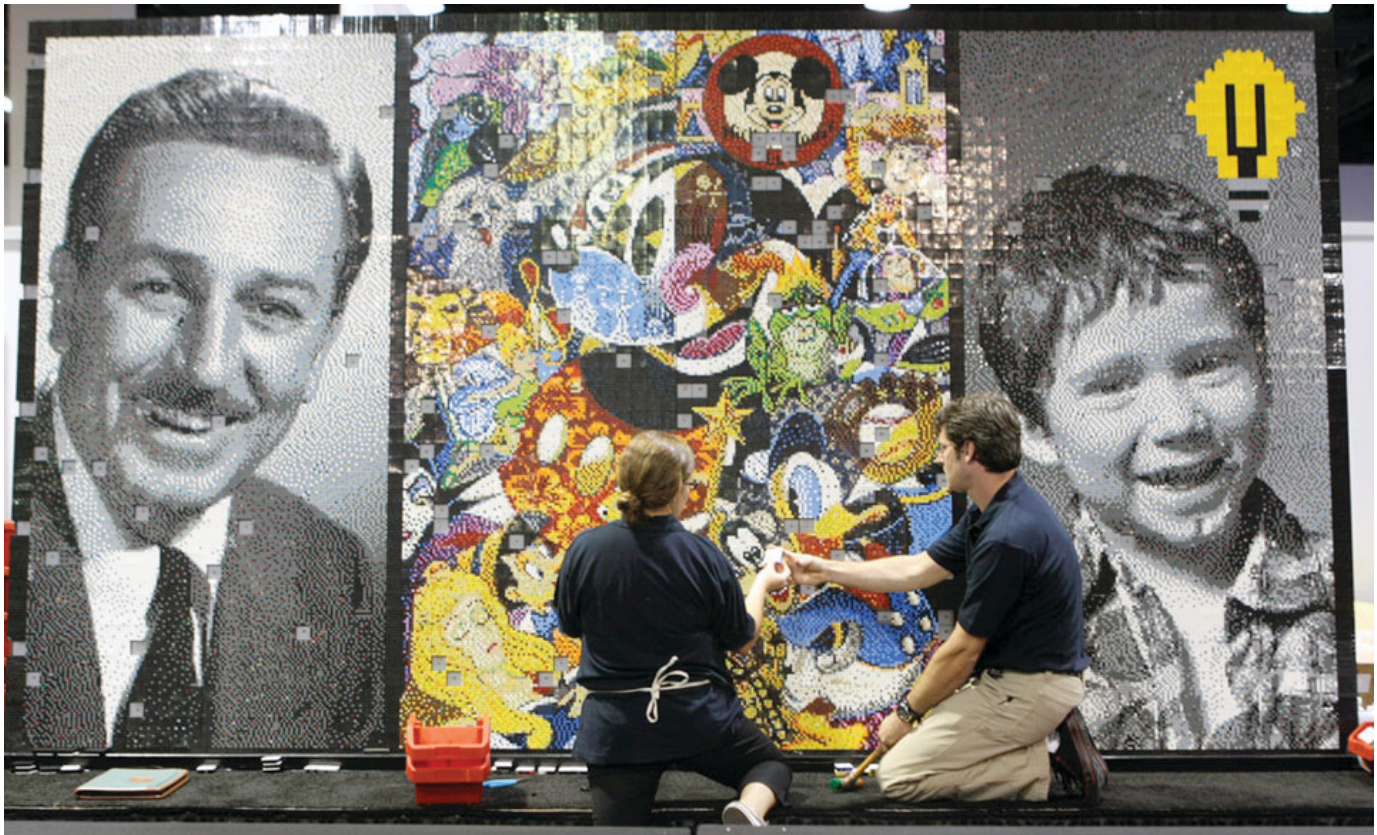
The full mosaic had a pallet of 19 different LEGO colors and was made up of something like 5,000 of the pre-printed plates. The full color image came out fantastic but the Black and white portrait of Walt was incredible. It sheer size meant the resolution would be very fine but I particularly like how it isn't a pure LEGO B&W mosaic. There's just enough Sand Green, Earth Green and Blue and Dark Reds in there to give it a bit of warmth."

Erik working on the D23 mosaic.



A closeup of one of the completed plates.

Below: The almost-completed mosaic.



“The Festival Of Masters *Toy Story* mosaic was actually first produced during a private Disney employee event in Burbank. But this one upped the color count with 22 colors. We unfortunately didn't have the time to finish it in Burbank so I'm glad to hear it was attempted again in Orlando.”

Bricks ready to be used.

Adding mosaic plates.

The mosaic completed!

A closeup of a mosaic plate, showing the color printing for reference. Some colors were tough to see - the other brown color shown is dark tan.

Building BIG

Dan Steininger is one of the LEGO Model Builders and can be seen most often at the LEGO building events around the USA. He was also the Master Builder that was at the Buzz Lightyear Build held in Orlando, Florida during the Festival of the Masters. Here he talks about his part in working on the project:

Dan (with the lab coat) with the finished Buzz Lightyear Event build.

"As for the 8-foot Buzz Lightyear Building event I project managed the process, originally I was pulling for a 10-foot model because the bigger the better, and because with bigger you can get more detail in the finished model because you are limited to the four times 2x4 bricks that were being built buy the many LEGO/Disney fans. Of course it was well into the design process and we even built a 30-inch prototype before Steve Gerling brought up the fact that a 10-foot Buzz Lightyear is humongous! We decided we would add a second Master Builder to the event but I still was uneasy because of Steve's concerns, lo and behold I had a LEGO epiphany: Model Builder Pete Donner and I were building last year's Festival of the Masters model the 8-foot pirate in a mall in NY, we were then asked to move the completed model up to the second level LEGO Brand Retail Store. We removed the Pirate hat which got us down two 7-foot along with the rolling platform that the model was built on, we needed to do this because we (thought) measured the lowest doorway between the building sight and the LEGO Brand Store on the second floor. So off we went up an evaluator down a hallway through doorways when it happened, we crashed the model into a lower than 7-foot doorway. There was Brickbeard (the Pirate) everywhere, on the rolling platform on the floor on us! Not a good thing — Dave from the store freaked out and Pete and I just shook our heads knowing that our long day and long weekend was now not near over.

It came to me like a bolt of lighting: 10-foot Buzz Lightyear = BAD IDEA! So I convinced all involved that 8-foot is plenty big for a touring building event that may be required to be on display in a small LEGO Brand Retail store. At 10', he would have been over 7-foot across at the elbows, so there would be no room for shoppers in the store. Bigger is not always better.

Some LEGO facts about the 8-foot Buzz Lightyear model The model was designed by a group Erik, Steve, Pete and even me. I built both prototypes and designed the rebuilt glued sections. The event ships on 3 pallets and he weighs in at around 8-900 lbs. Tim was my (great) assistant builder from the Orlando LEGO BR Store. I currently have the 30-inch tall prototype in my office. How big will we build Buzz Lightyear in the future? Who knows maybe to infinity and beyond…"

The LEGO Group

Twelve Questions:

Klaus Elias Nielsen,
LEGO Prototype Designer

Interview by Nina Chatelain
Photography by Mark Stafford

1. How long have you worked for The LEGO Group (and how long in the Prototype studio at the company)?
I was employed as a Prototype Designer (now called Prototype Engineer) in 1995, so going on fifteen years come January 2010. I started up in Copenhagen where they used to have the Duplo Development Department and I moved to Billund in 1999 when the department was moved to Billund.

2. How challenging was it to bring LEGO® identity to iconic Disney characters in a three-dimensional format?
It was very challenging to be a part of the first IP product the LEGO Group developed together with a partner. It was a challenge to meet the standards of Disney and the company at the same time. We were flown to Disney Paris to meet their chief designer to ensure that we captured the right expressions on the Winnie the Pooh characters. I personally worked on Eeyore and my two other colleagues worked on Tigger and Winnie the Pooh. The basic design developing process went on for about five months.

3. Can you describe some of the process to get from concept to the final figure?
First you draw on a grid to define the size of the figure and make sure that it can be moulded. Then you study the figure's expression and work that into the grid rendering. When we had all finalized the drawings, we made a presentation range of the various figures sized 1:1 for final approval from Disney. Once they approved them, we carved them in birchwood at three times the actual figure size. After that the figures were handed over to the part designers who digitized them and began working on the moulds. We had our moulds made in Switzerland when LEGO had their tool factory still located there.

4. Did you get to meet with representatives from Disney during the prototype process?
Yes, we met with their representatives in very beautiful locations in Paris, France.

Below: Figures designed by Nielsen, from left to right: Winnie the Pooh, Eeyore, and Tigger.

5. How was it working with Disney?
It was extremely exciting and we had to listen very carefully because it was the first time we had worked with partners on an IP product outside of the LEGO Group. We were under pressure to get a final approval from Disney so that we could get the project underway and bring the figures on the market on the agreed upon schedule. As soon as they saw we understood what they wanted, it didn't take long to get them to approve the figures.

6. How much time did you have to work on the prototypes before they went into production?
From what I recall it was about three months.

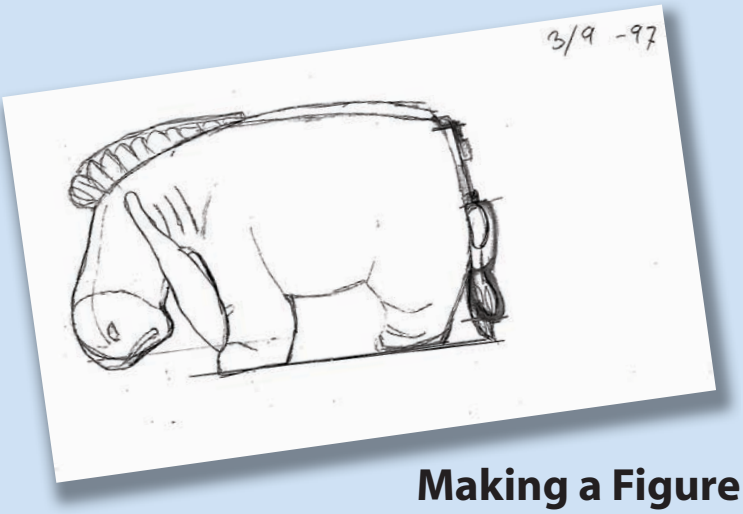
7. Since the sculpting was for Duplo are there any additional safety concerns you had to consider for the younger age group?
It is very important that we live up to our high safety standards, which meant that we had to make sure that the figures couldn't pass through the measure cup (an artificial esophagus, used to test choking hazards). We also had to make sure that none of the parts could break off of the figures and become smaller, easy to swallow parts.

8. Did you work from reference images, or some sort of style guide for the Disney characters?
There was a Disney style guide and then we received one photo of the original hand sculptured turnaround (a figure that is used as a reference when drawing animation - a maquette).

9. How does it feel bringing concepts to and from the sketchbook to life?
The process can be very frustrating at points, but very rewarding when you achieve the desired results. I think it is the same with regards to all creative process, where at some point you must accept that it is finished and you have done your best, even though you wish it could have been better. A healthy process is to leave the piece for a period to create some distance from it so that you

A minifigure leads a progression of Tiggers - from production figure in front to preproduction to prototype.

Pooh and friends with their prototypes.



Making a Figure

Designing a figure requires careful thought and planning. In Eeyore's case, a sketch was done by Nielsen to figure out a pose (above). After approvals, a prototype is made from which decisions are made on coloring and molding (below). Eeyore is a two-part figure, to take advantage of differently colored parts. Prototypes are made to a larger scale than the final (bottom and right) to work on details.

can objectively decide whether it is completed when you look at it again. I'm sure all creative people experience the process this way.

10. We've heard that there are some amazing machines in the prototyping area of the company, any chance you could describe a few of them and what they are used for?
We have two different types of 3D printers, a 3D scanner, the CNC (Computer Numerical Control) mill we use for milling out prototypes from the vacuform machine and our 3D printers. There is also a laser cutter and various types of traditional machines and tools. We work both on the computer and by hand.

11. Did you dream one day of working for the LEGO Company? Or was it something that took you by surprise?
I never dreamt of working for the LEGO Company, things just happened along the way. By luck I got a contact and found out that with my education it was possible for me to apply for a job here. After my first interview, I was employed as a prototype designer. I must admit, though, that LEGO was my favorite toy as a child, which I really reconnected with once I became employed here.

12. Of all the parts and projects you have helped to create at the LEGO Company can you pick a favorite?
It is difficult for me to pick one favorite, but my favorites are when I work in the front end groups because you are part of the process of inventing something new. I also like to work with free form—when you work with shapes, and I get excited by working on new technical inventions.

Thank you Klaus for taking time out of your very busy schedule for *BrickJournal*!

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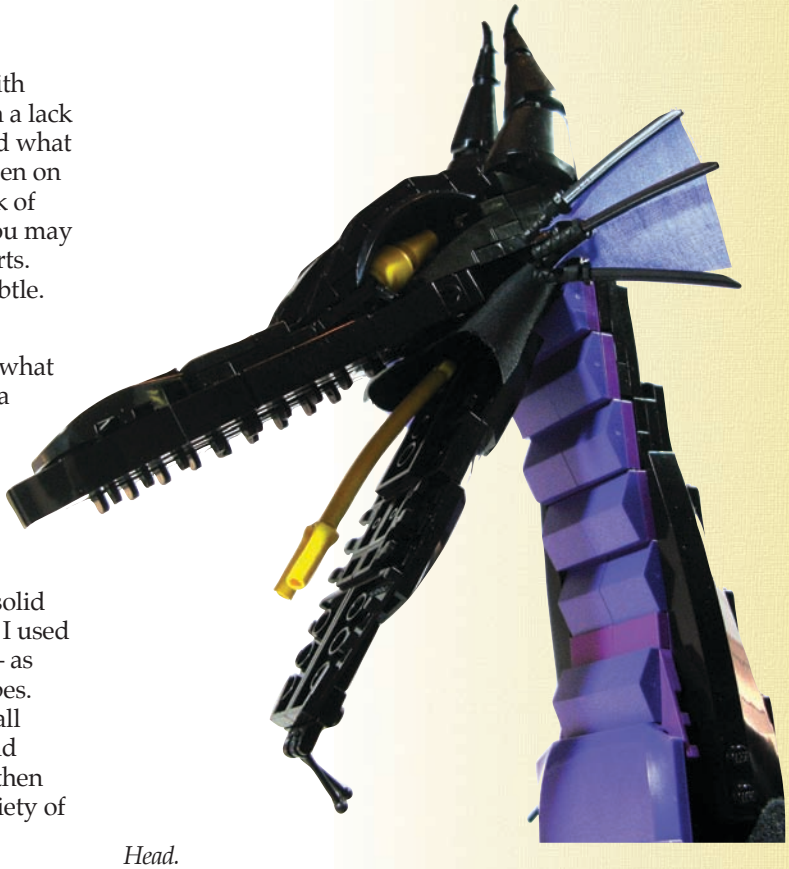
Maleficent!

She is cold. She is wicked. She is the Mistress of all Evil. I am, of course, speaking of Maleficent, from Walt Disney's Sleeping Beauty (1959). Her signature black and purple robe screams black magic, her horned headdress cries vice and her raven caws at her beckon. This shape-shifting fiend is not only the cause of Princess Aurora's fateful predicament in the tale, but also of Prince Philip's. Trapped in a dungeon of her lair, the noble prince escapes with the Good Fairies and heads toward King Stephan's Castle. But Maleficent is close behind – "A forest of thorns shall be his tomb; born through the skies on a fog of doom. Now go with a curse, and serve me well – 'round Stephan's Castle, cast thy spell!" But after her spell fails at halting our hero, she flies in disbelief to the gates of the castle. "No, it cannot be! Now shall you deal with me, O Prince, and all the powers of Hell!" She thunders into the sky in a blaze and emerges transformed – as a beastly fire-breathing dragon. A steedless Philip finds himself on a jagged cliff – a hard ground behind him, a hungry dragon in front of him. But with the help of the Good Fairies, Maleficent is outmatched – "Sword of Truth, fly swift and sure, that evil die and good endure!" The sword thrusts into her, and she tumbles over the cliff to the ground – dead.

Article and Photography by Jordan Schwartz

Before tackling this massive project, I was faced with two main challenges. My first issue was rooted in a lack of experience - I have never built a dragon before; and what (vaguely) similar creatures I have built have never been on such a scale. The second problem was the serious lack of elements in purple. In fact, if you have a good eye, you may notice a mixture of dark purple, purple and violet parts. Luckily, the difference between them is incredibly subtle.

