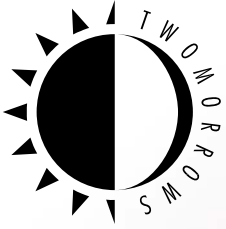


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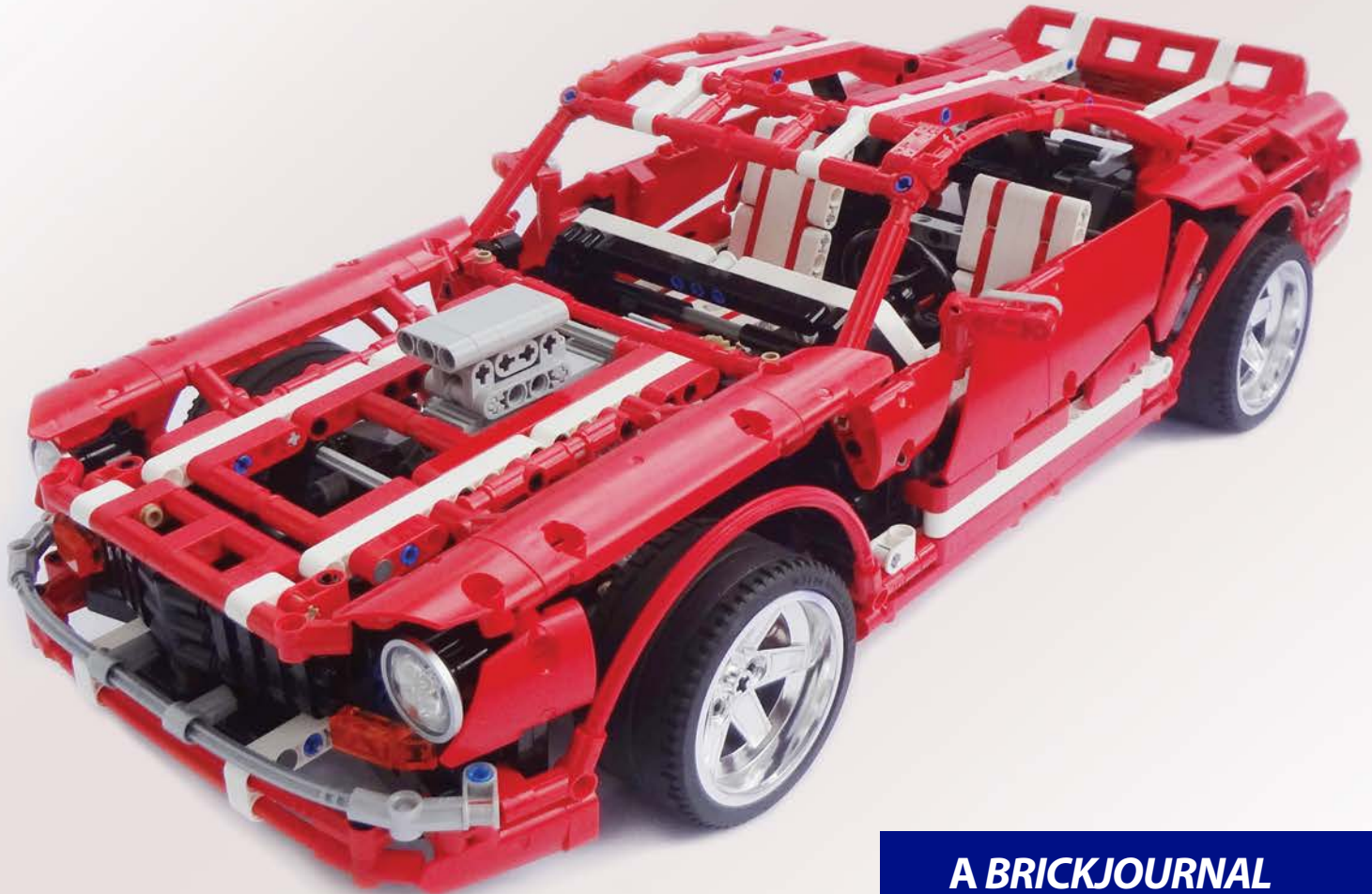


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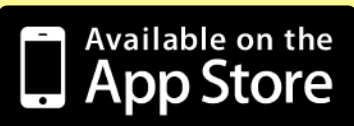
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About the Cover:
One of Paul Boratko's hot rods revs up.

About the Contents Page:
Another model by Paul Boratko.

Cover and contents page photos provided by Paul Boratko.



From the Editor:

So, this is an odd issue. I decided to do a Technic *BrickJournal* because many LEGO builders simply don't know about the theme and don't think that Technic is true LEGO.

I think that's silly. Out of all the themes, Technic has the most potential for innovation. Why? Because Technic building incorporates some kind of movement in its modeling. This allows builders to create models that can interact and—with

a MINDSTORMS set—react to things. Accuracy becomes a major aspect of building when mechanical details have to be created.

This issue is an introduction to Technic, not only to builders, but to building. Japanese Technic builder Yoshihito Isogawa will show you how to add movement to your buildings and layouts using Technic parts. There's also a talk with the directors of the LEGO documentary making the rounds, and our regular models to build. So have fun and build on!

Joe Meno, Editor

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

P.P.S... Yes, *BrickJournal* has a website—www.brickjournal.com! Twitter? Yep, there too—<http://twitter.com/brickjournal>. Facebook? Yup—<http://www.facebook.com/group.php?gid=58728699914&ref=mf>. Or you can scan the bottom codes with a QR reader!

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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)

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Shubham Banerjee with his printer.

Shubham Banerjee, a 7th-grade student from Santa Clara, California is not an ordinary student. Using a retail MINDSTORMS set, he made a printer for the blind that he named Braigo, which is far less expensive than commercial Braille printers. This achievement gained him attention from people and groups around the world, including the LEGO Group, who sent him supplies and also were inspired to hold a competition challenging Seattle, Washington's most innovative companies to build a MINDSTORMS robot that could improve everyday life. The competition's name was Build for Good, and there is no doubt that Shubham has done exactly that. *BrickJournal* was able to chat with Shubham briefly about his work and upcoming plans.

BrickJournal: *So the first question that I have to ask is how long have you been building with LEGO, and when did you start building MINDSTORMS models?*

Shubham Banerjee: I have been playing with LEGO since I was 2 years old. I have previously built with the NXT version of LEGO. But the first MINDSTORMS set I got was this year in January when I wanted to build Braigo.

What inspired you to pursue a braille printer? In an abstract, you mention that you were looking for a low-cost printer solution, but this doesn't explain why you started thinking about the blind to begin with. What inspired you to look at such a challenging problem?

In the mail that came to our house in December 2013, I noticed those posts that said, 'Help the blind people with donations.' I had no idea about Braille, so I asked my parents how blind people read and they said "Google it!" Upon further research, I discovered that typical Braille printers cost about \$2,000 or even more, and I felt that was unnecessarily expensive for someone already at a disadvantage. Thus, I put my brain to work, and the first thing that came to mind was to create an alternative using my favorite toy. I took the LEGO MINDSTORMS EV3 and devised a new kind of Braille printer!

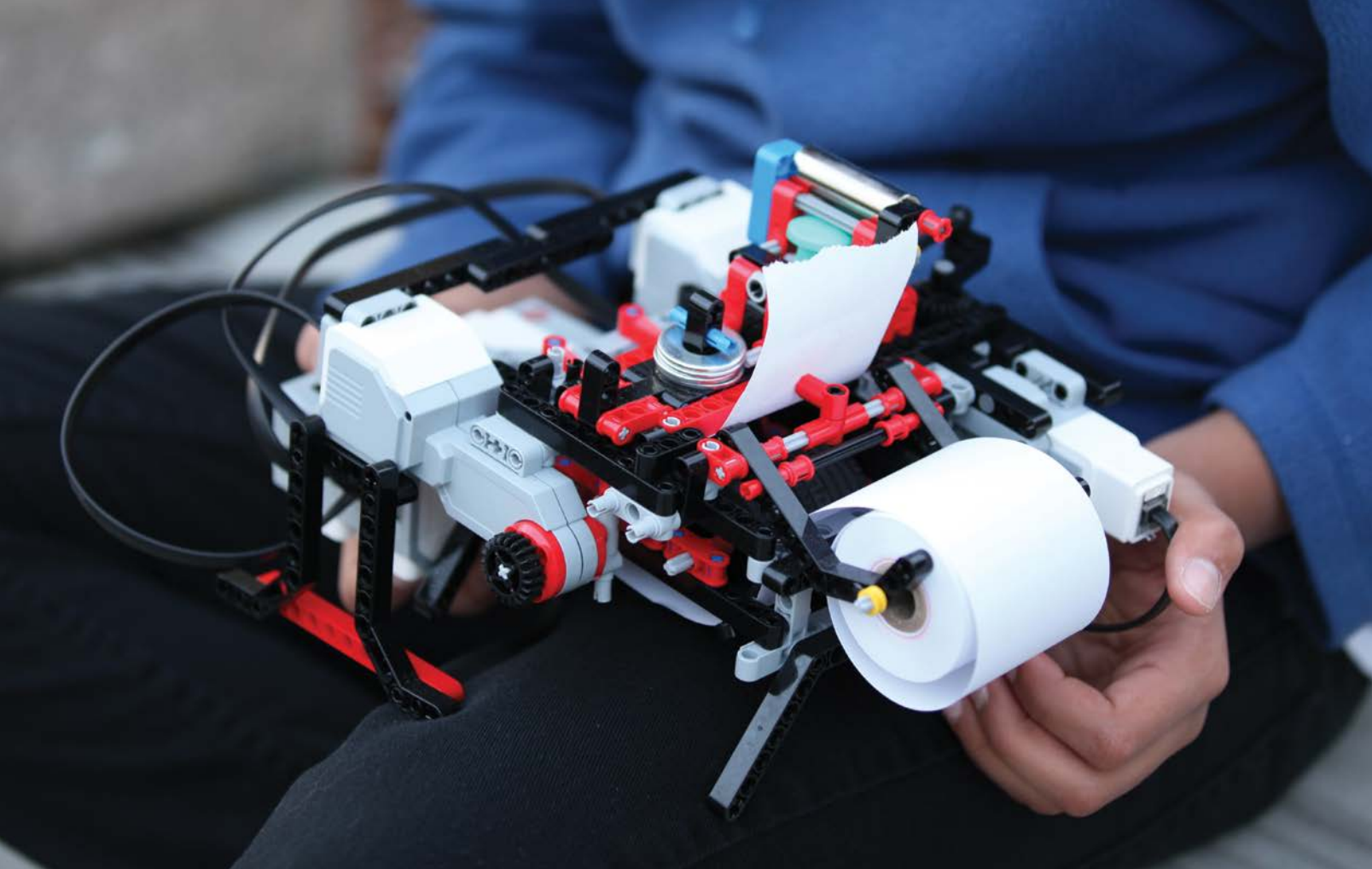
You went through seven prototypes before you were happy with the Briago. Were you confident that you were going to be successful? What were the issues that you encountered in the initial versions of the printer?

To give access to easily assemble and build a braille printer for the masses, the basic

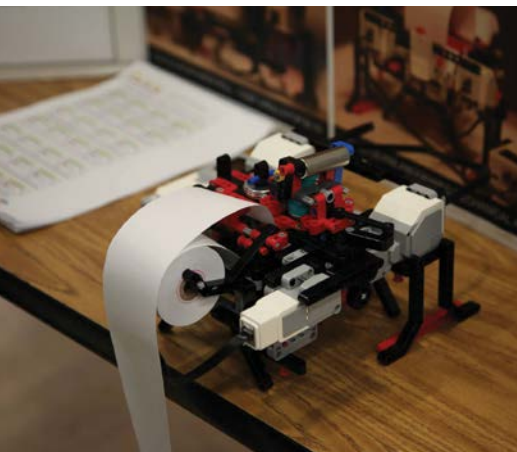
Braigo: A LEGO Printer for the Blind!

Article by Joe Meno

*Photography provided by the
LEGO Group*



A closer look at the Braigo.



On display at a science fair.



For more information on the Braigo, including assembly instructions and programming, scan this QR code or go to <http://tiny.cc/i7i2fx>

ability of Do-It-Yourself (DIY) is key. The kit should be readily available at stores or procured online from reputable websites to make the process easy for adoption.

Most printers operate in X (to move the print head) –Y (to push the paper) –Z (to print or not to print) coordinates. The printer has to be compact and self-explanatory. Engineering as a discipline is the application of scientific, economic, social, and practical knowledge in order to design, build, maintain, and improve structures, machines, devices, systems, materials and processes. In this experiment, I relied on my love of LEGO and readily available MINDSTORMS EV3 robotics kit to build a DIY Braille printer and program the device to print in Braille. I worked with a constraint that all parts should be from one kit and maybe some low-cost readily available add-ons to make such a printer. After studying the Braille language I understood that a visually impaired individual feels through his/her fingers the bumps on a paper through a combination of 6 dots. If we could make a printer that prints (by making holes in a paper) a mirror image of the letter, when the page is flipped we should be able to translate letters into Braille. I used rapid prototyping concepts where I tried to build models and program it to see if I was able to get the desired results. I had to build and break 7 different models before settling on a final one that was able to print the six dots in a desired sequence according to the Braille standards. After which, I programmed the letters A-Z. I used normal calculator paper to provide the proof of concept.

I have validated my version 1.0 of Braigo and potential small updates in software necessary to perfect for the next version 2.0 at Santa Clara Valley Blind Center based in San Jose, and also with Hoby Wedler at his laboratory in UC Davis. I would say that the first prototype of the proof of concept has been successful and me providing the building instructions and software as open source will provide a low cost alternative solution to the visually impaired community. I achieved an 82% reduction in cost and have been overwhelmed by the encouraging feedback from both the sighted and the blind equally.

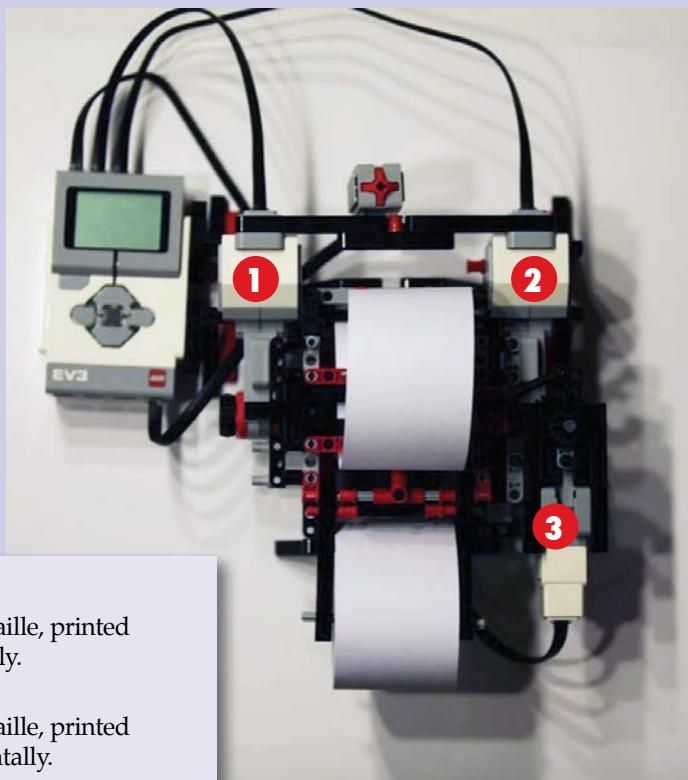
Challenges were to get the holes done correctly including the software; paper quality was also important. Sometimes the printer was getting stuck since the paper was not rolling properly.

How the Braigo Prints

The Braigo printer has three mechanical components:

1. The 'punch' motor (or Z). This MINDSTORMS motor moves the print head (the cradle for the thumbtack punch) up and down. The weight of the printhead allows the tack to pierce the paper, and the motor pushes the tack up and away to make the next punch.
2. The feed motor (or Y). This MINDSTORMS motor pulls the paper through the printer in specific increments.
3. The print head motor (or X). This MINDSTORMS medium motor moves the print head back and forth along the width of the paper to position the punch.

Using the EV3, some metal washers for weight, a thumbtack, and register tape, this printer can write in Braille for a fraction of the price of a presently available Braille printer.



Printing Braille

Printing Braille is actually hole punching, as Braille is a tactile reading language. The language is based on a grid of 6 dots—2 x 3 dots.

The Braigo prints one line horizontally in a mirror image, so words are printed in reverse. However, by flipping the punched paper over, the words are readable.



A in Braille, printed vertically.



A in Braille, printed horizontally.



A printed by Braigo, horizontal and mirrored

How did you discover the MINDSTORMS model you chose to modify for the Briago?


If you have seen some of my older models on Facebook, you will notice I tried different versions. Also in a YouTube video you will see that I used the model by Ralph Hempel to see how he programed the model to print <https://www.youtube.com/watch?v=R9FKY3JFWaA>

Then it hit me: the concept by Ralph can be reused and re-purposed to build a Braigo, with the necessary design change.

What programming language did you use for Briago? ROBOTC or EV3's language?

I used the EV3 language that came with it.

It's admirable that you are making everything open-source. Are you going to continue innovating the Briago, or do you have another project you want to pursue?

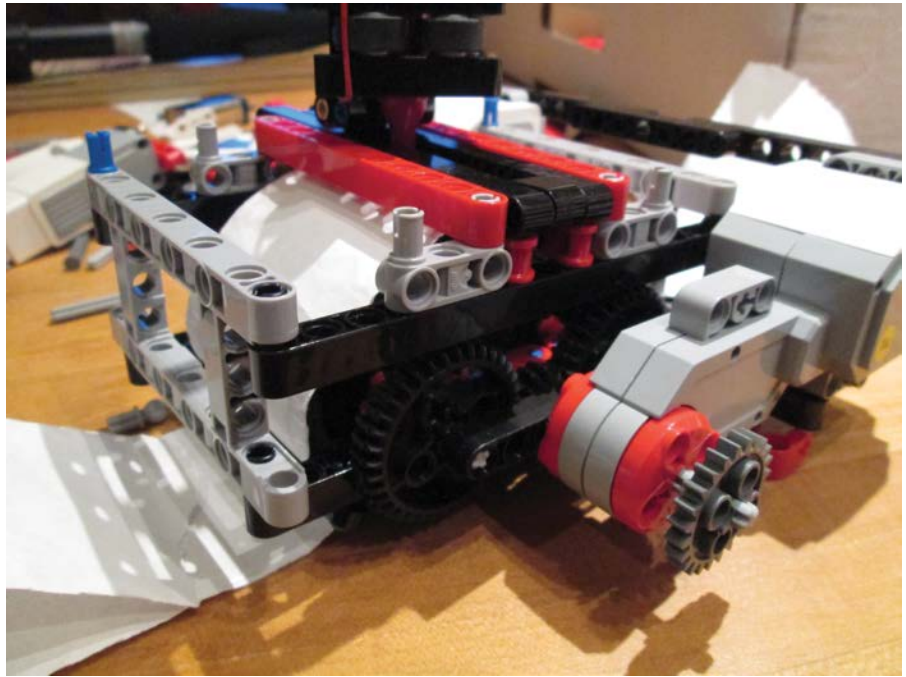
The next version is in the works—I think the interest that was generated to provide a better, cheaper tool to the blind has helped me to get experienced professors and industry people willing to guide me for a portable commercial version. It's in the works at this moment. 



Demonstrating the Braigo at a local event.



Ralph Hempel.



Ralph's banner printer in development.

Hey! Look at What This Kid Did With My Printer!

Article and Photography by Ralph Hempel

Ralph Hempel is a man with a history with LEGO MINDSTORMS. He helped develop the MINDSTORMS NXT and EV3, resulting in designing a bonus model for the new EV3 sets. This model, BANNER PRINT3R, became the base model for Braigo. BrickJournal asked Ralph for his comments on the Braigo:


I first found out about Shubham's work on February 15 this year when one of my online LEGO friends (Xander Soldat) sent me a link to an article on CNET describing the Braigo. My thought was: Hey! That's my printer model—and look what he's done with it!

The model began as a challenge to a group of 12 MINDSTORMS enthusiasts to create a series of bonus models that would be available on the LEGO website. I'm not known for building as much as for writing replacement firmware for MINDSTORMS bricks, but I decided to give it a try.

After a few weekends and evenings, the plotter was really taking shape—the paper transport was working well, the pen holder was elegant and minimal, and the program was printing letters. Then the hard work of creating building instructions began, and I could not have finished without the extra help of a well-known member of the MINDSTORMS community, Philippe Hurbain (philo).

Once the design was complete, and was put up on the LEGO website with the other bonus models, I continued to work on other projects. I was pretty surprised when I got that link.

Rather than complain about how somebody had reposted my work, I embraced the fact that Shubham did exactly what was expected of a good engineer. Given a problem, first see if there's a solution out there. That's not being lazy, that's being smart! Then adapt the solution to your needs, taking the good parts, modifying or discarding the bad parts, and adding your own parts. That's what LEGO can help teach kids of all ages.

Engineering is all about striking a balance between competing solutions, and Shubham has done a great job with Braigo. I am not sure I could keep up with his incredible media schedule and his visits to events. He should be an inspiration to young students and STEM (Science, Technology, Engineering and Math) teachers around the world. I am proud to share links to the Braigo site and say, "Hey, look what this kid did with my printer!" 

Technic Builder: Vimal Patel

Article by Joe Meno
Photography provided
by Vimal Patel



From left: Jernej Krmelj (online name: Zbli), Vimal Patel, and Peer Kreuger (online name: Mahj) with their MOCs below.

One of the challenges with Technic building is discovering new and smaller ways to steer a vehicle. One builder that has been pushing the envelope, or rather, shrinking the envelope in Technic building, is Vimal Patel. Currently in college studying Industrial Design, he has built some cars and vans that use distinctly different ways to steer. BrickJournal was able to chat with him about his building.

BrickJournal: When did you start LEGO building and did you start in Technic, or transition to Technic from System?

Vimal Patel: I've been building with LEGO since the age of two or three. It started with System; set 565 (Build-N-Store Chest) usefully included a storage container (and baseplates for lids) that housed most of my childhood collection. I combined LEGO with so-called Better Blocks (a competing brand); their rounded end profiles created hinged connections that allowed for dynamic models, like flowing ship sails and flexible tank treads. Technic came to me as a three-year-old when, with my dad, I 'built' 8856 Whirlwind Rescue. In due course, the rotors were motorized—it was great fun to lie beneath the turbulence, and to see how close you could inch your face to the spinning blades without injury. Three years later I built 8880 (Technic Super Car), which I knew as The Supercar. It took me four days to finish; the first three were spent doing it incorrectly. On the last day I identified my mistakes, dismantled it, and put it all back together. I was bought a lot of LEGO throughout my childhood, and by the age of eleven I had a large collection of mostly Model Team and Technic sets.

What I find interesting now is that as a child, I barely deviated from the instructions LEGO provided. I might've modified things like Whirlwind Rescue or built simple contraptions like a motorized shaver (completely unnecessary at the time, obviously), but generally, I treated LEGO as individual construction sets rather than as a system of interchangeable modular parts. Its creative potential eluded me; it never even occurred that there were people out there designing these toys from scratch. This perspective stuck throughout my teenage years, and like many others, LEGO became just another little kid's toy.



Vimal in 1992.



Patel's model of the A-Team's van, which is remote-controlled.



Another view of the A-Team's van, which shows the rounded IR control sensor. The large gear is attached to the drive motor, which is an XL motor.



A look at the bottom of the van showing the differential gear for the drive. The M motor is actually the steering motor.

Fortunately, the Internet showed me that there were people unbound by the prescription of LEGO's instruction manuals and used their imagination to snap bricks together however they pleased. In 2007 I bought my first set in a long time (the motorized and remote-controlled (!) 4958 Monster Dino), cracked open my collection, and looked at LEGO in a new way. I now am addicted to the feeling of being able to create seemingly anything from a modest pile of bricks.

What inspires you to build?

I think that anything can be inspiring, it just depends how you look at it. When it comes to design, I might be inspired by something as tangible as an object or as fleeting as an emotion. Everything's interconnected and constantly dynamic; to me at least to an indefinable extent, which makes it difficult to say what inspires me beyond to say I build what I like to build. Nevertheless, as a subset of design that makes you work within a fixed system, my inspirations for LEGO builds are generally more tangible and iterative—things like vehicles and animals, rather than for 'pure' design, where there are really no limits and there is a greater focus on raw innovation.

There are many LEGO builders in the online community that inspire me. Peer Kreuger (online name: Mahj - www.mahjqa.com) constantly surprises me with the way he uses the bricks; the ingenuity, clarity and efficiency in his constructions is really wonderful. I also particularly love zblj's (Youtube account: <https://www.youtube.com/user/Zblj1987>) prolificacy and brute force engineering, along with akiyuki's (<http://legokarakuri.blog91.fc2.com>) super clever mechanisms.

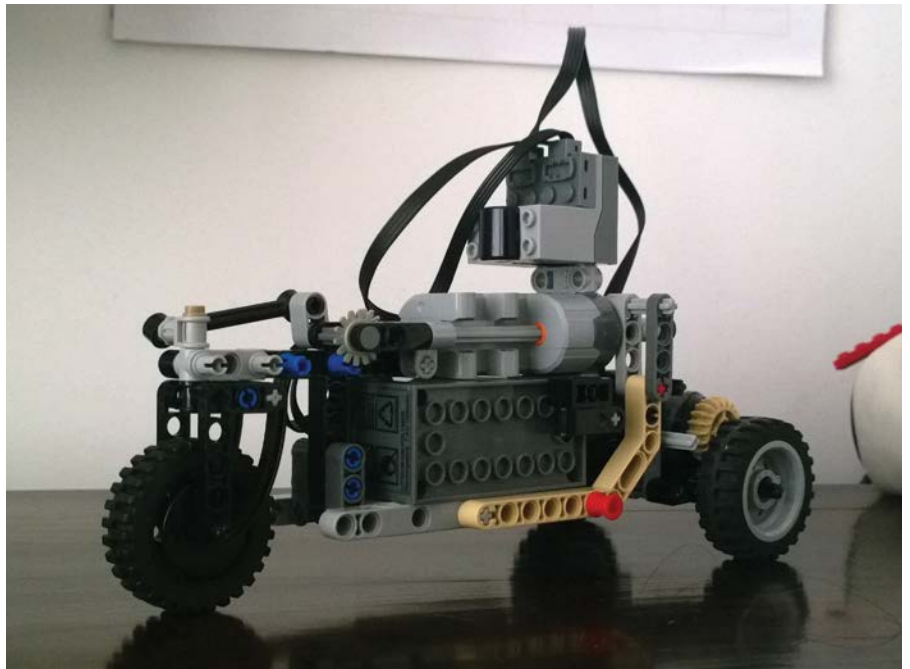
How do you build?

My process is very much trial and error; very little is planned apart from what I would actually like to build—and even that sometimes changes. If I'm building a LEGO version of something that exists in real life, I don't print out blueprints or anything, because I often build using generous amounts of creative license. When it comes to functional, studless Technic models, I first focus on the functions (starting with the most difficult) and worry about holding it all together later. I find that doing it the other way around—for instance, building an open car chassis and trying to fit your functions in afterwards—can be unnecessarily frustrating.

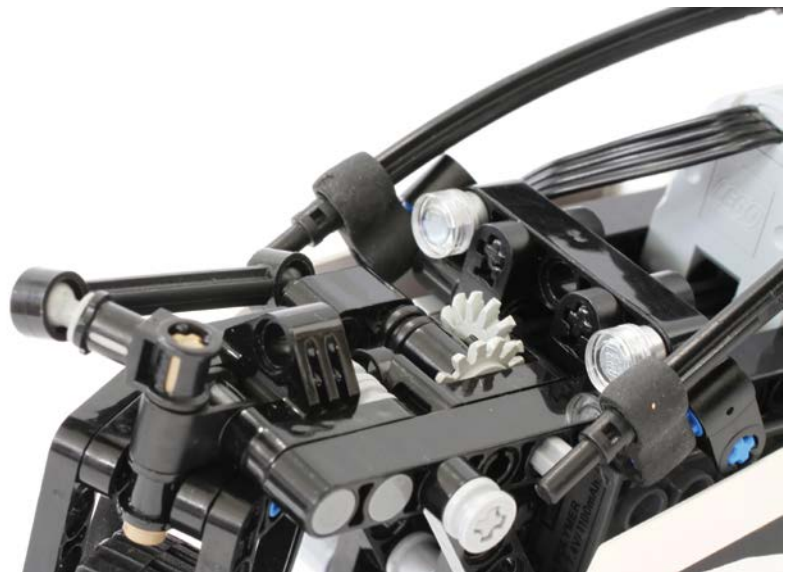
At least initially, I don't worry too much about the assemblies that functions are contained in. Keeping things loose at this stage helps keep me open to new ideas and solutions for both individual functions and how they might work with each other in an integrated system. It never usually comes together in a single take. I keep rebuilding, and at some point I end up with a working model. Reliable operation and efficient parts usage are important to me, which means the rebuilding process can go through many cycles and take a lot of time. I don't build small for the sake of building small. Building a condensed package of functioning parts is a uniquely challenging process, where the solutions to problems are quite different to larger scale builds.

