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Issue 31 • November 2014

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# Contents

# The Cathedral of St. Francis of Assisi

*Interview by Joe Meno*
*Photography provided by Tony Sava*

Tony Sava is a husband, father of two young builders, and an Internal Auditor for Kinder Morgan Inc. In addition to building with LEGO bricks, he likes to dabble in photography and making smoked barbeque.

He started building when as a child, "My grandparents gave me first LEGO set 6385 Fire House-I sometime when I was around six years old, but I didn't really get into playing with LEGO in any major way until my parents gave me 6081 King's Mountain Fortress. I didn't have too much of a dark age to speak of, though I didn't really start moving away from building only sets and start building MOCs until my mid- to late- teens. Well into college, in July of 2000, I joined Lugnet and became an official Adult Fan of LEGO and have been actively building ever since."

When asked about what kind of models he builds, he answers, "I used to build exclusively Castle MOCs, but I've since moved onto building Trains—primarily steam engines. To a lesser extent I build Town as well, but mostly as a backdrop to my trains."

One his most ambitious models is the Cathedral of St. Francis of Assisi, which has been shown at train shows and most recently at Brickworld 2014. Here, he talks about how he built his model.

*A minifigure view of one of the stained glass windows in the cathedral.*

**BrickJournal:** ***What inspired you to build the church?***
***Tony Sava:*** I've always wanted to build a big Gothic Cathedral. In spite of my switch from Castle to Trains, I've retained a love for Gothic architecture. It wasn't until I was an adult, and in fact when I had stopped building Castles, that I had enough spare grey bricks and funds to attempt such a huge MOC. I have seen many inspiring LEGO Cathedrals over the years, and truth be told I have borrowed many techniques from these other builders to build my own.

***What church is this inspired by?***
My Cathedral is inspired by two real-life Cathedrals. The general floor plan is based on St. Patrick's Cathedral in New York. I was able to find a diagram online of St. Patrick's floor plan, complete with columns and buttresses. Using photo editing software, I overlaid the floor plan onto a field of LEGO baseplates and used that to plan the rest of the build.

Chartres Cathedral in France is the other inspiration for my build. St. Patrick's is a beautiful building, but it is built in a Neo-Gothic style, meaning it lacks the flying buttresses and overall overwhelming "greebles" that Gothic Cathedrals tend to have. Chartres was not only built in the Gothic style complete with flying buttresses, but it is also notable for having asymmetrical bell towers. Just about every LEGO Cathedral I've seen has had symmetrical towers, and the thought of following the road less traveled was very appealing.

***How long did it take you to build it?***
All told about 6 months. I spent several months simply planning the build. After I created the floor plan overlay, now knowing how big the building would be, I began scaling out the different features. Knowing how many windows would be on each wall, I was able to calculate their widths, how far apart the pillars would be, how many pews I would be able to fit inside. I studied other MOCs and tested out different building techniques, making note of the ones I thought would be a good fit. After that I began making Bricklink orders in preparation of the build.

Actual construction took about four months, occasionally slowed by the lack of parts (my local LEGO store and its Pick-a-Brick wall helped a lot with that) and unexpected design challenges I had not yet addressed. Throughout the process I uploaded Work In Progress photos to Flickr, asking for input from online AFOLs in an attempt to both improve my MOC and my repertoire of building techniques. As a builder, I tend to get a little lazy and complacent, so having this outside influence really helps to drive me to be a better builder.

# Building *Calvin and Hobbes*

*Design and Photos by Adam Dodge*
*Instructions by Joe Meno*

*Calvin and Hobbes TM & © Bill Watterson.*

Adam Dodge posted this sculpture online, which was immediately posted on leading blogs. *BrickJournal* contacted him and was able to make instructions.

When asked about this creation, Adam explained: "I made this Calvin and Hobbes in response to someone wanting to buy a Calvin and Hobbes creation from me. Not wanting to part with the amount of bricks in my original model, I put together this smaller, more iconic image and gave that away."

This is a great Bricks of Character creation that not only captures the look of the classic cartoon characters, but also shows the whimsy that the *Calvin and Hobbes* strip (and LEGO) has. Enjoy building!

# Parts List

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

**Calvin**

| Qty | Color | Part | Description |
|---|---|---|---|
| 2 | Black | 42446.dat | Bracket 1 x 1 - 1 x 1 |
| 1 | Tan | 3024.dat | Plate 1 x 1 |
| 2 | Red | 3024.dat | Plate 1 x 1 |
| 2 | Black | 3024.dat | Plate 1 x 1 |
| 2 | Sand Purple | 3024.dat | Plate 1 x 1 |
| 2 | Tan | 4073.dat | Plate 1 x 1 Round |
| 1 | Yellow | 3023.dat | Plate 1 x 2 |
| 1 | Black | 3023.dat | Plate 1 x 2 |
| 2 | White | 3023.dat | Plate 1 x 2 |
| 2 | Tan | 3023.dat | Plate 1 x 2 |
| 1 | Tan | 3794b.dat | Plate 1 x 2 with Groove with 1 Centre Stud |
| 1 | Tan | 3022.dat | Plate 2 x 2 |
| 2 | Red | 3022.dat | Plate 2 x 2 |
| 2 | Black | 3022.dat | Plate 2 x 2 |
| 1 | Red | 87580.dat | Plate 2 x 2 with Groove with 1 Center Stud |
| 2 | Tan | 54200.dat | Slope Brick 31 1 x 1 x 0.667 |
| 4 | Yellow | 54200.dat | Slope Brick 31 1 x 1 x 0.667 |
| 2 | Black | 3665.dat | Slope Brick 45 2 x 1 Inverted |
| 2 | White | 3070b.dat | Tile 1 x 1 with Groove |