I began with the most important section of her, and what I consider to be the focal point – her head. She has a distinctly shaped head – her upper-jaw is quite long, while her lower jaw is quite thin. Her upper jaw was built on its side; old-style finger hinges helped bring it to a point on the end. Meanwhile, the bottom jaw was built very carefully using many plates and cheese slopes (1 x 1 x 2/3 slopes) to keep it at the correct thickness. Her eyes were made from solid yellow minifigure heads with 1 x 1 cones on top, and I used one of my favorite parts – the new style mudguards – as eyelids, which were then covered in 1 x 4 curved slopes. My favorite details on the entire dragon were the small wing-like appendages on her face – I used katanas and capes (an unlikely but effective combination.) It was then topped off with her hallmark horns, built using a variety of cones connected with bent TECHNIC tubing.



Head.

Looking at the finished creation, I realize the level of detail I had to incorporate into the body to craft her shape accurately. Of course, because she is a dragon, her shape is curvaceous, bulgy and organic. So how do you build that out of generally square elements? I asked myself that before I began and brooded over it for quite some time before I discovered a plausible solution. I began by making the purple breast section and her black back (which were essentially mirror images of each other.) Each individual section of that was connected to the others with old-style finger hinges, and the two strands were held up from each other using a series of internal supports. To fill in the sides, because no properly shaped or sized wedges existed, I turned to something flexible that I could easily fold into the correct shape – capes! But not just any capes – I needed two from TECHNIC set #8010 Darth Vader. Who knew those would come in handy? After filling in the sides, I built the tail from bricks.

Body.

Next up were the arms and legs, which were also both brick-built. These were probably the simplest sections of the entire model; some of the more interesting parts usages included 10 x 10 round corner bricks as the upper thighs, and black new style mudguards as fingers. The legs had an articulated joint at the top of the foot, the arms could bend at the shoulder, elbow and wrist and each finger was articulated.

Arms and hands.

Wings.

The last features were the wings. These took the longest amount of time to get just right; unfortunately, no dark purple, purple or violet pieces of cloth existed in the element spectrum - so I turned to the large dark blue capes found in set #8701 King Jayko. These were folded into the correct shape and connected to the wings using mechanical claw clips. It was purely coincidental that I ended up relying so heavily on capes – but if an element works, I use it! (Forget not that I only use official parts.) Overall, considering the lack of large cloth elements, my design worked quite well.

Naturally, she is a fragile MOC, but a great display piece. Maleficent is arguably the most recognizable Disney villain (and definitely the most evil), so it was high-time she was realized in LEGO. So now she stands – a plastic reincarnation of the full might of the powers of Hell, frozen in time, never able to vanquish the little plastic prince. It is the epitome of the message that despite size, power and clout, good always conquers evil.

Jordan Schwartz is also known as Sir Nadroj and can be found on Flickr at: http://www.flickr.com/photos/sirnadroj/

and on Brickshelf at: http://www.brickshelf.com/cgi-bin/gallery.cgi?m=sirnadroj

His website is: http://www.brickstud.com/home.html

The final confrontation between Prince Phillip and Maleficent.

Tale as old as Time...

Interview by Joe Meno

Photography by Na Kyoung-bae

In early 2009, a model appeared online based on the ballroom scene from Beauty and the Beast. *While the building skill alone was noteworthy, what really made the model special was that it incorporated both movement and sound by having a music box inside it!* BrickJournal *spoke with the builder of this model.*

Belle in her ballroom gown.

Introduce yourself. What do you do?
I am Na Kyoung-bae, male, in South Korea. I post my LEGO creations on brickshelf by the ID of edulyoung. Recently I started to build LEGO as a job in a office with my friends. We make LEGO dioramas exhibited at LEGO shops or fairs for promotional use. (http://www.brickshelf.com/cgi-bin/gallery.cgi?f=405703)

When did you start building? Did you stop building (have a Dark Age) at any time?
I began LEGO building at the age of 10 (about 20 years ago). 6659 was my first set.Then I went into my Dark Ages after 2 or 3 years without any particular reasons, just like many people do. I got into LEGO again in winter 2005.

What got you interested in Disney? How long have you been a Disney fan?
I love Disney's *Little Mermaid, Aladdin, Lion King* and *Beauty and the Beast*. I have been a fan since they came out. Their soundtracks were awesome. Listening to the original soundtrack tapes over and over, I sang along and memorized the lyrics.

I watched them numerous times on videocassette of course.

The heroines' beauty and their wonderful voices were dazzling enough to captivate a teenage boy. And stories were all so romantic and always had a happy ending. I like happy endings.

What inspired you to build a *Beauty and the Beast* music box?
Maybe the fact that I am not married and feel the need for romance made me take something romantic as a theme. Music boxes are very romantic objects, so I thought they could be a good match for the characters of *Beauty and the Beast*.

The enchanted rose and magic mirror.

What was the hardest part of the model?
The hardest part was the music box itself. It was not easy to find a music box which plays *Beauty and the Beast's* main theme around here. Searching streets for about a month, I finally found one out of a broken egg artpiece.

How long did it take to complete?
I remember the actual building took about 2 or 3 days. However, I had to spend a month and a half searching for a proper music box and waiting for the ordered parts to arrive.

What else have you done?
I made several sculptures like Pegasus, Vader, Robot Taekwon V and Ford Model T, and small scenes like Shrine and Secret Scent. S#9 and YunaKim are mini figures. YunaKim is mainly made out of LEGO tubes, but I think the empty space of photo is more important than the object itself.

You can see them on Brickshelf.
(http://www.brickshelf.com/cgi-bin/gallery.cgi?m=edulyoung)

What are you working on now?
I'm designing small or mid-size animals. We are planning to compile them into a book.

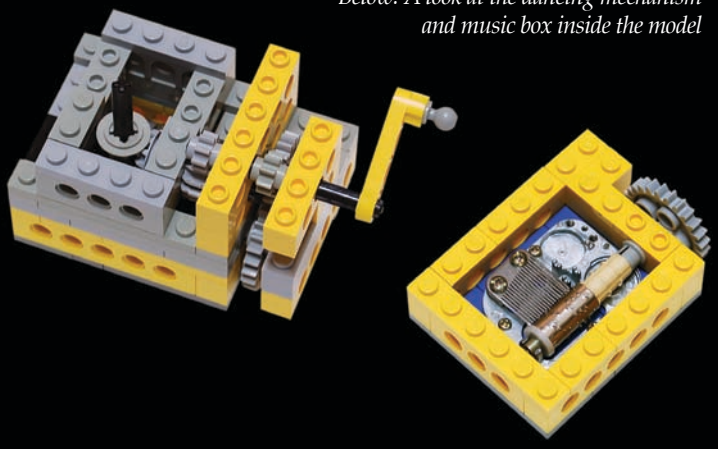
A look at the model without the figures.

Beast dressed for the dance.

Left to right: Lumiere, Cogsworth, Chip and Mrs. Potts.

Above: A look at the side of the model where the music box crank is located.

Below: A look at the dancing mechanism and music box inside the model



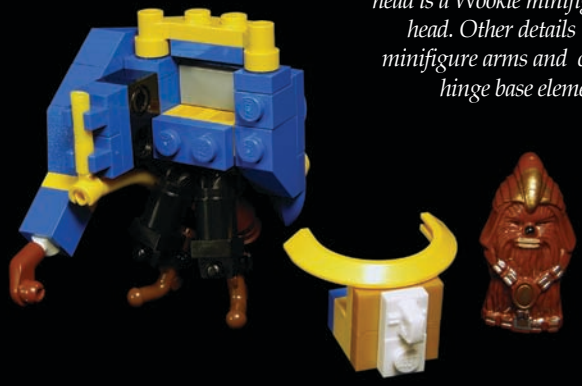
What do you want to eventually build?
Everytime I finish a work, I feel something lacking and try to find out what it is. In asking me what I want to eventually build, I only wish my next creation could be the one that fills that need.

Favorite theme?
Making sculptures is my favorite. I'd like to make a sculpture with lyrical coloring.

Looking forward to the LEGO Disney sets?
Sure! I saw the LEGO Toy Story sets on the internet. Their minifigures looked very cool. If the Disney sets come out with such nice figures, I will get some and display them on my desk.

Lumiere construction details. His flames are jewels placed on top of the candles. Flex tube is used for his arms pneumatic tubing is used to keep his arms in place.

Beast construction details. His head is a Wookie minifigure head. Other details use minifigure arms and clock hinge base elements.



Cogsworth construction details. The arms are held in place with pneumatic tubing. The tubing also provides a place to attach his clock face/. Eyebrows are made with brown minifig arms and a hinge part.

Belle construction details. Her gown is made of minifigure arms., and her head is a control lever base. Other parts include yellow flex tube and for the waist, a yellow flower.

Mrs. Potts construction details. Most of her parts are dish elements, with flex tube to connect them. Flex tube is also used to keep the arms in place.

Walt Disney World®: The Brick Tour!

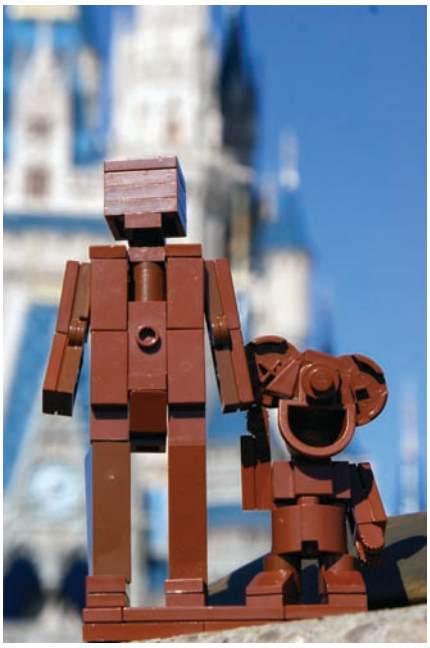
BrickJournal's *editor and one of its writers build their favorite icons at the resort!*

Articles by Jordan Schwartz and Joe Meno

Photography by Joe Meno

Cinderella Castle by Jordan Schwartz

This fantasy castle is probably the most iconic structure in all of Walt Disney World. Its complex design and ornate features posed a challenge when translating it in this mini form. The MOC was built in two major sections – the bottom "stone" base and the white "plaster" top. The bottom's outer wall is built with finger hinges, while TECHNIC connectors with wheels on top serve as turrets. The rest of it is built in a basic, studs-up fashion. Although it would be almost impossible to replicate Cinderella's Castle perfectly in LEGO at this scale, all of the distinct features are there – from the blue roofs to the golden spire, this castle is fit for royalty!



Partners
by Jordan Schwartz

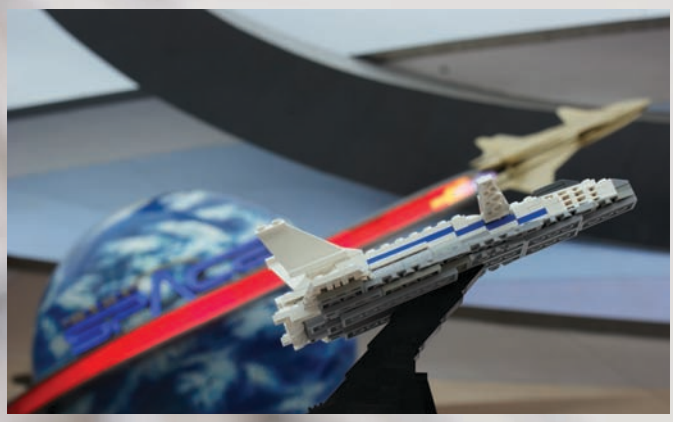
Definitely my favorite creation of the group, *Partners* is a beautiful tribute to Walt Disney and his prominent little friend. This is my first serious miniland scale creation, so naturally it was a lot of fun to build. Although the Walt figure looks fairly simple, he is actually an intricate system of headlight bricks and tiles. But even more complicated than Walt is Mickey! His body was simple to construct, but his head posed some issues. Ultimately, I found that a D-Basket (part# 4523) makes a nice, ebullient mouth, so that is what I went with. This little MOC is my tribute to the most famous man and mouse duo ever!

Pirates of the Caribbean®
by Jordan Schwartz

"Scuttle ye old cockroach! Where be the treasure!?" On "Pirates of the Caribbean", as we pass through the pillaged town's center square, we spy Carlos, the town's mayor, being interrogated on the treasures' whereabouts. I would say the pirates have the upper hand! The well itself was simple to build, but it was the minifigures that were the most important things for me to match. In the attraction, the animatronic figures, with all their personality, truly make the ride memorable Just like any other LEGO creation, it is almost impossible to match people perfectly, but I feel I was able to construct the figures and the base as true to the original as possible.

Splash Mountain®
by Jordan Schwartz

"How do you do? Mighty pleased to meet you! Pretty good sure as you're born!" Because Splash Mountain is my favorite attraction at the Magic Kingdom®, I just had to try and build it! Of this group of MOCs, it is by far my most complex. The most difficult element to match was the color scheme – I used browns, grays, greens and tans. Besides this, the other challenge was the mill, which I feel came out really very quaintly! In the end, I can just picture a tiny Br'er Rabbit, Fox and Bear running all over my little Chick-A-Pin Hill!



Ride Vehicles: Mission: Space® X-2 by Joe Meno

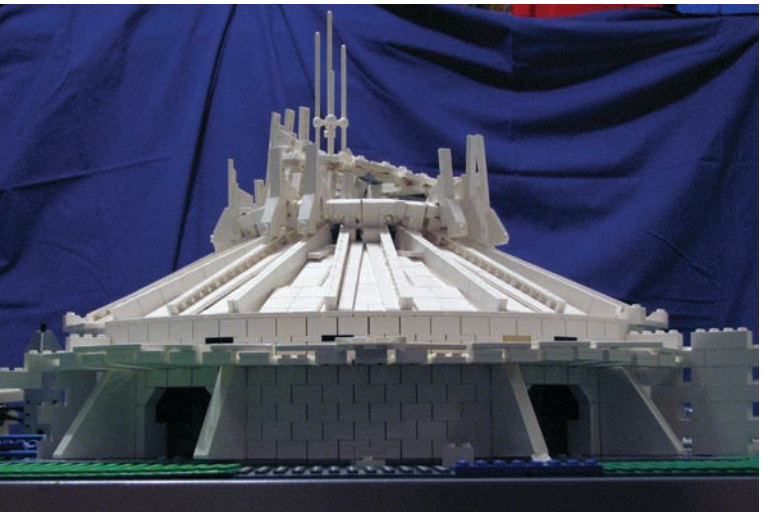
This was an easy ride to single out, since it had a spaceship - I like building those! This was a fairly easy build, with a couple of SNOT tricks to make the nozzles and trapping the forward wing plates to make canards - the canard bases are not attached, but held in place by tension. The base has a hinge on the top so the ship is set on an angle.

Dinosaur CTX Time Rover by Joe Meno

The Time Rover has been a favorite vehicle of mine since the ride was first opened. Building it was a challenge, though, because the rover is really big for its scale. To make things more interesting, the width of the rover measured out to seven studs, a dimension that is not easy to work with. Using a Time rover toy car from the attraction, I was able to make an accurate model. The scale, however, is smaller than minifigure scale.

Rock n' Roller Coaster® Stretch Limo by Joe Meno

My favorite ride at Walt Disney World® is this one, hands down! This model is NOT an accurate model at all, since the vehicle is actually a 'stretch' train of roller coaster cars. Again, I used a toy of the attraction to build a model - the toy had the rear wheel skirts and stylized car body I wanted to make for the retro-looking ride vehicle. The base uses click joints to position the car at almost any angle.



Some views of the completed Space Mountain.

Scott Lyttle: Space Mountain®, Jessica Rabbit, Tinker Bell, and Mickey Mouse®

Article by Scott Lyttle
Photography by Scott Lyttle and Joe Meno

My part of the layout for the NMRA 2008 convention was to make Space Mountain® from LEGO elements. The main challenge was how to represent this round and angular building out of LEGO bricks. Looking at pictures and overhead images, I broke Space Mountain into separate challenges: Step 1 would be the ring, establishing its overall round base. Step 2 would be how to get the angles of the exterior correct, step 3 would be top of the structure.

Step 1 uses the technique of utilizing only 1x2 bricks/plates. When connecting only 1x2 elements in a line, the multiple small gaps between the elements has a domino effect, and allows you to make a curved shape. Around 72 bricks per layer works well if using a standard 48x48 stud gray baseplate.

Step 2 involved some experimentation, and was the biggest hurdle in the project. I used the old finger hinges were prevalent in the mid '80s to late '90s, now out of production. One of these elements was a 1x2 plate with a finger hinge attachment. This fit into the round ring well, and would be the attachment point for the angled roof. After some trial and error, I determined the roof could be made of "spines" that would lean against an internal central column. Space Mountain has 36 spines, but after some fitting, I found that was too many to work in such a space, and reduced them to 24 spines. While building these, I quickly discovered that I wasn't able to make multiple copies of a single insert plate that fit between the spines, as they were being pushed apart at the top. The solution I discovered was to use two different inserts. One insert used a matching pair of 3x16 wings, while the second insert was a row of 2x2 tiles, with the bottom being 4 studs wide. The second insert posed a problem, as long triangular gaps could be seen. Simply laying white tiles over the gaps managed to successfully cover the holes.