What are the challenges you run into while building?

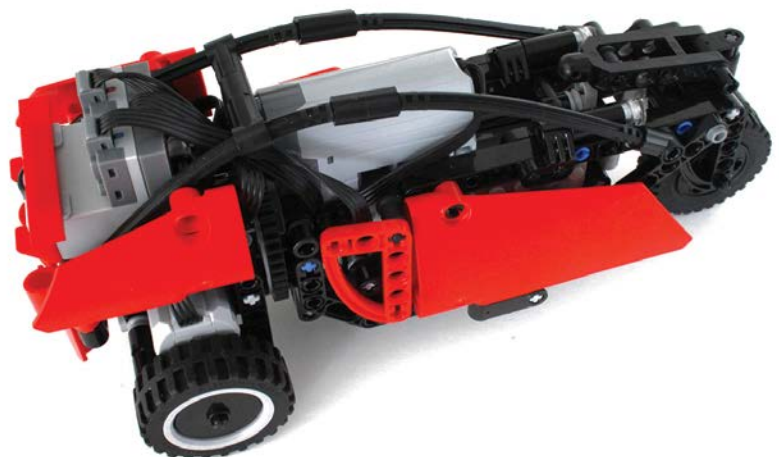
In 2011 I built a model called the Carver (seen in this video: <http://youtu.be/GStC09Je6jk>). It's based on a real three-wheeled car of the same name that uses hydraulics to both tilt and turn in the corners. Recently, some people asked me to make a few Carvers for them. I soon realized that what I had built for myself would not be ideal for those not used to LEGO building and making repairs or adjustments. It was difficult to use: if you turned too much, the gears in the steering mechanism could skip and bring the tilting chassis and front steering axle out of alignment. Fortunately, since the original Carver was built, LEGO released a servomotor that automatically self-centers. Compared to the motor I originally used, it has rotating outputs on two sides (rather than one) and more connection points—which also makes it larger. The increased size made it challenging to integrate into the model. Another problem that I ran into is that when you connect most of LEGO's gears together in a pair, you can never have the output angle of both axles perpendicular to each other. This problem can make driving a vehicle in a straight line difficult, since the servomotor's output angle has no trimming function (it is fixed at 0°).



A Carver development model in progress.



A look at a geared version of the steering mechanism. This was later changed to a gearless mechanism.

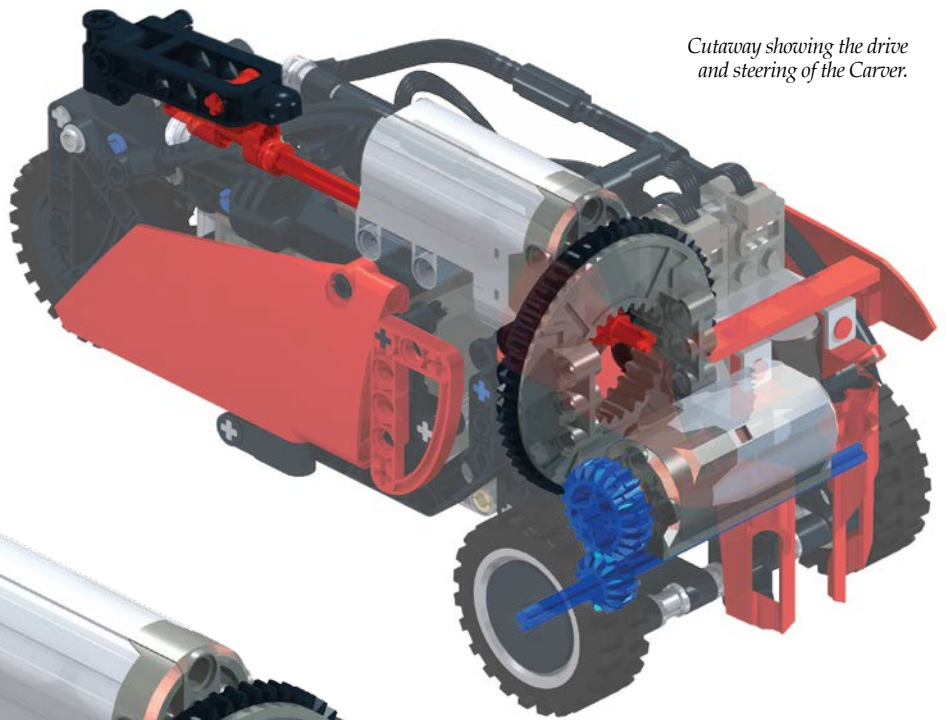


The updated Carver.

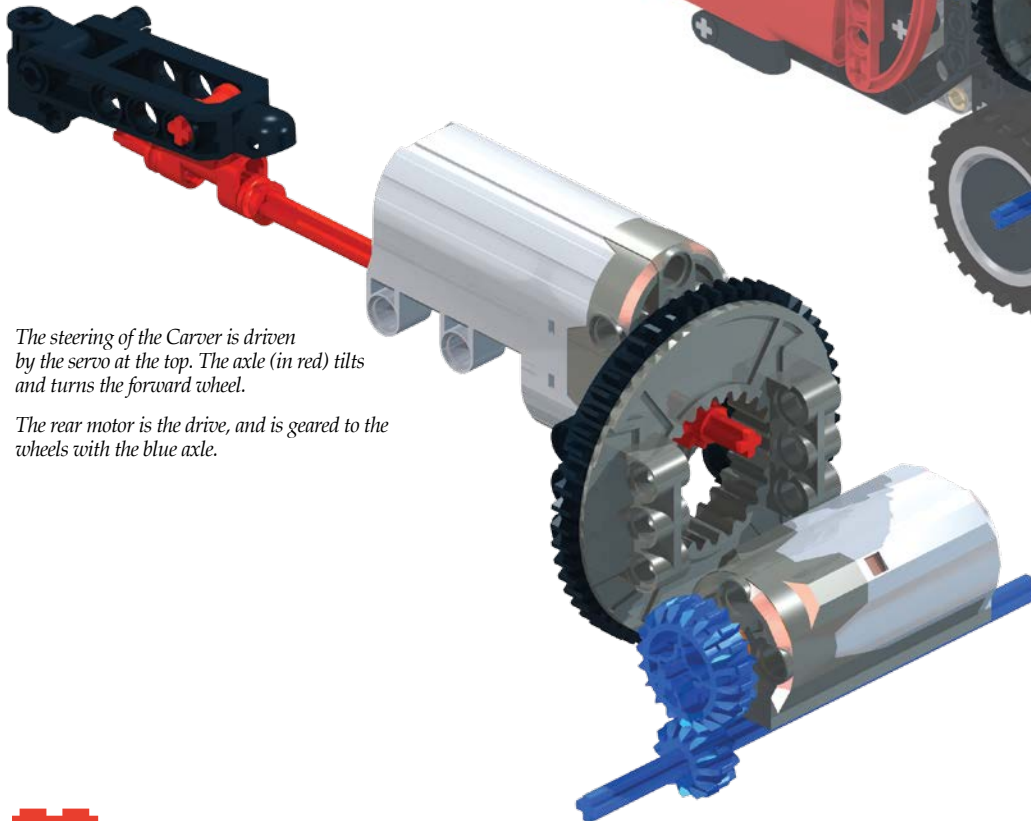
The only exceptions I have found are the old and fragile 14t gears, and an 8t gear connected to the interior 24t of the turntable. Some of the early sketch models I built used both of these connections; the former to steer the front axle, and the latter to tilt the chassis. These initial rebuilds turned out to be unreliable; vibrations from the front axle would sometimes cause a ball joint to disconnect, causing the model to become undriveable. Since I was building for a customer who would not be taking the models apart, I considered using glue to strengthen this unreliable connection. Fortunately I avoided such sacrilege and devised a series of robust and reliable linkages for the front steering rather than gears. In the end, the model was more intuitive and reliable to use than before. It was a painful process, but the result was worth it.



Another view of the Carver.



Cutaway showing the drive and steering of the Carver.



The steering of the Carver is driven by the servo at the top. The axle (in red) tilts and turns the forward wheel.

The rear motor is the drive, and is geared to the wheels with the blue axle.

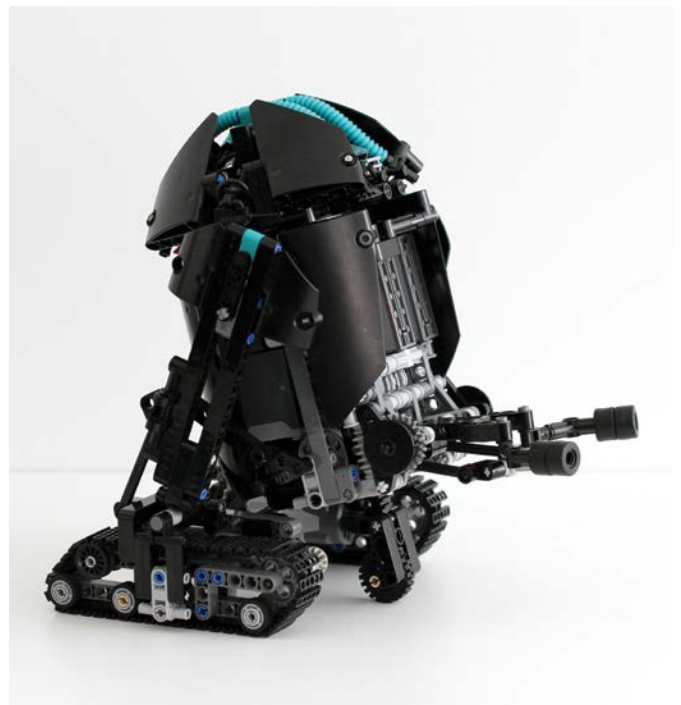
What's the hardest model you have built? What's been the most fun?

Like a lot of people who do work in a creative field, I'm unsatisfied with work I've done in the past. Each time I build, I want to move in different directions, improve on the past, and avoid repetition. As a result, I probably spend more time thinking about building than actually doing it, something my little cousin continually teases me about.

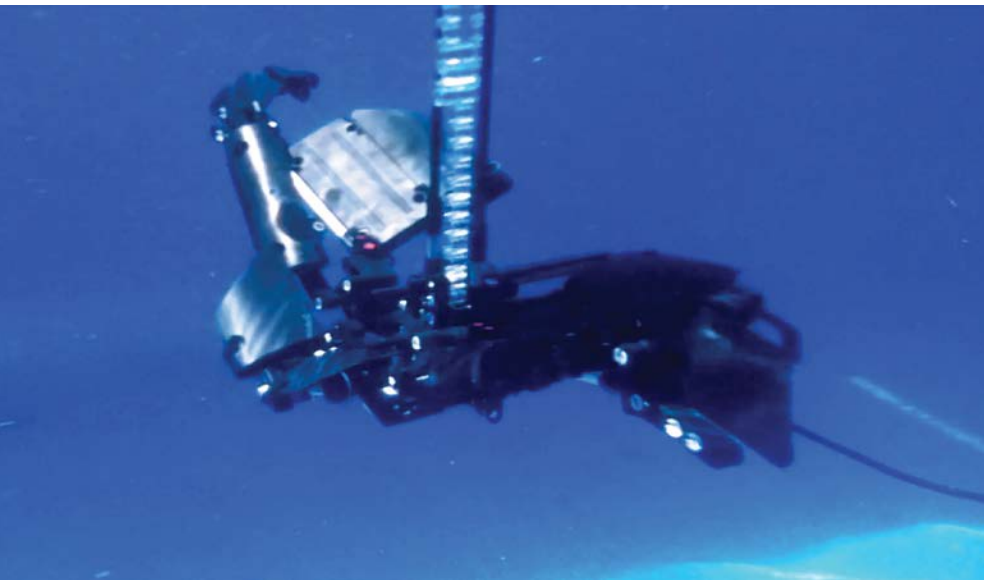
The most technically complex would have to be my most recent builds—a pair of Star Wars astromechs (video: <http://youtu.be/2h3ITTEDtso>). I actually began building them in the middle of 2012, and in between life, other LEGO builds and industrial design projects, they weren't ready until the end of 2013. What made it 'harder' was that since they were built over such a long period, I constantly revisited various constructions and make changes—the chassis alone was completely rebuilt more times than I can remember, not to mention tweaking specific functions or subassemblies. In this case 'harder' is not necessarily a bad thing, because I enjoy the process and philosophy of kaizen, or continuous improvement. Perfection is impossible, but trying to get close is fulfilling.



Two astromechs built by Patel.



Astromech at rest and (right) with extended arm.



Patel's stingray model underwater.

The most fun build has been the swimming stingray (video: <http://youtu.be/6ircaHjBiAk>). While I enjoy continually improving and optimizing constructions, it was a nice change to have a relatively simple and stress free build.

I saw some real rays up close, figured out the relevant mechanisms and put it together comparatively quickly. It was also great fun to watch and record in motion—for the video I put my camera in a sealable grocery bag and went for a swim. The stingray is probably also the build I'm happiest with; the astromechs were a greater technical challenge but ultimately, I'm drawn to simplicity and innovation. The stingray did something that I hadn't seen before with a simple mechanism, while the astromechs were more about packaging a lot of functionality in a tight space.

Do you keep your creations assembled?

Nope. Once they serve their purpose and I'm bored with them, they go back into the discard pile. With the quantity of parts I have now, I can have roughly 3-4 motorized models built at once, and not feel overly restricted by a lack of parts. Apart from when I find really good deals, I rarely buy sets—getting newly-released parts direct from LEGO is enough. I keep some official sets assembled; mostly my Model Team and Technic from the 1990s. They hold nostalgic value, but more importantly, I don't often find myself needing their parts.

What models are you planning to build?

No plans are currently set. I am currently away from my LEGO collection until July, and it'd be unhealthy to dwell on the impossible. Before I left, I built the BF Injection from *Grand Theft Auto*, but that's pretty bog-standard as far as 'newness' goes—it's really just another car. I'd like to build

some things from *Thunderbirds*, and perhaps the Jigabachi helicopter from *Ghost in the Shell*. I also want to explore convergences between LEGO and 'pure' industrial design—the wider need towards sustainable product lends itself well towards modular, multifunctional products and systems; something that LEGO exemplifies so well.

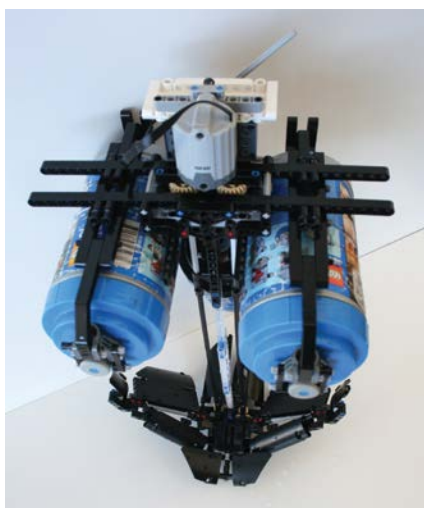
Patel's full stingray model. The top clamps are to hold two floats.

What's your favorite LEGO element? Why?

I don't have a favorite; the parts only have collective value within the entire system. I'm a big fan of the studless system. It was difficult to transition from the studded Technic parts I grew up with, but I find studless is better suited to constructing compact mechanisms. I also love Power Functions; there's nothing better than bringing models to life and controlling them with a remote. For me, it's close to a perfect system, except for its poor range in bright sunlight. Radio control would solve this issue—but perhaps LEGO doesn't really want to encourage outdoor use, where grass and dirt can damage drivetrains.



The stingray's swimming strokes.




Looking down from the floats.

Do you use elements not made by LEGO for your Technic creations?

I used wheels from Big Ben Bricks (<http://www.bigbenbricks.com>) in a mountain train once. They made the build easier, since the diameter of the wheels needed to match a central gear inside the train that meshed with teeth on the track. What appeals to me about building with LEGO is that the system is fixed. With industrial design there are no boundaries to how a problem can be approached and solved, which can be freeing, but sometimes overwhelming. It is comforting to sit down with my LEGO and work within the challenging limitations of the fixed system to find creative solutions.

If I were to design my own parts, I think it would take away from that challenge—but that's just me and my approach to LEGO. It is nevertheless interesting to see what others in the community are proposing or designing. There is an excellent thread on Eurobricks (link: <http://www.eurobricks.com/forum/index.php?showtopic=91294>) where a member has designed an assortment of custom parts, and in some cases 3D printed them. I think this is a particular area where LEGO can draw from the online community to help ensure relevancy into the future. At some point the quality of 3D printing will be comparable to injection moulding—LEGO's response will be interesting.

Do your LEGO builds influence your industrial design work, and vice versa?

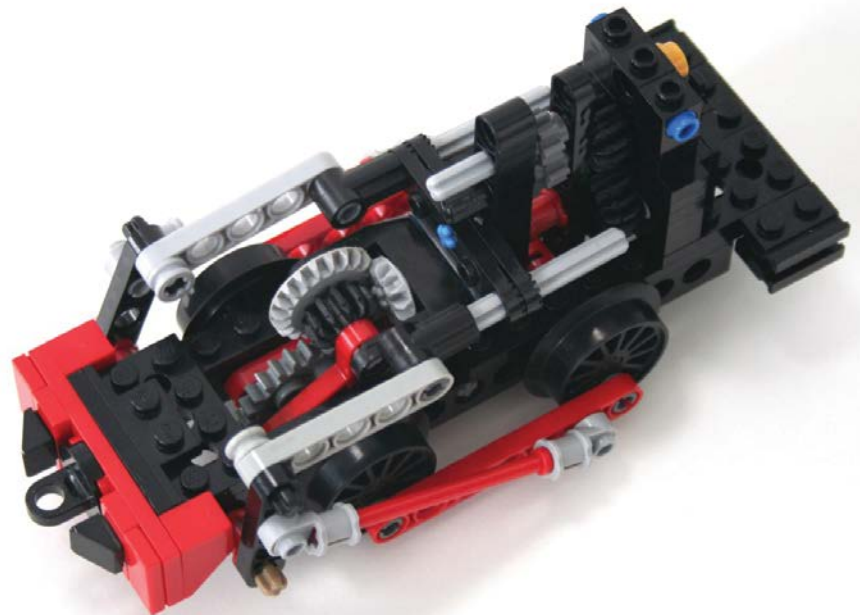
For me, industrial design perfectly intersects art and science. I see LEGO as a subset of design where the components are restricted in variety, but with virtually limitless combinations. It's such a useful tool, from teaching people about the way the world works, to specific things like restoring ancient mummies (link: <http://www.bbc.com/news/uk-england-cambridgeshire-19635413>). Within my degree, I have used it to create rapid prototypes and to help explain design concepts. For instance, a chair I built as part of a group project has its origins in a simple LEGO sketch model, with no fundamental mechanical changes (link: <http://www.designboom.com/design/clean-flat-pack-chair-reclines-with-your-body-posture-11-13-2013/>). 



You can view Vimal's webpage by going to <http://cargocollective.com/vimalpatel> or scanning this QR code!



Patel's mountain train.



A look at the gears inside the train.



Patel's chair, with inspiration at right.



Technic Junkie

Article and Photography
by Paul Boratko

Two young boys walk up to my table where I have my models displayed, and one of them says, “My friend doesn’t think that these are real LEGO.” I reply, “Really? So do *you* think they are real LEGO?” He shrugs his shoulders and says, “I don’t know, they don’t look like real LEGO.”



Top: Lamborghini Gallardo with custom plated LEGO wheels designed in 2009.
Above: Paul Boratko.

Ah... The life of a Technic builder. Sometimes it just seems so hard to be accepted. Casual fans of LEGO are confused, and many System builders don’t view the building on the same level. I guess you can’t really blame them though, as it does take a much different approach when building a straight Technic model compared to something with traditional bricks, especially in the newer studless era. It is really nice to see so many new 2014 non-Technic sets incorporating Technic into them to add some cool playability.

Beginnings

I got my first LEGO set back in the late ‘70s. It was the LEGO “Technical” 853 Car Chassis set. When I had seen the cutaway view of the inline 4-cylinder engine in the upper left hand corner of the box, I was in awe: this is what makes cars work. I don’t remember a whole lot from when I was 4 years old, but I can remember building that awesome car and then building the alternate buggy model and then the car and then the buggy, back and forth to the point that I could build them both from memory.

I think that the Technic building experience gave me an edge when I started school in 1980. If there is one thing that Technic building does is that it improves your problem-solving skills as well as your creative talents. I continued building with Technic throughout the early-to-mid-‘80s and then the infamous “Dark Ages” began... you know, the time in a youngster’s life when it isn’t cool to build with LEGO anymore and you have to hide it from your friends.

I still tinkered with various LEGO mechanisms throughout the next 5 or 6 years. In 1992, I was a senior in high school and I had to build a mousetrap car for a drafting class project. Of course, I pulled out my Technic parts to get the job done. The goal was to get the contraption to travel 10 feet. Of course since I had the mechanical



A Lamborghini Murcielago built by Boratko in 2010.

advantage and knowledge of how gears work, I got an “A” when mine went 25 feet. None of my friends thought that LEGO wasn’t cool that day.

Two years after I graduated, the 8880 Supercar released. This was the model that had it all: New elements that made for a more realistic car including a more natural way to shift gears, new engine blocks with round pistons, all-wheel drive, 4-wheel steering, even a mechanism that made the headlights flip up and down. It was an absolute beast.

I didn’t buy my next set until 1999, which was the 8448 Super Street Sensation. It was absolutely fantastic. While it didn’t boast as many features as the 8880, it did have a unique sleeker look to it and also had a transmission with two more gears than the 8880, one of which was a reverse gear, something that never existed in a LEGO model. It also gave you the ability to mount the engine in the front or rear and had a cool convertible or gull-wing door option. It also introduced some new studless parts that in time would change the way that Technic models would be designed in the future.

In 2002, I had discovered Brickshelf and was amazed and inspired by the custom car models built by a man named Nathanaël Kuipers. Nathanaël’s skills were far beyond anything that I had ever built and when pics of his GT Car hit the Internet, I was completely floored by the design. Could I actually build something like this and at this level? I was determined to hopefully construct something someday that might



Chopped Hot Rod built in 2012 with moving pistons and convertible top.



Boratko's take on a monster truck named "Some Kind of Monster" built in 2013.

be cool enough that perhaps someone in some other country would see it and say "Wow, that is cool!" and maybe inspire them to start building.

I met a girl in the summer of 2003 and on our first date she had to stop at Toys 'R' Us to get a gift for her friend's daughter. We walked past the LEGO aisle and she stopped and said "They don't make LEGO like they used to, I don't remember them being this cool," to which I replied, "You have no idea." Yeah, she was a keeper. We will celebrate our 7th wedding anniversary this July. She also has a Technic-based Bricklink store called "Panda's Technic Palace" that she opened in August of 2012. Our life together is very much based around LEGO. And we have a little Pug named Idgit who is well-versed at locating any LEGO parts that hit the floor that we can't find. I have a very large inventory of well-organized parts that I work with so that if I ever need anything, I almost always have it on hand, and if I don't, I pull off a expertly planned heist at Panda's Technic Palace.

Building with Technic

My main goals when building cars are to try and come up with a completely new concept than I did with the previous model; this includes a different transmission, suspension set-up, steering, and of course a completely unique body style and shape. It can get frustrating when things don't work out the way that you want and it is best to take a break from building or work on something else, and then come back to your original project the next day. Sometimes your brain just needs to reboot and clear itself. I also enjoy watching television and knocking back a few cold ones while building. I almost always watch comedies. My recent purchases of all of the seasons of *Robot Chicken* have been my recent show of choice. It's fun watching toys making

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www.twomorrrows.com





Boratko's most recognizable model, The Vampire GT, designed in 2012.



you laugh while you are designing with them. It's a cool connection and the laughs help when frustration sets in.

The best thing to do if you are starting in Technic building is to remember to look at all parts from multiple angles. Try to find more than one use for every part. Also, don't settle for second best. If there is a better part out there to use, then get it. Don't just work with what works at the time and settle with it. People will respect your models more by the thought and techniques that you put into it. There is no need to rush your model either. Take your time and rebuild your creation over and over to



Deluxe Supercar built in 2011.



*Above: Black and Gold Deluxe Supercar model sold for Charity in 2013.
Below: Porsche 997 GT3 built in 2012.*



optimize it better. A well thought-out model will get more respect amongst other builders than one that was thrown together quickly over the weekend. Everyone likes to get pictures of their newest model uploaded as fast as they can without really taking a good look at it and making sure that they covered all of their bases before debuting it to the world. You don't want to get something out there too quick, only for others to find some obvious flaws that you may have overlooked. This can not only be frustrating, but also a bit embarrassing.

I also try to incorporate as many new LEGO Technic elements into my models as possible. I actually designed my new American Muscle Car with some of the new 2014 Technic parts before I actually even had them. Early pics of sets have a tendency to leak out and when I had seen the new steering arms, I knew they just had to be part of my new car. I get excited just like everyone else when the new set pictures are revealed, but I only get excited because I am harvesting them for new parts and new colors that I can use. I am not much of an actual set builder at all; in fact, the only sets that I have actually built in the last 20 years were the 8880, the 8448, and the 8070. I also built Nathanaël Kuipers' Concept Car to take to shows to help

him promote the new instructions that he and Josh Delahunty had done for it. I also recently built Nathanaël's Alternate 42000 "C" model Street Rod and did a video review on it to also help promote its instructions.

I also prefer to build my models in the studless format as I believe the builds are more challenging than building with the standard Technic bricks. Modules can be built more practical while still being relatively strong. Of course there is nothing wrong with combining the two styles together. As I said before, studless building in my opinion is more challenging, which is why I came up with the saying, "Studless building is like playing chess, you must always plan five moves ahead."

Technic building gives me more of a perspective on life now. I find myself sizing things up in the world that most people would normally just take for granted. I like to study various mechanical objects as I am always looking for new ideas for mechanisms that may be recreated in Technic. I work in the automotive field and am always taking apart cars and discovering new clever things that I can use for future reference. I do kind of feel left out with some of the other builders that I look up to, as it seems the majority of them all have backgrounds in engineering or a similar field; meanwhile I am just a regular guy who had never even gone to college.

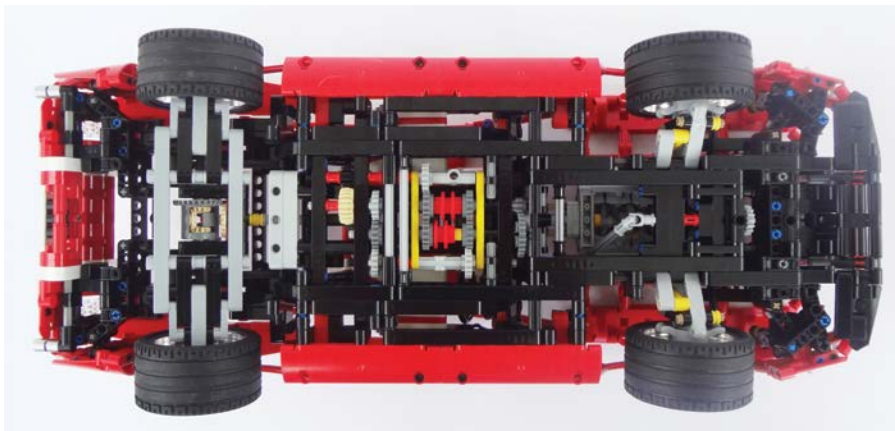


American Muscle Car designed in 2014.



Opening doors, hood, and trunk.





4-speed linear gearbox with live rear axle.



Detailed interior with working steering.




Connecting with Technic

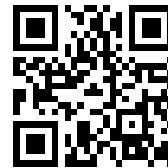
Over the years, I have met a ton of great people and made hundreds of friends from all over the world in just about every country. A few years ago, I got an email from a man informing me that he had designed a new website concept for me because he was a fan of my work. He showed me what he had done and I was shocked. It was leaps and bounds better than the “Do-it-Yourself” site that I had constructed. The genius behind the incredible work was Juanjo Montilla from Spain. He works for jontusmedia.com and he is the best. I also work closely with Eric Albrecht with instruction design, as Eric is a master with LEGO CAD. When it comes to renders and CAD work, Eric is the top of the food chain. And of course I have to give thanks to Fernando Correia for being kind enough to promote my work at his awesome website TechnicBRICKS.