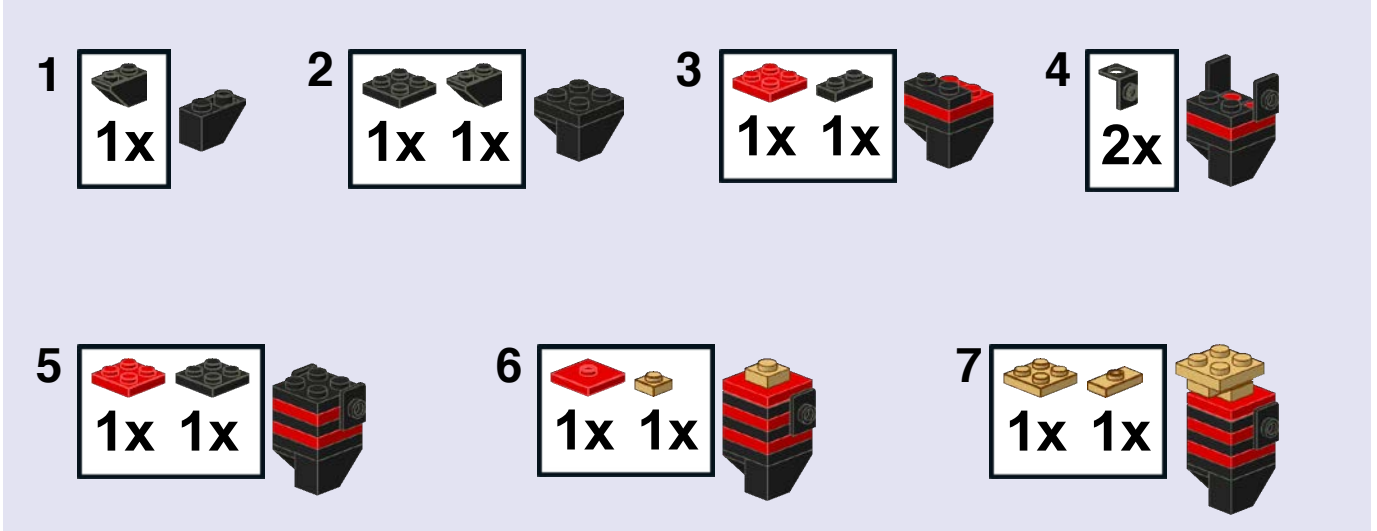
**Hobbes**

| Qty | Color | Part | Description |
|---|---|---|---|
| 2 | Black | 42446.dat | Bracket 1 x 1 - 1 x 1 |
| 1 | Black | 87087.dat | Brick 1 x 1 with Stud on 1 Side |
| 2 | White | 87087.dat | Brick 1 x 1 with Stud on 1 Side |
| 4 | White | 3004.dat | Brick 1 x 2 |
| 2 | White | 2877.dat | Brick 1 x 2 with Grille |
| 1 | White | 3024.dat | Plate 1 x 1 |
| 1 | Orange | 3024.dat | Plate 1 x 1 |
| 4 | White | 4073.dat | Plate 1 x 1 Round |
| 16 | Black | 4073.dat | Plate 1 x 1 Round |
| 18 | Orange | 4073.dat | Plate 1 x 1 Round |
| 2 | White | 4081b.dat | Plate 1 x 1 with Clip Light Type 2 |
| 2 | White | 49668.dat | Plate 1 x 1 with Tooth |
| 4 | White | 3023.dat | Plate 1 x 2 |
| 8 | Black | 3023.dat | Plate 1 x 2 |
| 16 | Orange | 3023.dat | Plate 1 x 2 |
| 2 | White | 3794b.dat | Plate 1 x 2 with Groove with 1 Centre Stud |
| 2 | Orange | 3022.dat | Plate 2 x 2 |
| 2 | White | 4032b.dat | Plate 2 x 2 Round with Axlehole Type 2 |
| 1 | White | 87580.dat | Plate 2 x 2 with Groove with 1 Center Stud |
| 1 | White | 3700.dat | Technic Brick 1 x 2 with Hole |
| 1 | Blue | 4274.dat | Technic Pin 1/2 |