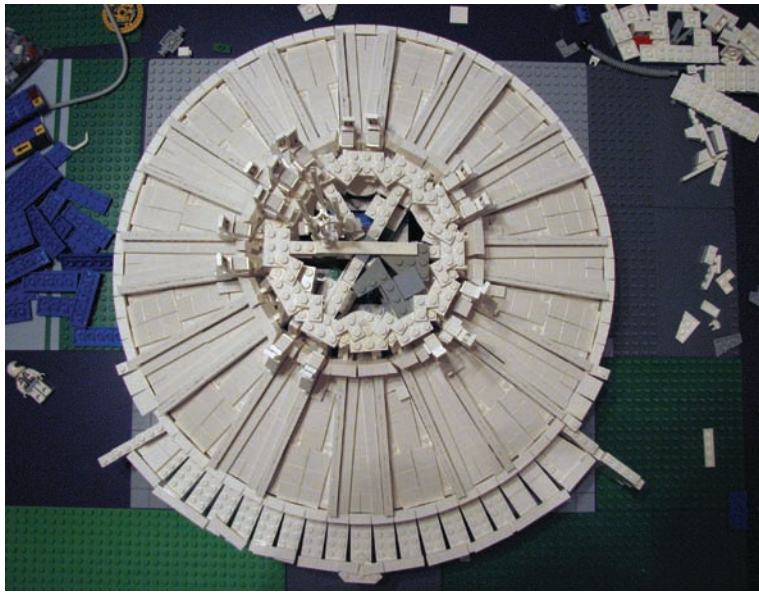
Step 3 involved the top of the structure. As the spines rested against the central column, I determined that I would be able to build up the end of the spines and use them to create the upper "ring" appearance, which became a mounting point for the small spires on the primary ring. Again, this took a lot of trial and error, but I was able to build something approximating the real thing. I was able

to make the small spires fit on the ring, and for the top ring, I used plates, using opposite corners of the 2x2 plate as pivot points to create a ring-shape. As the upper ring is on an angle, I simply used a hinge brick as a rest, so the ring would sit at an angle. From there, I was able to use boat antenna elements to create the top spire on Space Mountain. The net result was a very nice looking, albeit very fragile creation. At the end of NMRA 2008, Space Mountain was disassembled, never to be seen again.

For my Jessica Rabbit, Tinker Bell, and Mickey Mouse mosaics, I utilized a cross stitch program called "PC Stitch" by STOIK Imaging. In this specific program, there are two key settings that allow you to make a LEGO mosaic. The first setting is called "color blocks". The image on screen matches a mosaic perfectly. The second setting allows you to adjust the size of the blocks. A 32x32 stud baseplate is essentially 10 inches, so dividing 32 studs by 10 inches gives you 3.2 studs per inch. Adjust this to 3 blocks per inch, and you are very close. Then, find an image you like, and import it into the program. For Jessica Rabbit, I used "Toon Town Couture" by artist Mike Kungl, and for Tinkerbell, I used "Flirty Fairy" by artist Trevor Carlton. Mickey Mouse's face was taken from a Disneyland park Guide that I found online. I would say that of the three, Tinkerbell has received the most admiration. One key thing I found with mosaics—the simpler your image, the better it will work.

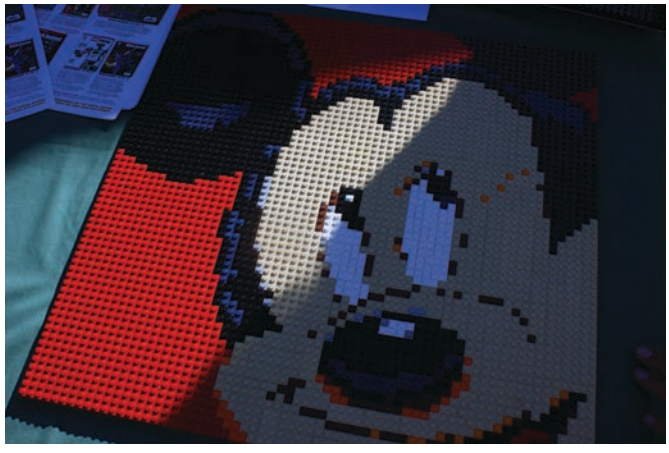
Jessica Rabbit (left) and Tinkerbell on display at Festival of the Masters 2009 in Downtown Disney, Orlando Florida.

Above: Space Mountain was part of a Tomorrowland layout built by Scott. You can see a Rocket Rod on the track.



Above: A top view of the model, showing the insert plates and spines.

Below: Mickey Mouse peeks out of his mosaic.



Walt Disney World's Main Street Train station, displayed at Festival of the Masters 2008.

Robin Werner: Building Walt Disney World®'s Main Street

Article and Photography by Joe Meno

Introduce yourself. What do you do?
My name is Robin Werner; I am a former mechanical designer now working information solutions for a large military contractor in Florida. As a side job, I am one of four co-owner of Brick Replicas Inc. and I'm also the President of train show operations and web master for the Greater Florida LEGO Users Group and Train Club (GFLUG/GFLTC).

When did you start building? Did you stop building (have a dark age) at any time?
It all started on my fourth birthday when my grandmother gave me my first LEGO set (#180 4.5V train set) I have been building off and on since them without a real dark age to speak of.

What got you interested in Disney?
Growing up in southern California, I made many trips as a child to Disneyland with family and friends. My fondest memories were riding the train around the park and Space Mountain when it first opened.

How long have you been a Disney fan?
Basically all my life, I don't remember living without Disney.

What inspired you to begin building the WDW train station?
Greater Florida LEGO Users Group was invited to display at the Florida Disneyana Fan Convention near Disney World. The group basically started claiming parts of the Magic Kingdom, so I took point and grabbed the front of the park.

What has been the hardest part of building?
When it was decided that we would be display the Magic Kingdom at the NMRA National Train Show in Anaheim, California, I needed the model to be somewhat portable and we needed the park to be at a scale that would be manageable for all. So capturing the detail and character of building in brick was the hardest for me.

What has been the best part of building the layout?
The teamwork and fun displaying it with other adult fans, but more so the excitement and enjoyment of the public viewing it.

How long did it take to complete?
It took many months of planning; sourcing parts and of course building, there is at least 80 hours of work to construct.

What other models have you done?
For the Magic Kingdom display, I also built the streets and park squares for Main Street with the *Partners* statue. Plus the monorail which still needs a lot of work.

What are you working on now?
I am working on the Town Hall and Fire House for Main Street. And if that goes well I will start work on a new Space Mountain, since the one built by Scott Lyttle was dismantled.

What do you want to eventually build?
I would like to expand out of the main gate and build the Magic Kingdom monorail station and the Contemporary Resort.

Favorite theme?
Train and Town of course...

Looking forward to the LEGO Brand Disney sets?
Yes, especially the *Toy Story* line.

Bird's eye view showing landscaping

A look at the back of the station.

Another look at the back.

Steven's Main Street Square layout, complete with Disneyland band,

Steven Walker: Building Disneyland® Brick by Brick

Interview by Joe Meno

Photography by Steven Walker and Joe Meno

The Disneyland Emporium.

Introduce yourself. What do you do?
My name is Steven Walker. I am a software test engineer for a large computer conglomerate.

When did you start building? Did you stop building (have a dark age) at any time?
I received my first set from my grandpa. It was set 360 Gravel Quarry, followed a year later with 367 Space Module with Astronauts. I have been collecting sets ever since. I never had a true dark age, but I did have a dim time after college for about 5 years. Moving into a new house with more space enabled me to have building space again and come out of this dim time.

What got you interested in Disney?
I am not sure if there was a time that I was not interested in Disney. My earliest Disney memories was of watching *The Jungle Book* at a drive-in movie theater in the early 70's. As new or re-released Disney animated movies came out we always went to see them. My interest in Disney increased in 1984 when we went to Disneyland over Christmas break.

How long have you been a Disney fan?
Since the early '70s.

What inspired you to begin building Disneyland?
After going to Disneyland in spring break my sophomore year of college, I built my first Disneyland attempt. It was restricted to a 4x7 drafting table and contained small representations of the monorail station, the train surrounding the park, parts of main street and a small version of Sleeping Beauty Castle. At that point I made it a dream to build Disneyland in minifig scale.

What has been the hardest part of building so far?
The hardest part has been getting bricks in the correct color. I have an average collection, but not large numbers of any one color or brick. So I have spent lots of time and money on Brick-link to finish a building or a train car.

What has been the best part of building the layout?
When it is on display, seeing the expression of the Disney fans who realize what they are looking buildings from Disneyland.

How long did it take to complete?
I currently have over 3.5 years into the current Disney buildings.

What other models have you done?
The buildings of Disneyland include the Main Street Station, City Hall with the Guided Tour and Fire Station, the Opera house with the Bank of Main Street and Mad Hatter, the Haunted Mansion, Mickey's house from Mickey's Toon Town, and the most recently, the Disneyland Emporium.

Outside of the Disneyland buildings, I contribute vehicles and bridges to the Puget Sound LEGO Train Club displays. I have done a number of amusement park rides in minifig scale. The best of these was a 3 foot Ferris wheel and a static Wild Mouse roller coaster.

What are you working on now?
Disneyland trains. As I build the Disneyland railroad system, I am looking at a variety of methods to power the 3 different types of trains in the park. I have built 2 different 4-4-0 engines, 1 with the older 9V motor in the tender, and a second with Power Function driving the engine. The more challenging engines are the 2-4-4 Forney-style locomotives as the tender is attached to the engine, making space for batteries or motors the fun of the challenge.

What do you want to eventually build?
The big challenges are the Disney mountains (Splash Mountain, Matterhorn, Space Mountain and Big Thunder Mountain Railroad) and Sleeping Beauty Castle. If I can get a hold of the pieces, the Matterhorn would be my first choice.

Favorite theme?
I tend to look at sets for their pieces. But to pick a theme from LEGO it would be the Cafe Corner series. The details and pieces that come in the sets are great.

Looking forward to the LEGO Brand Disney sets?
I am looking forward to the LEGO Disney sets. The *Toy Story* minifigs will be great for my layout. I have only seen the figures from *Prince of Persia* so I can only hope the sets look as great as the figures. I am more excited about the potential for future sets. I can imagine that *Pirates of the Caribbean 4* could be the next Pirates sets or *Cars 2* in mini-fig scale instead of DUPLO, or even a Model Team version of Mater or McQueen. Hmm, that gives me an idea of my next build...

Above: Town Hall.
Below: Mickey and Minnie's house in Toontown.

The Disneyland Firehouse, with Walt Disney's apartment above.

The Haunted Mansion.

All Aboard the Wildest Ride in the Wilderness!

Article and Photography by Joe Meno

"Howdy Partners. For your safety, remain seated with your hands, arms, feet, and legs inside the train and be sure to watch your kids. If any of you folks are wearing hats or glasses, best remove em' cause this here is the wildest ride in the wilderness!"

— Big Thunder Mountain Safety Spiel

Big Thunder Mountain at Walt Disney World.

You can tell Peter Wanaski is a Disney fan. At his apartment in Orlando, where he works at the Walt Disney World Resort, he has shelves of Disney memorabilia. From figures from the Haunted Mansion to collector pin sets, he has an enviable collection for anyone that follows Disney.

But looking closer you discover something else. The large model of Nemo from *Finding Nemo* is built with LEGO bricks! The large figure in the corner with the mouse ears is a large LEGO minifigure, also built with LEGO elements - including the mouse ears! And what are the models on? Extra large LEGO bricks!

As a former attraction host for Big Thunder Mountain Railroad, it was only a matter of time before he began building a model of the beloved ride. Since 2007, Peter has built the ride boarding area and queue, and the result is a wonderfully detailed model.

Details include the areas not normally seen by riders, such as the breakroom and control room. Other things can be seen too, which would only happen with a LEGO layout - Indy and Marion taking the Ark of the Covenant to the ride, for example., or a Jawa from *Star Wars* getting his height checked for the ride.

For Peter, this has been a labor of love. His coworkers are also in the layout, with the Big Thunder Cast Member (staff) costumes painted on the minifigures. A working detail are the ride gates - some have been geared to open simultaneously, like the actual ride gates!

The ride train has also been replicated. Two of the engines have been built so far, but he plans to have then all completed. Ultimately, Peter wants to build the entire ride, but it will take some time and space - this layout already covers his dining room table, and it still has the entrance building to be completed!

He takes this in stride, though. The model may take a while to build, but it will be worth it. While he has built smaller LEGO creations, Big Thunder Mountain Railroad will be a very unique and special addition to his collection.

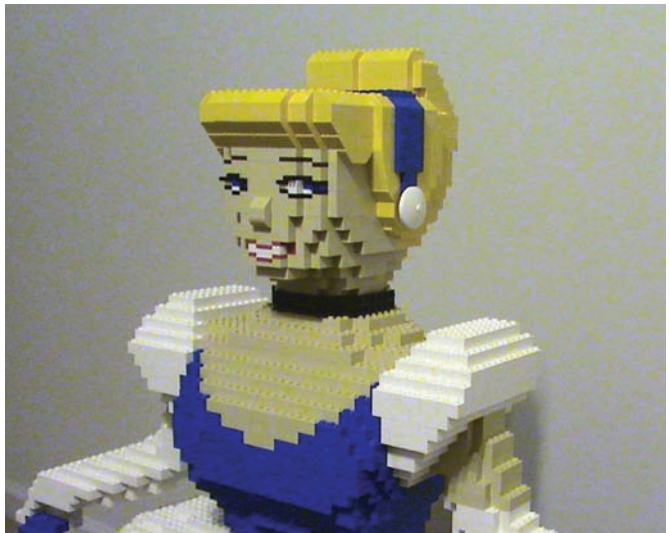
Cinderella

Sculpting a figure, especially with basic bricks, is a challenge. Here's an example of one builder's version of a Disney princess!

Article and Photography by Mark Staffa

My model of Cinderella was one of my first large-scale sculptures. When I was looking for an idea of what to build, a friend of mine had a large collection of *Cinderella* memorabilia: plates, porcelain statues, etc. After looking, I found what seemed like a good idea to build. Cinderella's color in her ball gown matched well to colors widely available in LEGO bricks, with her blue dress with white trim, yellow hair and tan skin all translating well.

I started the build with the face and hair. I wanted to begin here because this is where most of the smaller detail is and would need the most attention. I didn't have an overall final size in mind, only to keep it smaller than life size. Once I finished the face and hair, I used this to set the scale for the rest of the model. I continued to build the rest of the model from the neck down. The shoulders and torso went pretty quick. Once I started the remainder of the dress from the waist down, I ran into some difficulty. There were about three or four almost complete rebuilds of this portion of the dress until I was satisfied with the end result.



Gallery:

Disney and BIONICLE® = Disneyonicle

by Matt Armstrong

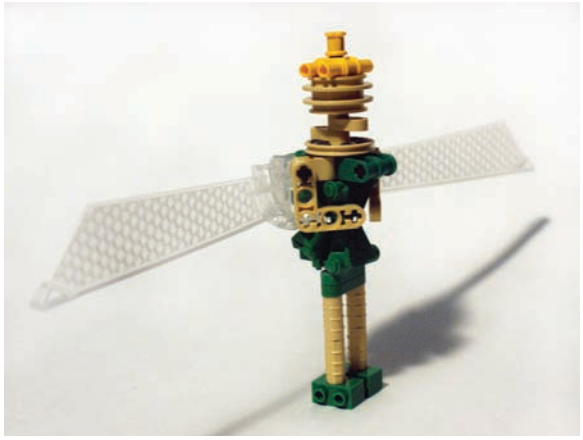
Article and Photography by Joe Meno

Mickey Mouse.

Matt Armstrong is one of the more prolific builders in the community and also one of the most creative. A more recent foray into building with BIONICLE parts resulted in Matt building Disney characters. Along with the Fab Five (Mickey Mouse, Minnie Mouse, Donald Duck, Goofy and Pluto), he has built LEGO versions of Pinocchio, Genie from *Aladdin*, Zero and Jack Skellington from *The Nightmare Before Christmas*, and other characters.

This is only a small sample of Matt's work. You can find these creations and more at his Flickr gallery:
http://www.flickr.com/photos/monsterbrick

Tinker Bell.



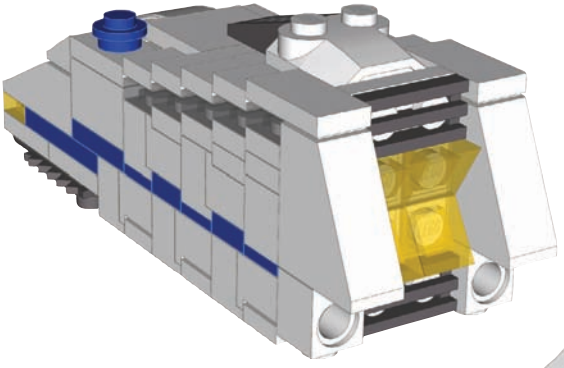
Mickey and Minnie.