I will be turning 40 very soon and I’m still trying to figure out where the time went. It is interesting to look at my Brickshelf folder and see the evolution of my models through the last 12 years. I often wonder if I will have what it takes to keep up inspiring with the other amazing Technic builders from all over the globe like Paul Kmiec, Jurgen Krooshoop, Fernando Benavides de Carlos, Jernej Krmelj, Nicolas Lespour, Alex Zorko, Francisco Hartley, and of course Nathanaël Kuipers. I am sure that I missed many others in that list. Links to everyone’s work can be found on my Friend’s Wall at my website www.crowkillers.com.

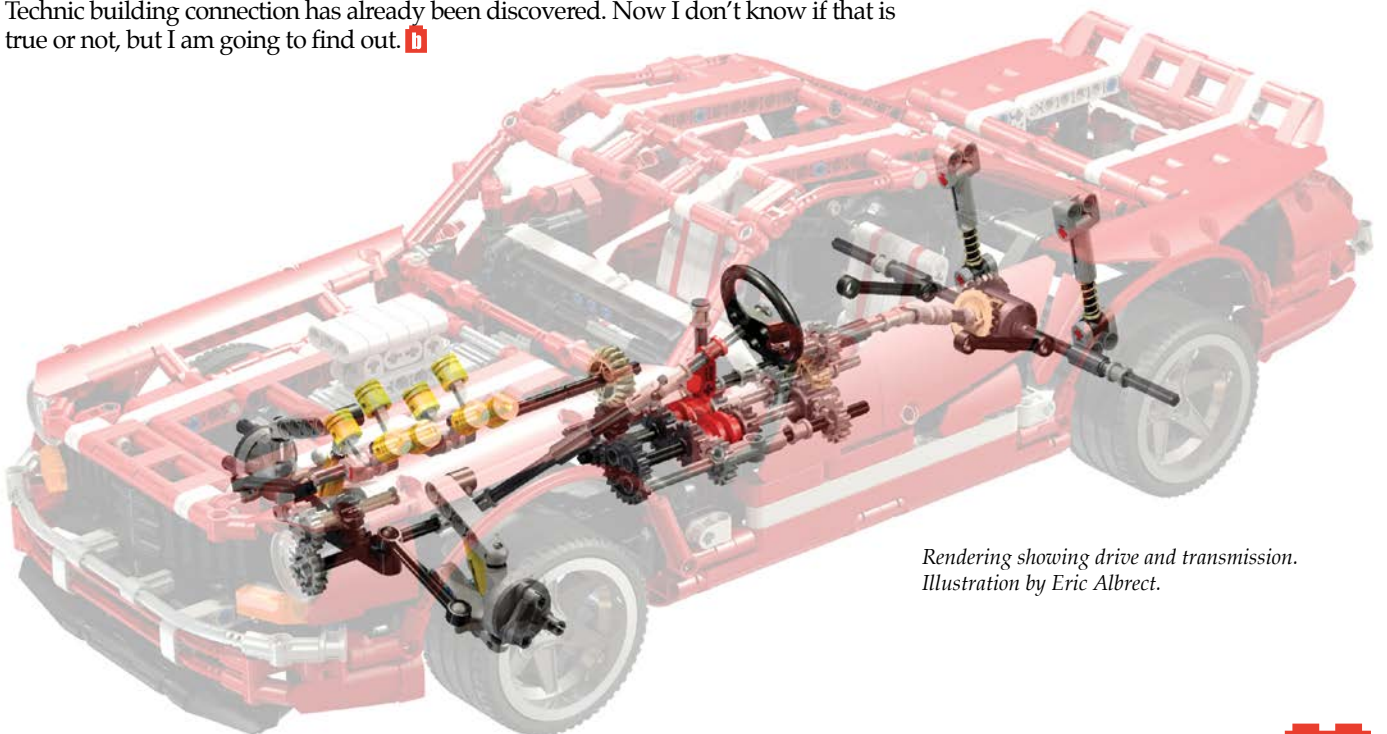


It's been a fun ride for me so far. I've done a few AFOL shows as well as LEGO Kidsfest events. I've sold a few of my models to raise money for charity, I got to write articles for some websites, did a few television and online interviews. I was also lucky enough to be asked to be part of the STUDS collectible trading cards series. I met and married the perfect woman who loves LEGO just as much as I do. What else could I ask for?

I am not sure what direction my building is going to go in 2014. I do know that I have to keep pushing myself to keep evolving and improving. I once read that every legal Technic building connection has already been discovered. Now I don't know if that is true or not, but I am going to find out. 



You can view Paul's webpage by going to <http://www.crowkillers.com> or scanning this QR code!



Rendering showing drive and transmission.
Illustration by Eric Albrecht.

Building

“Open Sesame!”

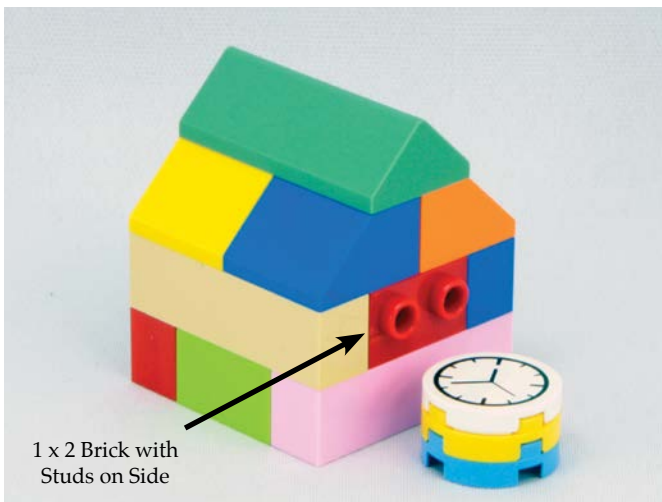
Adding Movement in Your MOCs

Article by Yoshihito Isogawa

In this article I want to introduce how LEGO Technic and MINDSTORMS parts and techniques can be incorporated into static System models. The examples that I show are just simple models. I hope you can start with these examples and expand on them to create your own incredible models.

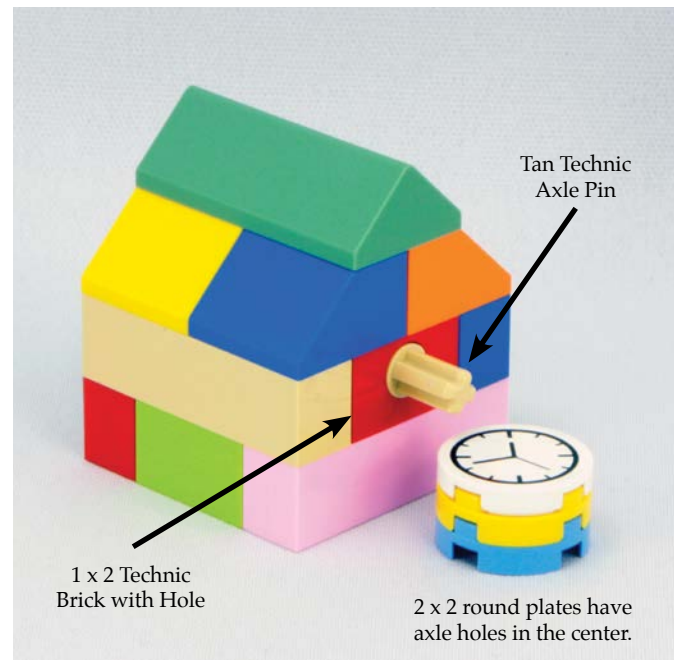
Let's Rotate

Rotation Movement is the most basic movement. Everything starts from here. I will use an example of a building with a clock attached to it.



Of course, in its current state, the clock will not rotate. You could detach it, rotate it 90 degrees at a time and reattach it, but this is not a very smooth movement.

In order to get it to rotate smoothly here is one way we could do it.



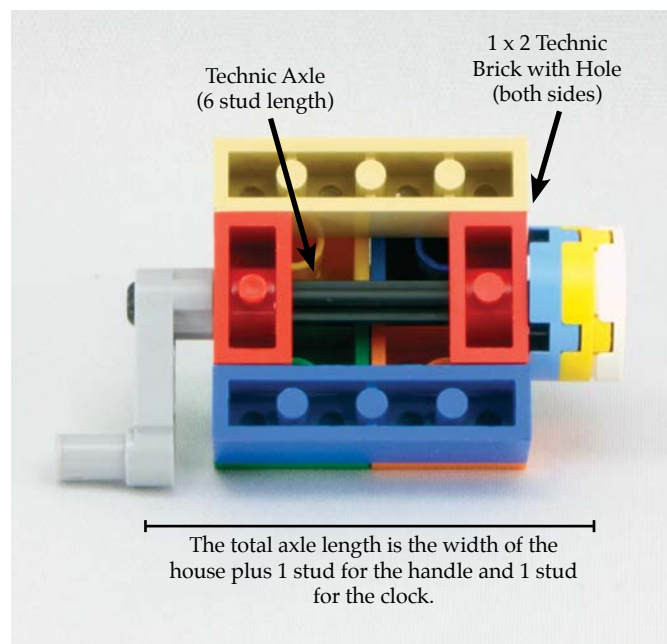
(If it is rotating too freely, instead of the tan color Axle Pin, use a blue color Axle Pin,)

But with this, you cannot create a “Clock Rotating Scene.” This is because your fingers will block the scene each time you want to rotate the clock. A way to avoid this is simple.

You just need to put a handle on the back of the building that will rotate the clock. Now you can rotate the clock from the back of the building.

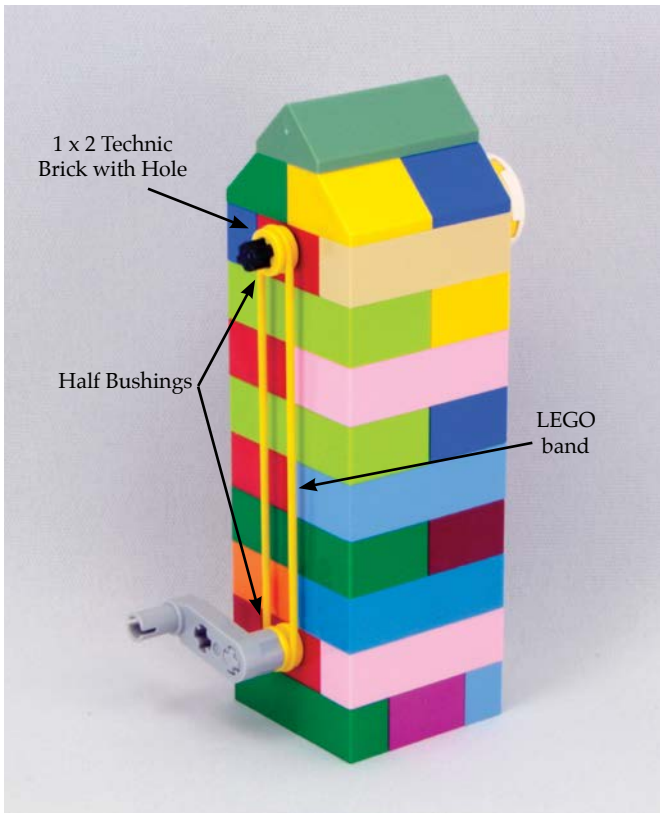


Still, when you do this your hand can be seen at the back of the building.



Let's change the building into a tower and put the handle at a place farther away from the clock.





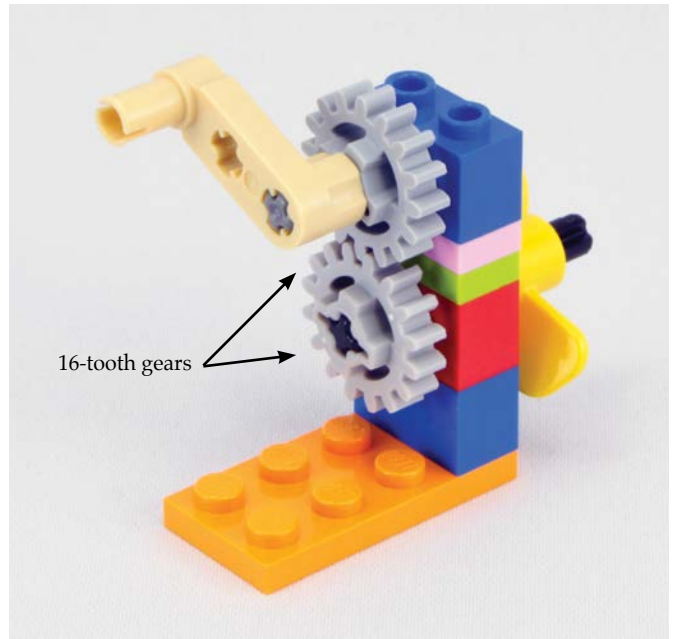
In this way you can rotate the clock from a handle that is in a different place.



By starting off with adding a simple movement and then changing it bit by bit to solve problems one at a time, you can polish your ability to create moving MOCs. If one starts by trying to make an “incredible machine,” there will often be setbacks.

Let's Rotate With Gears

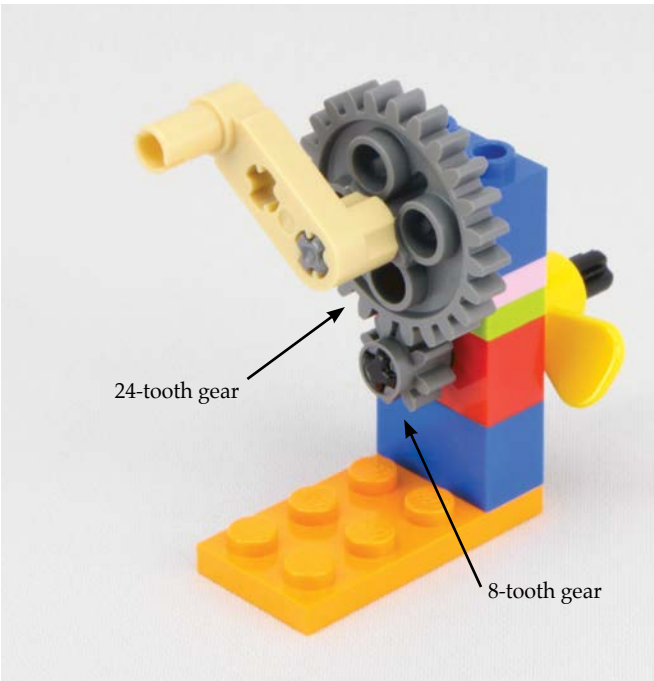
Next, I would like to talk about using gears.



This is a propeller for a submarine. When you rotate the handle, it rotates a gear that rotates another gear and turns the propeller. Both of these gears are 16-tooth gears.

Basically there are 16 “teeth” lined up around the outer edge of the gear. *If the number of teeth of both gears is the same, the handle and the propeller will turn at the same speed.*

How about if we do this?



The gear connected to the handle has 24 teeth, the one connected to the propeller has 8 teeth.

By rotating the handle one full turn, the 24-teeth will cause the 8-tooth gear to rotate three times. Basically, the rotation speed is 3x. When using gears, this "Gear Ratio" is very important. There is really no need to remember detailed calculations.

*What one should keep in mind is that when a large gear rotates a small gear, the speed **increases**. In reverse, when a small gear rotates a large gear, the speed **decreases**.*

At the same time, power also reverses proportion, but that is something for another discussion.

If one wants to rotate something faster, do this:



This is a two-step 3x speed increase. It does a $3 \times 3 = 9x$ speed increase.

Changing Shaft Placement

When creating things that move, where the shaft is placed is always something that needs to be kept in mind.

Here are a few basic models. All change the rotation direction by 90 degrees.



Using the gear setup on the right, we can make a merry-go-round type of ride.



Using the same setup, one can also make “kids chasing each other in a room.”

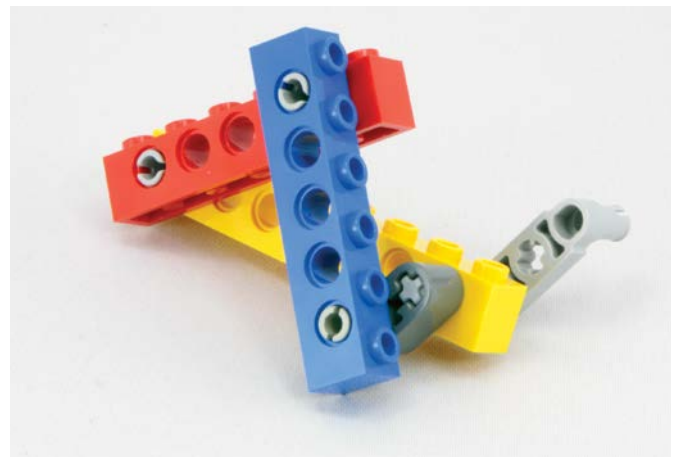


Let’s think of some more ideas.

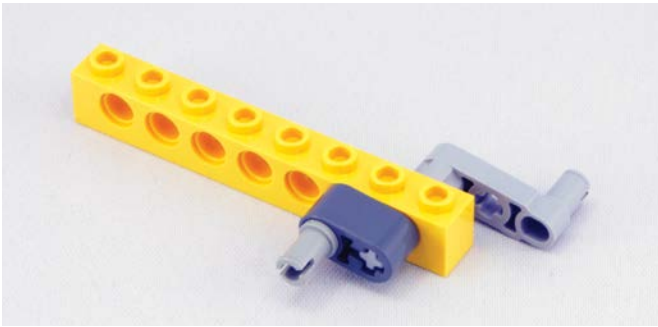
Back and Forth Mechanism

A technique that is used just as often or maybe even more frequently is **reciprocating motion**.

Here is a basic model.



When the handle is rotated, the red beam and blue beam go “back and forth.”



The base of this movement is the crank in the picture above (the dark grey part).

Using this technique we can make a see-saw.



Using a slightly more difficult technique, a bird's wings can be made to flap when the handle is rotated.

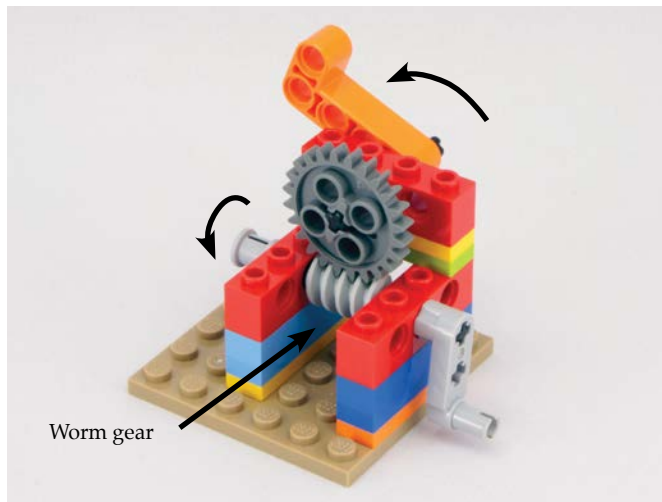


The reason why it is a bit more difficult is because it allows for both the left and right wings to flap at the same angles.

Using Worm Gears

Worm Gears are gears that look like a worm. *These can be used when one wants to dramatically increase the power of a motor, or dramatically decrease the rotation speed.*

The picture below is a basic model.



The LEGO element Worm Gear should be thought of as having only 1 tooth. In this example, the handle rotates a single tooth gear that in turn connects to a 24-tooth gear. In this way the handle must be rotated 24 times to get the 24-tooth gear to rotate a single time.



Using the worm gear, the hatch on this vehicle can be opened and shut.



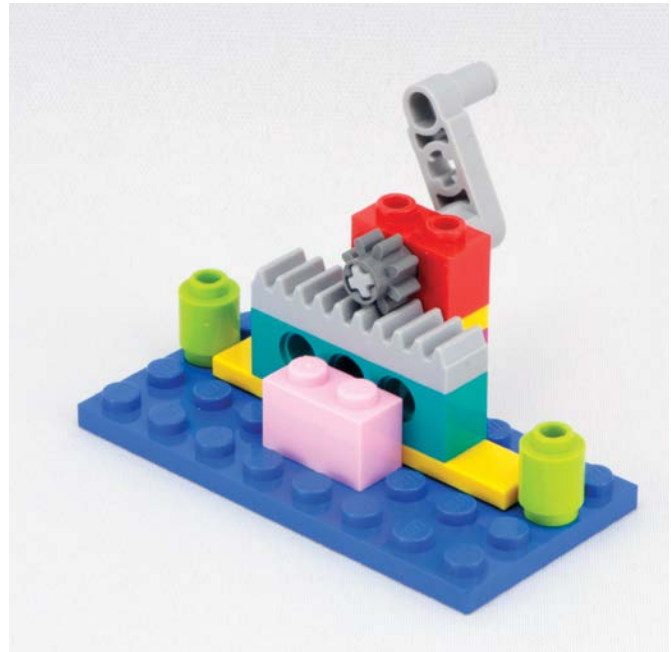
Worm gears can only be connected one way. Basically another gear can be turned with a worm gear, but the worm gear cannot be turned with another gear.

The reason why guitar strings do not unravel on a guitar is due to the use of worm gears to secure them.

Using a Rack Gear

A **rack gear** is a gear with the teeth lined up flat. It is used to change rotational motion into linear motion.

The following picture is a basic type.



When one builds this, they quickly understand that there are a few things that must be taken into consideration when using a rack gear. First is that tiles (the yellow tile parts in the picture) need to be used to allow for a smooth sliding movement. Next, guides need to be used so that the gear doesn't slide off the tiles (the dark pink part in the picture).

Also, stoppers need to be used so that the gear does not go out of range of the rotating gear (the yellowish-green parts in the picture).

Using a rack gear, a sliding door can be made.




Yoshihito Isogawa is the author of *The LEGO Technic Idea Book* series and C.E.O of Isogawa Studio, Inc. He is also part-time lecturer at Kanagawa Institute of Technology and a member of the MINDSTORMS Community Partners.

Video:
<http://www.youtube.com/ISOGAWAYoshihito>
<https://www.facebook.com/isogawastudio>

A slightly futuristic double opening door can also be made, as seen on the right. Take a look at how the gears are set up to separate the doors.



Using LEGO bricks to create movement will open you to a new and deep world. I hope that you too have experienced the thrill of this world. 



You can go to Isogawa's website by using this link: <http://translate.google.com/translate?u=http%3A//www.isogawastudio.co.jp/legostudio/index.html&sl=ja&tl=en> or scanning the QR code to the left.

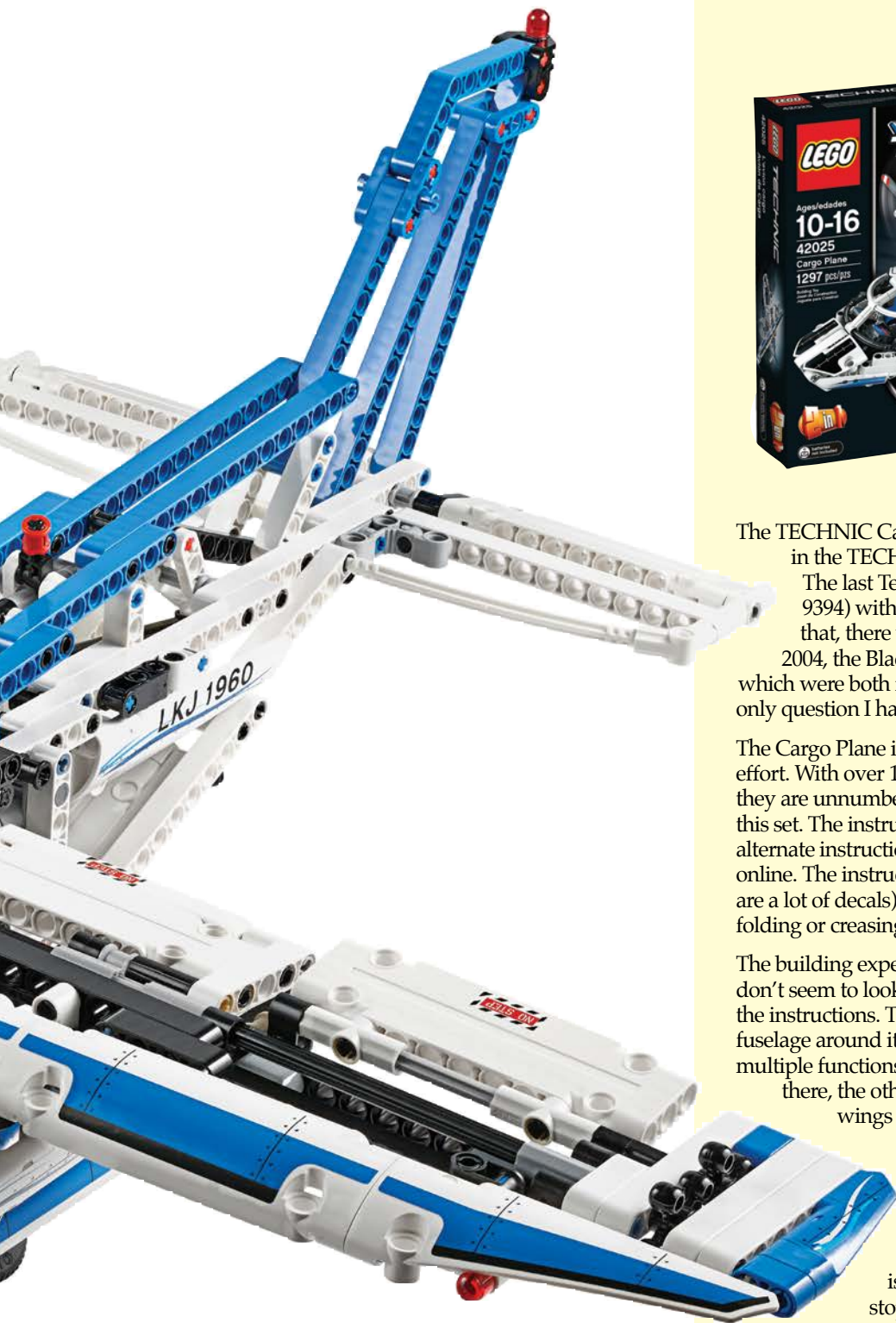
The LEGO Group

On the Runway: The TECHNIC Cargo Plane

The Cargo Plane's gearbox is located right behind the wings on the top. The two red levers activate the four functions: the right lever switches from propeller spinning to rear cargo door operations, while the left lever operates the nose opening or the landing gear. Immediately behind the gearbox is the lever for flap control. Pulling backward or forward extends or retracts the landing flaps on the wings. The last red-tipped control moves the ailerons and elevators to simulate turning and up and down maneuvers.

*Review and
Interview
by Joe Meno
Photography
provided by the
LEGO Group*

The Power Functions battery box is located inside the fuselage and can be accessed by removing the side panels. Removal of the battery box is done by removing a couple of retaining pins and sliding the box out and disconnecting the motor wire. Another wire can be attached on top of the motor wire to add more functions—the box will have a tight fit, but no elements get stressed. From there, modifications like lights can be added.




Cargo Plane (42075)
1297 parts, \$139.99 USD

The TECHNIC Cargo plane is the first large scale plane model in the TECHNIC theme since—well, a really long time. The last Technic plane was a smaller craft (the Jet Plane, 9394) with only a third of the parts of this set. Before that, there was the (VTOL) Aircraft (8434), released in 2004, the Black Hawk (8425), and the Space Shuttle (8480) which were both released in 1996(!). After building this set, the only question I have is, “Why did it take so long?”

The Cargo Plane is a good weekend’s build and well worth the effort. With over 1200 parts, there’s more than few bags—and they are unnumbered. Sorting would be a good way to start this set. The instructions for the plane are 225 pages long, so alternate instructions are not included, but can be downloaded online. The instructions come with a decal sheet (and there are a lot of decals) in a bag with a cardboard insert to prevent folding or creasing either, which is a nice touch.

The building experience is a long one, where the assemblies don’t seem to look like anything until about the last third of the instructions. The first assembly is the gearbox and the fuselage around it, and is pretty enlightening in showing how multiple functions can be operated with only *one* motor. From there, the other sections are added, but it’s only when the wings are added that the set starts looking like a plane.

Some of the assemblies by themselves are worth noting—the two propellers are geared as separate units that attach to the wing. What is neat about the props is that they have a built-in clutch if a prop is stopped, so the gears don’t break. The other assembly that is impressive is the landing gears. All of them are linked together to simultaneously raise or lower, and the side wheels have doors that are synchronized to open for the gear.