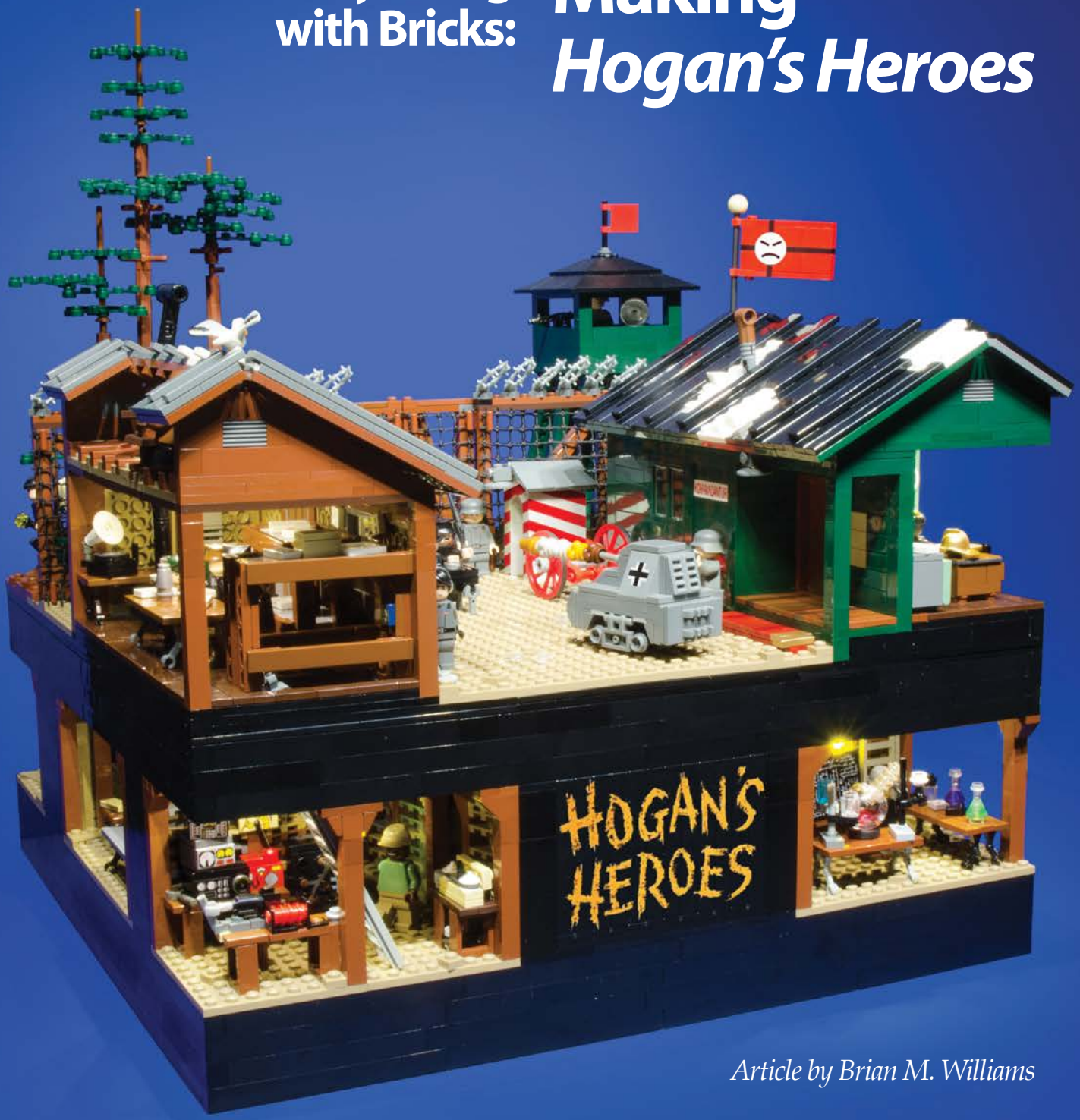
**Tree Trunk**

| Qty | Color | Part | Description |
|---|---|---|---|
| 2 | Reddish Brown | 87087.dat | Brick 1 x 1 with Stud on 1 Side |
| 9 | Reddish Brown | 3941.dat | Brick 2 x 2 Round |
| 2 | Reddish Brown | 3024.dat | Plate 1 x 1 |
| 2 | Reddish Brown | 3666.dat | Plate 1 x 6 |
| 4 | Reddish Brown | 2420.dat | Plate 2 x 2 Corner |

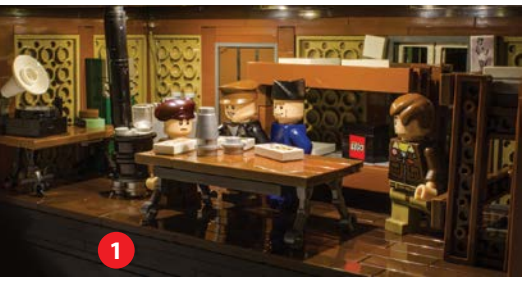
# Calvin



# Storytelling with Bricks: Making *Hogan's Heroes*

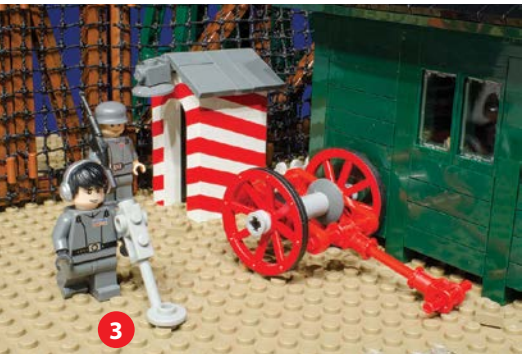



*Article by Brian M. Williams*




*Barracks 2 was the home to Hogan's crew where they would listen to secret conversations using a loudspeaker in a coffee pot. There were many other secret gadgets they employed including the special drop bunk leading to the tunnels below.*


*Sergeant Kinchloe's extensive radio room includes the hydraulic jack used to raise the antenna (left), wireless (rear), and a small phone exchange (center). The wire recorder to the right was featured in the episode "Top Secret Top Coat."*




*The tiles on the roof of the guard's house are held together using clips. The stripes are stickers. The red wagon is firefighting equipment.*



*(Left) Colonels Hogan and Klink share a couple fine cigars courtesy Klink's own locked humidor (on the desk) which Hogan effortlessly opened on many occasions. The photo of the object of the TV series' ridicule in the background featured an actual microphone which Hogan's crew would use to eavesdrop on Klink's office.*

*(Right) Sergeant Carter's homemade explosives lab. The ladder in the rear accesses the stove in Klink's office.*

# Minifigure Customization 101: 3D Resolution

*by Jared K. Burks*

*Legend of Zelda and all related characters TM & © Nintendo.*

*Link created with custom printed 3d parts designed by Michael "MINGLES" Inglis, painted and decaled by Michael "Xero" Marzilli, featuring custom decals created by Jared Burks. Photo by Jared K. Burks.*


*Don't miss Jared K. Burks' two books* Minifigure Customization: Populate Your World! *and its sequel* Minifigure Customization: Why Live In The Box? *(both are available now at www.twomorrows.com)*

3D printing is a method of rapid prototyping, which involves creating digital 3D objects and 'printing' them by having a printer lay down successive layers of a material. Objects manufactured using this process can often be extremely detailed and include awkward shapes. Other manufacturing processes, such as metal injection molding, cannot easily manufacture these awkward shapes without multiple molds. The process of 3D printing allows a minifig customizer to physically make a 3D model without having to deal with extremely large production costs and minimum orders. The rate at which these models can be ordered and received is merely a matter of days with companies such as Kraftwurx and Shapeways.

How do you know if 3D printing is right for your LEGO project? Well, it typically boils down to resolution: specifically, print resolution. Will your printed part hold the design details you have created in your 3D file when printed to LEGO scale? In this article, I will discuss the differences in print materials and resolutions from two of the major commercial sources: Kraftwurx and Shapeways.

Previously, this article series has discussed creating your own 3D files for printing. This article appeared in *BrickJournal* #19 (June 2012). The 3D files from this previous article will be presented here printed in different types of materials and different resolutions as examples. As with anything in life, you get what you pay for: higher resolution materials will be more expensive. You will need to balance the expense of your project against the desired quality.

The materials that can be produced by a 3D printer are extensive. Shapeways and Kraftwurx, the major commercial leaders in 3D printed parts, currently provide metals, plastics, glass, ceramics and sandstone. An exhaustive examination of all the printable materials is beyond the scope of this article. Both manufacturers offer very informative sections of their websites on the materials they offer; if you want to try something out of the mainstream, please visit their sites and community sections for more details.