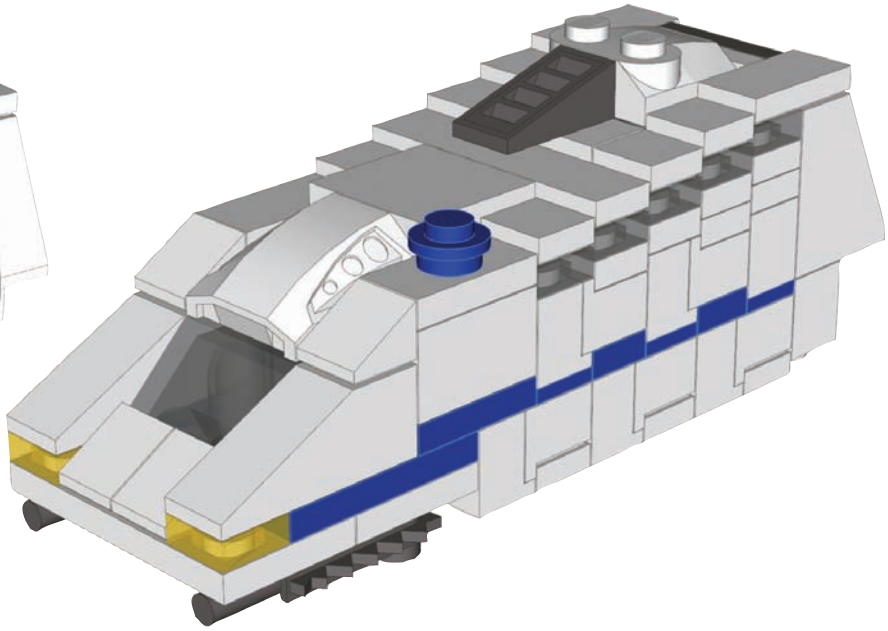
Donald Duck.

Pluto.

Goofy.

Star Tours Starspeeder 3000





Design and Instructions
by Christopher Deck

Hello and welcome back for another MINI model building session in this issue of *BrickJournal*. This time the issue's general theme is Disney which offers almost infinite building possibilities.

Those of you who already visited one of the Disney theme parks located all around the world most probably will know Star Tours, a simulator ride attraction based on the *Star Wars* universe. The tour takes place in the well-known StarSpeeder 3000, the standard transport vessel of the Star Tours agency able to carry up to forty passengers. Besides that, Star Tours and the StarSpeeder 3000 also appear in several sources of the *Star Wars* Expanded Universe so that even those who never visited a Disney park but are interested in *Star Wars* might know it.

In this issue, I'd like to present a MINI model of the Star Tours StarSpeeder 3000 to you which allows me to bridge the gap between the world of Disney and the *Star Wars* Universe.

When you look at the StarSpeeder 3000 it basically looks like a simple trapezoid, but when you take a closer look, it will reveal some pretty challenging details. The cockpit, for example, is embedded more deeply in the sloped hull frame than the surface. Then you will recognize five doors on each side, each of which has a small window on top. With each of the passenger doors the height of the transport increases by one small step.

The bricked version presented to you below features all these details beginning with the accurate cockpit construction, weapon emplacements, astromech droid, maneuvering fin, detailed engine block, and a stepwise increase of the main body. Realizing those five little steps was the toughest part while building this ship. With normal plate heights for each of the steps it would have grown far too tall. Thus there had to be half plate heights for them which resulted in a quite complicated construction for the rest of the model. It was a great feeling when everything turned out quite well.

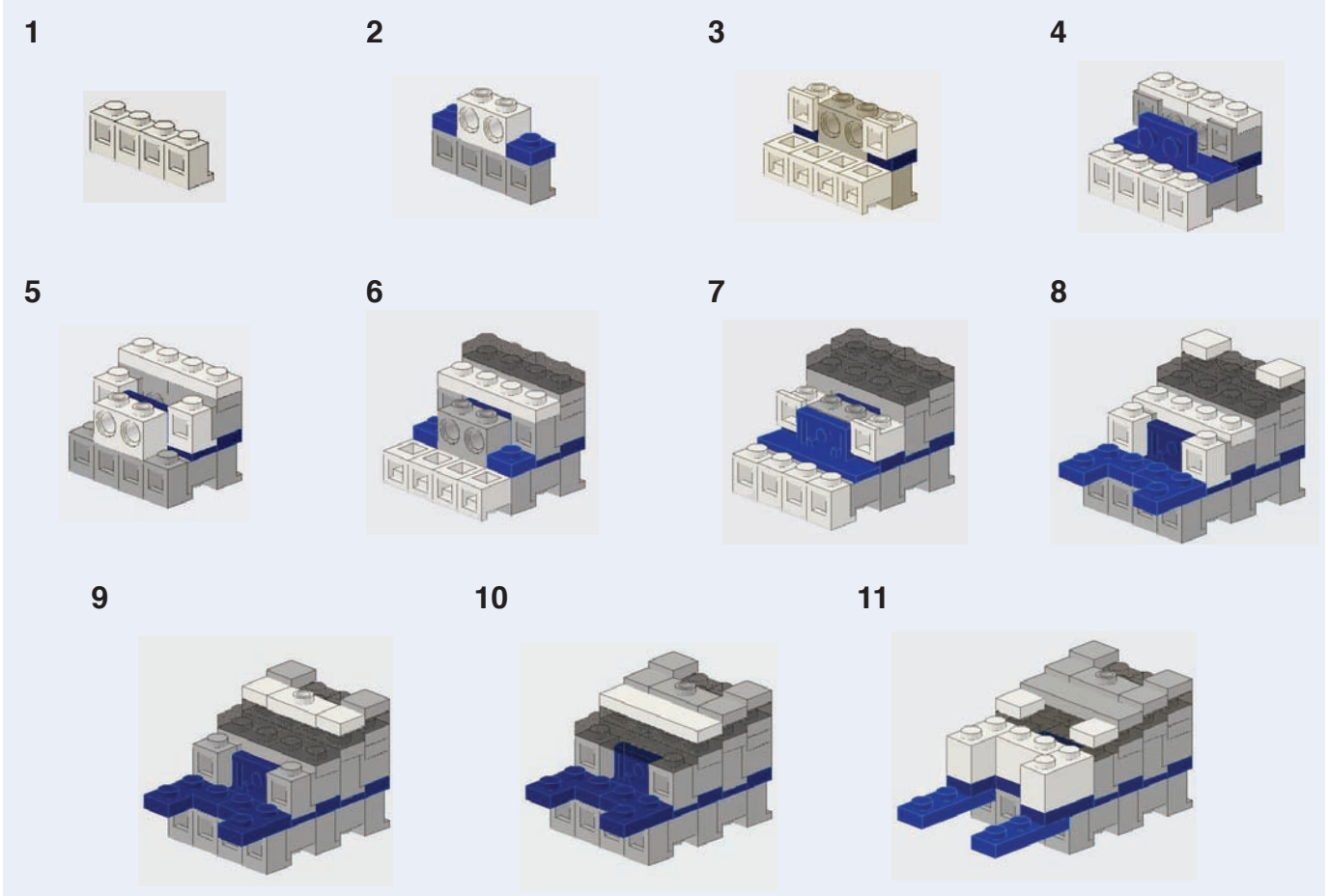
With that I think we have a finished model. Hope you'll enjoy this one. I wish you happy building and see you next time!

~ Yours,
Christopher Deck

Parts List

Numb.	Color	Part	Description
3	Blue	2436.dat	Bracket 1 x 2 - 1 x 4
32	White	4070.dat	Brick 1 x 1 with Headlight
3	White	3004.dat	Brick 1 x 2
1	Trans-Black	3065.dat	Brick 1 x 2 without Centre Stud
1	White	54196.dat	Dish 2 x 2
2	Dark-Stone	6117.dat	Minifig Tool Chainsaw Blade
4	Blue	3024.dat	Plate 1 x 1
2	White	3024.dat	Plate 1 x 1
2	Trans-Yellow	3024.dat	Plate 1 x 1
1	Blue	6141.dat	Plate 1 x 1 Round
4	White	3023.dat	Plate 1 x 2
13	Trans-Black	3023.dat	Plate 1 x 2
2	White	3794.dat	Plate 1 x 2 with 1 Stud
2	Blue	3623.dat	Plate 1 x 3
4	White	3710.dat	Plate 1 x 4
2	Blue	2420.dat	Plate 2 x 2 Corner
2	White	2420.dat	Plate 2 x 2 Corner
2	White	3020.dat	Plate 2 x 4
1	Dark-Stone	61409.dat	Slope Brick 18 2 x 1 x 2/3 Grille

Numb.	Color	Part	Description
2	White	4286.dat	Slope Brick 33 3 x 1
4	White	54200.dat	Slope Brick 45 1 x 1 x 2/3
2	Trans-Yellow	54200.dat	Slope Brick 45 1 x 1 x 2/3
2	Trans-Yellow	50746.dat	Slope Brick 45 1 x 1 x 2/3
1	Trans-Black	3039.dat	Slope Brick 45 2 x 2
2	White	60481.dat	Slope Brick 65 2 x 1 x 2
1	White	44675.dat	Slope Brick Curved Top 2 x 2 x 1 with Dimples
1	White	41855.dat	Slope Brick Round 2 x 2 x 2/3
4	White	6541.dat	Technic Brick 1 x 1 with Hole
2	White	32000.dat	Technic Brick 1 x 2 with Holes
6	White	3070b.dat	Tile 1 x 1 with Groove
2	Dark-Stone	2412b.dat	Tile 1 x 2 Grille with Groove
3	White	3069b.dat	Tile 1 x 2 with Groove
4	White	2431.dat	Tile 1 x 4
1	White	3068b.dat	Tile 2 x 2 with Groove



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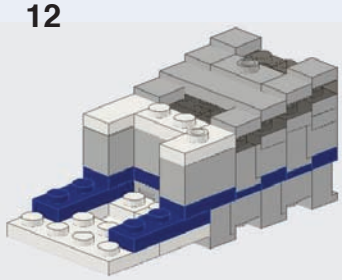

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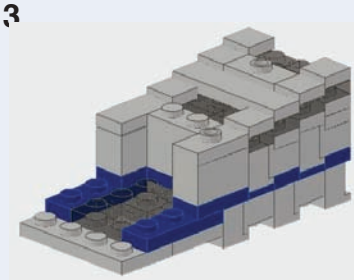

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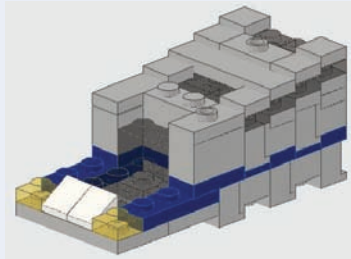

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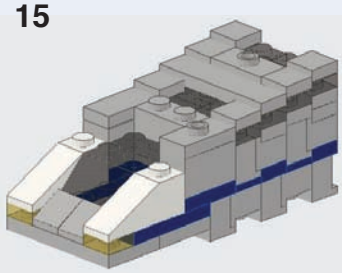

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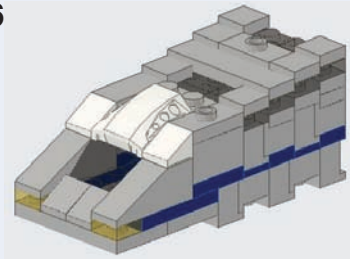

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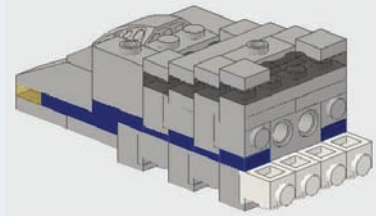

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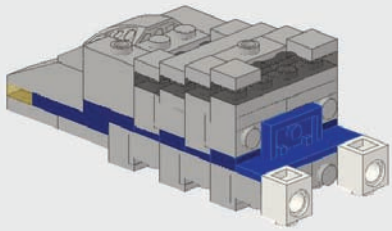

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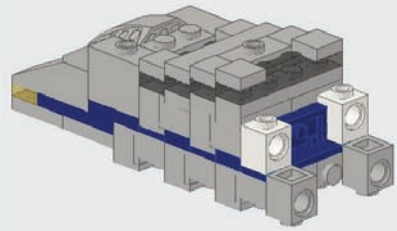

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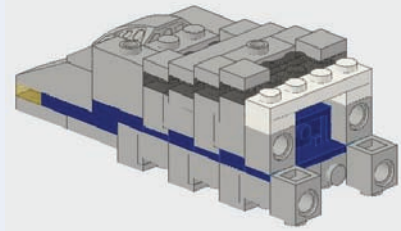

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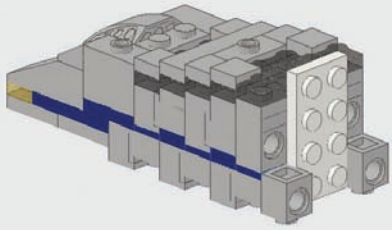

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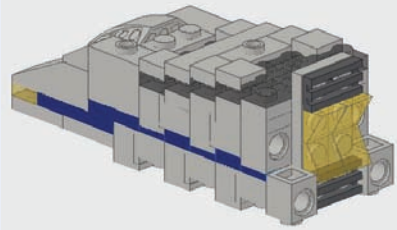

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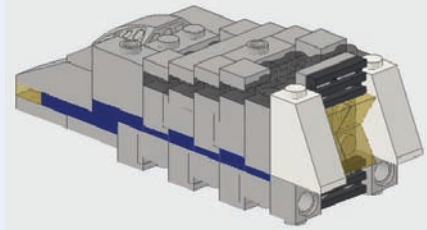

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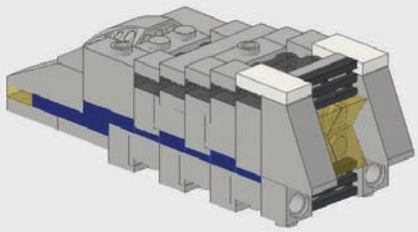

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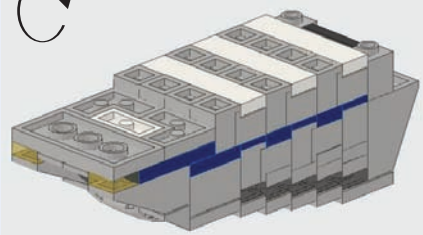

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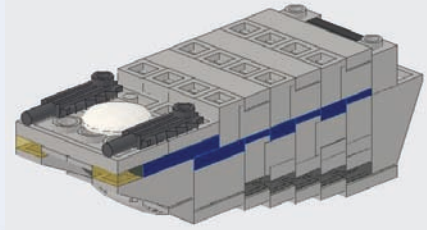

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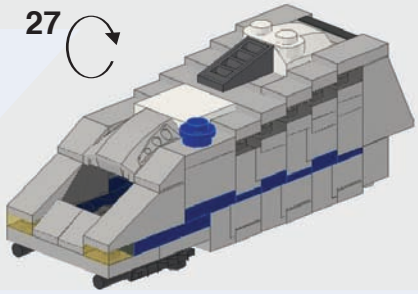
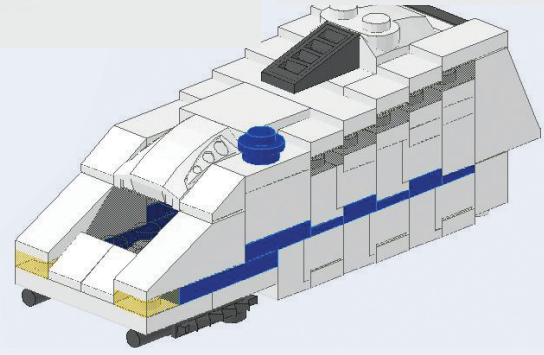
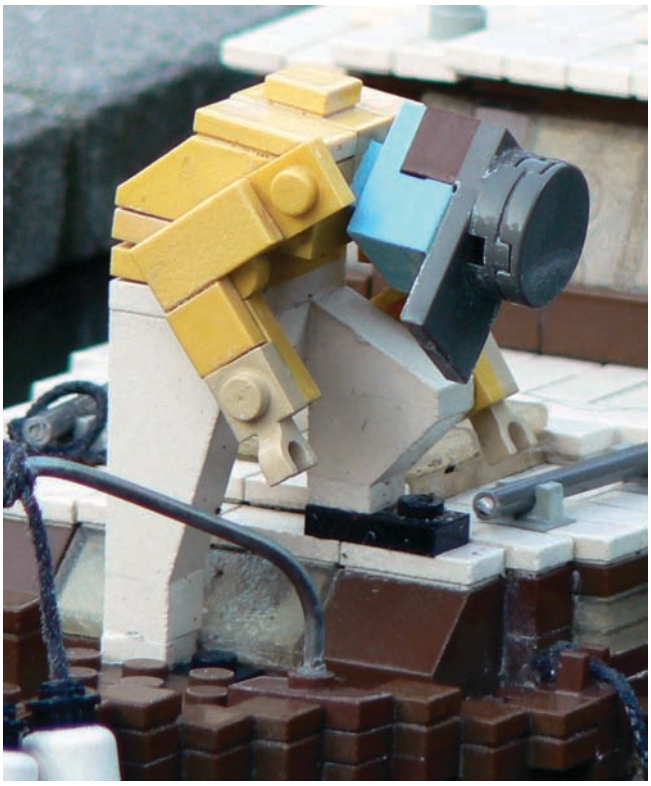




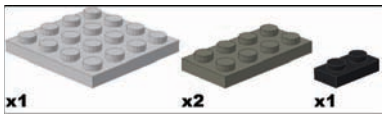
SICKO

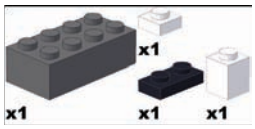
Article, photography and art by Didier Enjary

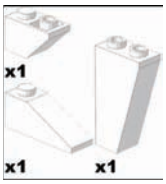


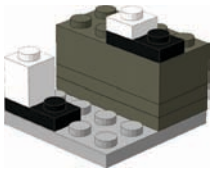
This character adds some humor at the MINILAND in Billund. He is a seasick sailor on the deck of a boat and he is apparently sick to the point of nausea!