Completed, the set is heavy, but with the motor on, can open the rear cargo door, landing gear, nose door, and props. The only complaint I have is that the props cannot run when opening the rear cargo door—I can see the props not running when the nose is open, but not the back. However, that is a small complaint. This set is a worthy addition to any Technic builder’s collection! 

This set is already available in Europe and will be coming to the US in August!

From the Designer's Desk: The TECHNIC Cargo Plane

Lars Krogh Jensen is the designer to the Cargo Plane set, which went through an extensive design process to get to production. BrickJournal was able to talk to him about the set and its challenges.

BrickJournal: *What functions were initially planned?*

Lars Krogh Jensen: Our main consideration for every LEGO® Technic model is that it lives up to our core concepts, so steering and operational functions were our main focus. Steering requires elevators, ailerons, rudders and flaps. And every cargo plane needs engines, landing gear that's concealed when retracted, operational main and nose wheels, and a spacious cargo bay you can access from the front or rear.

How was the gearbox designed?

We wanted to design the gearbox to accommodate four functions, using only one motor. The gearbox elements in themselves are pretty standard, and you can adjust them to the specific needs for each model. In the cargo plane, we needed to consider the size of the cargo bay, so I placed all the gear wheels horizontally to make a slim, wide gearbox that sits at the top of the plane. This way, I was able to make the cargo bay as big as possible.

There are a lot of actuators in this model—was this planned?

Yes. Actuators are always most practical when you have functions that require a lot of lifting or moving bigger parts of a model. Actuators have friction clutches that prevent stress on the elements, so they basically make the model more stable and durable than if we had used a bunch of gear wheels.

How long did it take to work in all the functions in the final model?

About six months from when we first signed off on the functions we wanted.

How do the props work? They disengage when they are blocked.

The gearing in the props works like a friction clutch. The props are designed to disengage when they are blocked—you know, to avoid unfortunate incidents involving fingers, your little sister's hair, or other foreign objects getting caught.

After building the plane, I added lights by wiring Power Function lights to the battery pack. Are there functions you wanted to add but couldn't?

I hope you had fun with that! Yes, lights, and a sound module would have been



LEGO Set Design Step 1: Getting into the Mood

At the beginning of every project, the LEGO designers create 'mood boards,' which are basically bulletin boards of inspiration and wish lists for possible functions and looks for a model. For the Cargo Plane, the ideas of cargo doors and landing gear are already being thought of and researched visually.

very cool! And it would have been a fun feature if you could control the steering with the stick in the cockpit. Maybe next time.

Favorite part of the set?

Can I choose three? The retractable landing gear, the propellers, and I'm really happy with the opening front cargo door.

Hardest part of the set to design?

Making the nose and cockpit look as authentic as possible was a fun challenge. It took a few tries, and I like how it turned out. And here's a little fun fact: The dash board displays show the frequency for Billund Airport Tower (119.0) because Billund is where the LEGO headquarters is based, and Herning Radio (121.0) because I'm a member of Herning Flying Club (<http://www.herningmotorflyveklub.dk/>).


LEGO Set Design Step 2: Preliminary Builds

After research is done and the functions of the set are defined, a preliminary model is made. From here, decisions on building methods and parts are made as ideas are tried for the plane, from the nose design to color solutions. The model shown is one of a few models built to tighten the design of the final model.



While this model is not the final rendition, most of the final set elements are present, including the control surfaces and landing gear. What is notably different is the orientation of the battery pack and nose shape. There is also a Power Functions polarity switch that is mounted that did not get included in the set.



From this preliminary model, small changes are made to the plane, including color and some additional elements to the tail. The production set is a result of this design work as well as a review committee to evaluate the soundness of the model in terms of building. After approval, instructions are created and the model finally produced! 



The Buffalo Airways DC-3 model submitted to LEGO Cuusoo, now LEGO Ideas.



Mikey McBryan with his namesake sculpture at Polar Land in LEGOLand Billund. The Ice Pilots School is modeled after the Buffalo Airways hangar in Yellowknife, NWT.

An Ice Pilot and a LEGO Idea

Article by Joe Meno

Photography provided by Buffalo Airways

Ice Pilots NWT, a documentary series on History TV, begins its sixth season this year. The show is about a small family-run airline (Buffalo Airways) that runs routes in the Canadian Northwest Territories. Buffalo Airways uses vintage prop-driven planes, such as the DC-3 to run their operations, and the general manager to the airline is Mikey McBryan. It also turns out that he's a LEGO fan, and he has had a few adventures with the brick. He's a friendly, outgoing guy that *BrickJournal* chatted with about his LEGO adventures.

When asked about how long he has been a builder, he explains, "I've been a LEGO fan as long as I can remember. I had a pirate ship, and still have all my sets from childhood. I loved the LEGO sets with the metal—the lights and sound sets with the battery box and 2 lights. I also loved the Classic Space stuff."

Getting LEGO sets in the Northwest Territories, though, was a challenge. At Hay River, where Mikey grew up, there was only one general store. Mikey explained, "It had a limited selection, and there were no Toys 'R' Us stores then. The nearest toy store was Toys 'n' Wheels, and it was a 12-hour drive." It turns out that quite a few years later, the toy would find him.

When Polar Land (a new area that was opened in LEGOLand Billund in 2012) was in its design phase, a group of LEGO designers went to the Arctic to research and used Buffalo Airways. As Mikey puts it, "They fell in love with the airline," and were inspired to include the airline and the Ice Pilots show in the new themed land. Buffalo Airways donated DC-3 parts to LEGOLand to decorate the restaurant that was built for Polar Land. Mikey also got a DC-3 LEGO model in gratitude. "It's one of only two made. The other one was kept by the designer," Mikey explained, continuing, "The designer's was stolen, so I guess it's in the non-black market!"

From that adventure, it was only a matter of time before Mikey would again work with the bricks. This time, it was a smaller, but no less complex project. He wanted to build his airplanes, namely the DC-3 that is the workhorse of Buffalo Airways. He searched online for models that he could reverse engineer in MLCAD, a digital LEGO building tool, when he stumbled on a silver DC-3 model that was submitted on LEGO CUUSOO.



The Buffalo Airways staff with the DC-3.



More views of the model and minifigures.

Inspired, Mikey did some research and contacted the builder of the model and asked to partner up. They decided to create a smaller DC-3, and eight months later, completed a DC-3 model that was reduced in functions. Mikey was asked for advice by the designer on how to keep the model accurate, and the final model reflects the research done by the designer (Ssorg on LEGO Ideas).

The first prototype was funded by Mikey, and was built over 2 weeks. The completed model not only had an interior, but retractable landing gear. For Mikey, the best detail was that the wings had the right dihedral angle, so they tilted up from the body.

After the build, the model was submitted to LEGO CUUSOO for consideration. In the time since the model was initially submitted, LEGO CUUSOO became LEGO IDEAS, and as of press time, 3837 people have voted their support for the set idea. There's still quite a few supporters needed to get the model to review stage, but there's a year to rally those votes.

For Mikey, it's soul-wrenching peddling votes. "I've gone LEGO crazy," he states, "and I'd do it all over again." He knows that it will take time to



A glance at the removable roof and interior of the DC-3.

make the set a success. It comes down to branding, and having a celebrity like Mikey behind a project makes the set more marketable. But for Mikey, what's important is that every vote in CUUSOO is special. Someone sat down and sent a vote of support, which is a vote of confidence in the design. That vote has value.

And there's still one thing Mikey hasn't done. He hasn't attended a LEGO fan convention. He jokes, "I should try to get in a convention disguised as a homeless man!"

Convention coordinators, you have been warned. 



A family shot with the DC-3.

Ghostbusters Proton Pack

Design and Instructions
by Tommy Williamson



About this issue's model:

It's hard to articulate the effect *Ghostbusters* had on me as a teen. Not only was it a visual effects extravaganza, it starred some of my favorite comedians, and if you spend any time with me you'll probably get just a hint of Bill Murray or Rick Moranis in my sense of humor. It wasn't until years later I realized how much I tend to mimic those boys in grey. With the coming of the latest Cuusoo set, the Ecto1, and the passing of the great Harold Ramis, *Ghostbusters* has been on my mind a lot recently. So I designed this issue's model as a tribute to a movie I love, and to the influential comedians in my life. I hope you like it.

I'd like to dedicate this model to Harold Ramis; thanks for all the laughs, you are missed. 



Tommy Williamson is no stranger to *BrickJournal*, having been featured previously for his Jack Sparrow miniland scale figure. Since then, he has gone farther into building, making some remarkable *Star Trek* props and other models. He's now doing a column for *BrickJournal*: DIY Fan Art. Here, Tommy

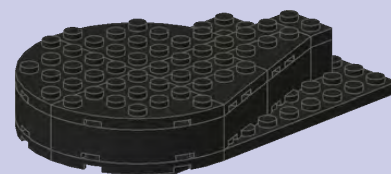
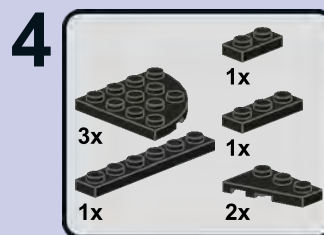
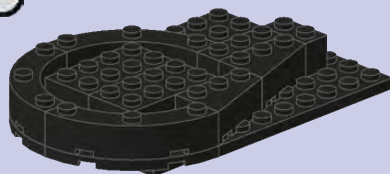
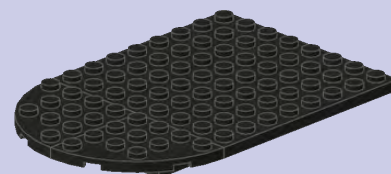
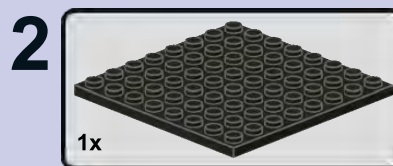
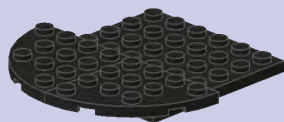
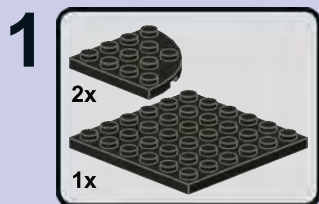
takes a little time out from his busy schedule at BrickNerd.com to make a model of his choosing for the magazine.

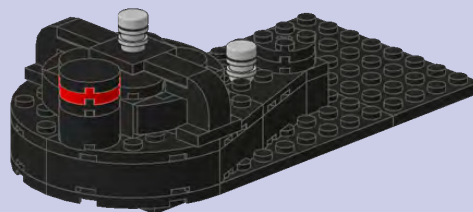
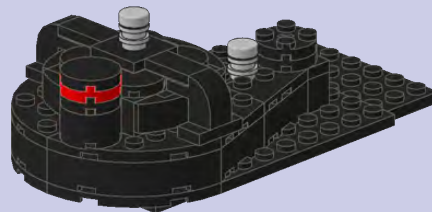
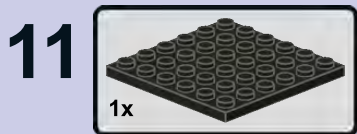
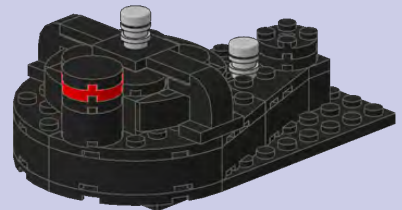
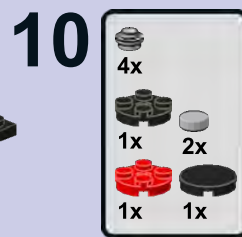
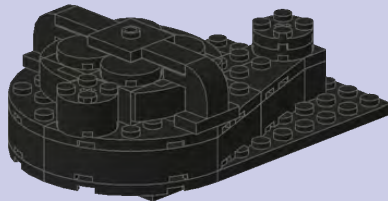
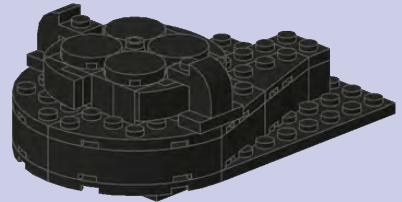
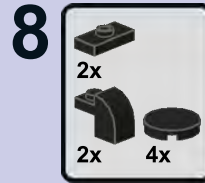
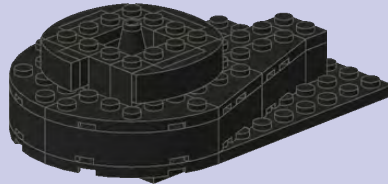
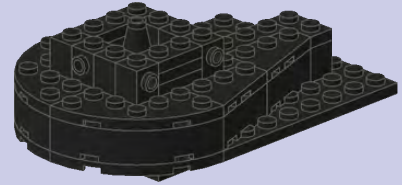
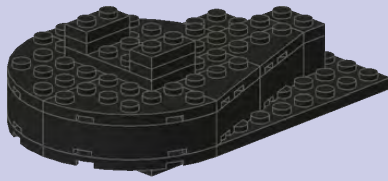
Parts List (Parts can be ordered through Bricklink.com by searching by part number and color)

Qty	Part	Color	Description
1	50746.dat	Black	Slope Brick 31 1 x 1 x 0.667
2	30039.dat	Black	Tile 1 x 1 with Groove
2	87618.dat	Black	Bar 4.5L with Handle
1	30374.dat	Black	Bar 4L Light Sabre Blade
2	63965.dat	Black	Bar 6L with Thick Stop
2	44728.dat	Black	Bracket 1 x 2 - 2 x 2
7	3956.dat	Black	Bracket 2 x 2 - 2 x 2 Up
1	3005.dat	Red	Brick 1 x 1
2	3005.dat	Black	Brick 1 x 1
1	3062b.dat	Trans Clear	Brick 1 x 1 Round with Hollow Stud
4	3062b.dat	Black	Brick 1 x 1 Round with Hollow Stud
1	4070.dat	Light Bluish Gray	Brick 1 x 1 with Headlight
10	87087.dat	Black	Brick 1 x 1 with Stud on 1 Side
1	3004.dat	Black	Brick 1 x 2
1	2877.dat	Black	Brick 1 x 2 with Grille
1	52107.dat	Black	Brick 1 x 2 with Studs on Sides
2	3245a.dat	Black	Brick 1 x 2 x 2
2	3622.dat	Black	Brick 1 x 3
2	6091.dat	Black	Brick 2 x 1 x 1 & 1/3 with Curved Top
4	6143.dat	Black	Brick 2 x 2 Round Type 2
2	3001.dat	Black	Brick 2 x 4
3	48092.dat	Black	Brick 4 x 4 Round Corner
1	4589.dat	Black	Cone 1 x 1
1	2654.dat	Black	Dish 2 x 2
2	57539.dat	Black	Hose Flexible 19M
1	3024.dat	Red	Plate 1 x 1
11	3024.dat	Black	Plate 1 x 1
1	4073.dat	Trans Clear	Plate 1 x 1 Round
4	4073.dat	Metallic Dark Gray	Plate 1 x 1 Round
4	4073.dat	Light Bluish Gray	Plate 1 x 1 Round
10	4081b.dat	Black	Plate 1 x 1 with Clip Light Type 2
1	3023.dat	Blue	Plate 1 x 2
18	3023.dat	Olive Green	Plate 1 x 2
19	3023.dat	Black	Plate 1 x 2
2	32028.dat	Black	Plate 1 x 2 with Door Rail
3	4175.dat	Black	Plate 1 x 2 with Ladder
2	3794a.dat	Black	Plate 1 x 2 without Groove with 1 Centre Stud
2	3623.dat	Black	Plate 1 x 3


Qty	Part	Color	Description
2	3710.dat	Olive Green	Plate 1 x 4
1	3666.dat	Black	Plate 1 x 6
3	3022.dat	Black	Plate 2 x 2
2	2420.dat	Black	Plate 2 x 2 Corner
1	4032a.dat	Red	Plate 2 x 2 Round with Axlehole Type 1
7	4032a.dat	Black	Plate 2 x 2 Round with Axlehole Type 1
1	87580.dat	Black	Plate 2 x 2 with Groove with 1 Center Stud
2	3021.dat	Black	Plate 2 x 3
1	3020.dat	Olive Green	Plate 2 x 4
1	3020.dat	Black	Plate 2 x 4
5	30565.dat	Black	Plate 4 x 4 Corner Round
1	3035.dat	Black	Plate 4 x 8
2	3958.dat	Black	Plate 6 x 6
1	41539.dat	Black	Plate 8 x 8
1	11477.dat	Black	Slope Brick Curved 2 x 1
3	93273.dat	Black	Slope Brick Curved 4 x 1 Double
4	13547.dat	Olive Green	Slope Brick Curved 4 x 1 Inverted


Qty	Part	Color	Description
1	76384.dat	Black	String Braided 11L with End Studs (Complete)
1	32199.dat	Dark Bluish Gray	Technic Axle Flexible 11
1	32199.dat	Black	Technic Axle Flexible 11
1	6538a.dat	Black	Technic Axle Joiner
2	59443.dat	Black	Technic Axle Joiner Inline Smooth
2	6541.dat	Black	Technic Brick 1 x 1 with Hole
1	32000.dat	Black	Technic Brick 1 x 2 with Holes
1	4274.dat	Light Bluish Gray	Technic Pin 1/2
1	61184.dat	Light Bluish Gray	Technic Pin 1/2 with Bar 2L
6	75535.dat	Black	Technic Pin Joiner Round
2	2780.dat	Black	Technic Pin with Friction and Slots
3	98138.dat	Light Bluish Gray	Tile 1 x 1 Round with Groove
6	2412b.dat	Black	Tile 1 x 2 Grille with Groove
3	3069b.dat	Black	Tile 1 x 2 with Groove
6	4150.dat	Black	Tile 2 x 2 Round
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2	43722.dat	Black	Wing 2 x 3 Right
1	78c02	Black	Ribbed Hose, 7mm D

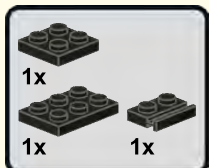





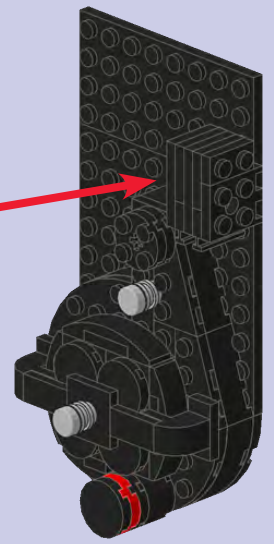

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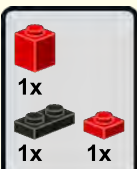
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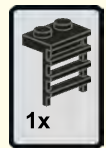



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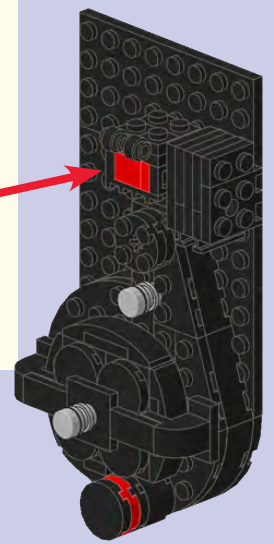

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5  1x 2x





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3  1x

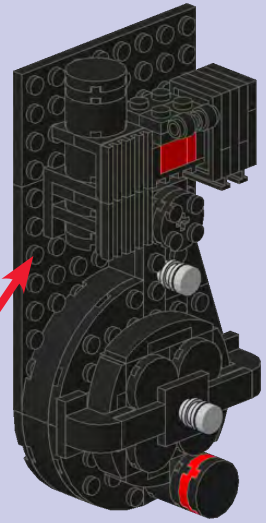
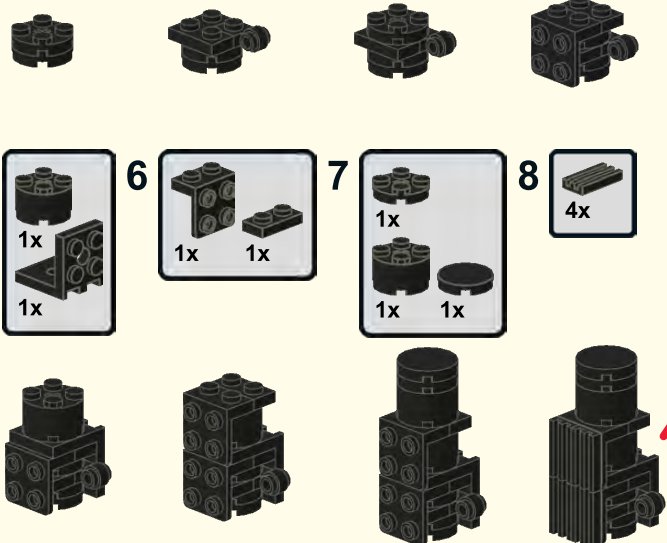
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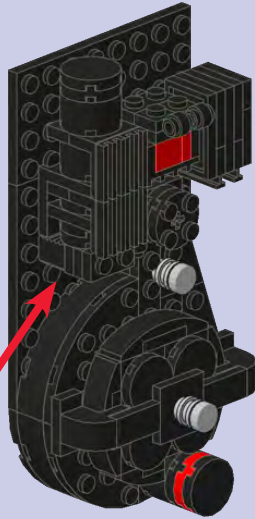
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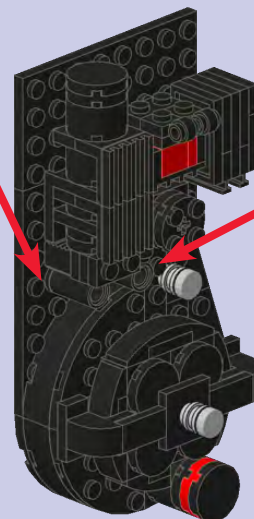
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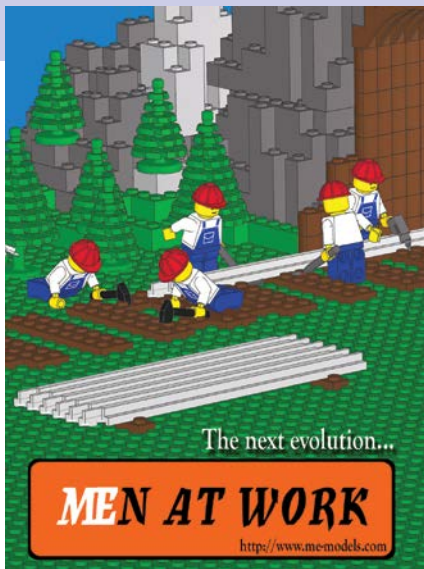
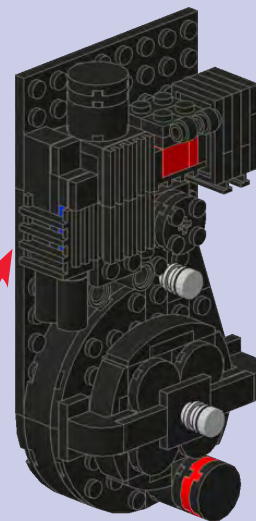
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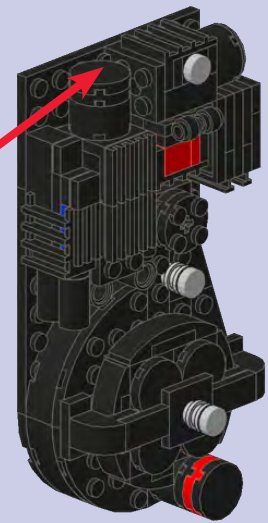
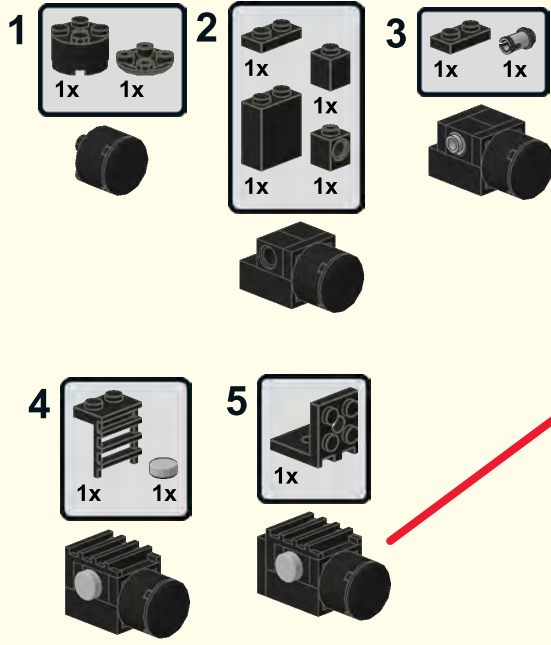