*The same parts printed by Shapeways and Kraftwurx with various resolutions. Left two columns, top down, are as follows: White Strong and Flexible from Shapeways, Black Strong and Flexible from Shapeways, Nano Clear HD from Kraftwurx. The Swords from left to right are White Strong and Flexible, Black Strong and Flexible, and Nano Clear HD. Notice the print pattern on the Nano Clear sword. This can be removed with sanding, however, be careful not to remove your print detail or sand your part too thin. Note: the Shapeways shields (White Strong and Flexible and Black Strong and Flexible) are much larger than the Kraftwurx (Nano clear HD) print; for scale see the Multicolor Links or Shield figure.*

## Materials

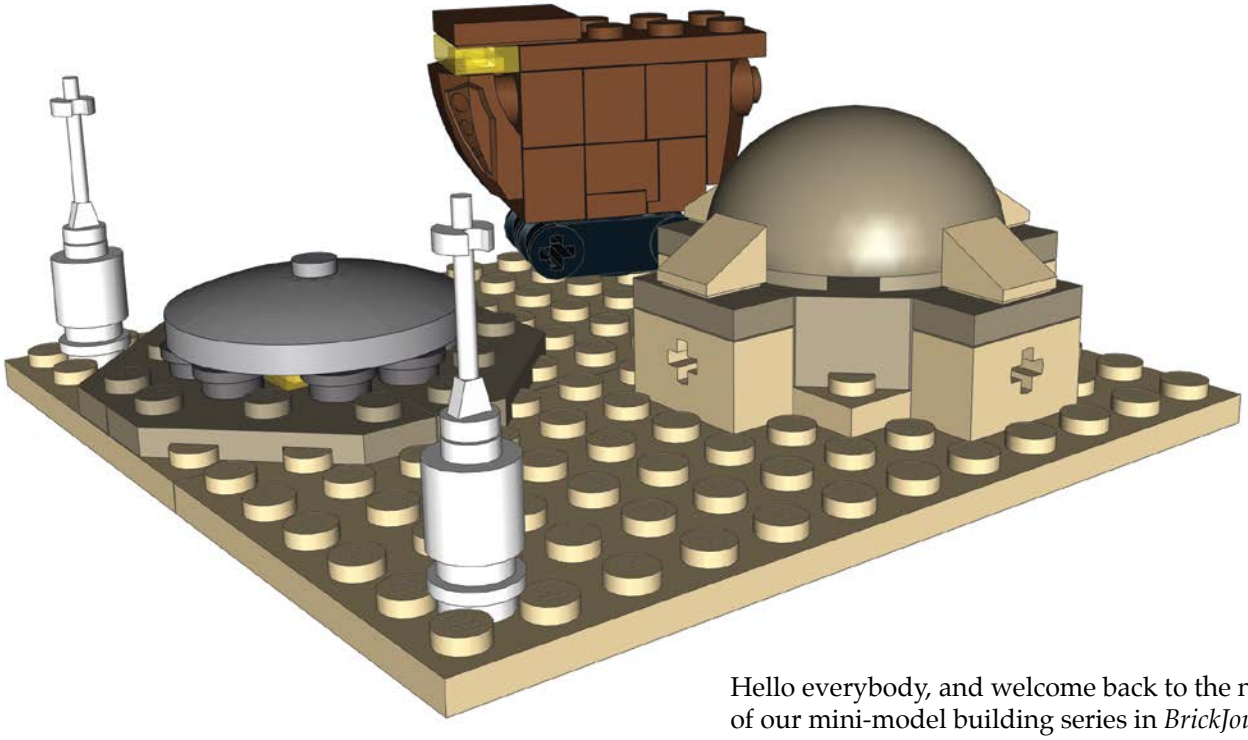
*http://www.shapeways.com/materials*
*http://www.kraftwurx.com/3d-printing-materials*

Shapeways has two materials which suit both the detail and texture of LEGO elements; the 'White Strong and Flexible' (WSF) and the 'Detail' plastic. The WSF material is a nylon material and as the name would suggest is strong and flexible. Although cheap, it has a somewhat bumpy surface due to it originating from a powder. The Detail material solved this surface problem. The Detail material is an acrylic-based photopolymer, which is a smooth material with a much higher resolution to the printed item. This resolution has limitations as it lacks both the flexibility and the strength of WSF. Many colored variations of the two materials have been introduced as well as a polished WSF (50-51 micron resolution) option which significantly improves the problem of its bumpy surface texture. The high demand for such small detailed objects also allowed Shapeways to release the 'Frosted Detail' and 'Frosted Ultra Detail' materials. This UV curable acrylic plastic can achieve details of up to 0.1 mm and is very smooth to the touch. Despite being quite costly compared to the other materials, it is by far the most authentic looking in the hands of a LEGO Minifigure as it most closely resembles LEGO element materials (ABS).

Kraftwurx has several options well-suited for both detail and texture of LEGO elements: Water Clear SLA, Nano White, Nano Crystal, Nano Crystal HD, and Vero. Nano Crystal would be the first choice with the smoothest surfaces and highest detail and part strength. Vero White would be the next best choice for smoothness and detail. For the purpose of this article I am going to focus on Nano Crystal and Nano Crystal HD as these are the best and still affordable. Water Clear SLA is highly detailed, but small features may be lost in LEGO scale. Shapeways' polished WSF is same material as Karftwurx's Nano Crystal, however Nano Crystal is printed at a higher resolution (29 microns for Nano Crystal versus 50-51 microns SW polished Strong & Flexible). The Polished WSF

# You Can Build It

*MINI Model*



# *Lars' Homestead Mini Diorama*

*Design and Instructions by Christopher Deck*

Hello everybody, and welcome back to the next session of our mini-model building series in *BrickJournal!* This time we want to expand our little collection of popular *Star Wars* locations. After a visit on Endor in the last issue of *BrickJournal*, we are back on the dessert planet Tatooine this time. We want to build a mini diorama of the Lars' family moisture farm, home of Luke Skywalker. To keep it as compact as possible we will start on a 12x12 basis and place living quarters, tech dome and some moisture evaporators on it. You will mostly need tan and brown colors for this diorama. If you don't have the proposed tan color, you can take whatever you have available—even sand red shades will work to provide a sandy desert look. As a bonus, we will place a Jawa Sandcrawler in the background travelling the dune seas. I hope you will enjoy building this small set-up! Happy building, and see you next time!