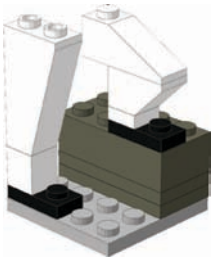
What makes this funny is not his illness but the unexpectedness of the situation. Anyway, the character is interesting in this way it has an unusual posture.



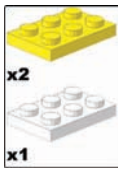


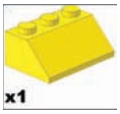


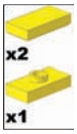


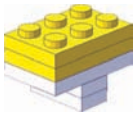


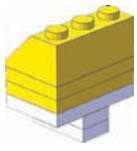
First, the feet are not on a same level and as a consequence one leg is straight while the other is folded. This is achieved simply by using different kind of slope brick : the 3x1 and the 2x1x3 inverted.

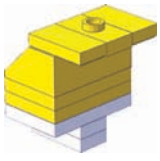


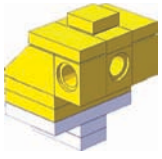


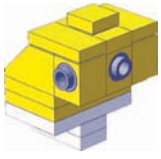






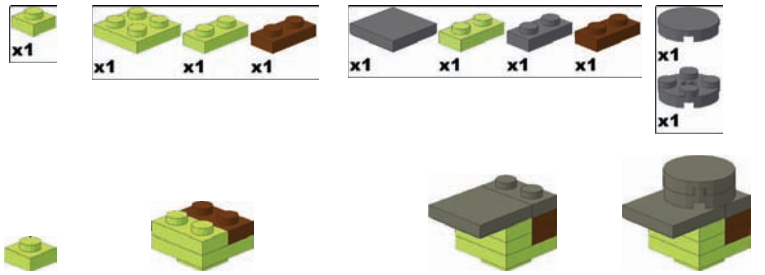




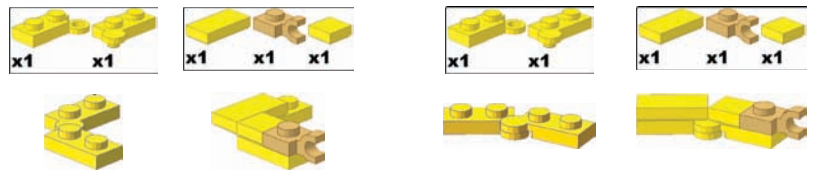


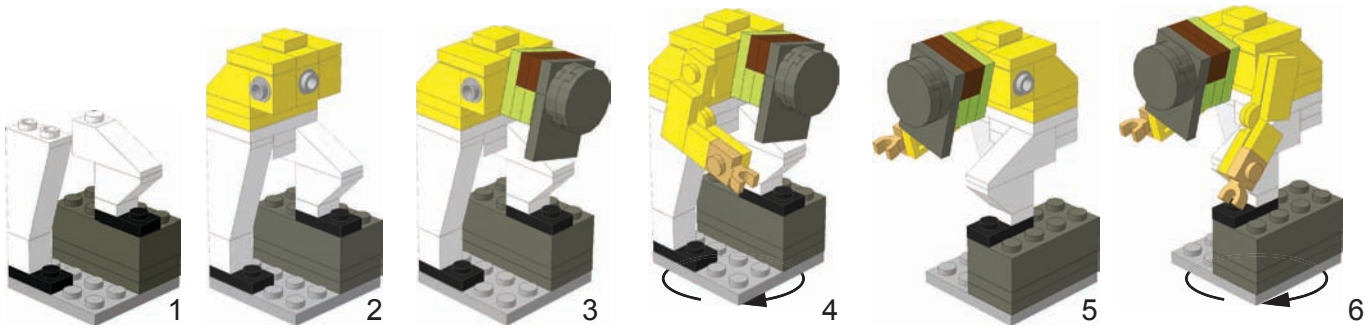
Also, the character is leaning. This is achieved with the help of another slope brick (2x3) but there's something else. As you can see in the closeup picture, the 2x3 plates are *purposely* not perfectly stacked, emphasizing the feeling that the character is leaning. It makes the build weaker but that is not an issue as the model in the park is glued.

The sailor's face is of an undetermined color (at least not highly common - medium blue or what is called Maersk blue). You can use any kind of bluish or greenish color (in this case lime green) for it to achieve the effect of a sick person. The sailor hat is grey - again it's up to you to use a bluish hue that is the newer grey or the older grey.



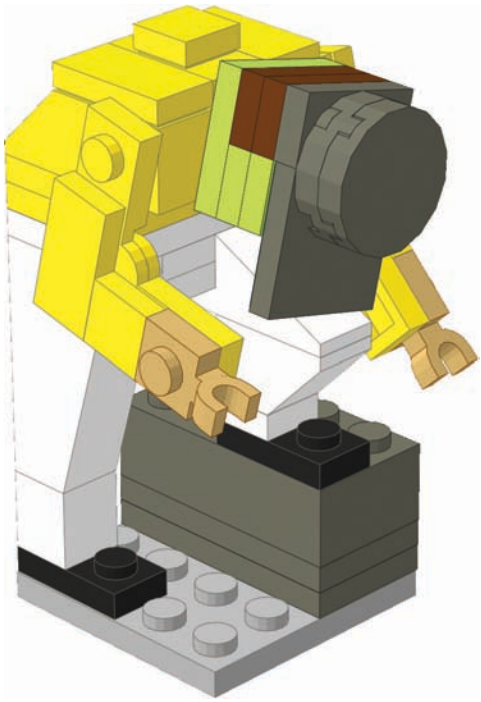
The jointed arms are built the "usual" way : plates or tiles stacked on hinges plates. They both feature some clippy 1x1 plates to represent the hands. As the character do not holds anything, you can use regular plates instead.

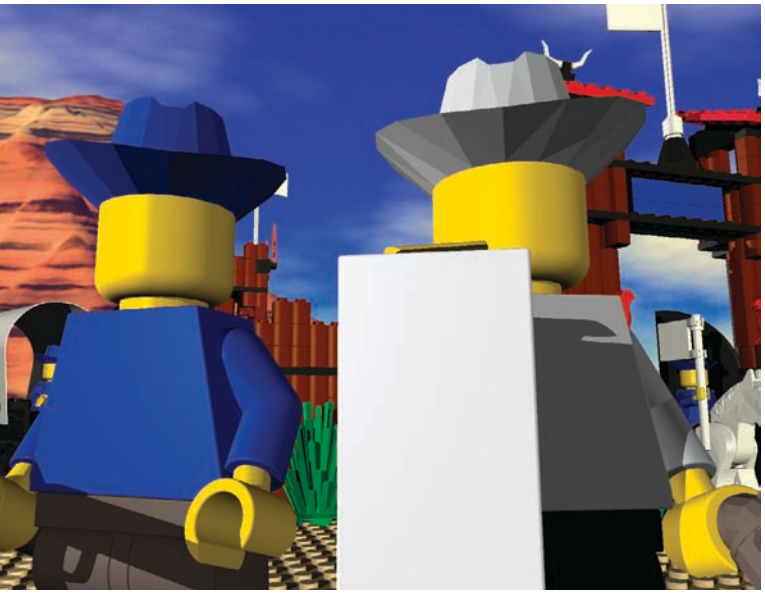




The final build is not regular as the head is, just like the arms, SNOT-mounted. The character is really bending forward now.

This is a very unusual posture. But I am pretty confident that you have an imagination big enough to put this character in another funny context.





A western scene using exclusively non-patterned parts or pieces with the printing removed.

The same scene with patterns. Some parts like the canvas or the horse do not exist without a pattern.

Pattern it!

The "Standard Grin Pattern", the "Classic Space Logo"—some patterns are as iconic as the brick shape itself. Having their digital counterparts also available in the LDraw system calls for special authoring techniques. Willy Tschager and Philippe "Philo" Hurbain give you an insight into how they author patterns for LDraw parts.

Article and art by Willy Tschager and Philippe (Philo) Hurbain

To be perfectly honest: Authoring LDraw patterns are a waste of time! Along with curved surfaces called free forms, which are hard to measure and therefore re-engineer, patterns are usually the last thing a new [Ldraw] parts author wants to tackle. Not only because of their complexity, especially when they are applied to a curved surface, but also because they do not add a new valuable brick shape to the LDraw library. On the other hand, a scene without a patterned torso or some stickers would miss a crucial detail: character!

Every author has a different approach to authoring parts and patterns; some just run an image through a program like BMP2DAT or BitSticker and are happy with its pixelated, mosaic-like output, others use professional CAD programs. There's even someone who blows up the original print in a photocopy machine to measure the coordinates of knots and vertices with a ruler after he has laid a fine grid on it, which isn't scaled in millimeters or inches but LDUs (LDraw units) where 1 LDU corresponds to 0.4 mm or 0.016 inch.

Willy's way

The process I'm going to describe was formulated back in 2002 when I authored my first pattern: the "Classic Space Logo". It took quite a bit to perfect the way I transform a picture into LDraw code and other part authors might consider it laborious, but I cannot imagine doing patterns like '3754p01 - Brick 1 x 6 x 5 with Rocket Launch Pattern' or '3069bpw0 - Tile 1 x 2 with "Wanted - Flatfoot Thomsen" Pattern' in a different way.

Step one: "Scan 2 vector graphics".

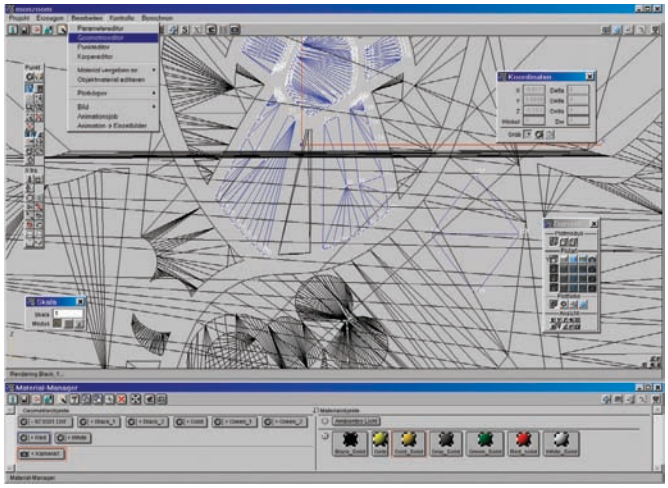
To get some data I can later elaborate on in an editor, I usually take a 600 or 800 dpi high resolution scan to be used as reference in a vector graphics program where I re-draw the outlines of the different colors. It gives me a first overview, makes me aware of critical sections I have to take care of once I edit the pattern in my CAD program and also gives me the chance to correct gaps or offsets caused by print misalignments during the different color runs. The caveat is that I cannot create some sort of wireframe like the one you can find in a coloring book and fill in the color. I have to make sure that every path is closed, that there are no overlaps and more important that the single shapes do not have holes. The simplest way to achieve this is to separate each color into a separate layer and export every layer as a stand-alone object.

Since the LDraw specification only knows about lines, triangles and quadrilaterals, and nothing about complex polygons or meandering paths called "splines" in CAD-jargon, the output of the vector graphics program has to be converted. During conversion the piecewise polynomial curves are analyzed and substituted with portions of straight lines trying to simulate the path as close as possible and finally turning it into a mesh of rough triangles (the technical term for this is tessellation).

The single color layers build the final pattern.

Step two: "Triangle 2 Triangle".

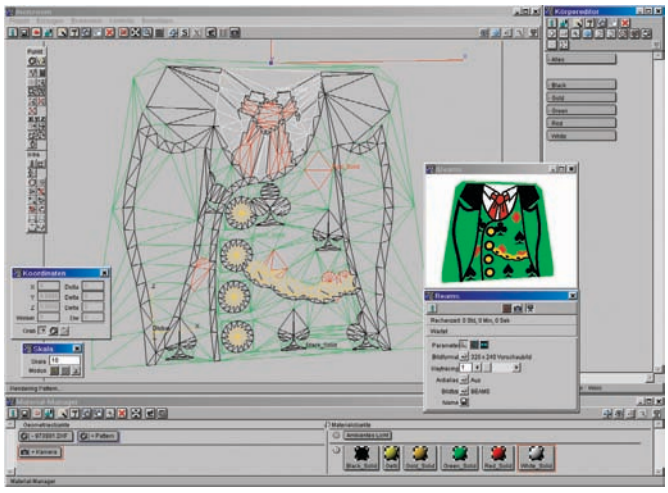
Time to start up "Monzoom 3D". This modeler and raytracing program was once developed as "bookware" for the Commodore Amiga computer back in the 80s and its development was stopped more than 10 years ago, shortly after it was ported to the Windows platform. Monzoom knows nothing about all the fancy manipulator tools you can find in today's state-of-the-art CAD programs, but it still builds everything in its virtual world with triangles and is therefore a perfect tool to manipulate LDraw shapes. After loading the single layers into Monzoom I'm faced with two hassles. First off, there is still too much detail. Splines with many nodes require much more tiny straight lines to simulate a curve than an almost straight section. There has to be a balance between enough detail to still reassemble a shape and the number of triangles required to do the job. Despite today's quad core processors and cheap memory, the so-called "polycount" is still an issue. Consider that though the LDraw world uses 16 triangles to simulate a perfect disk the number of triangles sum up quickly to 818 in a simple 2x4 brick. It will have a massive influence on the rendering time if I use thousands of triangles to build the above pattern for the gambler torso or the 768 triangles which make it up now.



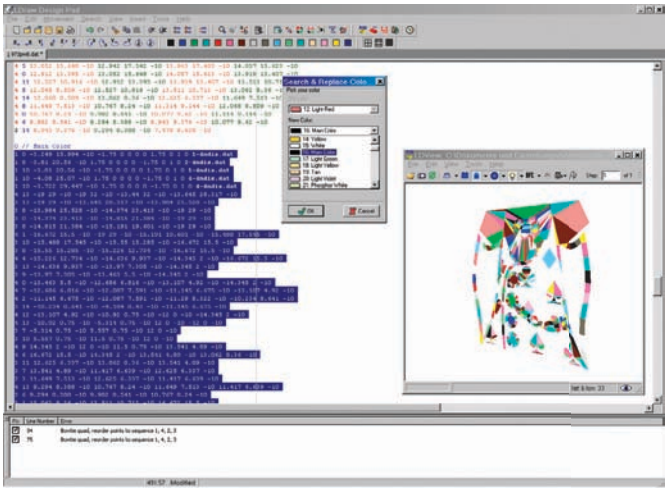
Screenshot of Monzoom showing the red color layer after the splines have been tessellated

Second, since I do not have a wireframe, but different layers, I have to identify which vertices belong to a specific color and where do I have to connect them.