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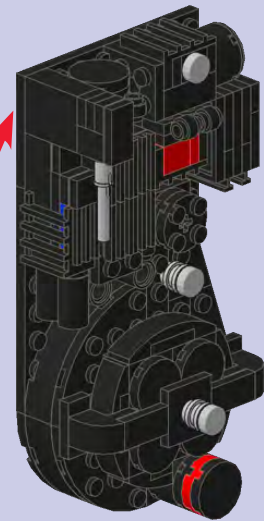
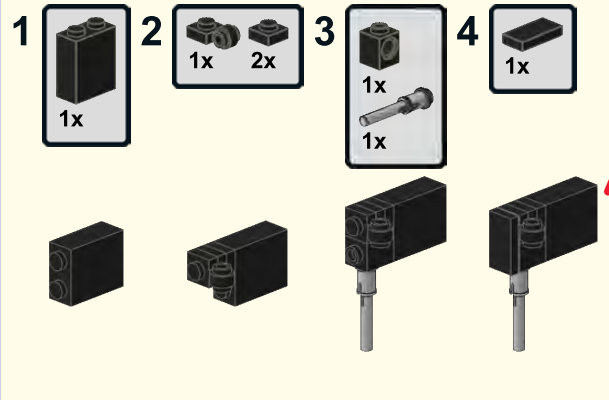
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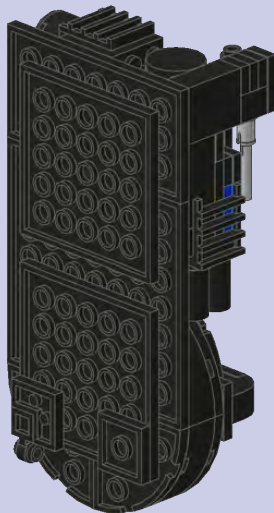
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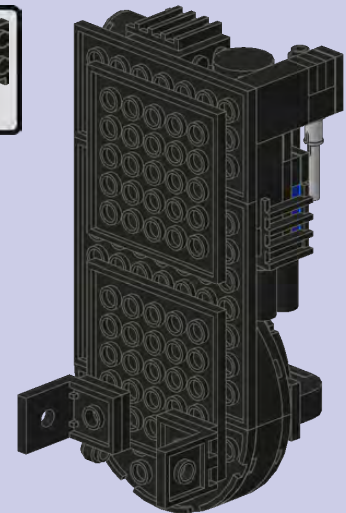
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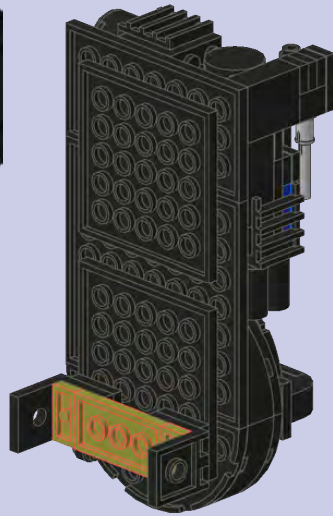
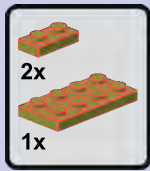
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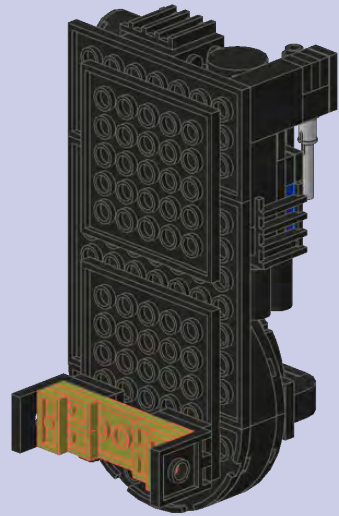
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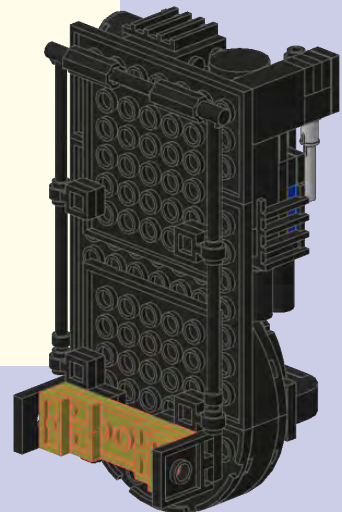
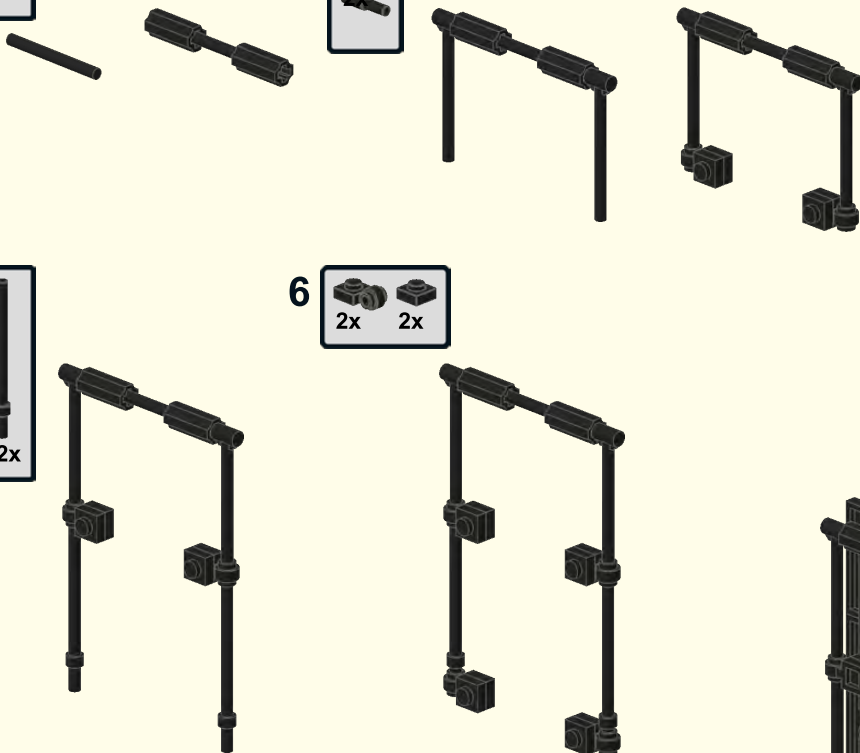
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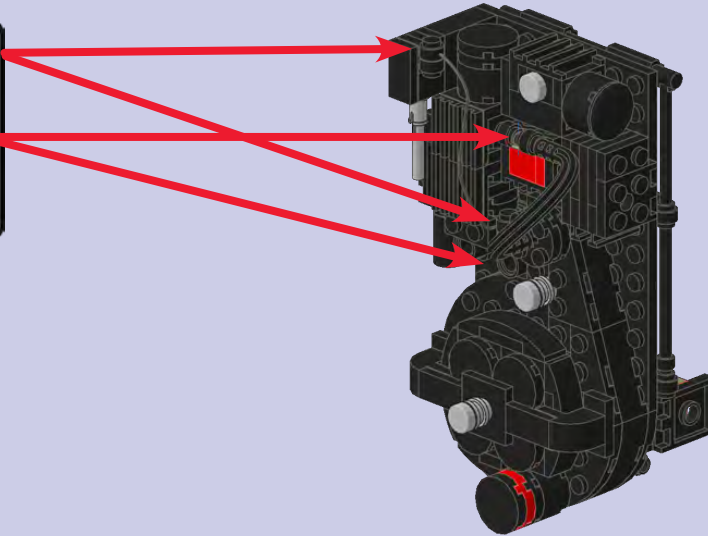
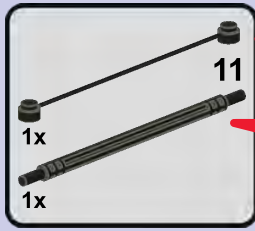
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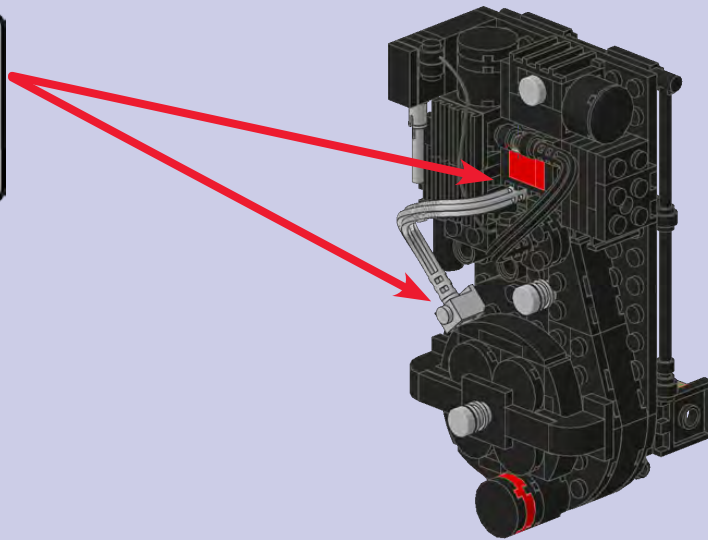
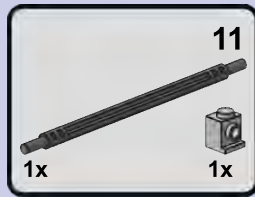
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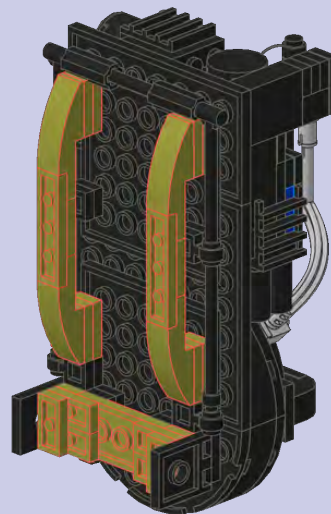
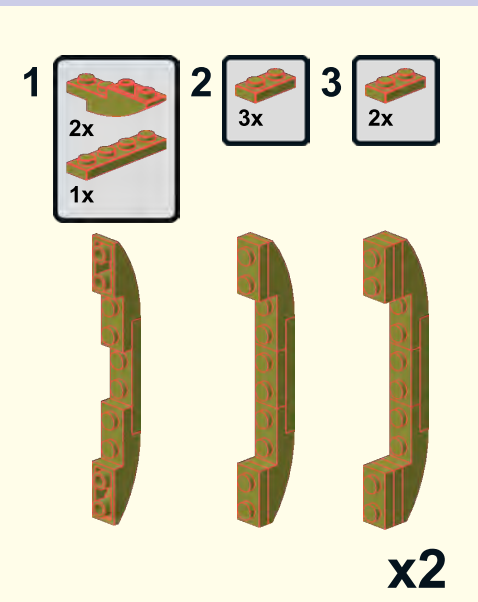
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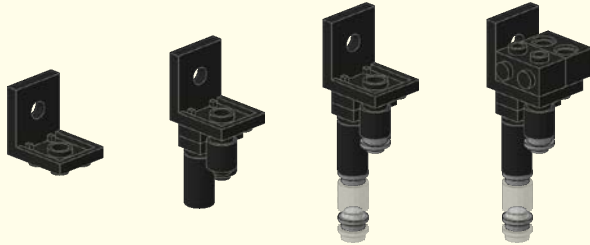





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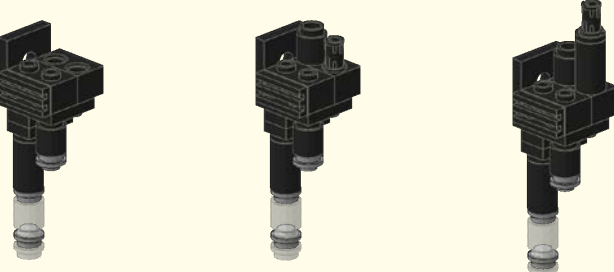



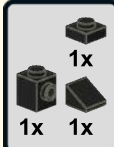

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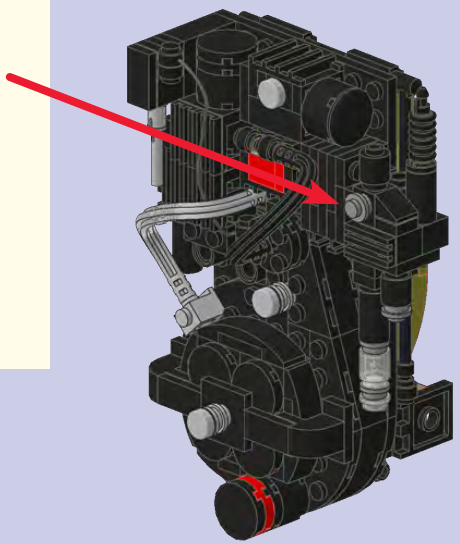
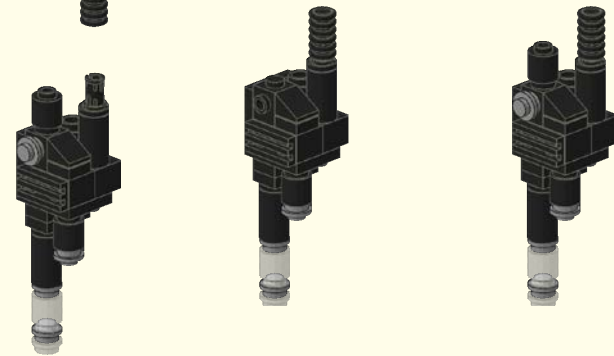
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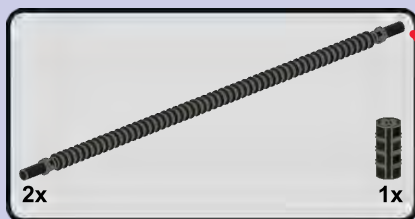
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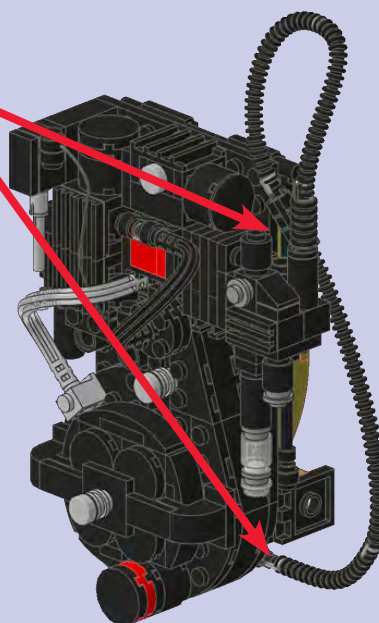
- 8  1x
- 9  1x
1x 1x
- 10  1x 1x



30



Attach the two hose segments to the axle connector to make one long segment. From there, attach the ends to the proton pack at the indicated points.



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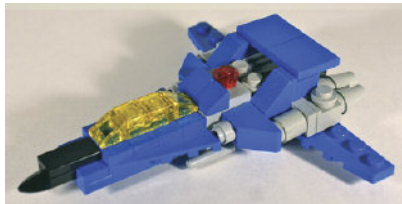
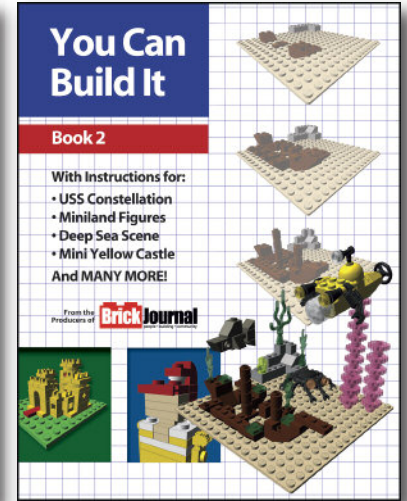
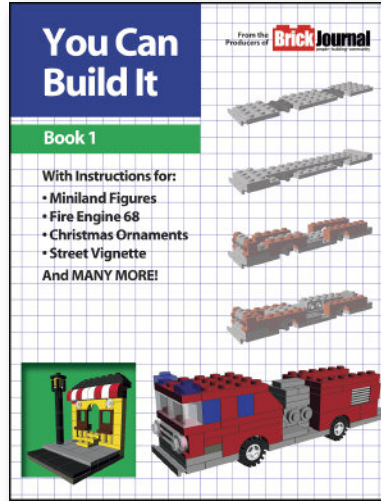
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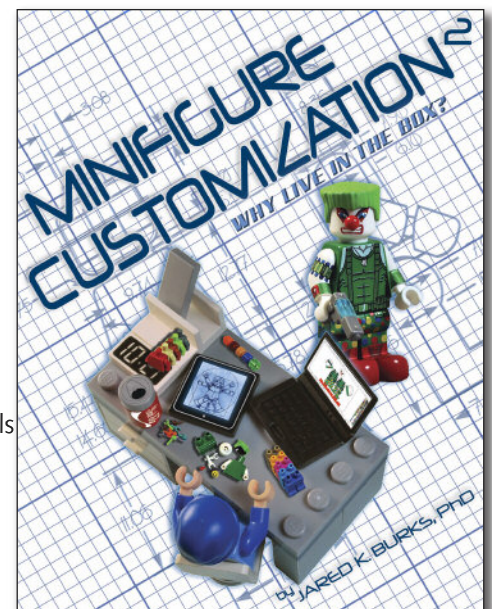


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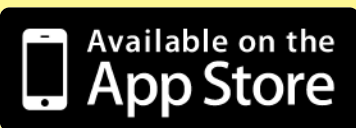
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ISSUE #30 SHIPS IN AUGUST:

LEGO ARCHITECTURE with JONATHAN LOPES, a microscale model of Copenhagen by ULRIK HANSEN, and a look at the LEGO MUSEUM being constructed in Denmark! Plus Minifigure Customization by JARED BURKS, step-by-step "You Can Build It" instructions by CHRISTOPHER DECK, BrickNerd DIY Fan Art by TOMMY WILLIAMSON, MIND-STORMS building with DAMIEN KEE, and more!

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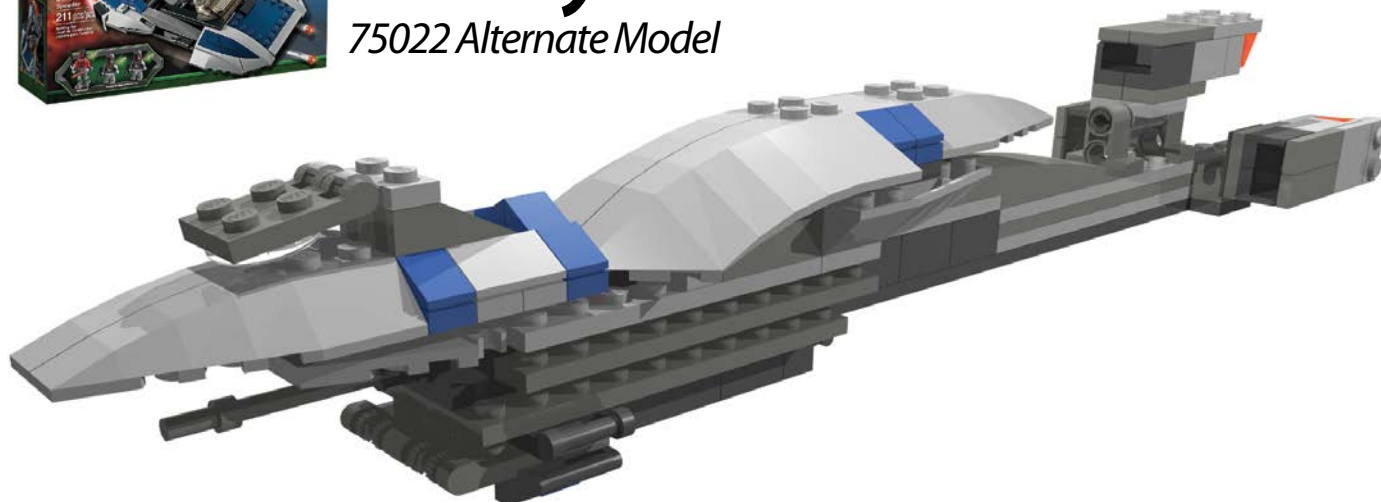
You Can Build It

MINI Model




Recusant Destroyer

75022 Alternate Model



Design and Instructions by Christopher Deck

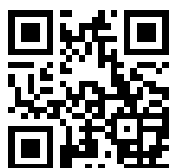
Hello everybody! Welcome back to our mini model building series! This issue's model is a little larger than usual, and would most probably be called a midi model. It's the *Recusant*-class light destroyer as seen in the opening battle of *Star Wars III: Revenge of the Sith*. The very special thing about this model is that it is (like the pirate ship model in last issue) an alternate model of an official LEGO® set. You only need pieces from set 75022: *Mandalorian Speeder* to build this model. The piece variety of this set is almost perfect to build this particular alternate starship model. It employs 85% of all pieces of the original set and is quite detailed for an alternate model. You can also apply all stickers as intended for the speeder model. They will in the same way also benefit the typical color scheme of the Separatist fleet. Happy building! 

Parts List

(Parts can be ordered from Bricklink.com by searching by part number and color)

Main Hull

Qty	Color	Part	Description
1	Dark-Bluish-Gray	63965.dat	Bar 6L with Thick Stop
1	Black	30236.dat	Brick 1 x 2 with Handle
2	Dark-Bluish-Gray	3622.dat	Brick 1 x 3
2	Black	3010.dat	Brick 1 x 4
2	Black	3009.dat	Brick 1 x 6
4	Black	3003.dat	Brick 2 x 2
2	Dark-Bluish-Gray	3937.dat	Hinge 1 x 2 Base
2	Black	6134.dat	Hinge 2 x 2 Top
2	Light-Bluish-Gray	6231.dat	Panel 1 x 1 x 1 Corner with Rounded Corners
2	Light-Bluish-Gray	60897.dat	Plate 1 x 1 with Clip Vertical (Thick C-Clip)
5	Black	3023.dat	Plate 1 x 2
4	Light-Bluish-Gray	3023.dat	Plate 1 x 2
1	Light-Bluish-Gray	60470b.dat	Plate 1 x 2 with 2 Clips Horizontal (Thick C-Clips)
2	Dark-Bluish-Gray	60478.dat	Plate 1 x 2 with Handle on End
4	Dark-Blue	3710.dat	Plate 1 x 4
2	Black	3666.dat	Plate 1 x 6
1	Black	3795.dat	Plate 2 x 6
1	Light-Bluish-Gray	3034.dat	Plate 2 x 8
1	Dark-Bluish-Gray	3832.dat	Plate 2 x 10



You can view Christopher's webpage by going to www.deckdesigns.de or scanning this QR code!

Qty	Color	Part	Description
2	Light-Bluish-Gray	2445.dat	Plate 2 x 12
2	Black	4282.dat	Plate 2 x 16
1	Light-Bluish-Gray	3035.dat	Plate 4 x 8
2	Dark-Bluish-Gray	3030.dat	Plate 4 x 10
6	Dark-Blue	54200.dat	Slope Brick 31° 1 x 1 x 0.667
2	Light-Bluish-Gray	85984.dat	Slope Brick 31 1 x 2 x 0.667
1	Dark-Bluish-Gray	3298.dat	Slope Brick 33 3 x 2
2	Dark-Bluish-Gray	85970.dat	Slope Brick Curved 1 x 8 with Plate 1 x 2
1	Black	3700.dat	Technic Brick 1 x 2 with Hole
1	Black	2780.dat	Technic Pin with Friction and Slots
4	Black	2431.dat	Tile 1 x 4 with Groove
2	Light-Bluish-Gray	41748.dat	Wedge 2 x 6 Double Left
2	Light-Bluish-Gray	41747.dat	Wedge 2 x 6 Double Right
1	Light-Bluish-Gray	43723.dat	Wing 2 x 3 Left
1	Light-Bluish-Gray	43722.dat	Wing 2 x 3 Right

Tail

Qty	Color	Part	Description
2	Light-Bluish-Gray	60470b.dat	Plate 1 x 2 with 2 Clips Horizontal (Thick C-Clips)
2	Dark-Bluish-Gray	3794b.dat	Plate 1 x 2 with Groove with 1 Centre Stud
2	Dark-Bluish-Gray	60478.dat	Plate 1 x 2 with Handle on End
1	Light-Bluish-Gray	6636.dat	Tile 1 x 6

Underside

Qty	Color	Part	Description
2	Blue	4070.dat	Brick 1 x 1 with Headlight
1	Dark-Bluish-Gray	44570.dat	Hinge Car Roof 4 x 4 Locking
2	Black	48336.dat	Plate 1 x 2 with Handle Type 2
2	Black	3069b.dat	Tile 1 x 2 with Groove
2	Black	2432.dat	Tile 1 x 2 with Handle Engines
2	Light-Bluish-Gray	99207.dat	Bracket 1 x 2 - 2 x 2 Up
6	Light-Bluish-Gray	3004.dat	Brick 1 x 2
6	Black	4865b.dat	Panel 1 x 2 x 1 with Rounded Corners
2	Light-Bluish-Gray	3023.dat	Plate 1 x 2
2	Dark-Bluish-Gray	3623.dat	Plate 1 x 3
2	Light-Bluish-Gray	2420.dat	Plate 2 x 2 Corner
1	Light-Bluish-Gray	2817.dat	Plate 2 x 2 with Holes
2	Dark-Bluish-Gray	3021.dat	Plate 2 x 3

Qty	Color	Part	Description
6	Trans-Orange	54200.dat	Slope Brick 31 1 x 1 x 0.667
1	Light-Bluish-Gray	32000.dat	Technic Brick 1 x 2 with Holes
2	Light-Bluish-Gray	4274.dat	Technic Pin 1/2
2	Black	2780.dat	Technic Pin with Friction and Slots
2	Dark-Bluish-Gray	32530.dat	Technic Tile 1 x 2 with Two Holes
6	Dark-Bluish-Gray	63864.dat	Tile 1 x 3 with Groove
2	Light-Bluish-Gray	3068b.dat	Tile 2 x 2 with Groove

Bridge

Qty	Color	Part	Description
1	Trans-White	2654.dat	Dish 2 x 2
2	Dark-Bluish-Gray	60478.dat	Plate 1 x 2 with Handle on End

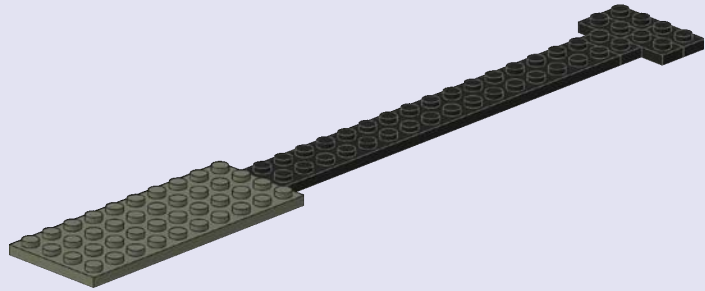
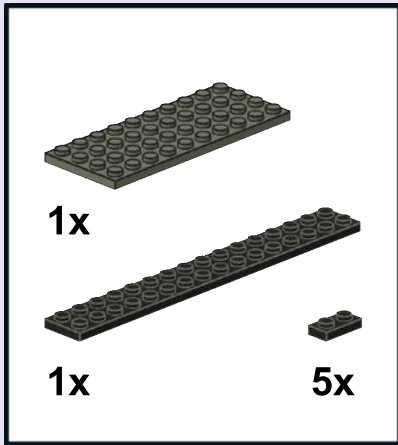
Top Shell

Qty	Color	Part	Description
4	Trans-Red	4073.dat	Plate 1 x 1 Round
2	Light-Bluish-Gray	3023.dat	Plate 1 x 2
2	Dark-Blue	3710.dat	Plate 1 x 4
2	Black	3666.dat	Plate 1 x 6
4	Dark-Blue	54200.dat	Slope Brick 31 1 x 1 x 0.667
1	Light-Bluish-Gray	41750.dat	Slope Brick Round 3 x 8 x 2 Left
1	Light-Bluish-Gray	41749.dat	Slope Brick Round 3 x 8 x 2 Right
1	Light-Bluish-Gray	3068b.dat	Tile 2 x 2 with Groove
1	Light-Bluish-Gray	41765.dat	Wedge 2 x 6 Double Inverted Left
1	Light-Bluish-Gray	41764.dat	Wedge 2 x 6 Double Inverted Right

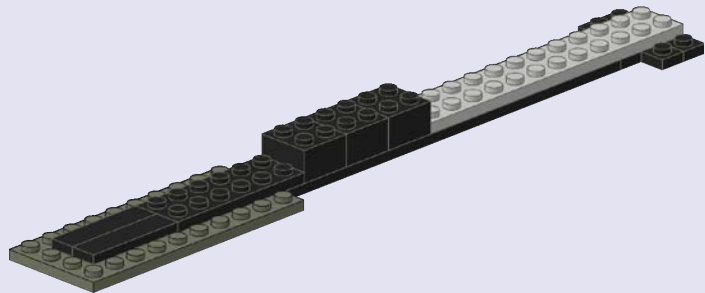
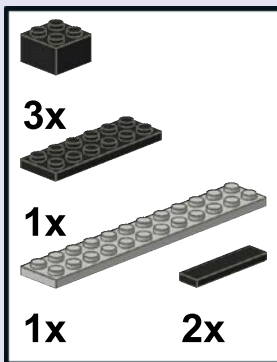
Stand

Qty	Color	Part	Description
1	Blue	3001.dat	Brick 2 x 4
2	Black	92582.dat	Hinge Plate 2 x 2 Locking with Single Finger On Top
1	Black	3031.dat	Plate 4 x 4
1	Dark-Bluish-Gray	3298.dat	Slope Brick 33 3 x 2
2	Black	3069b.dat	Tile 1 x 2 with Groove
2	Black	4162.dat	Tile 1 x 8
1	Dark-Blue	6180.dat	Tile 4 x 6 with Studs on Edges
2	Black	60592.dat	Window 1 x 2 x 2 without Sill
1	Dark-Blue	41770.dat	Wing 2 x 4 Left
1	Dark-Blue	41769.dat	Wing 2 x 4 Right

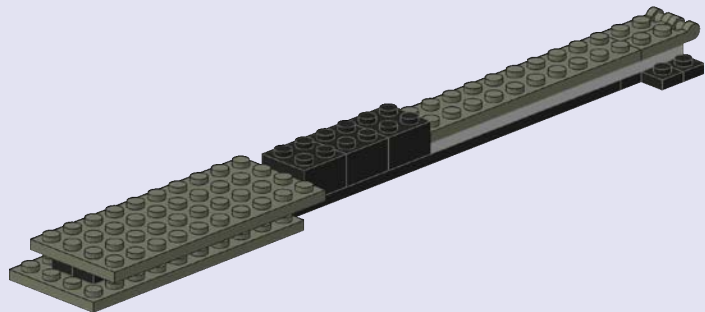
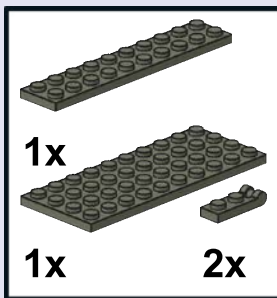
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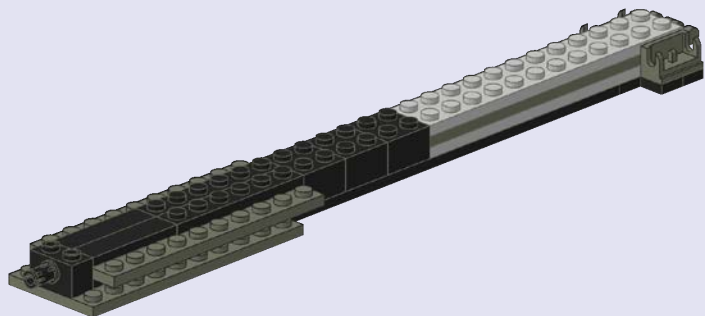
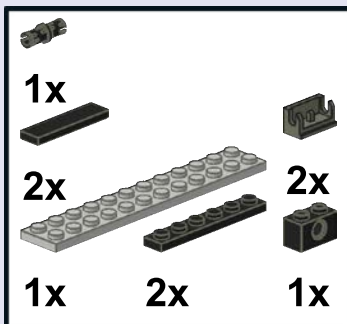
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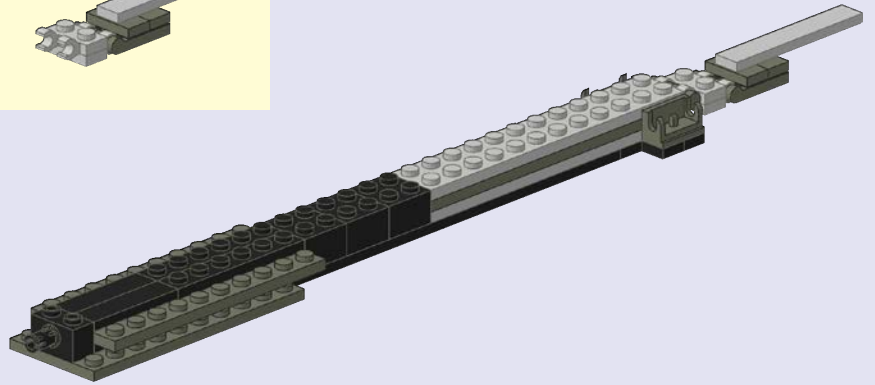