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

# Parts List

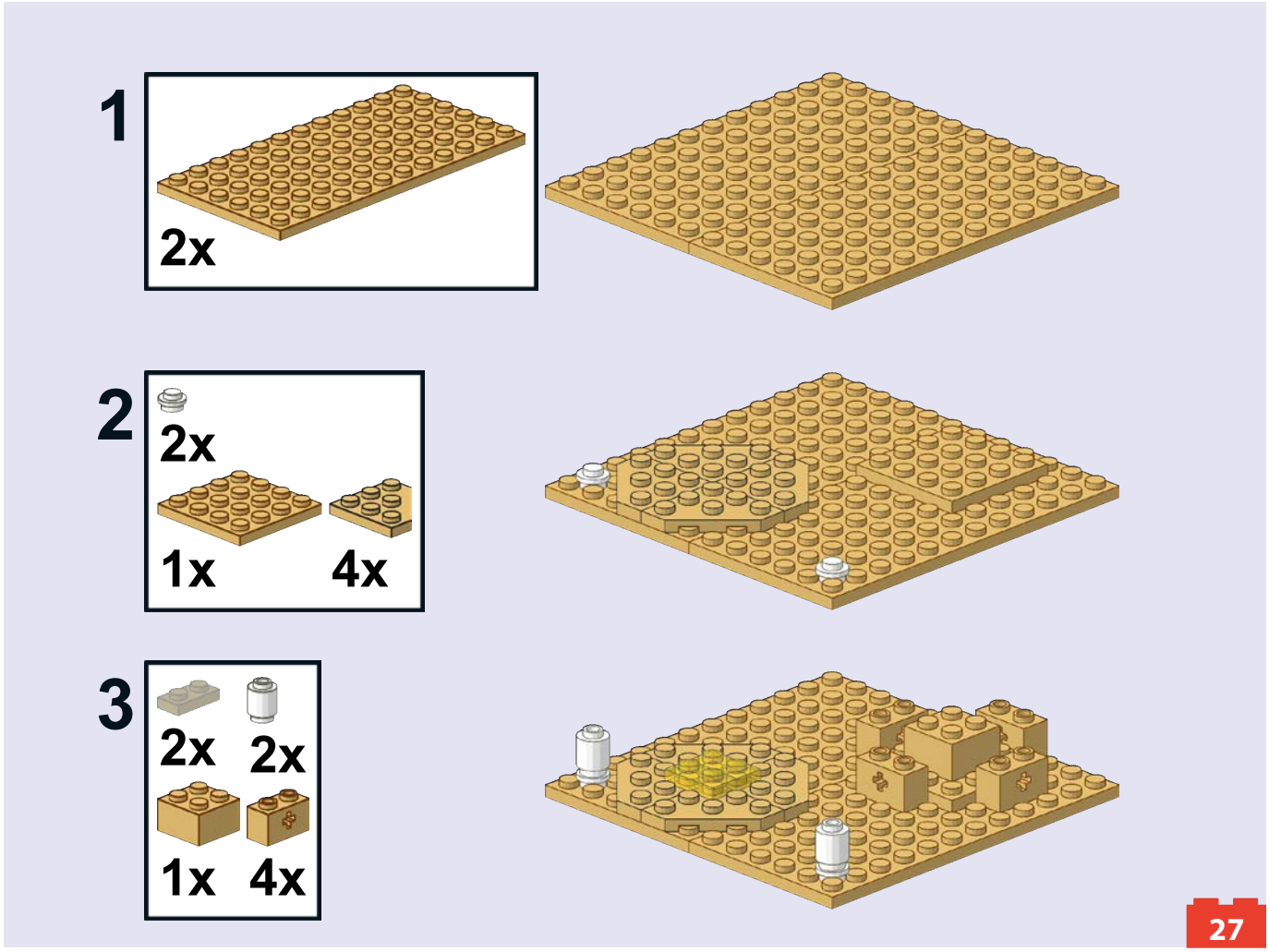
*(Parts can be ordered from Bricklink.com by searching by part number and color)*

**Homestead**

| Qty | Color | Part | Description |
|---|---|---|---|
| 2 | White | 3062b.dat | Brick 1 x 1 Round with Hollow Stud |
| 1 | Dark-Tan | 3003.dat | Brick 2 x 2 |
| 4 | Dark-Tan | 87620.da | Brick 2 x 2 Facet |
| 1 | Light Bluish Gray | 3960.dat | Dish 4 x 4 Inverted |
| 1 | Dark-Tan | 86500.dat | Dome 4 x 4 Smooth |
| 2 | White | 90540.dat | Minifig Ski Pole |
| 2 | White | 4073.dat | Plate 1 x 1 Round |
| 8 | Dark Bluish Gray | 4073.dat | Plate 1 x 1 Round |
| 2 | Trans-Yellow | 3023.dat | Plate 1 x 2 |
| 4 | Dark-Tan | 3794a.dat | Plate 1 x 2 without Groove with 1 Centre Stud |
| 4 | Dark-Tan | 2450.dat | Plate 3 x 3 without Corner |
| 1 | Tan | 3031.dat | Plate 4 x 4 |
| 2 | Tan | 3028.dat | Plate 6 x 12 |
| 4 | Tan | 54200.dat | Slope Brick 31 1 x 1 x 0.667 |
| 4 | Tan | 32064a.dat | Technic Brick 1 x 2 with Axlehole Type 1 |

**Sandcrawler**

| Qty | Color | Part | Description |
|---|---|---|---|
| 4 | Reddish-Brown | 4070.dat | Brick 1 x 1 with Headlight |
| 4 | Reddish-Brown | 87087.dat | Brick 1 x 1 with Stud on 1 Side |
| 1 | Reddish-Brown | 3004.dat | Brick 1 x 2 |
| 1 | Trans-Yellow | 3023.dat | Plate 1 x 2 |
| 1 | Reddish-Brown | 3023.dat | Plate 1 x 2 |
| 1 | Reddish-Brown | 3020.dat | Plate 2 x 4 |
| 1 | Reddish-Brown | 44675.dat | Slope Brick Curved Top 2 x 2 x 1 with Dimples |
| 1 | Reddish-Brown | 41855.dat | Slope Brick Round 2 x 2 x 2/3 |
| 2 | Reddish-Brown | 6541.dat | Technic Brick 1 x 1 with Hole |
| 2 | Black | 32184.dat | Technic Cross Block 1 x 3 (Axle/Pin/Axle) |
| 1 | Reddish-Brown | 3068b.dat | Tile 2 x 2 with Groove |



# MINDSTORMS 101: Using the Colour Sensor

*Article and art by Damien Kee*

In the last installment of our MINDSTORMS articles, we looked at how to program your robot to turn. This time, we will start using sensors to control a robot's actions. To get started, grab your RileyRover or RetailRover that you built for the last lesson. In fact, any two-wheeled robot will be fine for this activity.