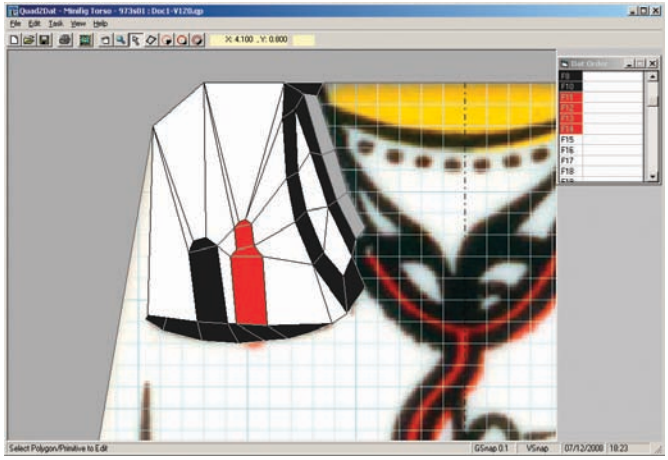
It can take several weeks deleting obsolete vertices and triangles, rebuilding them, and grouping them into colors. In addition I try to identify sections which can later be substituted by so-called LDraw primitives, pieces which already reassemble a certain shape–like discs or half-discs–and therefore don't have to be re-designed a second time. At the end of many mouse clicks I get a wireframe which already looks like the final pattern but comes in Monzoom's own file format. You cannot expect a 40 dollar program to support many other 3D file formats; actually it exports to just one: POV-Ray. Luckily the POV-Ray format has much in common



Screenshot of Monzoom with the final fully-colored wireframe and a test render in the thumbnail. Note how the number of vertices reassembling the red bow tie have been dramatically reduced in the thumbnail. Note how the number of vertices reassembling the red bow tie have been dramatically reduced



Screenshot of LDDP polling to the external parts viewer LDView to get a visual feedback while running through the code line by line. The triangles and quads have been assigned a random color to better distinguish them



Quad2Dat window showing a minifig torso partly covered.

Partial pattern on the torso, displayed by LDView.

with the LDraw file format.

Step three: Pov 2 Dat.

For the final rush I use LDDP - LDraw Design Pad, a text editor for LDraw files. After a bit of "Search'n'Replace", the POV-Ray output has been turned into LDraw code lines. What follows is a back and forth between programs like MLCad (to sort and order the pattern-building triangles into color groups or do primitive-substitution) and LDDP (to further sand the code): According to the LDraw spec 1.0.0, the decimal numbers have to be trimmed to three digits after the decimal place. Where possible, the triangles have to be joined in quadrilaterals, and those have to be checked to verify that the sequence of the vertices is correct. All triangles must have the same clockwise or counterclockwise winding (which in LDraw jargon is called "BFCing"). Comments should be added to document at least a bit of the code. Last but not least, I have to make sure that my pattern fits the blank brick and also a test rendering in POV-Ray doesn't hurt to spot undiscovered errors. Before I'm going to upload the patterned brick to the LDraw Parts Tracker for reviewing and certification I edit the header in DatHeader and add keywords and other data required for an official parts header.

Some of my patterned bricks even come with a branding. Search your parts library for the text criteria "www.holly-wood.it" or visit my website and have a look at the patterns I have authored so far.

Links to the tools and their documentation:

- BitSticker: http://anoved.net/bitsticker.html
- BMP2Dat: http://home.swipnet.se/~w-20413/bmp2dat.htm
- Monzoom: http://www.geoxis.de/monzoom/downloads.htm
- LDDP: http://lddp.sourceforge.net/
- DatHeader: http://home.arcor.de/mikeheide/db86.html#ch641

Philo says: I have been in the patterned parts creation game for a shorter time than Willy, and I use a totally different set of tools. The foremost one is Quad2Dat, which allows to lay down triangles, quads and LDraw primitives over a photo or scan of the real part. Other tools in my bag include Dat2QP (to convert LDraw files into Quad2Dat file format) and Projector (to add volume into flat patterns by projecting them on 3D LDraw shapes).

Creation of flat patterned parts with Quad2Dat. The first step is to scan the part at high resolution (600dpi or higher). It is also possible to photograph it, but it is more difficult as there are many sources of shape distortion. The camera lens must be perfectly aligned with the center of the pattern. If you have a zoom lens, try to use it at intermediate zoom setting (on most zooms, optical distortion is greater at both ends of their operating range). Then you should fine tune your image in a photo editing program. Correct any rotation of the image, add contrast and crop the image around the pattern.

Start Quad2Dat, select the template of the part you are patterning and import your image. Quad2Dat will scale it automatically, but you may have to adjust scaling and centering for a perfect fit.

I used Dat2Qp to mirror half frame and to duplicate repetitive areas.

Then you can start pattern creation. Cover all areas of the same color with triangle and quads (click on each vertex of the form). Mouse position will snap to previously created vertices (cursor color turns yellow when snapping). This snapping action avoids creation of gaps and overlaps between forms.

The power of Quad2Dat is that you may tune your pattern by moving vertices. All polygons that use the moved vertex are stretched accordingly.

Quad2Dat also allows you to use some LDraw primitives (discs, inverted discs and rings). This helps for rounded shapes, and results in smaller file size. When you are finished covering the image with joining forms and primitives, you can export your work to the LDraw format and admire your work with LDView.

Warning: Chris Alano, the author of Quad2Dat, seems to have stopped all development of his program. Unfortunately, he left quite a few bugs, so here is some advice to live by when using it:

- Save OFTEN, using different file names. Quad2Dat has the bad habit of crashing halfway though saving files, leaving them useless. One good point of Quad2Dat is that it saves automatically from time to time; you may be able to recover a part of your lost work there…
- If you have to scale your image to fit the template, note the zoom factor, as Quad2Dat often forgets it.

Despite these shortcomings, Quad2Dat is nonetheless a very useful tool!

Advanced uses. Quad2Dat has no way to import LDraw files. You need to convert them to Quad2Dat file format (.qp) using Dat2QP, a little utility written by J.C. Tchang. As this is a command line tool, you will probably appreciate LETGUI, a graphical shell authored by Michael Heidemann. This shell is a convenient way to control Dat2QP and Projector.

With Dat2Qp you can:

- Import partial patterns created with other programs (for example letterings created with Txt2Dat).
- Duplicate/rotate/mirror sections of the pattern that appear in multiple places using MLCad, and re-import result in Quad2Dat for further editing.
- Retrieve already created patterns to reuse or modify them.

Modelling non-flat patterns is more difficult since Quad2Dat works mainly in 2D, even if it is able to map a (flat) pattern onto the (flat) surface of a slope brick. The only 3D shape it manages is the minifig head, but the way it does that may introduce shape distortions in the sides of the face.

To help with 3D patterned parts, I have created Projector. This utility is able to stamp a flat pattern on a 3D former. Projector is not perfect: it is up to the user to ensure that each polygon of the pattern will project in full on a single facet of the 3D former – this can be somewhat tedious…

Here is the complete process:

- Retrieve the surface to be patterned from the blank part. This surface will become the 3D former.
- Convert the former with Dat2QP to create a custom Quad2Dat template.
- Open this template in Quad2Dat and import the scanned image of the pattern.
- Replace each facet of the template with the triangle and quads drawing the pattern. Remember that no form must cross any facet boundary. To align vertices with a boundary, use the "along line" feature of Quad2Dat.
- Once you are finished with this tiling process, export the result to LDraw format and check that everything is correct.
- Stamp the pattern with Projector onto the 3D form. Once again, the use of LETGUI is highly recommended.
- Incorporate the 3D formed pattern back into the blank part.

This concludes the overview of tools for patterned parts creation. Creating patterned parts can be tedious sometimes, but in the end it is really rewarding – and can even become addictive: I started the Doctor torso as an illustration for this paper, but couldn't refrain from completing it before finishing the article!

Links to the tools and their documentation:

- Quad2Dat: http://www.geocities.com/calano/lego/download.html
- Dat2QP: http://philohome.com/isecalc/dat2qp.htm
- Projector: http://philohome.com/isecalc/projector.htm
- LETGUI: http://letgui.mikeheide.kilu.de/

Decal Design: It's All About Style!

Article and Photography by Jared Burks

This was the topic of the very first article I ever wrote for *BrickJournal* back in February 2006. While the hobby has grown exponentially since then, the basics are still critical. In this edition, we will revisit the basics and then dive a bit deeper into the many different Minifig design styles, including the most recent.

Helpful links: What color is that? For CMYK or RGB color values for common colors in the LEGO palette check out these resources from Peeron:
Official Lego Color Values
http://www.peeron.com/cgi-bin/invcgis/colorguide.cgi
Peeron Color Chart: http://www.peeron.com/inv/colors

The Basics: Raster vs. Vector

There are two types of graphics files, raster and vector. Raster image formats are made of tiny squares of color called pixels; these are primarily used in digital photography. The main graphic formats of the web, GIF and JPG, are raster formats. When you zoom in, these images become blocky (or pixilated). Think of a LEGO mosaic when you can see a raster picture, stand far away you see a picture, stand close you see squares. This image format will always have the limitation of the pixel size.

Vector formats are not based on a square but mathematics, as such if you zoom in or out you will never have pixilation because all points have a mathematical distance from the other points. EPS, to some extent PNG and native formats like AI (Adobe Illustrator) or CDR (Corel Draw) are vector formats. When you magnify vector art, it stays sharp and clean because the same math applies at whatever the magnification. Think of looking down railroad tracks, they never meet and will never meet, even using binoculars, you maintain resolution despite the magnification. Vector graphics are used in illustration and design (Commercial Artwork), most home users, doing simple web graphics, drawing pictures, or photo editing don't have a need for these formats. However, for the best results it is important that you create your designs in a vector art program. If you don't have a vector program, consider a trial version of the aforementioned programs or for free programs check

out DrawPlus 4 or Inkscape (DrawPlus: http://www.freeserifsoftware.com/software/DrawPlus/default.asp Inkscape: http://www.inkscape.org/). If you don't want to use a vector art program, raster programs like Adobe Photoshop can be used, just remember to set your dpi (dots per inch) as high as possible (300dpi minimum). This value is the resolution of your image, thus the size of your pixel, which is tied to its print quality.

Now that the basics are out of the way, let us talk about decal design style. I am sure at one point in your life you have seen a cartoon. Cartoon styles run the gambit from Mickey Mouse to very risqué scantily clad superheroes. In order to really draw a design, you need to decide or discover what your design style is. You don't even have to limit yourself to a single style. For example, the LEGO Company is a bit confused as to its design style when you look at older versus newer figures or for that matter across LEGO themes. Let's recap the just some of the variations in the "official" LEGO design style; I bet many of the options LEGO has included in their palette you may never have noticed. The following images of LEGO figures are from Bricklink as I do not personally own all of these figures. Bricklink is a wonderful source of information on the various design options that LEGO has encompassed over the years. By studying other's work we are able to better understand what we like and dislike, so you can better translate your favorite character into LEGO form.

2D versus 3D

Our favorite minifigure started out ages ago, and not so ages ago, with simple 2 dimensional designs that adorned its chest and head. These designs are simple and quite easy to create. These can still capture most custom designs and should be examined when considering the creation of a new design.

With time and the modernization of the minifigure design the styles used have become more complex including drop shadows on ties, belts that flop off the figure, curvy pockets and necklines, and cloth wrinkles. These all attempt to add depth or a third dimension to a design. They make the flat surface look more than it is and give the illusion that the figure surface is textured. Some good examples are seen to the right. These features can add a great flair to a design and give the figure more shape.

Faces

The simple face has come a long way since the smiley. Even today's smiley features pupil reflections. However, once LEGO crossed into the world of Japanimation with Exo-Force and Avatar themes expressions took on a whole new meaning, giving the characters more complex emotions. This is not to say that LEGO didn't have the occasional scared or grimacing face, but these themes seemed to free LEGO to dive into a whole new series including this year's Christmas carol singer with rosy cheeks and a tongue. While the customizing community has been adding more expressions for some time, especially the stop-motion animation film makers, LEGO just now seems to be catching up.

Musculature

Musculature is also something that is still relatively new to LEGO designs and seems to be evolving over the last few years. When LEGO tackled the Spiderman theme it introduced muscle designs as a base to the outfits Spiderman wore. These evolved in the Batman series seen in the image at left. Notice that Robin's muscles are shaded, where as Batman's are very rigid. I can only assume

that this is meant to show that Batman's armor is thicker or his muscles are larger. The musculature changed with the introduction of the character Bane. Bane is a heavily muscular villain and LEGO needed to show that he was bigger than the Bat. This design was recycled in the German Mechanic from the Indiana Jones theme. So now a normal mechanic is bigger than Batman. This is an inconsistency that needs to be avoided if you are creating a series of figures. Make sure you are staying consistent with your designs. Also, like LEGO, it is best to reuse design elements like the musculature as this makes the figure designs appear to be more cohesive.

Oddest Features

I bet many would make the statement that LEGO has never included toes or a nose in a minifigure design, well you would be wrong there, LEGO has done both. I have a good friend that swears by the inclusion of a nose in a face design. I myself have included them in a design or two as I just couldn't get the feel of the character without one. Feel free to be open to new ideas on design, if you lock yourself into only what LEGO has done, or commonly done, you won't grow in your design skills. Over the 10 plus years I have been designing minifigures my style has dramatically changed and I even have different styles these days for specific themes.

Old versus New

Everyone's style will change with time, the more you design the more influences other's work will have on you. Let's look at the new Pirate's theme on the classic. The soldiers and captains have changed dramatically. The older designs were more flat 2D designs, where as the new designs encompass more of the 3D effects and utilize more colors. Be sure to keep this in mind when designing. Watch for the growth in your design style, typically these come as you better learn the program you are using to create them.

Figure X: Superman, Bottom left created by Bluce "Arealight" Shu, top left created by Isaac "RedBean" Yue, and right created by Chase "Vid" Lewis.

Perspectives

Now that we have closely examined LEGO's design palette for the figure, what did you like and dislike. How would you tackle an iconic figure like Superman? Obviously he needs a red cape, but what about the torso design, specifically the S icon and the musculature? People see this differently; just look at the comics, films, and TV shows. There is always variation to his design. Here are a few fan-created versions at left just to demonstrate this practice.

Now that you have seen some variations on the theme of design, how would you create Superman, or for that matter your favorite minifigure?

Please be sure to send us a link to your favorite creation by email to FineClonier@gmail.com so that we can cover it in a future article.

Next Time:

Minifig Customization 101 – The Best of Custom Part Creation

Event Report:
National Train Show 2009

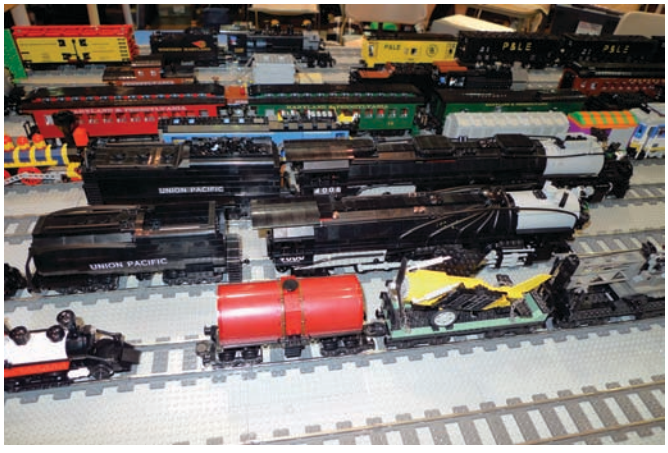
Article and Photography by Mike Ripley
Group Photo by Bill Probert

From 10-12 July 2009 LEGO train builders participated in the fifth annual International LEGO Train Club Organization (ILTCO) LEGO train display at the National Model Railroad Association (NMRA) National Train Show (NTS) in Hartford, CT USA. Over 17,000 visitors attended the three day event, and as is usually the case, the most popular layout was the ILTCO LEGO train display. This year's display consisted of two train layouts and a demonstration area covering over 1600 sq. ft. (150 sq. meters) and included the New England LEGO Users Group (NELUG), the Pennsylvania LEGO Users Group (PennLUG), Trains and Town (TnT), the Pewaukee Road LEGO Train Club (PRLTC), the Delaware Valley LEGO Users Group (DelVaLUG), the Ottawa LEGO Users Group (ParLUGment), and the North Carolina LEGO Train Club (NCLTC).

The main layout, organized by NELUG member Jonathan Dallas, was close to 1100 sq. ft. (100 sq. meters), and featured city, residential and rural sections; a carnival section with working carnival rides made from Technic, Mindstorms and PowerFunction components; a moonbase/space section that included a monorail; and a castle/ren faire section. Each section had a train loop around it, and then circling the entire layout was one outer train loop. The centerpiece of the layout was a giant railyard, where an amazing collection of custom LEGO trains were displayed. This design gave the layout an Epcot Center-like feel to it, where each section had its own theme with the trains tying it all together.

The second layout featured the Blau family's Pewaukee Road LEGO rail line. Included on this layout was a wonderful city section, a wilderness/wild west area, and a big railyard featuring a custom built train station based on the Berlin Hauptbahnhof. The station featured a

Close-up of PennLUG's 8 Stud-wide Trains.



Train Sheds with Old Time Steam Engines.

MINDSTORMS controlled set of switches that swapped trains running on the main line each time around, allowing minifig passengers to embark/disembark as the other train made its way around the layout.