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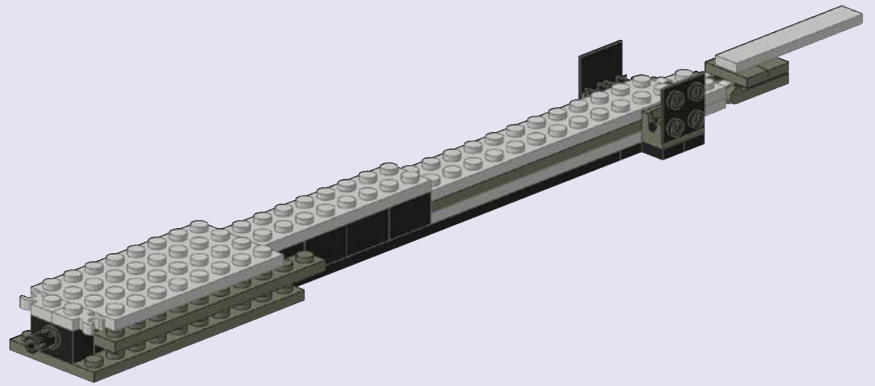
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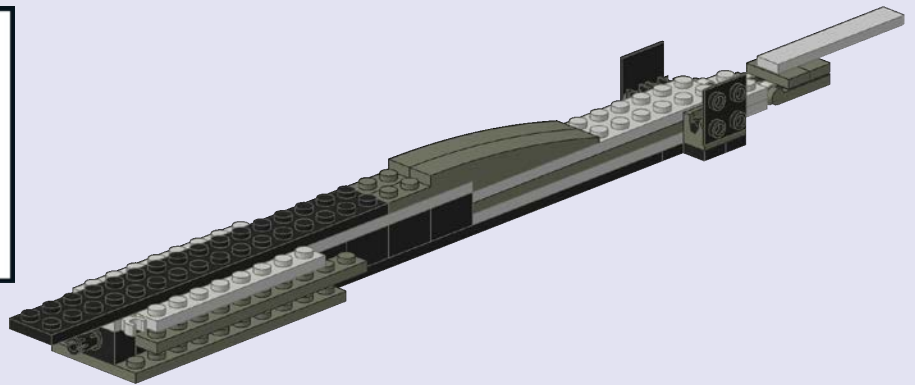
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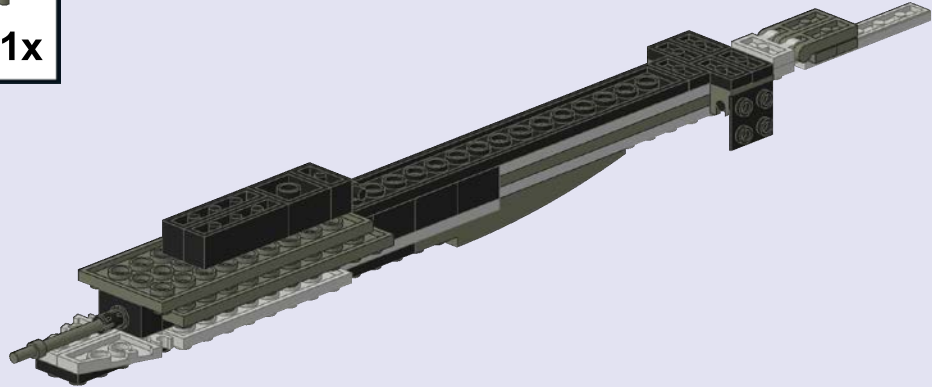
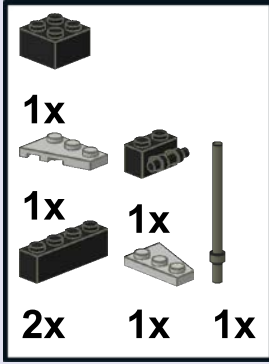


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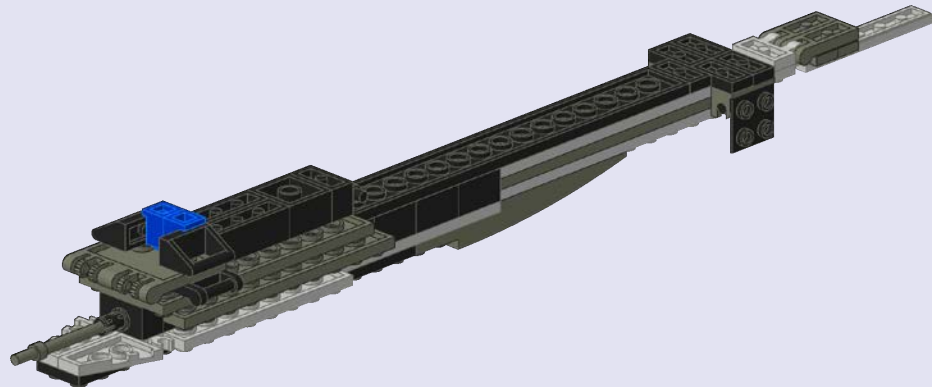
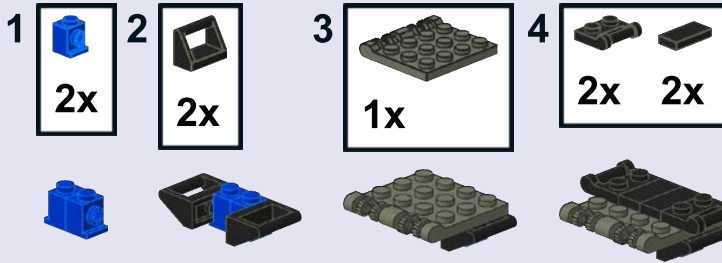
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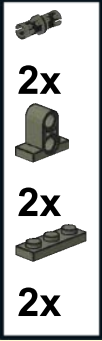




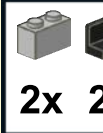
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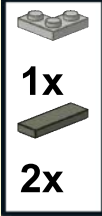
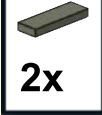


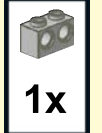
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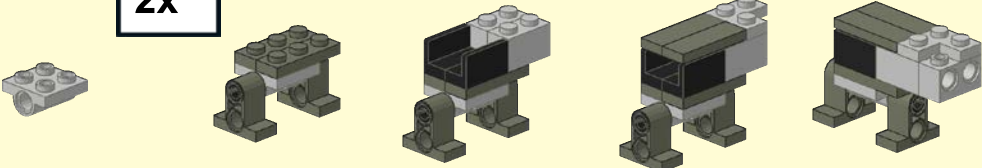
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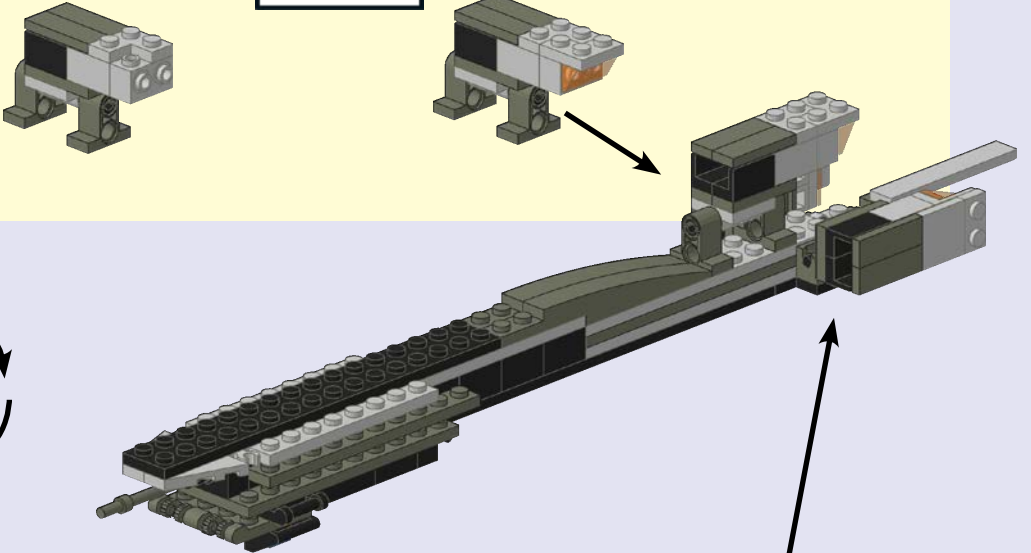



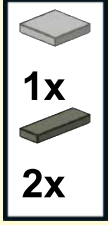
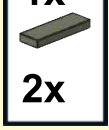




Diagram showing the sub-assembly being attached to a long Technic beam. A circular arrow indicates that the sub-assembly is to be attached to both ends of the beam.

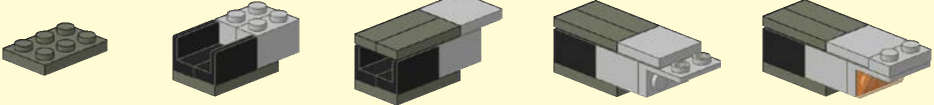
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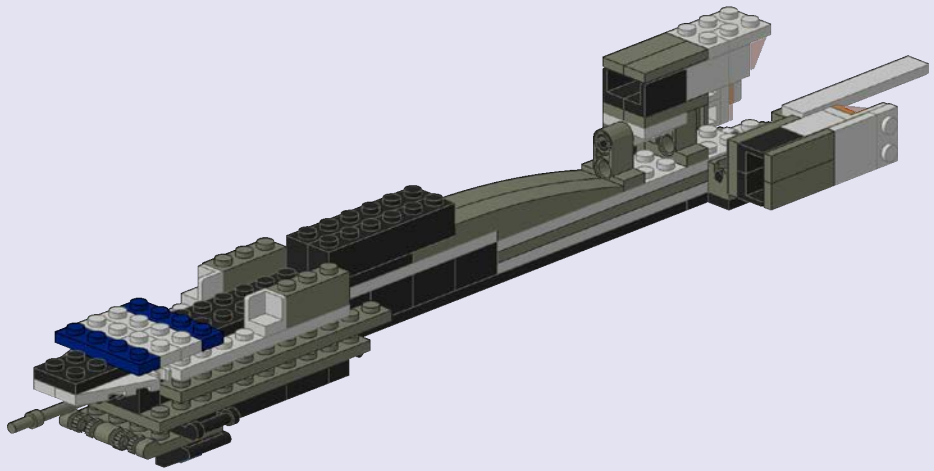
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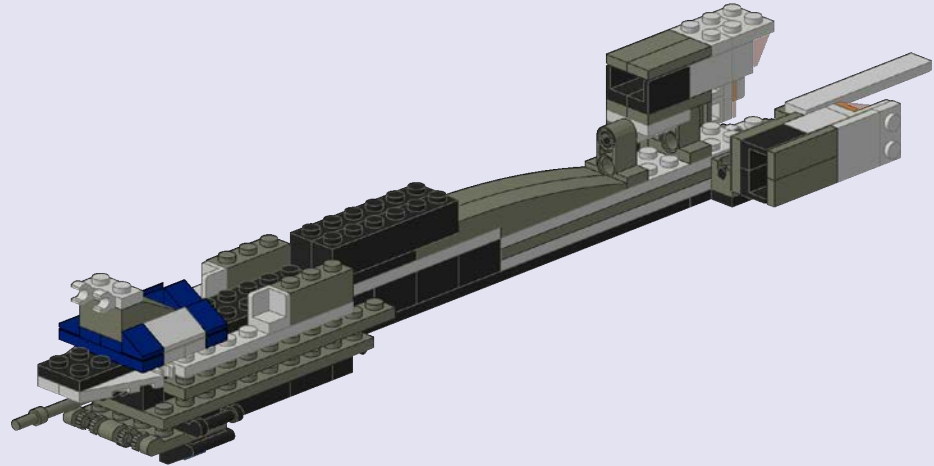
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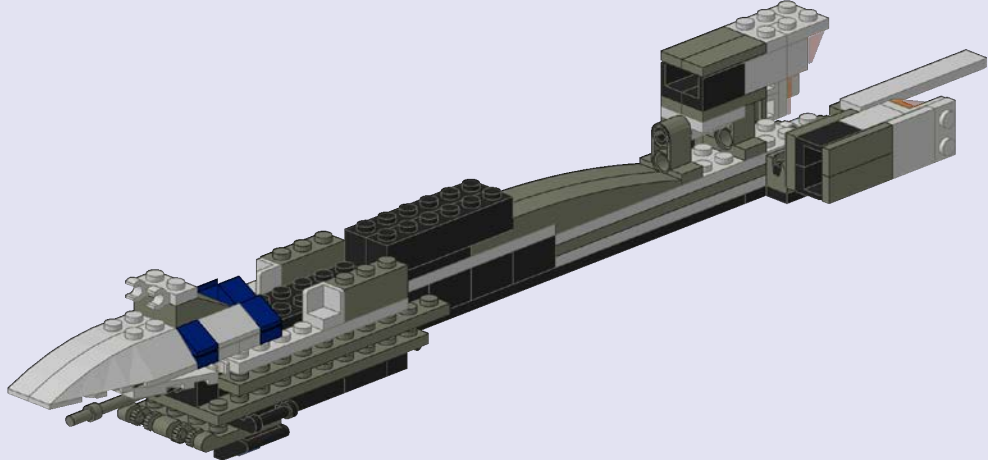
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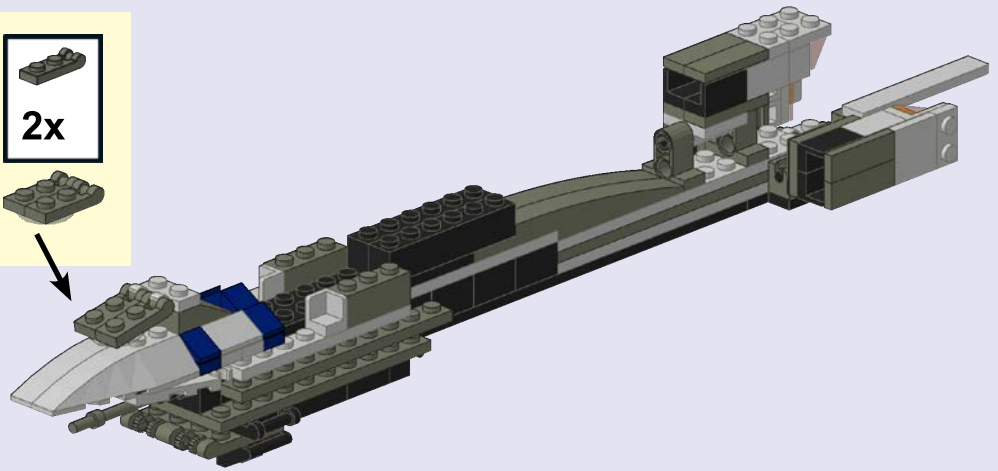
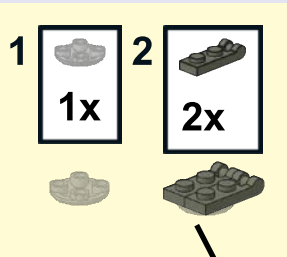


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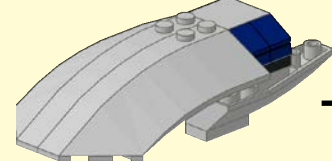
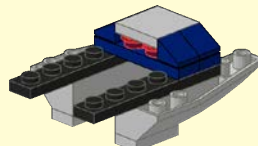
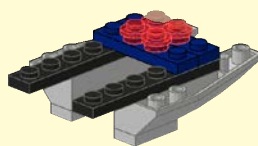
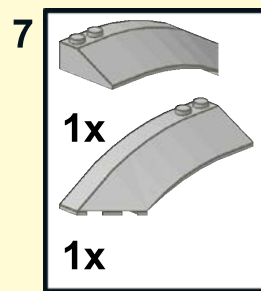
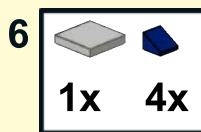
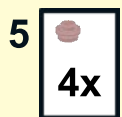
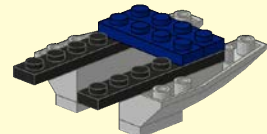
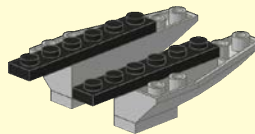
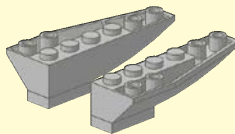
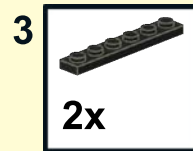
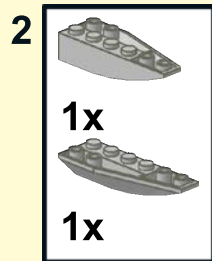
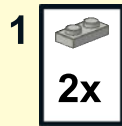
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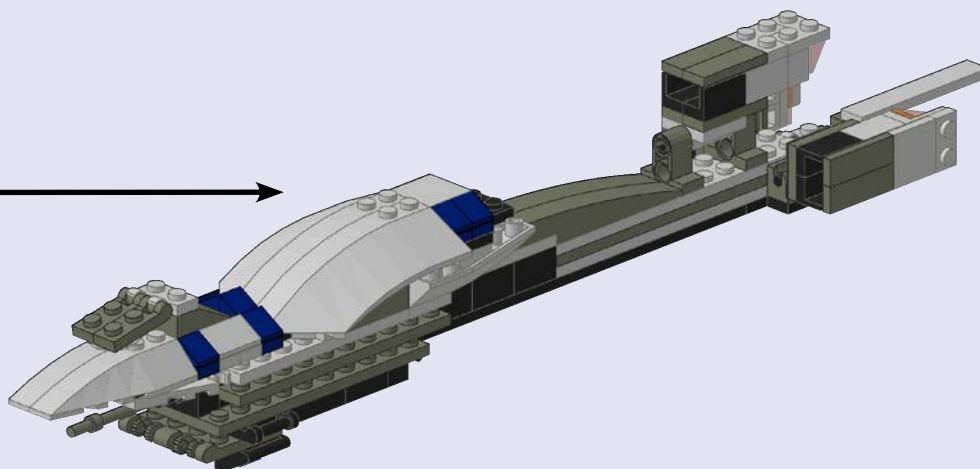
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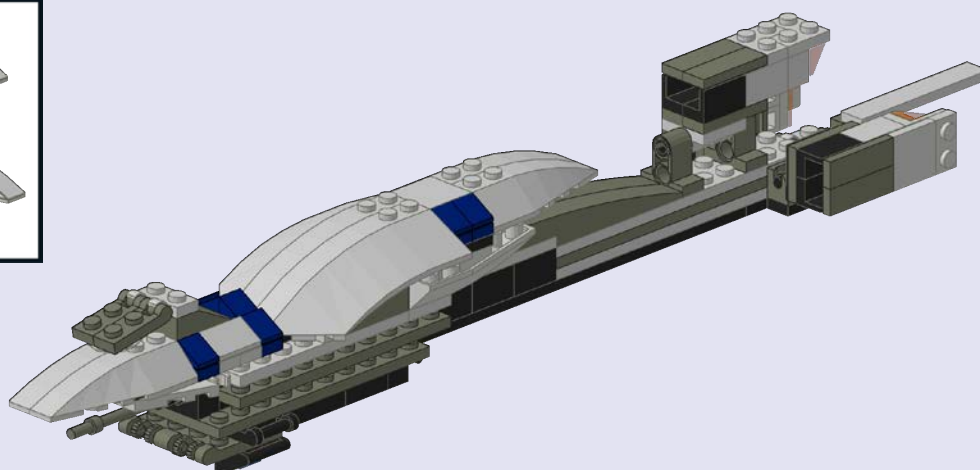
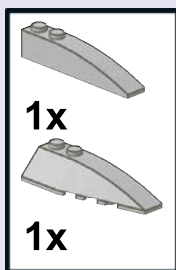
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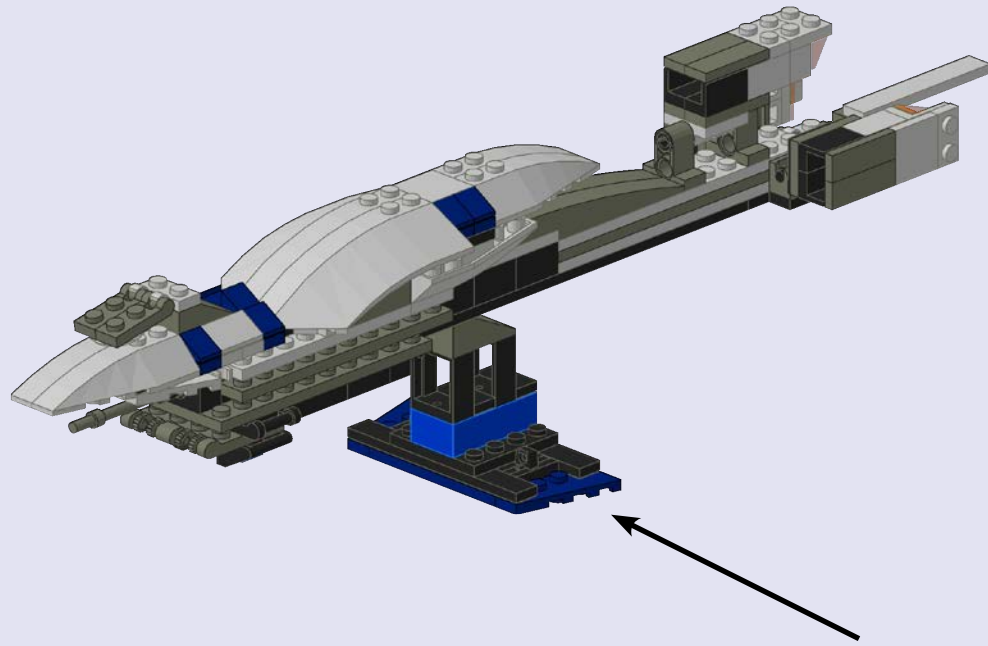
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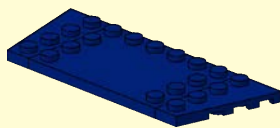


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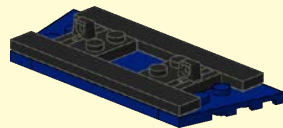
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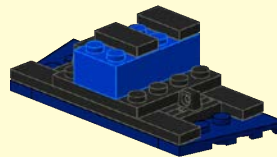
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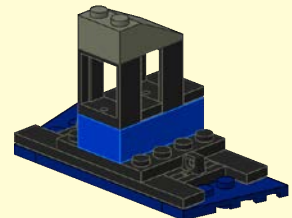
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Building

Minifigure Customization 101: Resolving Limited Range of Motion Issues

by Andrew Vu
and Jared K. Burks

Don't miss Minifigure Customization: Populate Your World! and its sequel Minifigure Customization: Why Live In The Box? (both are available now at www.twomorrow.com)



What is the single most limiting detail of a LEGO minifigure? The size, the proportions, the scale—no, all these issues are manageable. The most limiting detail of a LEGO minifigure is its range of motion. Arms and legs can go up and down, hands and heads can rotate, but in reality every joint in the minifigure is single axis, meaning that these joints only rotate around one axis. This is also the detail that gives the figure some of its signature look. So the biggest customization challenge is how one addresses the limitation without losing the signature look of the figure. A few solutions are out there and some new ones have presented themselves, and I think they are worth a closer look.

Many have tried to address the limited range of motion before to various degrees of success. This article will present several methods, but will not serve as the final word on the subject because none of these solutions are perfect. Like every aspect of customizing, there are always alternative ways, each specific for their own purpose, but I digress.

In this article we will discuss minifigure articulation using three major methods; the dislocation approach, limb replacement, and advanced articulation customization. As mentioned each serves a purpose and thus are relevant. Some are quite easy and others much more time consuming. The first two methods, dislocation and limb replacement, will be discussed, but much of the focus will be on the advanced articulation method.

Dislocation

The first method to discuss is dislocation. The minifigure arm or leg is removed from the joint and attached using a foreign object, typically a rubber band. This is then concealed by either the angle of the photo or by a piece of fabric the minifigure is wearing.



Examples of dislocation.
Photos by (from left to right) Jordan Schwartz, Aidan Flynn, and Mark Parker.

Limb Replacement

The second method is a limb replacement. In these cases the limb or joint is replaced with other materials. This could be other LEGO elements or aftermarket items such as Crazy Arms. There are several examples of these types of replacements below.



Examples of limb replacement. Photos by (from left to right, top to bottom) Matt Sailors, Jordan Schwartz, and Mark Parker.

Arm Articulation

Please read the instructions completely before trying.

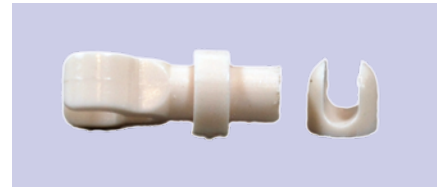
The final method is the most advanced and was created by Pedro79 on Flickr and refined and polished by Andrew Vu (AndrewVxtc on Flickr). To achieve a higher level of articulation, a ball and socket joint is required. To create a ball in socket without destroying the aesthetics of minifigure is difficult, but Andrew's method is quite successful. This method demonstrates how to get a larger range of motion in the arm, but it could be used to give more range of motion to the head.



A. LEGO Skeleton Arm - Socket



B. LEGO Lever - Ball



C. Cut LEGO Socket from the Skeleton Arm



D. Remove the arms from the figure; the arm socket needs to be widened slightly. Using an X-acto knife, make three light shavings around the socket or use a 5/32" drill bit to open up the socket.



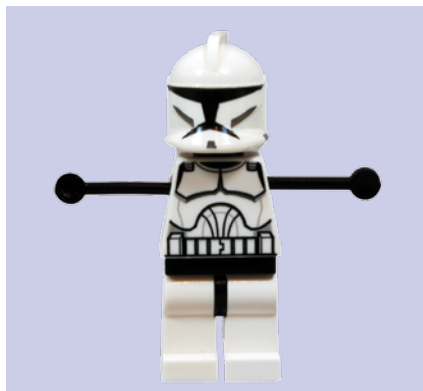
E. Test fit the skeleton socket for fit. Push the socket inside the torso.



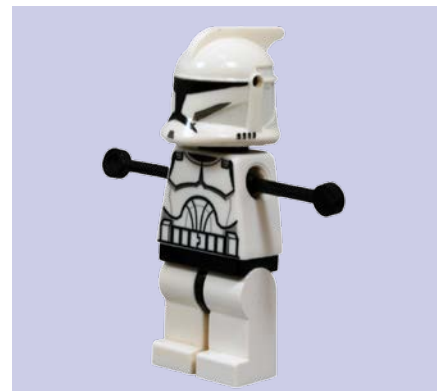
F. Notice the Ball tip of the lever is slightly too wide for the socket



G. Trim the edges of the ball. The cuts should be parallel to each other, but slightly wider than the arm attached to the ball.



H. Push the skeleton socket into the torso and push the trimmed ball into the socket.



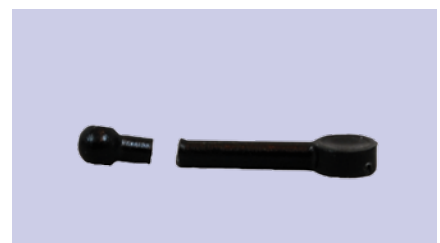
I. Additional view.



J. Take the minifigure arm and cut off the shoulder ball.



K. Trimmed arms with shoulder ball removed.



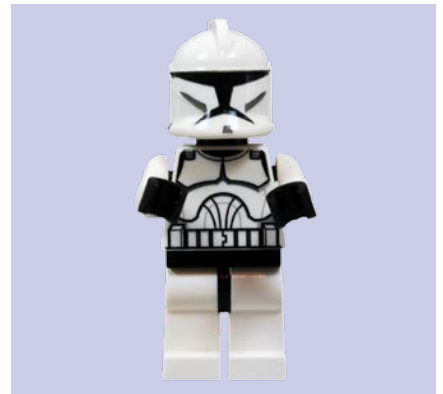
L. Cut lever arm 1/4" from the tip of the ball.