When using just the Move Steering blocks, we are always directing the robot to do a specific set of movements. This is often called 'dead-reckoning'. The problem with dead reckoning is that, should anything get in the way of the robot, it has no ability to realize this and will blindly continue to follow its given instructions, regardless of what is happening in the real world.

Sensors give our robot the opportunity to measure what is happening in the outside world, in real-time, and then (programming permitting) use that information to make informed decisions about its actions.

## The Sensors

There are quite a few sensors that are included as part of either EV3 system.

| **Home Edition (31313)** | **Education Edition (45544)** |
|---|---|
| Touch | Touch |
| IR Seeker | Ultrasonic |
| Colour | Colour |
| | Gyro |

In addition to this, there is a huge range of third-party sensors that can be used with the EV3 system, including accelerometers, force sensors, temperature probes, etc.

For this article, I'll concentrate on the Colour sensor, as it is common to both versions of the kit.

## A Look at the Colour Sensor

The Colour sensor can be used in three different ways:

**Colour Mode** – Measure and report a specific colour, Black, White, Green, Blue, Red Yellow and Brown. These have to be pretty close to the official LEGO colours for it to work most reliably.

**Reflective Mode** – Rather than just giving a set colour, this mode gives a reading ranging from 0 to 100, based on the amount of light that is reflected back into the sensor. Lighter, shinier colours will reflect more light, whereas darker colours will absorb more light. This is particularly useful when you know you'll encounter colours that are not the 'standard' LEGO colours.

**Ambient Mode** – This mode will measure the ambient light that the sensor can see. If it's in a dark room or you cover the sensor over, you'll get a low value; if it is in a bright room or pointing at a light source, you'll get a high value.

We will stick with the Colour Mode for this article.

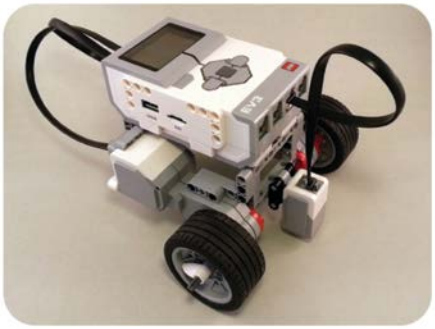
## The TASK

Your first challenge is to make the robot drive along the floor until it encounters a red strip of paper.

Firstly we'll need to add a Colour Sensor to our robot.

Here is a quick attachment that can be used with the RileyRover or the RetailRover. If you have your own design, find a way to attach the Colour Sensor to the front of the robot, so that it is pointing down and is approximately 5mm (.19 inch) from the ground.

**Colour Sensor Attachment**

*Colour sensor attached to Riley Rover.*

*Iain Heath (left) and Tommy Williamson at the first display of what will become Bricks of Character, shown at BrickCon 2009.*

# Character Witness

*Article by Tommy Williamson*

You may have already heard the story of how the Bricks of Character category came to be a thing. If so, too bad; I'm going to tell it again. It was Fall 2009, and two young (yeah, right) and brash (totally) builders were attending their first LEGO convention. Did I mention these two were ravishly handsome and exceedingly popular? No I didn't, because I'm talking about Iain Heath and me. Amid the chaos of set-up on the first day, both Iain and I struggled to find a place where our MOCs would fit in, me with my first larger size MOC of *The Colbert Report*, and Iain with a whole selection of fantabulous characters. As I finally settled in the Art section and was setting up, Iain came over to say that he had commandeered a section of table in the back corner of the room. He invited me to join him since our MOCs were sort of orphaned. We also went around a bit later and invited a few other builders to come to the back corner as well. Before we knew it, we had ourselves a fairly respectable little display. We spent the rest of the show getting to know each other and our fellow AFOLs, enjoying all the activities of the con, and generally misbehaving as usual. Before the end of the con, we decided that what we had pulled together needed to be a thing. We didn't have a name for it yet, but we were determined that it would happen again. Over the next few months we agreed to coordinate a category for the first Bricks by the Bay fan event and came up with a name for our little endeavor: Bricks of Character.

It occurs to me you may be wondering what I mean by characters, and it's actually pretty simple: brick-built characters from pop culture. Our guidelines were pretty simple: no minifigures, and don't make fun of Iain's silly accent (I made that second one up). We usually end up with a few MOCs that are in the gray area as far as what constitutes a character (for instance, GLaDOS from the Portal games), but for the most part, if it's got a face, it's in!

Bricks by the Bay 2010 was the first official instance of BOC, and by all accounts, a total success. We only had a couple of tables, but they were absolutely packed with characters. With over 100 characters making their appearance at the event, it was clear to both of us that Bricks of Character was a hit. At several events (and every BrickCon) since, the category has been very active and always a big crowd pleaser on public days.

*Bilbo and Gollum.*

# Adventures in Meme Chasing

*Article by Iain Heath*

One of the cool things about building LEGO versions of characters from popular culture is that—occasionally—a whole bunch of people get excited about your creations!

I first learned this when one of my earliest MOCs—a model of Stephen Hawking—went unexpectedly viral. As a LEGO builder, my passion has always been for recreating memorable characters from movies and television. And some of those creations have certainly been popular too, provided that the movie or show in question is recent and therefore still in the public consciousness. My interpretations of *The Hobbit*, *Inception*, and *Epic Meal Time* have certainly generated a lot of Twitter action, and even some press interest.

Actually, this isn't such a hard game to play… just keep an eye out for an upcoming blockbuster. Then track down any advance images you can find of the main characters. Then start your build well ahead of the movie's release date, so that you can reveal it just when the movie's buzz reaches its high point. And as long as the movie doesn't turn out to be a complete turkey, your effort won't have been wasted!