AFOLs and visitors alike were also treated to presentations made by Emerald Night set designer Jamie Berard in the demonstration area. Jamie spoke about the design process of the Emerald Night, and the history of how he was able to convince The LEGO Group (TLG) to produce the larger train wheels included in the set (all of which were prototyped by TLG in the 1970s). He also was able to talk to many of the AFOL train designers present to get their feedback on the new train and Power Function elements. A big thank you to TLG for sending Jamie to the show - it was a real treat to have him attend and be part of the exhibit!

Another highlight of the show was the traditional ILTCO pizza party that was hosted by Steve Witt, LEGO Community Relations Coordinator for North America, in the phase 1 building at TLG's North American corporate headquarters in Enfield, CT. In addition to pizza and soda, Steve held an exclusive sale of several overstocked sets and bulk brick for the train show participants. It was a great time for all and thanks to Steve and the crew in Enfield for such a wonderful opportunity!

Logistics for the show went extremely well, and everything went smoothly for us during the show. The NMRA folks were extremely helpful and a pleasure to work with. They are truly interested in including LEGO built trains in the overall model railroading community, and even extended to several of the builders an invitation

City Section of the NELUG Layout.

Main Railyard Featuring multi-Club 6 and 8 Stud-wide Custom Trains.

Pewaukee Road LEGO Rail Line's Main Train Station

Emerald Night rounds Corner of NELUG's City Residential Area.

to be evaluated for the NMRA Achievement Program Golden Spike Award, the first award in the NMRA's Achievement Program. This is a significant step in the evolution of the LEGO train community and its continued involvement with the NMRA.

All in all, the event was a huge success. Tons of wonderful MOCs, LEGO built trains, and minifig humor were on display, and it was great to meet the many AFOLs who attended the show and helped with the display. Thanks to all who made the ILTCO LEGO train display a highlight of this year's National Train Show!

Mike Ripley, Jonathan Dallas, Elroy Davis and Eric Kingsley were this year's ILTCO LEGO Train Display Coordinators.

For more information and pictures of the event please visit the event's Flickr group, "ILTCO NMRA Train Show 2009", the TnT and RailBricks web sites, and the NELUG Media Gallery:

http://www.flickr.com/groups/iltco2009/pool/

http://www.trains-n-town.com/

http://www.railbricks.com/

http://www.nelug.org/mediagallery/album.php?aid=411&page=1

Building a Blondin

Article by Stefano Prosseda

Photography provided by Stefano Prosseda and Agudio S.p.a.

My name is Stefano Prosseda (aka SteP) and I'm a member of www.abstechnology.org, the TECHNIC side of the Italian LEGO Users Group (ItLUG) - itlug.altervista.org and www.brickinitalia.org. For a recent local event, I built a blondin. What is that, you ask? Let me quickly introduce you to the world of blondins.

According to the most general definition, a blondin is something that travels over a rope, carrying a load.

For example, here's a man, walking over a rope, carrying a load. This is a very special type of blondin; actually the first blondin in history. The man is, in fact, Jean François Gravelet-Blondin, carrying his manager, Harry Colcord. Blondin crossed the gorge below Niagara Falls on a tightrope on June 30, 1859, becoming "the Great Blondin."

Below and on the next page, you can see another type of blondin, which served the construction yard over the Hoover Dam Bypass (www.hooverdambypass.org). The erection of this bridge required two of these special *cable-cranes*, in order to carry building materials over the 660 meter-long construction facility. In the table on the next page you can find some technical specification of this twin-cable-crane system compared with the device I built.

The Agudio blondin installation on the Hoover Dam Bypass

The track rope tensioning system.

As I first discovered this wonderful special cable-crane on the pages of www.ropeways.eu I suddenly realized I had to build one, to serve our very own LEGO construction yard for the 2008 Itlug Legofest in Ballabio (Lecco, Italy). So, I got in touch with the people at Agudio S.p.a., who kindly supported me with technical information, pictures, and much more, as noted at the end of this story.

Agudio (www.agudio.com) is an historical Italian company, established in 1861, specializing in custom and special ropeways, cable cranes, funiculars, and everything in-between.

In order to cover the whole abstechnology Technic Construction Yard, I had to build a 6 meter-long line, tightened between the two 75 cm-high towers, and able to carry up to 2.5 kg of material, with a maximum rope deflection of 25 cm in the middle of the line.

Obviously, no LEGO pieces were harmed in my design. I always use genuine LEGO standard-available bricks, I do not modify pieces (otherwise, there would be no challenge in it at all).

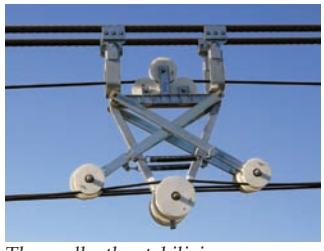
One of the most interesting devices of the real blondin is the "cradle". (**figure 6**) These structures are suspended at regular intervals on the track ropes, keeping the many cables separated from each other (there are actually six cables: haulage send and return, return of the opposite haulage winch, load, and the two track ropes), ensuring safe operations even during windy weather, and evenly distributing the self-weight of the cables along the line; I added this device to my model too, but unfortunately I didn't have enough space to replicate the original design, so I had to go just for functionality!

I've integrated a bunch of Power Function motors and receivers to control everything with the remote.

The possible actions are: side inclination of both towers, cable car movement, rising/lowering of the load, and track rope tension adjustment. I will not go in deep into the technical details, as I think it is an easy and self-explanatory design. Thanks, LEGO, for this awesome control system!

The carriage.

The 45-ton lifting tackle.



The cradle: the stabilizing arms retract upwards at carriage passage.

A night shot of the blondins.

	Hoover Dam Bypass Blondin	Ballabio Technic Construction Blondin
Line length (approx.)	660m	6m
Capacity	45 tons for each line	3 kg for single line
Tower Height	100m	75 cm
Sideways Load Displacement	Towers can tilt to move the line sideways	Towers can tilt to move the line sideways
Track ropes	2x "Ercole" for each line, 78 mm each	2x type, 2.5 mm each
Haul rope	28mm	.5 mm
Lifting rope	28mm	2.5 mm
Manufacturer	Agudio S.p.a, Leinì (Torino, Italy)	SteP Mechanical Industries
Customer	F&M Mafco Inc. (Cincinnati, Ohio)	abstechnology.org

The LEGO blondin installation on the Technic Construction Yard.

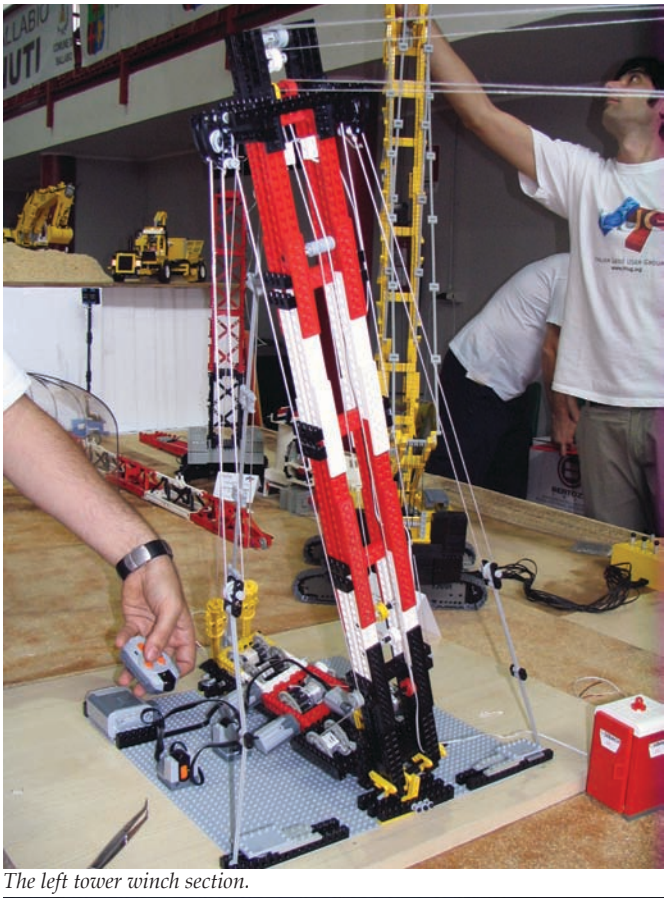
However, in the end, I was quite happy with the result, seen on this page. The resulting model has a fairly low piece count, a little modularity (which helps with assembly, quick design and troubleshooting), some minor "maintenance" issues, but was, of course, a lot of fun to build.

You can find some movies of the final installation in Ballabio 2008 by searching www.youtube.com for the terms "**lego blondin**".

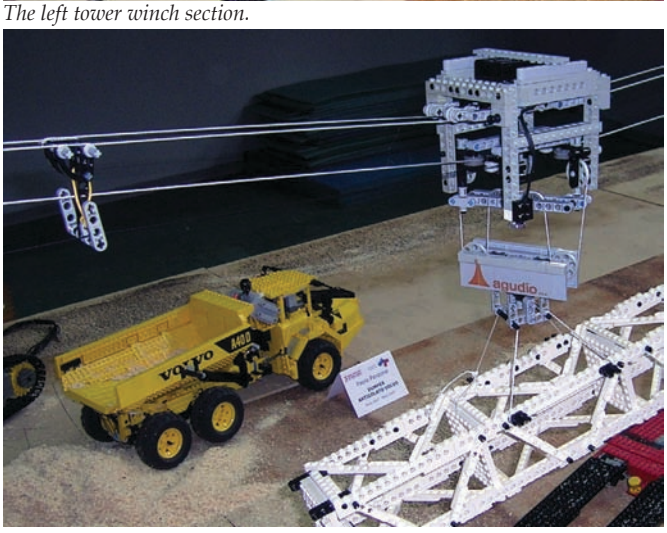
But what makes me most proud of this project is the fact that this model belongs now to the showroom of Agudio S.p.a., in Leinì (Torino), which sponsored my model.

This experience would not have been the same without the help of the following friends:

Marco Chiappa, Itlug LEGO Ambassador and organizer of the Itlug LEGOfest of Ballabio; Paolo, administrator of www.ropeways.eu forum, pushing me to complete this project (and the one coming next, which I hope to finish for Ballabio 2009); Alessandro and Davide, at Agudio S.p.a., for the enthusiasm, sponsorship, the photography appearing in this story and surely future inspiration for the models to come. Thanks also to Andrea, Fabio, and Paolo at abstechnology for their emotional support, for the help in lighting up the model the day before the exhibition and for the "last piece missing" service.



The left tower winch section.



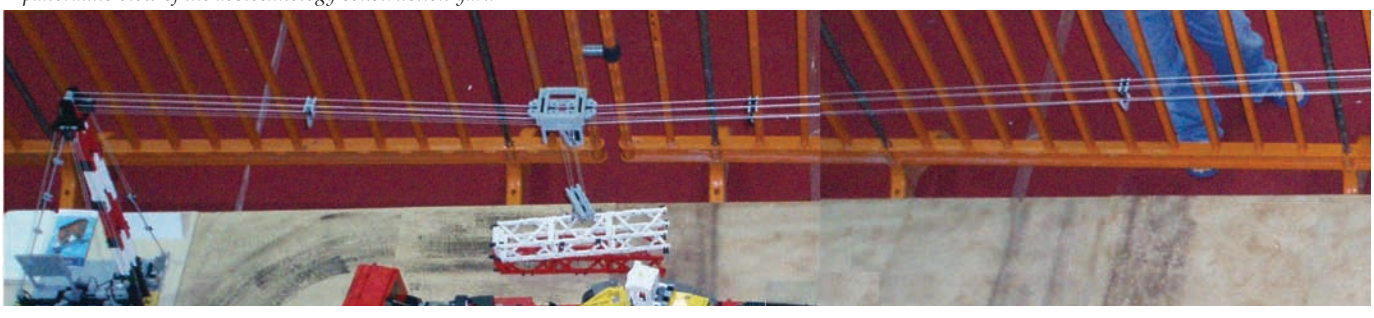
The carriage carrying a load, approaching a cradle on the left side.

You can contact Stefano at: stprosse@tin.it

His Brickshelf account is:
http://www.brickshelf.com/cgi-bin/gallery.cgi?m=stepro

www.brickinitalia.org

A panoramic view of the abstechnology construction yard.



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Mastering FIRST® LEGO® League, Part 3:

Calibrating the Robot (Programming Languages and NXT Drivers)

Article and art by Randy Miller and Tatiana Znayenko-Miller

This is the third in a series of articles about both basic and advanced techniques that can help your FIRST® LEGO® League team achieve mastery of the robot and the game. This article discusses the calibration of your robot as you prepare to solve this year's challenges. There are many aspects to calibrating LEGO MINDSTORMS® NXT robots including the programming languages, drivers, motors, turns, batteries, friction, and the center of gravity. We will examine each of these in the coming articles. This article helps you choose a programming language and get your robot onto the latest driver. In Part IV of this on-going series, we will discuss the three types of turns.

A robot that does not have any programs makes a nice sculpture like so many other LEGO sets. Through programming, we can teach our new robot to do much more. We can make it move and do things in any way that we want it to. Ultimately, this behavior that we impart onto the robot will be necessary to solve the problems posed by this year's challenges and to score high in the robot performance categories of First LEGO League. Getting the robot to perform simple tasks is easy. Getting the robot to perform this year's challenges perfectly in under two-and-a-half minutes will be very difficult.

This article describes the available programming languages and the upgrade process for the NXT drivers. It is ironic in this information oriented "sport" that most FLL teams do not even know that they have a choice of programming languages. In a future article, we will discuss calibrating motors, the various types of turns, the effects of friction, the center of gravity of a robot, and how batteries impact the motors. Throughout this article, we will use the term computer to describe the machine on which programming is done.

Choosing a Language

To begin, you will need a computer to program the NXT. A PC or Macintosh makes a much better input device (because it has a keyboard and large display) than an NXT brick. Your programs are created and compiled on this computer

and downloaded to the NXT brick (which is another computer). When a program is compiled, it is changed from the graphical block format that you see on the screen to a NXT machine readable stream of 1s and 0s. Choosing the computer for the team to use can be a simple task or a very complex task.

Many teams designate a team computer, a laptop or desktop that is used by the team during practice to program the robot. A laptop is preferable as it can be brought to competition and used to change programs at the last minute. It can also be used to show judges more detailed information about the programs during the technical interview.

Designating your laptop as the team computer is not to be taken lightly. This machine is really important. It must be brought to every practice even if its owner is not. Since nearly all practices entail programming, a practice without the team computer can be very unproductive.

Some teams use multiple computers for programming. This has the advantage that programming can continue outside of practice. The downside of this approach is that programs will eventually need to be merged onto a single computer when we create a compilation (or framework) program. The compilation program allows all of the programs to be run in order. We will discuss compiler programs in a future article. Ideally, you'd like all of the computers used to be the same type such as using all PCs or all Macs.

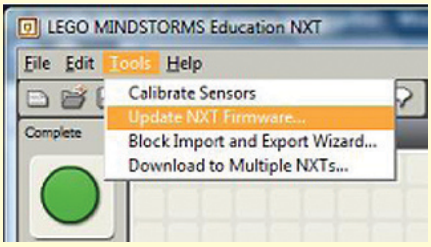
Finally, you need to consider the programming language that you will use. NXT/G and ROBOLAB are the visual programming languages supported for use in First LEGO League. Both languages are derived from LabView, a National Instruments visual programming language that may be used to programming the larger metal robots used in FIRST Robotics competition. Most FLL teams use NXT/G since it comes with the robotics kit that is shipped through the registration process. ROBOLAB has its roots in the RCX environment (the RCX was the predecessor to the NXT) and must be purchased separately.

ROBOLAB.

NXT/G has the added advantage of being simpler and with fewer programming elements. Even with its simplicity, it can do all that a robot needs to do to execute a typical run on the competition mat. ROBOLAB is the more complex of the two languages and has lower level programming elements. Thus, you have to do more to get the same results as a single NXT/G element. Very few teams use it but it has the advantage that it allows you to do more things by virtue of being lower level. We recommend it only for more advanced teams.

Downloading the Latest Drivers with NXT/G

The first thing that you should do for your new NXT is to download the latest firmware. New firmware is often available on the internet. This new firmware contains fixes for bugs and new algorithms for optimizing program space and execution. The two languages handle firmware updates differently.



To download the latest drivers, you will need to install the NXT/G software onto your computer. When the application is loaded, from the "Tools" menu, select "Update NXT Firmware…". The resulting screen will display the current firmware versions available and allow you to connect with the "LEGO Education" website to check for more recent versions. In addition to the firmware, there are many "goodies" available for NXT/G programmers but beware, some of these packages may not be legal for FIRST LEGO League.

Firmware drivers are found on the computer. Once they are there, they can be downloaded to an NXT brick. The complete list of firmware updates on the computer is shown on the resulting screen. New firmware updates are always legal in FLL.