M. Using a small drop of Super Glue, insert the lever arm into the hole in the arm. Allow the glue to dry.



N. Insert the arm with the lever ball into the skeleton socket located inside the minifigure torso.




O. Notice the new range of motion.



P. Again, notice the new range of motion.



Q. Using the same technique, the head can also be modified to achieve greater range of motion.

Now that you can articulate the arm, let's see the new process in action. With this small adaptation, Iron Man (below) is much more capable of targeting foes with his hand repulsors. What else can you create with this little modification? 

You can view Jared's webpage by going to <http://www.fineclonier.com/> or scanning this QR code!



Articulation at work.
Photos by Michael "Xero" Marzilli.

Using LEGO Ideas

Article by Glen Wadleigh
(Glen Bricker)

Photography provided
by Jared Burks

Recently, LEGO CUUSOO opened up submissions to include the BBC *Doctor Who* series. After only a few weeks, one project gathered enough support (10,000 votes!) to qualify for LEGO review. One of the creators talks here about the challenges and effort that went behind making this project successful!

I was asked if I would be interested in doing a quick write-up about how Jared Burks and I got *Doctor Who* to 10,000 supporters on LEGO Cuusoo. I enjoy sharing what I have learned, so I took up the offer and thus, you are reading this now.

I will start with a quick disclaimer that I can't, of course, account for the personal reasoning for every vote our project got, nor do I have access to the data required to absolutely confirm the direct return on any of these activities. This is, however, my observation of events, honed by my experience promoting LEGO Cuusoo projects over the last two years.

Project Creation

Collaborating

With a few possible exceptions, pushing a project on what is now LEGO Ideas is actually a very daunting task. There is a lot of work involved if you really want to get to 10,000, so I can't suggest enough that you partner up for the long ride.

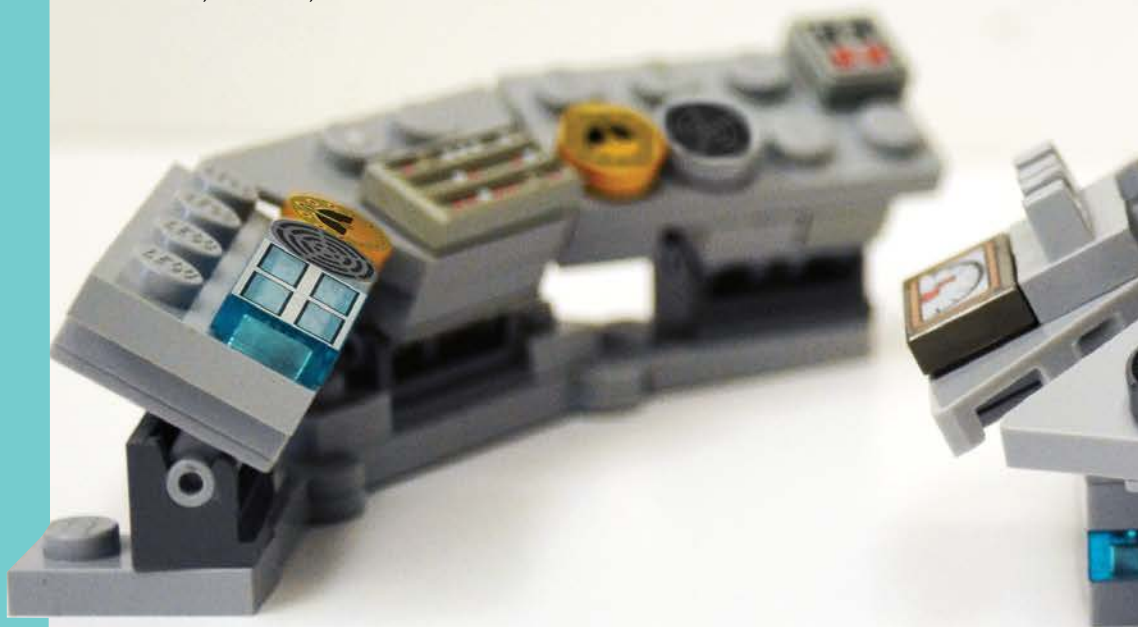
It is invaluable to have someone else, equally invested in the project, to share the highs and the lows, to bounce ideas off of, to distribute the load, and expand the available skill sets and resources.

Creating Project Content

A hard concept for a lot of people to grasp is that the project is not a product, but a pitch. The purpose of a project is to come up with a concept, and then prove to LEGO that your idea deserves further investigation by getting 10,000 people to support it.

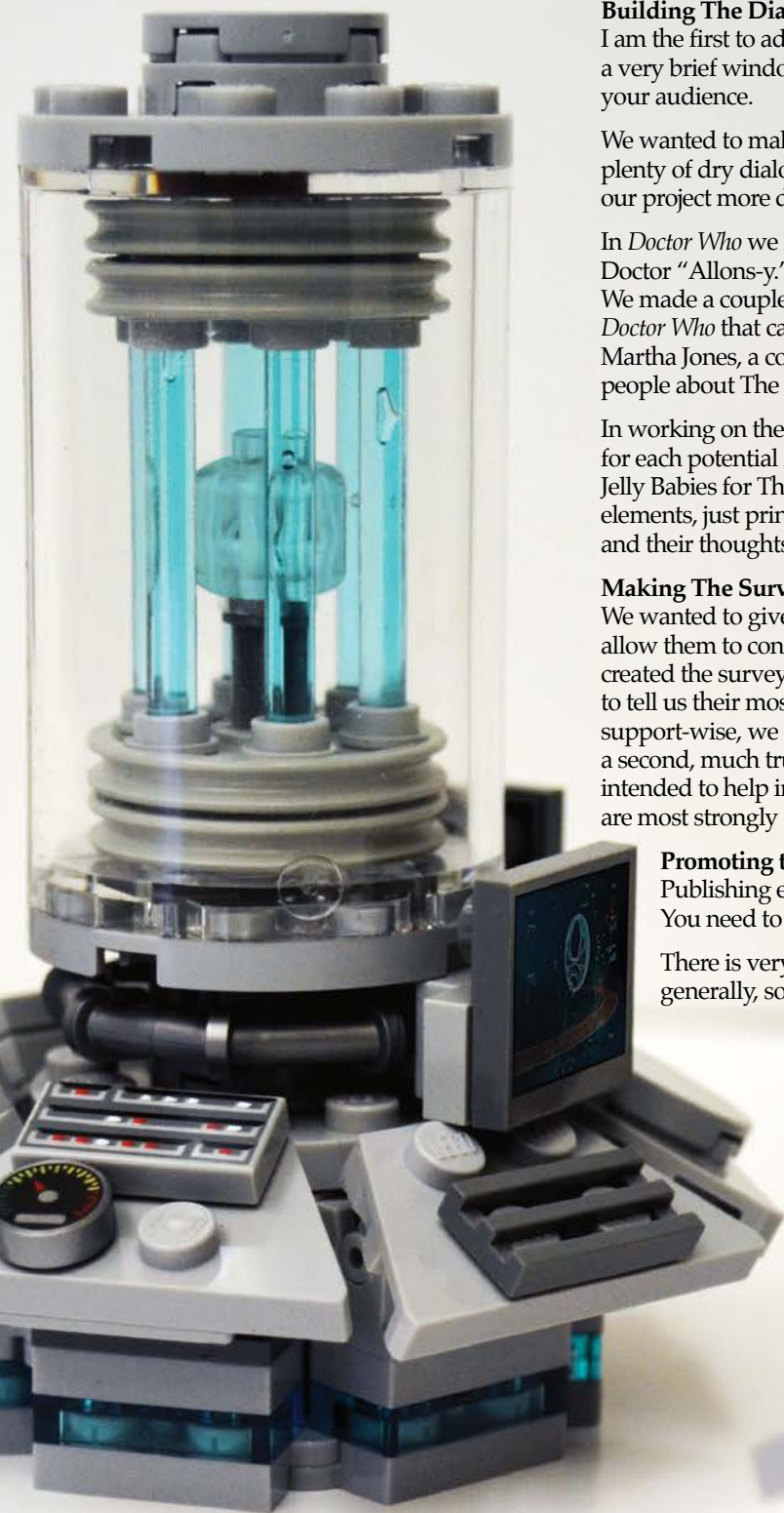
With this in mind, Jared and I, in developing the project, concentrated on the intersection of what we wanted, what we thought the market would want, and what best fit our skill sets.

It is hard to really come up with the singular set to summarize an entire franchise, sometimes to the point of impracticality. But in the case of *Doctor Who*, the critical element is, of course, The Doctor.



In order for our project to succeed we had to convince Whovians that this squat, angular, generic piece of plastic with a cylinder for a head that we built, could trigger the memories and emotions that people have for The Doctor. Everything else is secondary to this. It was no accident I contacted Jared as soon as I found out that *Doctor Who* was allowed back on LEGO Ideas. Not only is he a master craftsman at customizing LEGO figures, but he has also spent years recreating The Doctor specifically.

Did we succeed at convincing Whovians that The Doctor is brickable? In my opinion the results speak for themselves.



Building The Dialogue

I am the first to admit that I am long-winded in my projects but to be sure, you have a very brief window in which to explain what the point of the project is and engage your audience.

We wanted to make sure our love for The Doctor really came through. Sure, there is plenty of dry dialog but we also had a lot of fun taking the opportunity to connect our project more deeply with the show in creative ways.

In *Doctor Who* we found a few great lead-ins. First is the catchphrase of the 10th Doctor "Allons-y." Right off the bat, we were telling people they are among friends. We made a couple of tongue and cheek references to the Nestene (an alien species in *Doctor Who* that can animate plastic) as well. And finally, we used a great reference to Martha Jones, a companion of The Doctor, who at one point travels the world to tell people about The Doctor.

In working on these interconnections, we were also inspired to add a small element for each potential figure to showcase a deeper connection to the show. For instance, Jelly Babies for The Fourth Doctor and Psychic Paper for the 10th. These are tiny elements, just printed tiles really, but they have a big impact on potential supporters and their thoughts on recreating beloved moments in the series.

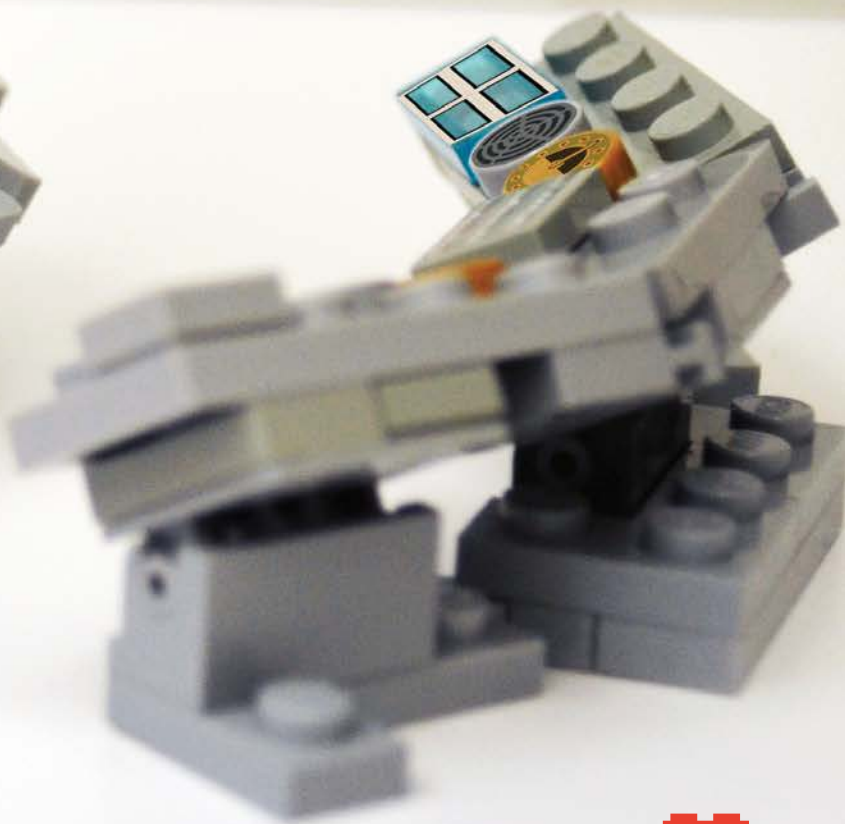
Making The Surveys

We wanted to give the potential supporters something engaging to do as well as allow them to contribute more to the project than just a single vote. For this we created the survey. We created a two-stage event. In the first round, we asked people to tell us their most desired figures from a wide list. At around the halfway point, support-wise, we closed the initial survey and used those results to help us populate a second, much truncated version of the original survey. This second survey is intended to help inform the BBC and LEGO on which figures the project supporters are most strongly drawn to.

Promoting the Project

Publishing even the most amazing project on LEGO Ideas is only the first step. You need to spread the word.

There is very little you can do wrong in promoting your project but, in generally, some methods are more likely to work than others.



A close-up of the TARDIS interior model. Photo by Glen Wadleigh.



The TARDIS,
Eleventh Doctor and
Amy Pond.



Two of the Doctor's companions: Sarah Jane Smith and K-9.

Before I list these, I want to reiterate that Jared and I have no formal training in marketing or social engineering. We are just some AFOLs who have applied some critical thinking on the subject of promotion.

Creating Engaging and Informative Images (You know... Ads)

In this world of 140 character limits, the power of an image is greater than ever. We made several images on the fly showcasing the features we thought would have the best chance of grabbing the recipient's attention. Often the image would have embedded dialog indicating the project.

Balance is key here. We didn't want to turn people off by sending them an obnoxious flyer, but there is nothing more frustrating than seeing one of our promos going viral with no mention of our project.

Contacting Your Friends, Fans, and Personal Contacts and Shamelessly Asking for Their Support

Yes, neither of us have any official training in social media but both of us have been putting ourselves out there on the Internet for years. Jared has been putting out LEGO Doctor Who figures for a long time so he posted to his fans on Flickr and his own site. I posted to my LEGO Ideas blog and we both reached out to our LUG and other AFOL contacts for support.

Contacting Official Channels for the IP

The idea here is to contact the Franchise and ask for a posting, somewhere. In my experience this rarely works with big franchises, due to any number of factors, but you have to try because nothing brings in fan support like a posting on an official site. While we did attempt this daily, we never got a response.

Contacting Associated Celebrities

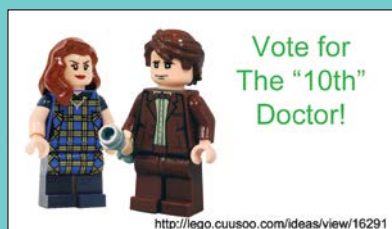
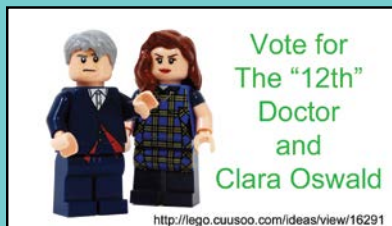
This is another "great idea" with very low chances but great potential for returns. The concept is simple: Contact the actors associated with your subject and they tell their fans and boom, job done.

It is always a blast to get one of your favorite actors to comment on your project, but this is extremely rare. Celebrities tend to get a lot of spam from fans so first off, you are one voice drowned out in a crowd. The second issue is that the type of celebrity with enough pull to get you to 10,000 also needs to be very shrewd about how they use their image and influence.

Of the actors we contacted directly, only one, Sylvester McCoy (the seventh Doctor) posted on our project. John Barrowman (from the BBC show Torchwood) also posted on it, but more on that later.

Contacting General Geek Sites and LEGO Fan Sites

I don't usually throw these categories together but they had a very similar result for us in this case.



A few of the ads used to promote the Doctor Who project.



Some of the companions to the Doctor: (above from left) Rose Tyler, Jack Harkness, Donna Noble, Martha Jones, Sarah Jane Smith, Amy Pond, Amy in her police costume, and Rory Williams. Below from left: The Last Centurion, River Song, Clara Oswald, the Impossible Astronaut, a Cyberman, Weeping Angel, and Silence.



There are a multitude of LEGO friendly sites out there that are looking for good content to share. I can tell you from experience though that these people are looking for really groundbreaking content.

While we did get some great sites to post on our project, we did not get as much mileage as is standard for a project of this nature. The reason? Well, almost every LEGO friendly site posted on LEGO Doctor Who possibilities before our project went online as that fact was newsworthy. By the time we got to the party, LEGO Doctor Who was yesterday's news.

Contacting Uber-fans and Fan-sites

This is where we really got the message out.

Official Sites and Celebrities are bound by contracts and protecting their image. Web-Fans are online because they love the subject and they want to share it with others online.

We posted first to fan-forums and dedicated websites. Then we looked to well-known bloggers or "professional geeks". Then it got more complicated. We hunted down every Whovian on Facebook, Twitter, and Tumblr with a decent sized following and tried to get them the message.

One of our biggest supporters in this regard was www.david-tennant.com, a David Tennant fansite. Another great turn out for us was "katie" @ barrowman_angel. She was able to get John Barrowman to retweet their post on our project.

We also had a fun campaign where we tried to get Craig Ferguson's support. We never heard back from him but a lot of his fans got a big kick out of it!

You never know where the next surge of support is going to come from, but if you are not putting it out there, nobody is going to see it.



The TARDIS drops by Craig Ferguson's desk.



All of the Doctors, including the War Doctor, seen in the 50th anniversary show, The Day of the Doctor.



The TARDIS.

Taking it to the Streets

Our last, and in many ways most fun avenue of promotion, was literally walking around with a MOC. The TARDIS could not have been more perfectly designed for this endeavor. Over the course of a week I walked everywhere carrying a plastic display box containing the TARDIS, The Doctor, and Amy. I was not shy about it either, I held it up were everyone could see it.

I did this at two locations, the first was at SXSW Interactive. This is an event were a lot of geeks get together for a working vacation. I stopped everyone with TARDIS bags, phone cases, notebooks, or even the slightest bit of *Who*-themed paraphernalia on their person.

I am usually a pretty shy guy but I didn't let a single Whovian showcasing their Love escape my spiel. And when I told people who were obviously interested in *Who*, I make sure everyone nearby could hear me too.

This was an amazing experience. Stoic professionals immediately geeked out over this tiny Doctor Display. They were actually asking me if they could share it with their friends, and on more than a few occasions people flipped out because they had "just supported this on that LEGO site!"

Now I also tried this at my local comic book shop, Dragon's Lair, and the results were very enlightening. People at the store responded with greater enthusiasm, with much less effort to get their attention. However these people, despite even stating a desire to obtain the set, balked at the idea of creating an account to support the project.

Parting Advice

There is a ton of effort behind the scenes in getting a project to 10,000. A MOC is just one step among many. I simply cannot stress enough the value of collaboration in this pursuit. Also, you need to promote as an active part of the process. Sure, the more contagious your idea is, the more awesome your MOC is, the less heavy lifting you will have to do in the promotion department; but if you don't care enough about your idea to actively share it with as many people as you can, then your project is not going to go anywhere.

And finally, if you really are passionate about your idea, don't give up on it. Keep on pushing it. You never know where the next surge of support is going to come from, but if you are not putting it out there, nobody is going to see it. 📺



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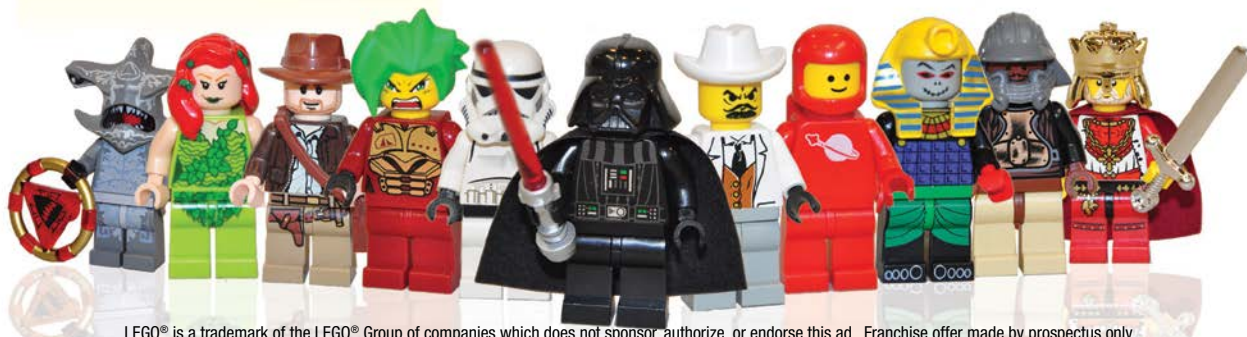
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Making Beyond the Brick: A LEGO Brickumentary

Interview by Joe Meno

Photography provided by Helo

While *The LEGO Movie* was being produced, another movie about the brick was being made—not an adventure/comedy film, but a documentary about the LEGO fan community. *Beyond the Brick: A LEGO Brickumentary* premiered at the 2014 Tribeca Film Festival in New York City on Sunday, April 20. Until then, final work was being done on the film, with narration being done by Jason Bateman and stop-motion animation being done in California with a crew helmed by AFOL and visual effects maker Tommy Williamson. It was during the final phases of production that BrickJournal talked about the documentary on a conference call with its producer Brendan Kiernan and co-directors Daniel Junge and Kief Davidson.

BrickJournal: As you guys are wrapping up on editing now, how long have you been working on the movie?

Daniel Junge: Brendan, do you have the exact date?

Brendan Kiernan: It depends on how you look at that. Daniel and I were talking about this with our executive producer over a year-and-a-half ago. The germination of the idea was from the executive producer. He went with his son to Brickcon and found it was an incredible experience and an incredible bonding experience, and really felt there was a story there. He's in the movie business and so brought this idea to me and I mentioned it to Daniel, and Daniel did a little bit of digging and realized that there was no really definitive or wide-reaching LEGO documentary. So we expanded on the original idea to be much more encompassing, and then Daniel and Kief worked on creating the design and the direction of the film, and went from there.

We officially started shooting it in June 2013, but there was a long genesis before that.

What was the original direction of the movie?

DJ: In the grand scheme of things, it wasn't different than it is now, and that is a film looking both inside and outside of LEGO. At its genesis, the film is about the LEGO community. That was always going to be the heart of the film, if you will, in all ways. I don't think our approach changed. I think it just—I just got off the phone with [builder] Sid [Dinsay] and he asked about research on the project. And you can research LEGO, and you can research LEGO, and you can research LEGO, and you can spend a year just researching—and you know this as well as anyone. What we had to do was just start shooting, and as we started doing that, certain storylines came to us. We always wanted to see a fan-based creation make it through to production, and then we learned about CUUSOO and brought their thing in—there's the user-generated story that we wanted.

So you ended up spotlighting Stephen Pakbaz for that and his Curiosity Rover set.

DJ: Yeah, actually we followed the three CUUSOO finalists in that round. When Stephen was chosen, we followed his set through production.

Great! In terms of looking at all the people, there were stories coming out and presenting themselves. What were some of the themes that you noticed between all the builders? What ultimately were they all doing? My perception is that an AFOL is actually a craftsman, an artist/craftsman, but ultimately there's a certain amount of control that is playing in that...

DJ: Right...

...a person being able to control his environment. So we end up building and creating. Did you see any things like that rising from your talks or just watching and making footage?

Kief Davidson: I noticed, at least with the time I spent at a couple of the conventions, the commonality really was community. I think that was a big one. I think a lot of the people that I met tended to work alone and clearly enjoy the process in building great work. At the end of the day, though, they really all looked forward to coming together and enjoying this experience with others. Then we started finding people that actually did group builds. That was a nice discovery for us, to see that you can have people in different parts of the



In the film, Alice Finch talks about her models, including Hogwarts (above) and Rivendell (seen at right).

country or the world coming together on a display. It's a real communal thing I didn't expect and it was neat to see some of these big builds like the Great Ball Contraption build.

Which events did you guys go to?

DJ: We filmed at Brickworld, Brickfair and Brickcon. We don't really distinguish too much between all of them—they are all talked about but I think it's fair enough to say that we tried not to give too much preference to one over the other, although there was more in Brickcon due to our stories converging there.

The one convention that has the most character and is most distinctive is Brickcon in Seattle. Part of that is because most of the people who go to Brickcon don't go to any other events. AFOLs on the east of the Mississippi will attend multiple events, so you'll see their models at multiple places. However, if you go to Brickcon, that's an isolated event where the MOCs are unique.

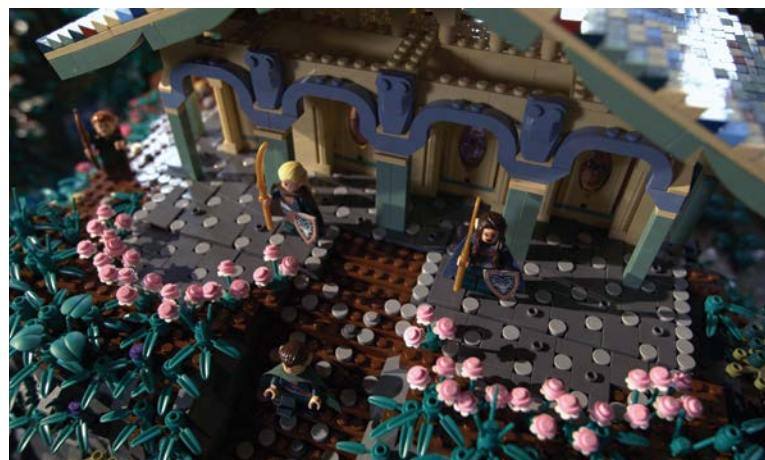
DJ: We are indebted to you Joe, for pointing us in the right direction in that regard.

For me, that was just one of those things—if you haven't seen them, you're kinda missing out. They are the Galapagos Island of events. They are their own community and flourishing on their own, and they are completely different. And it's really cool to see.

In terms of community, the idea of community builds is a more recent development, within the past three or four years. Before then everyone did build in their own little space and then brought their stuff to one point to take a look and talk to everybody, and then go back and build alone.

Did the LEGO Group give you free rein?

DJ: As about unfettered access as you would expect from a major international company. I think at the same time...



BK: I think what LEGO was most concerned about was that they really wanted to make sure the film was about the fan community and fan culture and that it was really an exploration of the way the community had taken the LEGO brick and gone in so many amazing and interesting directions with it. They were very concerned to make sure that was the heart of the film. Other than that, it was just making sure that any time there was an intellectual property, that we were aware of it and respected it. But I would say otherwise that they let us tell the stories wanted to tell.

What did they allow you in terms of access?

DJ: We got access to their designers, which was great, and to their production facilities. We got to follow the creation of the X-Wing all the way from design to finished product. We had access to their archives for our LEGO history section—what else, Kief?

KD: The factories where they are making bricks. The Master Builders in the Czech Republic...

So how is the documentary set up?

DJ: Are you talking about the structure of the film?

Yes.

DJ: Well, we're hoping people will come and see that themselves, but I think in general the film starts with your expectations of LEGO and then the rest of the film kind of works against those expectations; i.e. that it's a toy, that it's for kids, that it's produced by a small group of smart people in one room in Denmark. Those are some of the expectations that we set up, and the rest of the film works to defy them.

What was the expectation that you saw was most shattered from coming in? You came in with some expectations and stereotypes; what did you find was most wrong?

DJ: To me, it was the AFOLs that most surprised me. I think I kinda went into it thinking that no one's better or could possibly be better than the Master Builders and the designers that are creating at LEGO. And while they are doing some great stuff, I think we were all so blown away by what the people are doing, what the community was doing. It was non-stop from convention to convention seeing such great work.

KD: I was also surprised to find out, which was my initial interest in it, that LEGO is being used for things such as therapy for autism. To me it was a pretty intriguing idea.

DJ: I thought it was really interesting to see the relationship between this huge company and the community that has not only embraced it, but also has changed the product, and the interactive relationship between those two entities. I think it's all summed up in one line from Tormod Askildsen of LEGO, where he says, "We need to be aware that 99.99 percent of the smartest people in the world don't work for LEGO." I thought that was a very profound statement.

The Danish architecture firm BIG shows one of their designs in the movie.



Benjamin Davis (left) and his father, Brian Davis, show off their Great Ball Contraption module.





Stephen Pakbaz talks about the set he got to produce with the LEGO Group, the Curiosity Rover.

Another person that we should talk about, since we are talking about the crossover between the LEGO Company and the community, is Jamie Berard. He's a great guy that features prominently in the film, not because he's a great guy and designer, but because he represents that kind of glue between the LEGO world and the AFOL world.