It's certainly very gratifying when your LEGO creation starts spreading person to person, website to website, and that view counter kicks into overdrive. It's probably the drug that keeps me building. But none of my carefully orchestrated and painstakingly crafted creations ever seemed to experience quite the same success as that silly little Hawking model. People are *still* tweeting about it and reposting images of it on a daily basis, even eight years later.

Which got me thinking—could I repeat that feat, and create new LEGO models that would become just as viral? At this point I'd already mastered the art of shameless self-promotion, through a network of contacts on a multitude of social media sites, even getting the guys from *Epic Meal Time* to tweet a picture of one of my models sitting on their kitchen counter. All I needed to do was find a subject that was destined to become the Next Big Meme. The trouble is, they don't exactly announce those things months ahead of time, like they do with movies… it kinda just happens overnight.

So I got into the habit of monitoring all the "cool thing of the day" websites, waiting to see if some event or image was starting to show up everywhere—an early indicator that it might be going viral. Then during the London Olympics, US gymnast McKayla Maroney was *not impressed* with her silver medal, and I saw my opening! I ran to my bricks, and as fast as I could, I built a version of her pulling that face. I didn't have the time (or bricks) to build the scene behind her, so I just photoshopped it in from the original image. Then I blasted my version out there for all see. Within a day or two, people had started superimposing Ms. Maroney into all kinds of random situations, and my LEGO version got swept up along with them, even making an appearance on the official LEGO Facebook page!

*McKayla Maroney (inset) and her LEGO namesake.*

After the success of the Maroney build, I was able to refine my process for LEGO "meme-icry" to a fine art, watching for trending images, doing fast builds, and figuring out where to publicize them for maximum effect. The trick is definitely to get your build finished and photographed *fast*, typically within 24 hours of the original meme. That ensures your LEGO version can "ride the wave" of the original's popularity; which means the builds need to be *small*. For human characters I

*RWBY, a group of Anime characters built by Mike Dung.*

# Mike Dung: Anime Character Builder!

*Interview by Iain Heath*
*Photography provided by Mike Dung*

*Mike Dung is a 29-year-old software engineer from Taipei, Taiwan. When not playing with LEGO bricks, he enjoys digital painting, playing volleyball, watching Anime, and singing along to Vocaloid songs!*

**BrickJournal:** ***How did you get into building LEGO characters?***
**Mike Dung:** It began about 18 months ago when I first saw the work of Japanese builder MOKO. This had a great influence on me, since I had just started building. At that time I was crazy about Japanese Anime, so I started the idea of creating Anime characters using LEGO. Most Anime fans will be attracted by some characters in the animation, and I am no exception. The attraction drives me to create LEGO characters.

***Compared to the rest of the world, it seems like a larger proportion of MOCs coming from Asian builders are character-based, inspired by Anime or videogames. Why do you think that is?***
Since I've started following and learning from the works of LEGO builders in other countries, I have found that the proportion of characters built by Asian builders is more prominent, although I have seen a lot of characters built by European and American builders and they are also excellent.

*The gang's all here—(from left to right) Marvin the Martian, Tweety Bird, the Tazmanian Devil, and Yosemite Sam! All Looney Tunes characters TM & © Warner Bros.*

# Annie Diment: Looney Tunes Character Builder!

*Interview by Iain Heath*
*Photography provided by Annie Diment*

*Annie Diment is 47 years old and lives in Hampshire in the UK. She is married to professional LEGO artist Ed Diment, who she met through their shared hobby of tenpin bowling. Annie helps out from time to time at Bright Bricks, Ed's company. She has attended many LEGO events in the UK, as well as LEGO Fan Weekend in Skaerbaek, Denmark, Tomar, Portugal, and BrickFair Virginia in Chantilly, Virginia.*

**BrickJournal:** ***How did the whole idea of building*** **Looney Tunes** ***characters in LEGO come about?***
***Annie Diment:*** I wanted to build something sculptural so started playing around with building a rabbit, but this didn't really inspire me, so I started looking for something else. Ed had shown me the online Bram Sphere Generator (*http://lego.bldesign.org/sphere/*), and it occurred to me that cartoon characters' heads are often spherical. Marvin the Martian's head is a black ball, so I started building one of those and the model went from there. The cartoons are appealing due to their fun nature, coupled with a wide range of colors across the whole *Looney Tunes* family, and obviously a large number of characters to choose from.

# Paul Lee: Bat and Mouse Builder!

*Article by Joe Meno*
*Photography provided by Paul Lee*

*Batman TM & © DC Comics.*

Paul Lee is an illustrator for the LEGO Group. His latest work was the DC Super Heroes comic that was a giveaway at San Diego Comic-Con and with the new Batman Tumbler set. He's been an artist for comic book publishers, but he's also a LEGO builder. He caught the attention of *BrickJournal* with a couple of character models he displayed at LEGO fan events.

*Mickey Mouse TM & © Walt Disney Productions.*

Paul also made a model of Mickey Mouse, which was displayed at BrickCon in 2013. This model also was submitted to LEGO Ideas, where it is currently gathering support to become a LEGO-produced set.

Asked about what inspired him to build such an iconic character, Paul answered, "The reason I made Mickey Mouse was actually that I wanted to build a Lowell Sphere. Bruce Lowell is a member of my LUG, and I wanted to build one for some time. Using instructions available on the Internet, I began building one. Somewhere in the process, it dawned on me that Mickey's head was essentially a sphere and I could probably make a Mickey Mouse. I think I was playing a lot of *Kingdom Hearts* at the time, which features Disney characters.

"Notably, the first Mickey I did is problematic to reproduce because it turns out I used some rare pieces unknowingly at the time. In particular, the tan 2x3 wedge plates, left and right, used for the chin were only used in one set, the 2004 *Star Wars* Snowspeeder (set #4500). As a result, there aren't that many of these tan wedge plates available in the wild, and the ones that are tend to be pretty pricey. When I last looked on Bricklink, the price averaged around $9 each. So for two of them for the chin, it would cost $10 -$20. I keep hoping that LEGO will reintroduce these tan wedge plates into sets, so that they would be more readily available and cheaper. On top of that, white 1x2 click hinges aren't as rare but are also relatively uncommon.