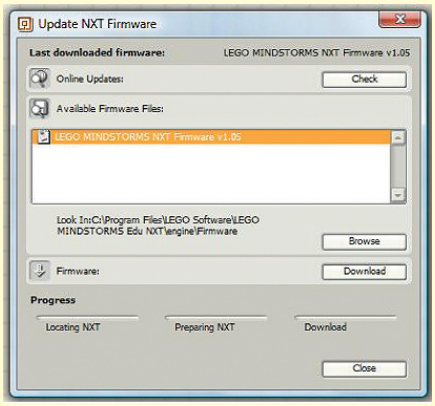
Note: LEGO Education's NXT Software updates can be found at: http://community.legoeducation.us/media/13/default.aspx

LEGO Education's website is now: http://www.legoeducation.us

Firmware updates on the LEGO MINDSTORMS website: http://mindstorms.lego.com/en-us/support/files/default.aspx

There is one word of caution about these updates. *Always update at the beginning of the season and stay with that update until you are done.* Firmware updates have been known to change robot behavior which can be devastating the day before the Regional or State championship. In addition, if you use multiple robots, be sure both robots have the same version of firmware.

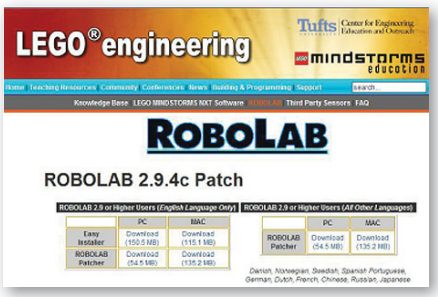
To check to see if there is a later firmware update, press the "check"' button next to online updates. Make sure that you have an internet connection. You may have to scroll down the web page to find the "NXT Firmware" version with the highest version number. The version number is of the form X.Y.Z where "X" is the version, "Y" is the release, and "Z" is the point release. Version always takes precedence over release which takes precedence over point release. So, version 2.0.0 is a higher version than 1.0.5 (which is higher than 1.0.4). The latest version is the one that you want to download.



If there are later firmware updates, download and unzip them into the "engine\Firmware" directory. This update will now show up in the "Available Firmware Files:" pane. Select the latest firmware file and press the "Download" button. Make sure the MINDSTORMS NXT is connected and on. The driver will be downloaded to the NXT.

Double check that firmware is loaded on the MINDSTORMS NXT by selecting "Settings" and then "NXT Version". The "FW" value should display the current firmware version.

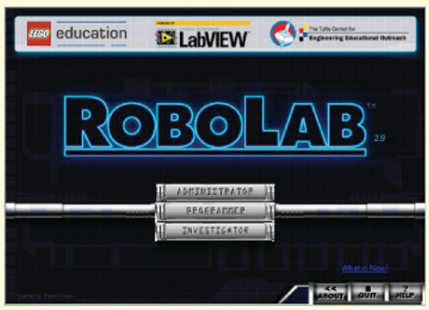
Downloading the Latest Drivers with ROBOLAB



Firmware updates on the LEGOengineering website: http://legoengineering.com/robolab-submenusupport-141.html

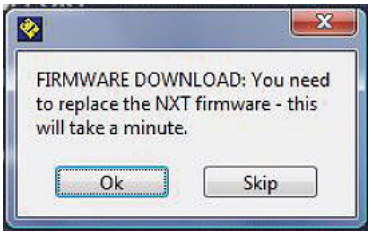
Before using ROBOLAB, install the latest patches. These can be found on the LEGOengineering.com website (look for ROBOLAB patch).

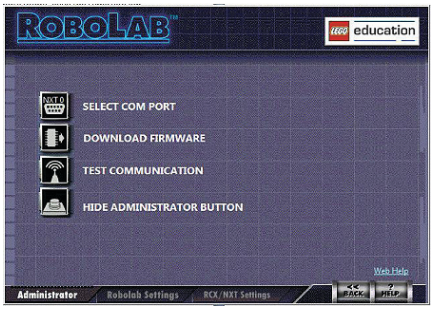
ROBOLAB and NXT/G have different firmware. Since the MINDSTORMS NXT comes configured with firmware for NXT/G so new firmware drivers must be downloaded before any ROBOLAB programming begins. Once ROBOLAB is started, the ROBOLAB firmware updates are found under the Administrator section.



In the Administrator area, there is an option to "Download Firmware". Like NXT/G, ROBOLAB checks the internet for the latest ROBOLAB firmware updates. Unlike NXT/G, ROBOLAB will find the latest driver and download it for you.

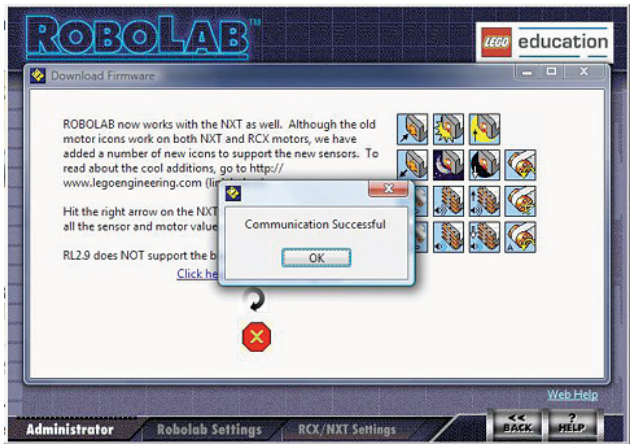
If the firmware is not up to date, you will be prompted to replace it. The download box prompts you to replace the firmware.





The latest firmware is downloaded to NXT. This may take a few minutes. Make sure the MINDSTORMS NXT is on when the process is started. As ROBOLAB moves the latest driver to the NXT, it will also reboot the machine. The firmware update will replace the NXT/G firmware on the MINDSTORMS NXT. If you wish to use NXT/G again on the robot, you will simply need to replace the ROBOLAB firmware as described in the previous section.

Double check that firmware is loaded on the MINDSTORMS NXT by selecting "Settings" and then "NXT Version". The "FW" value should display "'ROBOLAB" and the current firmware version (7.23 at the time of this article).



Conclusion

Updating the LEGO MINDSTORMS NXT to the latest drivers is critical to getting the performance that you need from the robot. Bugs have been fixed in these updates that make the robot more reliable. Most teams leave the driver at the level that is shipped on the MINDSTORMS NXT. This is a critical mistake.

In addition, those teams looking for a greater programming challenge may wish to work with ROBOLAB. Many First LEGO leagues never try ROBOLAB. In fact, you may be the only team in your regional that uses it if you do. Being the only team to use this language will cause you stand out in the judges mind. This is a good thing if programming is your forte. ROBOLAB may be the greatest secret to programming in FLL.

Our next article will deal with the many ways to turn the robot using the two motored approach that most FLL teams use. You may be surprised to find some new tools in this article that will help you move around the mat.

Good luck to all of you as you compete in upcoming SMART Move competition. I will be judging several events in North Carolina.

LEGO Designer Dan Villa Serber worked with the 3:1 scale models for the LEGO system Disney figures. During the development process of new figures, they are first sculpted by hand, then scanned and later printed in a 3D printer.

Mickey Mouse® and Friends visit the LEGO® Theme Universe

Article by Jette Orduna

Product Photography provided by the LEGO Idea House

Prototype Photography by Megan Rothrock

The LEGO Group signed a three-year contract with the Walt Disney Company in 1998 for the right to produce and market various popular characters and include them in the LEGO Baby, LEGO DUPLO and LEGO SYSTEM product programs.

Baby Mickey and Baby Minnie sets (released in 2000) were not the only Disney® characters in the LEGO® universe. In June 1999 five LEGO DUPLO sets with Winnie the Pooh and his 100 Acre Wood friends were launched globally and in September 2000, five Mickey Mouse sets were launched. The most beloved characters from Disney ® were also part of the LEGO range covering babies, toddlers and children up to nine years old.

For the LEGO Group, the cooperation with Walt Disney Company was part of a strategy to work with external partners, like Lucasfilms and the Egmont Group (a children's book and magazine publisher), who, like the LEGO Group, focus on children, fun and imagination and create play value for children all over the world. A total of 16 Disney LEGO sets were launched between 1999 and 2001. During that time,a lot of pre-school children around the world were enchanted when Winnie the Pooh, Tigger, Piglet and Eeyore went on adventures in the 100 Acre Wood, built from the brightly colored LEGO DUPLO bricks.

Development of New Figures

When looking at the details of the LEGO sets including Mickey Mouse, Minnie Mouse and Pluto, you will find surprising details.

The LEGO elements in the five Mickey Mouse sets are rather large, easy-to-build, and a mix of FABULAND pieces and elements from previous LEGO Basic & LEGO Free Style sets. An example is the apple tree element in set 4167 which is an element developed for Free Style sets launched in 1995. The vehicles, houses, fences, garden furniture and other small details are LEGO FABULAND elements (See *BrickJournal* issue 8, 2009)

Like the LEGO Baby Mickey and Minnie figures, Mickey Mouse, Minnie Mouse and Pluto were specially created to look like the Disney characters. The LEGO SYSTEM Mickey and Minnie figures are six bricks high just like the FABULAND figures, whereas a LEGO mini figure is four LEGO bricks high. The bodies of the FABULAND figures and the bodies of Mickey and Minnie were plastic and rounded.

These nostalgic sets remind one of the many Disney cartoons, films and book made with the characters. As a result they have enabled children to build and play their favorite scenes over and over again and create their own LEGO adventures.

Above is a prototype of Mickey Mouse. Not shown is a version of Mickey wearing a fire helmet.

A very happy Pluto with his final figure and a minifigure for scale.

DISNEY® sets: Mickey Mouse® and Winnie the Pooh®

Here's a chronological listing of the Mickey Mouse and Winnie the Pooh DISNEY sets by year of release. Photos are courtesy of the LEGO Group. Other information is culled from www.LUGNET.com and www.brickset.com.

1999

2981 Pooh and His Honeypot

2982 Pooh's Birthday

2983 Pooh and Tigger Play Hide n' Seek

2984 Pooh and Piglet go Honey-Hunting

2985 Tigger's Slippery Slide

2987 Welcome to the Hundred Acre Wood

2988 A Surprise for Eeyore

2000

2592 Baby Mickey & Baby Minnie

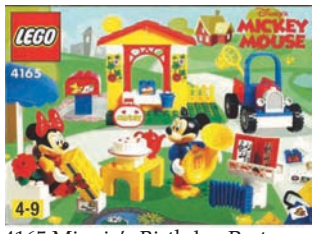
2593 Baby Mickey

2594 Baby Mickey & Baby Minnie's Playground

2989 Pooh's Honeypot

2990 Tigger's Treehouse

4164 Mickey's Fire Engine



4165 Minnie's Birthday Party

4166 Mickey's Car Garage

4167 Mickey's Mansion

4178 Mickey's Fishing Adventure

2001

2975 Bouncing with Tigger

2976 Acorn Adventure with Piglet

2977 Eeyore and the Little Raincloud

2979 Build and Play in the Pop-up 100 Acre Wood

2991 Pooh and the Honeybees

2993 Surprise Birthday Party for Eeyore

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

Theme: Old Days.
Year: 1994
Description: Gangster theme by Jens Nygard Knudsen's concept group. LEGO Old Days/American 1920s.
Other Information: There are 29 slides showing closeups and other models from this concept in the archive folder. At present, neither *BrickJournal* or LEGO have a slide scanner, but maybe one day we can show you more!

Here are TWO very early versions of the large Power Miners Lava Creature later named 'Eruptorr'. They have now been stored by the LEGO Idea House in the concept archive.

This pink Tuantuan body was produced to check for possible flaws in the mould that would lead to 'break points'. Most test moulding is done in red, but in this case a slightly transparent pink colour was used.

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

"Now it's time to say goodbye to all our company..."

The Mickey Mouse Club closed with the song above. And so wraps up this issue of *BrickJournal.* By the time this is on the stands, it will be January, and I and the writers will be deep at work on the next issue, which is undersea themed.

For now, though, it's a good time to thank everyone who has been part of this magazine. In two years, the magazine has gone from a quarterly to now a bimonthly and has been in not only LEGO fan events in the US and Europe, but also mainstream events and media such as San Diego Comic -Con and ABC television!

BrickJournal is making inroads in all sorts of places, showing off the best of the LEGO community. Along with the magazine you can now see builders on our video podcasts at iTunes and find out what is going on with the magazine on Facebook and Twitter. 2010 will be busy with the magzine ramping up, our website relaunched and even an event to showcase adult LEGO builders!

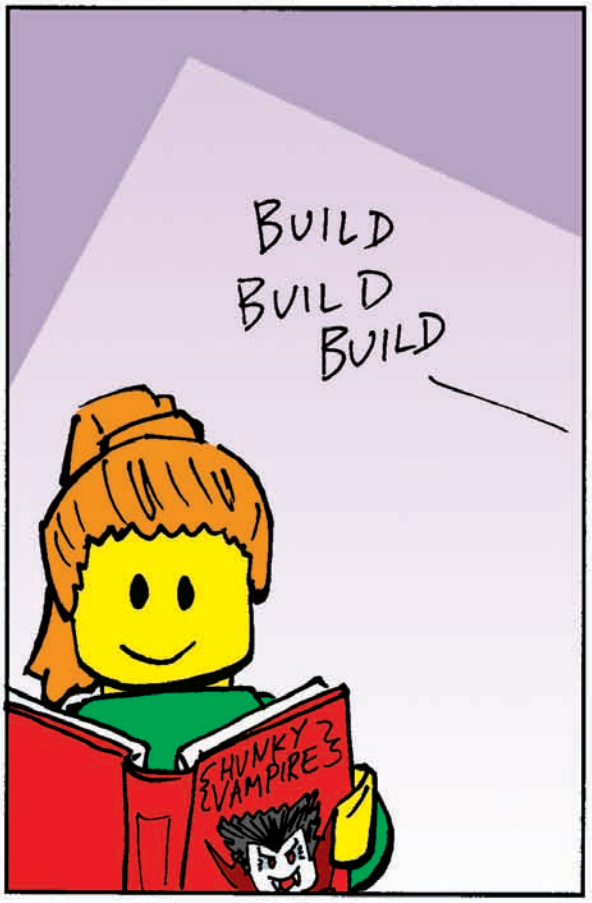
So Happy 2010!

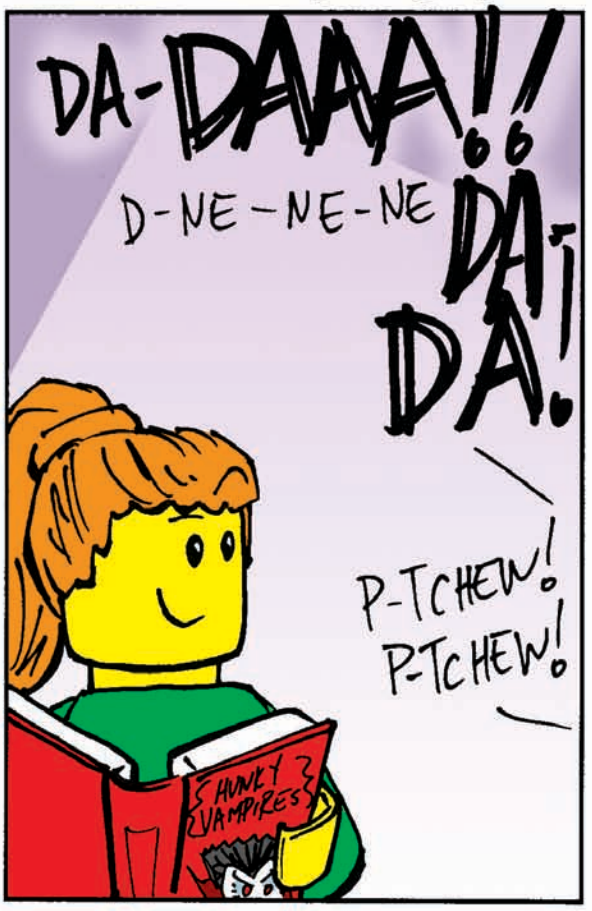
Joe

P.S. There's a LOT of Disney models that didn't make it in this issue - like the Disneyland layout from SALUG, the micro Disney cruise ship and Sleeping Beauty Castle by Mike Huffman, and many others. While I am sorry that I couldn't get everything in, that only means that I'll make another Disney-slanted issue next year...after all, there's more sets coming out!!

AFOLs

by Greg Hyland





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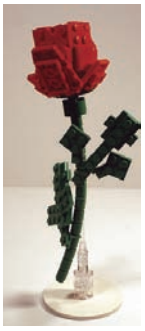

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If you're interested in seeing the wide assortment of brick engravings and finishes and now PRINTING that Tommy offers, you can go to www.brickengraver.com and browse through his catalog. You can see his work at events worldwide.

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