He's one of the first fans that made it to designer.

DJ: Exactly.

Getting back to events, what was the most unusual AFOL model you ran into?

DJ: The model that is most interesting is how virtual LUGs are popping up now. I think that it's not easy to explain, especially to a non-AFOL community, what a LEGO Users Group is. A virtual LEGO Users Group is even harder to explain. How some creations can be made by people in disparate places not only around the country, but around the planet, is a new incarnation of build that is really fascinating to me.

KD: Probably the two builds for me were one in Brickworld and one in Brickcon—that crazy carnival build in Brickcon, did you see that?

The Joker's Funhouse (built by Paul Hetherington, featured in BrickJournal #27)?

KD: Yeah. That one just blew me away, just the complexity of it. We filmed it, but it's hard to truly get the magnitude of it unless you spend a lot of time looking at it from all angles. I thought it was one of the more creative builds I saw. And we all liked what the BroLUG guys built at Brickworld, which was a cyberpunk layout.

DJ: Yeah, that was insane. *The Wizard of Oz* build at Brickworld was pretty sick too.

Brickcon got the overall weirdness factor just because of the



Sculptures by Nathan Sawaya, LEGO Certified Professional.

theme they had going this year—the “pigs vs. cows” thing. There was a lot of gory stuff.

The LEGO company line is that they are against violence. They have conflict, but not violence. At the same time, if you take a look at the AFOL builds, there is gore, but it's sort of.. not as serious-looking as what we are used to. What's your take on that?

DJ: Well, the fact that Will Chapman is one of the subjects of the film and that we talk about Brickarms (Will's company) and the fact that he has a respectful relationship with LEGO at the same time is fascinating. He's acknowledging that people like him exist independently—LEGO created the system and this system has enabled customizers (and that's the word he uses to describe himself) to proliferate. That's a pretty profound statement, especially on LEGO. They're not necessarily embracing it, but at least not squelching it.

Tommy Williamson (of BrickNerd.com) is working on the stop-motion transitions for Beyond the Brick. Tell me about how he got involved with the movie.



Husband and wife Dave and Stacy Sterling show their work.



Adam Reed Tucker is also featured with his architectural models.

KD: We met Tommy through Guy Himber. Tommy's been awesome and was a great find. When we were filming him at Brickcon, he was one of my favorites. He had just such a great sense of humor. Then he told us that he worked in special effects and once he became a viable potential partner for us to do stop-motion animation, I think it opened up the doors for us in a lot of ways. He's done some pretty remarkable stuff. He's building sets while working with other stop-motion animators. They're still cranking it through right now.

Jason Bateman is the narrator and he plays a minifig. It's his character that Tommy is animating.

Where and when are you going to be releasing the film?

BK: That's something that we are determining in the next few weeks with some pre-screenings to potential distributors and at Tribeca. So we are hopeful that shortly after Tribeca, we'll be able to announce the distribution strategy more generally. I know that one thing that we'll absolutely be doing is trying to organize some screenings at the various LEGO fan events and conventions and really making sure that the film is available to the LEGO fan community. We are in discussions with the LEGO Company to figure out how to best do that, and there will be a wider distribution strategy to the general audience as well.

Dan, a personal question: On the movie website, it mentions your favorite LEGO set, the classic moon lander.

DJ: Yeah, and in the film, it plays a classic hero role in Tommy's animation as well. We're really excited.

Why was that set your favorite?

DJ: Because—you know why? For no other reason than because it was out in 1979 and I'm in the LEGO sweet spot: I'm 10 years old in 1979 and that was on K-Mart shelves. So even that color scheme (blue and gray) registers with me emotionally.

For me it was one of those things; I was a space geek back then. I was a kid too, and this came out and the possibility



Iain Heath's work is also shown in the film.

was that first, can you make this spaceship? But then it introduced me to the idea of "Well, you can make your own now." That just started me on the hobby way back when I was overseas... I was an Army brat, so all my sets were sold when I came back to the states and I had a dark age until about 15 years ago. Even then, it was the start of creativity for me.

DJ: Yeah, you nailed it on two things. We were all in primo space time, right after *Star Wars*, and we were all primed for that theme; but then you're right, there's something about this toy, about how it empowers kids and now adults, that registers in a core way with us. There's something innately human about it that you go to a convention and you're seeing empowered people, because they're all creating.

KD: That happened in the last couple of days in a row for me. My sons goes in and out of playing with Legos. He'll play for a month, then he'll stop for a while and then get back into it. Just the last two mornings he's shown me this little creation he built (he's not the best builder in the world) and feels proud of it. He showed it to me and wanted my validation and approval that it was good, and just seeing it on a six-year-old's

face—that translates all the way to adulthood. It's pretty cool.

And for him, it's just the beginning, and that's the cool thing I see happening. Just seeing that type of creativity begin and empowerment on the kid's part is remarkable. My hope with the movie is that everybody understands: it's a lot like scratching the paint to something big—you just scratched the surface. There's a whole bunch more out there if you choose to look. I hope you guys demonstrate that to a lot of people.

Any final thoughts you want to add?

DJ: This was a really hard film to make, because it's such a huge multifaceted subject that it's just hard to understand and to figure out as a filmmaker where to start, and more importantly, where to stop. There's just so many incredible stories, and also, how do you wrap that all up in one unified thing? Making a film on LEGO is like making a film on the English language or water—it's such a big ubiquitous thing that it's hard to know what path to take. Just knowing the heart of the film is the LEGO community kept us tried and true on what stories we did and didn't do. **b**



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LEGO® History



The LEGO® Building Figure: Adding Role-Play to the LEGO System

*Article by Kristian Hauge
Photography provided
by the LEGO Group*

In 1974, the LEGO Group launches the very first LEGO® Building Figure encouraging children to a broader range of play.

As early as 1969, the LEGO Group management played with the idea of including “people” into the LEGO universe to add a new dimension to the LEGO® building system. LEGO designers were asked to come up with suggestions on how to create a LEGO figure. The different suggestions were all tested on children aged 4-7. One suggestion of a figure with movable legs connected by joints was disregarded because tests showed it was too difficult for the children to play with. Instead the solution proved to be a figure almost entirely made out of LEGO bricks. The torso and legs were made of LEGO bricks and combined with two new special LEGO elements: a head plus a brick with movable arms. This design was true to the core values of the LEGO System in Play. Only the arms and head were movable, the rest was built with bricks and therefore inflexible, but most importantly they were interlockable with other LEGO elements.

In 1972, considerations were made about the appearance of the LEGO Building Figure. Different facial colors were discussed and whether the figure should have facial markings or not. In the end it was decided that the head of the figure should be yellow and have black facial markings.

The LEGO Family is Introduced

After five years of development the first LEGO Building Figure set was launched in 1974 as set No. 200, containing a family of five: a grandmother, parents and two children. This set was such a huge success that the factory in Billund had to start up production on the weekends to keep up with the demand. The LEGO Building Figure was also the reason why the LEGO Group acquired its first manual processing equipment. The equipment was used for decorating the figure’s black facial markings. The success of the figure also earned set No. 200 a Toy of the Year award in the UK.

The LEGO Building Figure was very popular and added a human dimension to the LEGO building system. Now children could not only build houses and vehicles but also enjoy imaginative play with dialogue and role-play. The combination of creating, building and role-play gave children a greater opportunity to pursue the overall purpose of LEGO play—to develop their imagination and creativity.



Family box + models: After its launch in 1974, set no. 200 was a huge success.


The Next Step

The LEGO Building Figure was a popular part of the product portfolio for the next eight years, but it was not all positives. There was one problem with the building figure: The size! Due to the decision of creating the legs and torso out of LEGO bricks, the figure was fairly large compared to many other LEGO sets. Because of this, it was decided to try to create a new smaller figure to fit the scale of the rest of the product portfolio. This resulted in a new figure launched in 1975. The new figure never got a name, but went by various nicknames such as “stage extra” and the “pillar of salt”. The new figure had a round head with no facial expression and contours of arms and legs. Just like the LEGO Building Figure, the new figure was interlockable with other LEGO elements and could be placed anywhere and moved around, but it couldn’t walk or take hold of anything.

The “stage extra” was a transitional figure between the large LEGO Building Figure and the Minifigure which was launched in 1978 and still today is a part of the LEGO product portfolio. Today the LEGO Group has produced more than 5 billion Minifigures since the launch in 1978. It is safe to say that the idea of roleplay has caught on.

A Pivotal Part of the LEGO Idea

In 1955 Godtfred Kirk Christiansen, the son of LEGO founder Ole Kirk Kristiansen, explained the idea behind the LEGO system: “Our idea has been to create a toy that prepares the child for life—appealing to its imagination and developing the creative urge and joy of creation that is the driving force in every human being”. Today the LEGO Group still lives by the meaning of these words; the only change is switching from Godtfred’s words to a more modern wording: Inspire and develop the builders of tomorrow.

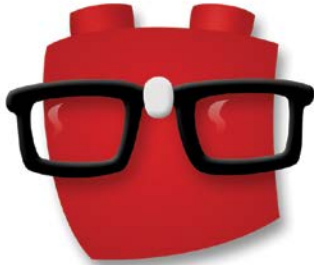
Forty years ago, the LEGO Building Figure played a pivotal part in adding a broader range of LEGO play, and the addition of role-play played an important part in the company’s journey to realize the idea behind the LEGO system. 



The stage extra stands four LEGO bricks tall including hat. A Minifigure stands four bricks tall without a hat or hairpiece.

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Hey Kids! Comics!

by *Greg (AFOLs) Hyland*

Lethargic Lad: Topics of Unclear Importance is a complete collection of seven years of Lethargic Lad comics! Presenting over 350 strips from the lethargiclad.com website and all the Lethargic Lad three-page comics that originally appeared in the pages of *Dork Tower* comics.

"Greg just gets it right: the situations, the ongoing storylines, the characterizations, the understated but gut-busting payoffs... Fans of the Lad are fans for life!"

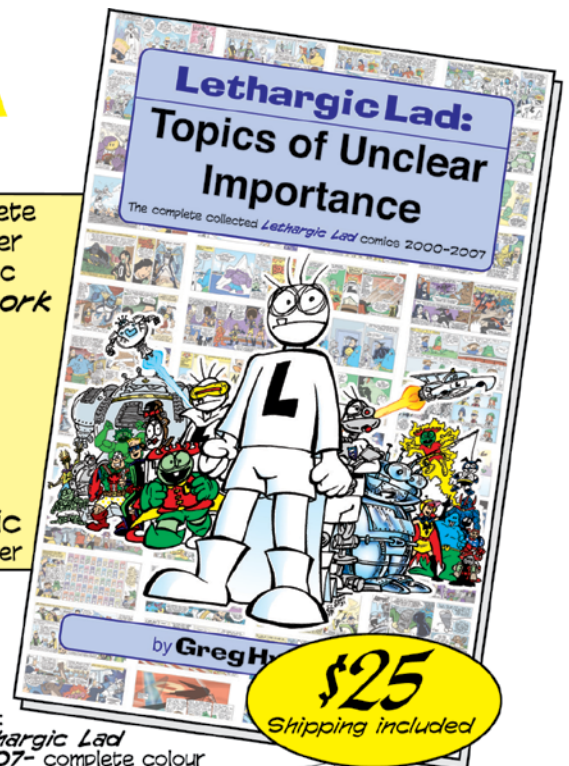
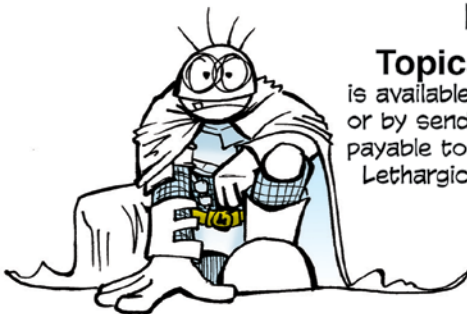
-John Kovalic
Dork Tower

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This issue, I am changing things a little here. Instead of the usual funny pics I find in my photo pile, I got some photos from FIRST LEGO League when I visited them while I was in Manchester, New Hampshire. *BrickJournal* will be covering FLL by providing MINDSTORMS-oriented information and articles in upcoming issues.

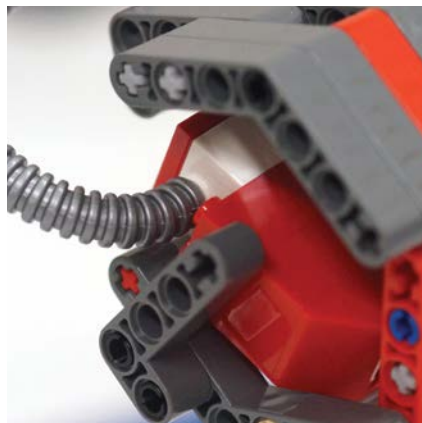
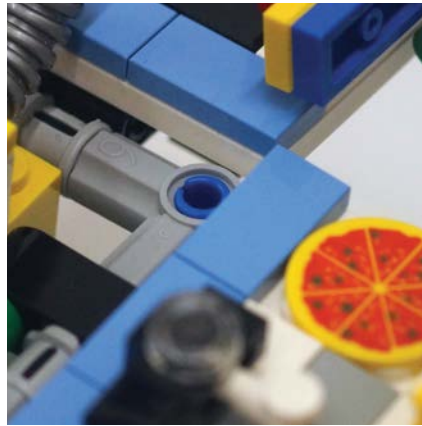
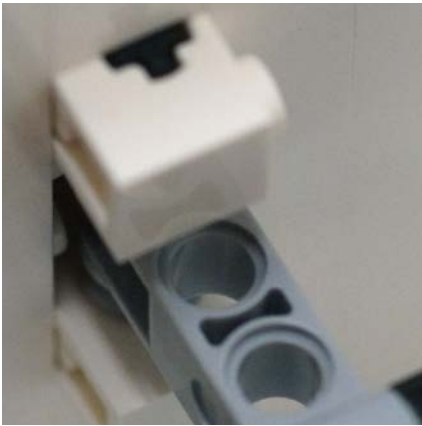
During that visit, I met the Robot Game Designer to FLL, Scott Evans, and he was gracious enough to show me the new game board. Of course, I couldn't reveal any pics of the models on the game, but Scott had an idea: Why not show ultra-close-ups of the models, like in the old *Ranger Rick* magazines?

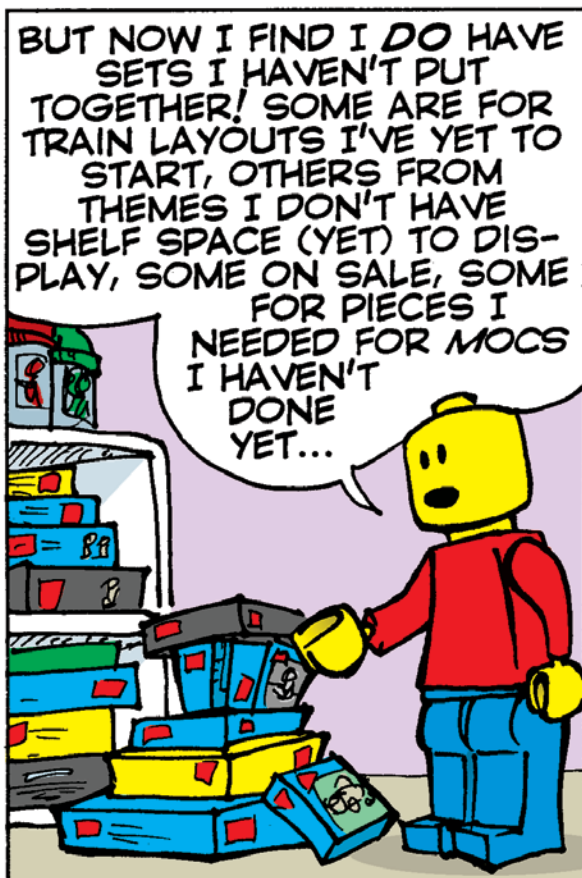
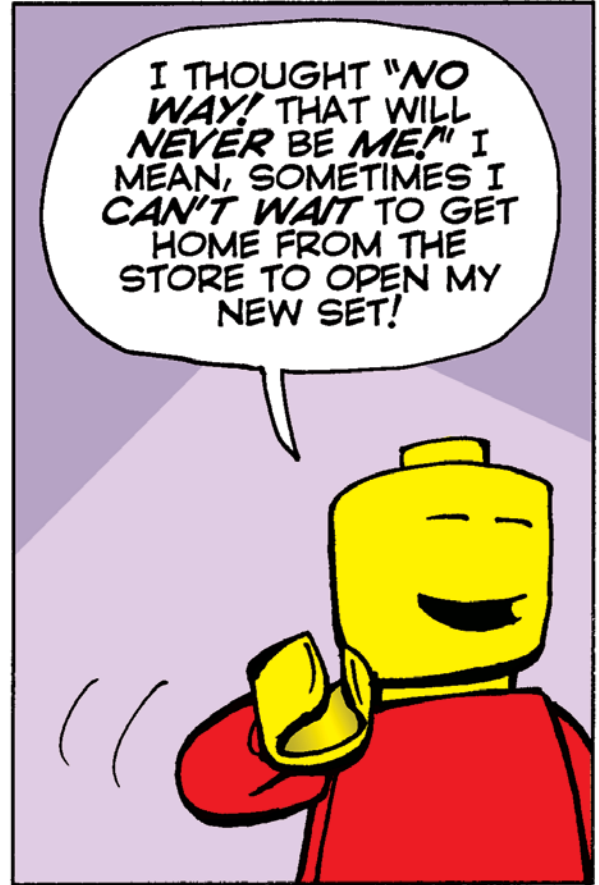
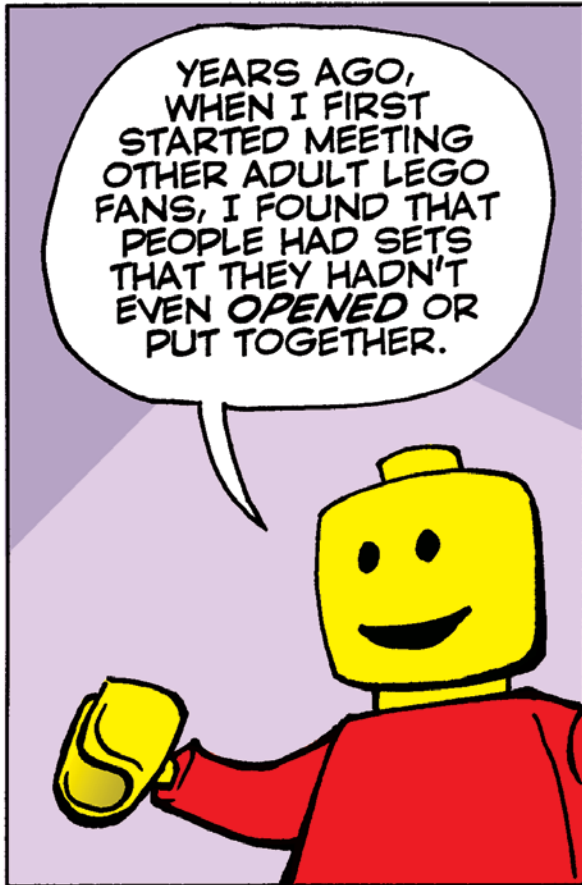
So here are some of the models, real close. This year's theme is World Class and is focused on education. The unveiling of the Robot game is August 26, 2014. Until then, what do you think these are?

You'll find out soon enough. See you next issue! 

Last Word

FLL: A Teaser







BRICKJOURNAL #1
The ultimate resource for LEGO enthusiasts of all ages, showcasing events, people, and models! FULL-COLOR #1 features an interview with Certified LEGO Professional **NATHAN SAWAYA**, car designs by **STEPHAN SANDER**, step-by-step building instructions and techniques for all skill levels, new set reviews, on-the-scene reports from LEGO community events, and other surprises!
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Spotlight on **CLASSIC SPACE SETS** and a look at new ones, **BRANDON GRIFFITH** shows his **STAR TREK MODELS**, **LEGO** set designers discuss their work creating the **SPACE POLICE** with **PIRATE SETS**, **POWER FUNCTIONS TRAIN DEVELOPMENT**, the world's **TALLEST LEGO TOWER**, **MINIFIGURE CUSTOMIZATION**, plus coverage of **BRICKFEST 2009** and more!
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Focuses on the new **LEGO ARCHITECTURE** line, with a look at the new sets designed by **ADAM REED TUCKER**, plus interviews with other architectural builders, including **SPENCER REZKALLA**. Also, behind the scenes on the creation of **POWER MINERS** and the **GRAND CAROUSEL**, a **LEGO BATTLESHIP** over 20 feet long, reports from **LEGO** events worldwide, and more!
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BrickJournal looks at **LEGO'S DISNEY SETS**, with features on the **Disney LEGO** sets of the past (**MICKEY** and **MINNIE**) and present (**TOY STORY** and **PRINCE OF PERSIA!**) We also present **Disney** models built by **LEGO** fans, and a look at the newest **Master Build** model at **WALT DISNEY WORLD**, plus articles and instructions on building and customization, and more!
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BrickJournal goes undersea with looks at the creation of **LEGO's** new **ATLANTIS SETS**, plus a spotlight on a fan-created underwater theme, **THE SEA MONKEYS**, with builder **FELIX GRECO!** Also, a report on the **LEGO WORLD** convention in the Netherlands, **BUILDER SPOTLIGHTS**, **INSTRUCTIONS** and ways to **CUSTOMIZE MINIFIGURES**, **LEGO HISTORY**, and more!
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Discover the world of stop-motion **LEGO FILMS**, with brickfilmer **DAVID PAGANO** and others spotlighting **LEGO** filmmaking, the history of the medium and its community, interviews with the makers of the films seen on the **LEGO CLUB SHOW** and **LEGO.com**, and instructions on how to film and build puppets for brick flicks! Plus how to customize minifigures, event reports, step-by-step building instructions, and more!
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Looks at the **LEGO MECHA** genre of building, especially in **Japan!** Feature editor **NATHAN BRYAN** spotlights mecha builders such as **SAITO YOSHIKAZU**, **TAKAYUKI TORII**, **SUKUYU** and others! Also, a talk with **BRIAN COOPER** and **MARK NEUMANN** about their mecha creations, mecha building instructions by **SAITO YOSHIKAZU**, our regular columns on minifigure customization, building, event reports, and more!
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Focuses on STEAMPUNK! Feature editor GUY HIMBER gives a tour with a look at his work, DAVE DEGOBBI's, NATHAN PROUDLOVE's, and others! There's also a look at the history of LEGO Steampunk building, as well as instructions for a Steampunk plane by ROD GILLIES! Plus our regular columns on minifigure customization, building tips, event reports, our step-by-step "You Can Build It" instructions, and much more!

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LEGO SPACE WAR issue! A STARFIGHTER BUILDING LESSON by Peter Reid, WHY SPACE MARINES ARE SO POPULAR by Mark Stafford, a trip behind the scenes of LEGO's NEW ALIEN CONQUEST SETS that hit store shelves earlier this year, plus JARED K. BURKS' column on MINIFIGURE CUSTOMIZATION, building tips, event reports, our step-by-step "YOU CAN BUILD IT" INSTRUCTIONS, and more!

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BRICKJOURNAL #18

Go to Japan with articles on two JAPANESE LEGO FAN EVENTS, plus take a look at JAPAN'S SACRED LEGO LAND, Nasu Highland Park—the site of the BrickFan events and a pilgrimage site for many Japanese LEGO fans. Also, a feature on JAPAN'S TV CHAMPIONSHIP OF LEGO, a look at the CLICKBRICK LEGO SHOPS in Japan, plus how to get into TECHNIC BUILDING, LEGO EDUCATION, and more!

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BRICKJOURNAL #19

LEGO EVENTS ISSUE covering our own BRICKMAGIC FESTIVAL, BRICKWORLD, BRICKFAIR, BRICKCON, plus other events outside the US. There's full event details, plus interviews with the winners of the BRICKMAGIC CHALLENGE competition, complete with instructions to build award winning models. Also JARED K. BURKS' regular column on minifigure customizing, building tips, and more!

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LEGO SUPERHEROES! Behind-the-scenes of the DC and Marvel Comics sets, plus a feature on GREG HYLAND, the artist of the superhero comic books in each box! Also, other superhero work by ALEX SCHRANZ and our cover artist OLIVIER CURTO. Plus, JARED K. BURKS' regular column on minifigure customization, building tips, step-by-step "You Can Build It" instructions, and more!

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BRICKJOURNAL #21

LEGO CAR BUILDING! Guest editors LINO MARTINS and NATHAN PROUDLOVE of LUGNuts share secrets behind their LEGO car creations, and present TECHNIC SUPERCAR MODELS by PAUL BORATKO III and other top builders! Plus custom instructions by TIM GOULD and CHRISTOPHER DECK, minifigure customization by JARED BURKS, step-by-step "You Can Build It" section, and more!

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LEGO PLANE BUILDING! Top builder RALPH SAVELSBERG takes off with his custom LEGO fighter models, there's a squad of articles on Sky-Fi planes by FRADEL GONZALES and COLE MARTIN, find instructions to build a Sky-Fi plane, plus our regular feature on minifigure customization by JARED BURKS, AFOLs by GREG HYLAND, other step-by-step "You Can Build It" instructions, and more!

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BRICKJOURNAL #23

STAR WARS issue, with custom creations from a long time ago and far, far away! JACOB CARPENTER's Imperial Star Destroyer, MARK KELSO's Invisible Hand, interview with SIMON MACDONALD about building Star Wars costume props with LEGO elements, history of the LEGO X-Wing, plus our regular features on minifigure customization by JARED BURKS, "You Can Build It" instructions, and more!

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LEGO TRAINS! Builder CALE LEIPHART shows how to get started building trains and train layouts, with instructions on building microscale trains by editor JOE MENO, building layouts with the members of the Pennsylvania LEGO Users Group (PennLUG), fan-built LEGO monorails minifigure customization by JARED BURKS, microscale building by CHRISTOPHER DECK, "You Can Build It", and more!

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BRICKJOURNAL #25

MEDIAeval CASTLE BUILDING! Top LEGO® Castle builders present their creations, including BOB CARNEY's amazingly detailed model of Neuschwanstein Castle, plus others, along with articles on building and detailing castles of your own! Also: JARED BURKS on minifigure customization, AFOLs by cartoonist GREG HYLAND, step-by-step "You Can Build It" instructions by CHRISTOPHER DECK, and more!

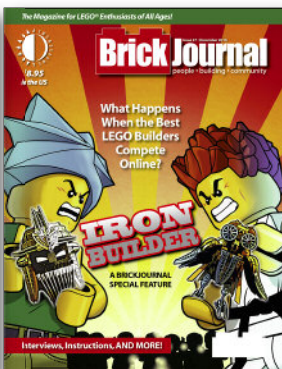
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CREATURES GREAT AND SMALL with builders SEAN and STEPHANIE MAYO (known online as Siercon and Coral), other custom animal models from BrickJournal editor JOE MENO, LEGO DINOSAURS with WILL PUGH, plus more minifigure customization by JARED BURKS, AFOLs by cartoonist GREG HYLAND, step-by-step "You Can Build It" instructions by CHRISTOPHER DECK, and more!

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BRICKJOURNAL #27

GUY HIMBER takes you to the IRON BUILDER CONTEST, which showcases the top LEGO® builders in the world! Cover by LEGO magazine and comic artist PAUL LEE, amazing custom models by LINO MARTINS, TYLER CLITES, BRUCE LOWELL, COLE BLAQ and others, minifigure customization by JARED BURKS, step-by-step "You Can Build It" instructions by CHRISTOPHER DECK, AFOLs by GREG HYLAND, & more!

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BRICKJOURNAL #28

Learn what went into the making of The LEGO Movie and other brickfilms with moviemaker DAVID PAGANO, chat with brickfilmmakers The Brotherhood Workshop, sit in on a talk with the makers of LEGO: A Brickumentary, a look at MINDSTORMS building, minifigure customization by JARED BURKS, step-by-step "You Can Build It" instructions by CHRISTOPHER DECK, AFOLs by GREG HYLAND, & more!

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BRICKJOURNAL #30

LEGO ARCHITECTURE with JONATHAN LOPES, a microscale model of Copenhagen by ULRIK HANSEN, and a look at the LEGO MUSEUM being constructed in Denmark! Plus Minifigure Customization by JARED BURKS, step-by-step "You Can Build It" instructions by CHRISTOPHER DECK, BrickNerd DIY Fan Art by TOMMY WILLIAMSON, MINDSTORMS building with DAMIEN KEE, and more!

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