"Mickey's head is attached with a black modified 2x2 tile with pin built facing downward on the bottom-facing side of the Lowell sphere. On the body side, it is attached to a 1x1 Technic brick. The connection is loose so the head will spin around if not careful. I usually use a bit of dental floss to "Snead" the connection, adding a touch of friction so the head rotation is tighter. Since the ears are attached by only one stud each, they tend to fall off easily."

*You can support Paul's Mickey Mouse creation by going to https://ideas.lego.com/projects/8082 or scanning this QR code!*

*You can see Paul's LEGO work and art by going to https://www.flickr.com/photos/art-poly/ or scanning this QR code!*

*Dwarves Kili, Thorin Oakenshield and Fili from the* Hobbit *movies.*

# Eero Okkonen: Building Characters from the *Hobbit* to *Metroid!*

*Interview by Iain Heath*
*Photography provided by Eero Okkonen*

**BrickJournal:** ***Tell us a bit about yourself. What are you up to when you're not building with LEGO bricks?***
I'm Eero Okkonen, known online as "Pate-keetongu", a 19-year old AFOL from Finland, an odd country in Northern Europe. LEGO is my most beloved hobby, but I fiddle with other art forms too, most of them involving some sort of building (and sometimes painting). I also like hiking, paddling and reading, not to mention obvious things like humor, cinema, and doing strange things with friends!

***What is Finland like for AFOLs? Do you have LUGs and conventions?***
It's very good, and developing all the time. LEGO is rather expensive here and the nearest Pick-a-Brick walls are in Denmark, but the community is active and friendly. Finland has one LUG, *Palikkatakomo RY*, which is nationwide. As Finland is a relatively big country with a small population, we have no regular LUG meetings. But Finland has quite a few exhibits and conventions each year, two of which are purely for the LEGO hobby.

***Many of your characters are built entirely from Bionicle elements, but you've also created characters using System bricks. How do you decide when to use one over the other, and what are the advantages and disadvantages of each?***

# Kevin Ryhal: Building Characters from a Galaxy Far, Far Away...

*Interview by Iain Heath*
*Photography provided by Kevin Ryhal*

*Kevin's model of Boba Fett. All Star Wars characters TM & © Lucasfilm Ltd.*

*A long time ago (well, 1974) in a galaxy far, far away called Ohio, Kevin Ryhal (aka "Moodswim") was born. Ever since he could hold a pencil, Kevin loved to draw and create—mostly space battles inspired by* Star Wars. *After studying graphic art in high school, he went on to study Fine Arts at Kent State University. Knowing that most people consider this a "useless" degree, he later focused on printmaking, hoping to land a job at a print shop (which he didn't). A few years later, the release of the LEGO* Star Wars *theme would ignite his passion for LEGO building. From there, collecting turned into customization, which turned into building models from scratch. Since then, "Moodswim" has appeared in the STUDS collectible card series, and even had his work featured on Rebrick, LEGO's official site for showcasing MOCs. In addition to drawing, Kevin also dabbles in sculpture, photography and filmmaking.*

# Nick Vas: From Bionicle to Character Building

*Interview by Iain Heath*
*Photography provided by Nick Vas*

*Nick's Tribull strikes a pose.*

*Nick Vas grew up in Auckland, New Zealand where he studied Engineering and Science at university. He first discovered the online LEGO community in 2007 (through BZPower) and was soon participating in LEGO shows across New Zealand with the country's newly founded LUGs in 2012, AuckLUG and LUG4/2. But his involvement in the LEGO community really kicked off in 2012 when he joined Team Jigsaw, a group of like-minded builders competing in the MOCpages "MOC-athalon" contest. Team Jigsaw would later go on to create the very popular LEGO Ideas projects "Thinking with Portals" and "Adventures of Steamrod" (of which "Thinking with Portals" received the 10,000 votes necessary to be considered as candidates for future LEGO sets). In January 2014, Nick moved from New Zealand to Billund, Denmark to begin work for LEGO as a Junior Product Designer for the Ninjago theme.*

***In the beginning I understand you were a big Bionicle fan. How has that shaped your approach to building?***
Starting with Bionicle rather than System has been a massive influence on my building style. Bionicle has a lot of limited and highly specialized pieces, so using pieces creatively and in unusual ways is an essential trait of Bionicle characters, even in official sets. Masks can be repurposed as armor shells, and feet can be flipped to form faces. Since I was one of the few Bionicle builders in New Zealand, I had the advantage of being able to find very cheap second-hand collections online, compared to System collections!

***Your building style is unusual in that you use a lot of non-standard connection techniques and unusual parts (such as LEGO elastic bands for your Tribull character). How did you develop this overall approach, and why do you like it?***
My building approach stems directly from a Bionicle building style, but expanded to include System and whatever unusual pieces I could find from Bricklink, such as old Technic parts, Clikits, or even Galidor. I enjoy using non-standard techniques since they can allow lots of detail in small spaces, by connecting pieces that were never intended to work together. When looking at other people's MOCs, I enjoy discovering new pieces and trying to figure out how the MOCs are put together, so I aim to include the same experience in my own MOCs.

I switch styles as much as possible to challenge myself to learn new techniques, but also because style choice has a big impact on the object or character you're trying to create. Some characters lend themselves much better to particular styles or scales, often due to part availability. I usually choose a more traditional brick style for

*Shawn's model of Altair, the lead character from* Assassin's Creed, *a popular video game.*

# Shawn Snyder: Building Characters of Video, Movies and Comics!

*Interview by Iain Heath*
*Photography provided by Shawn Snyder*

*Shawn Snyder is a 42-year-old mechanic and machinist from the* [illegible] *omic book reader, sci-fi fan* [illegible] *racter building has been a*

***ating LEGO characters, n come from?***

hild, and continued into r really had enough LEGO ariety of pieces were rather ain after going to BrickCon, that people had made— vere now available! I like make something look life- pieces.

es, comic books, and sci- mer. If I'm not building e first-person shooters, ture games. Right now I

***the largest and most roach each new build,***

ng I consider is my color I have enough variety of pieces in that specific color. Sometimes before I have an idea of a character, I'll look at the colors first and think of the character with those colors, such as a super-hero.

I always start the build with the head, particularly the eyes. The head will set the scale for the body. I'll make the head