Christy Hempel's Eco-City.

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Design with Nature, Design with LEGO

*Article by Joe Meno
Photography and Art provided
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How do you make a city? For centuries, the idea of a city was that of a specially built metropolis, where a grid is imposed on a sector of land and smoothed out and paved. From there, the city is built over the previous environment. The location of a city was defined by the benefit to citizens - a harbor city was a port of transport and travel, and a land-locked city would be a central point for goods and services of a region. The environment itself was something malleable for the city designers to work with. In the past few decades, though, this began to change.

50 years ago urban designer Ian McHarg wrote the book *Design with Nature,* where he talked about designing with the ecology instead of in spite of it, joining other important books at the forefront of the environmentalist movement. People began to understand the consequences of human inventions and started looking at ways to work and build in harmony with the environment. A display in Denmark uses LEGO to present his ideas. Conceived by Christy Hempel, herself an urban designer, the display is the largest part of a budding program to bring McHarg's insights to the public. *BrickJournal* talked to Christy about the program, called *Design with Nature, Design with LEGO.*
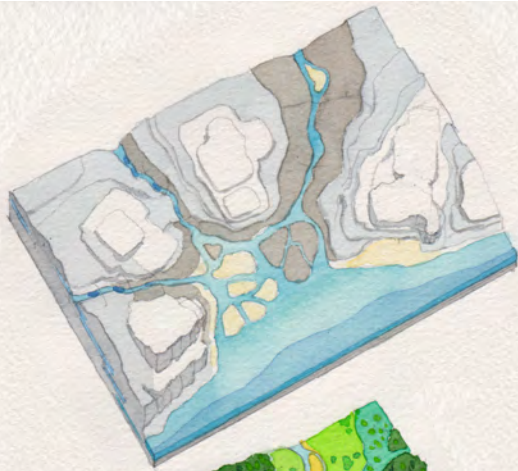
Designing Eco-City

Before anything was built, Christy made a set of watercolor sketches showing the progression of a urban area by the sea. First using a topological map (top left), the land is defined and first developments zoned out.

From there, a network of roads and rails are set up to link the developments. Each development develops its own grid to match the land it is on. Ecology becomes part of the city.

The inspiration for the program actually happened at LEGO World Copenhagen, a fan event n 2019. There, Christy looked at the LEGO city layouts that were displayed and noticed that they were all set up in a traditional grid. Buildings and streets were neatly setup as squares or rectangular sections, with any park and environmental areas built to fit the grid as afterthoughts. A little befuddled by the strict constraints of the layouts, she asked her husband Ralph (a LEGO employee) why didn't people build more natural layouts. Ralph laughed and answered "It would be just too hard." Christy thought: that's the reason that engineers give for why we don't do it in real life. It's easier to draw a straight line and pave and flatten and then build a city and it seems hard to design cities around natural forms like creeks or rivers.

A sketch showing farmland and natural development.
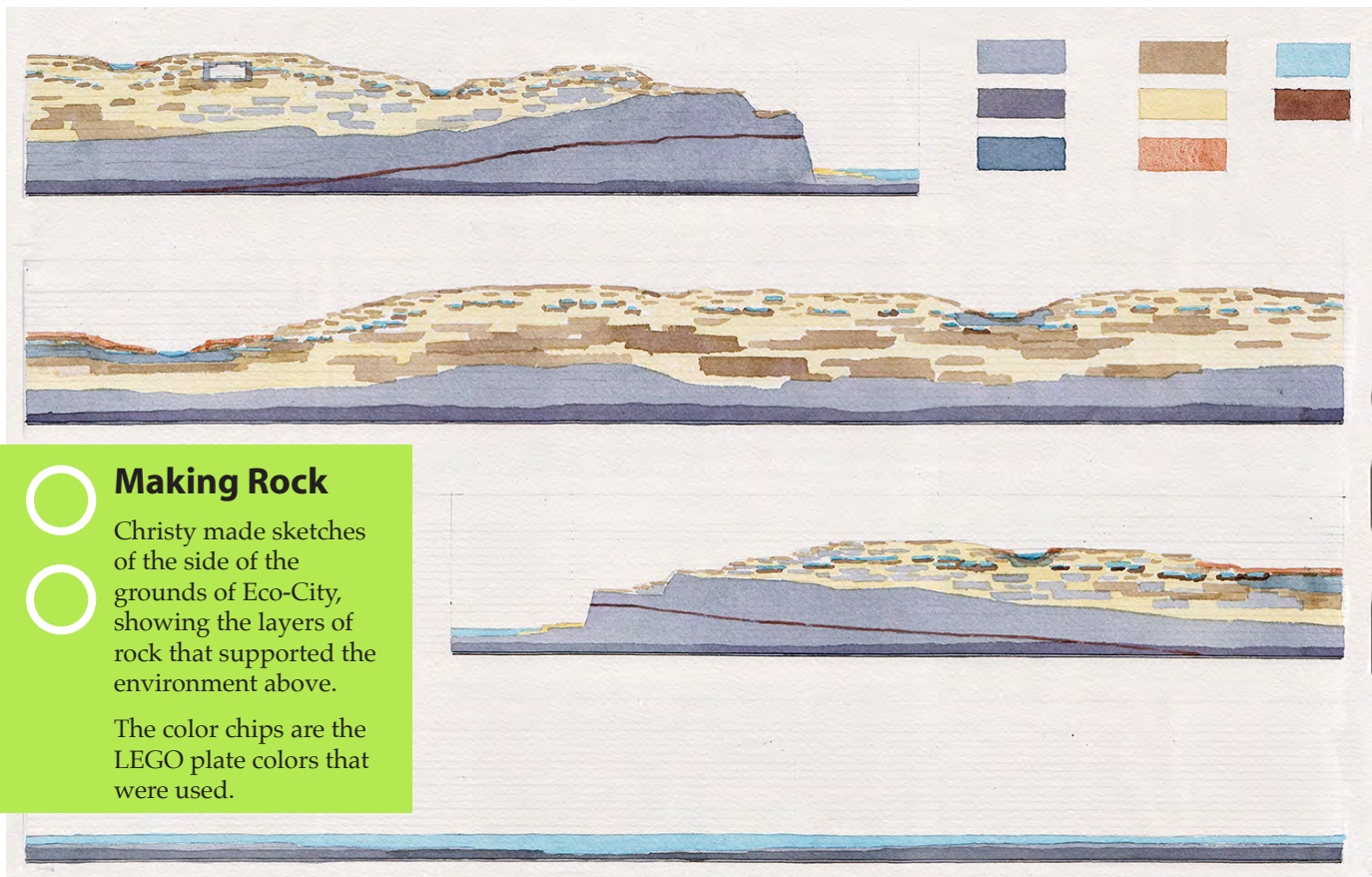
Making Rock

Christy made sketches of the side of the grounds of Eco-City, showing the layers of rock that supported the environment above.

The color chips are the LEGO plate colors that were used.

Christy took this as a challenge. While it may be hard, if designing with the environment in mind is the better way of planning cities, how could she display it? Would anybody be interested in hosting this project? She reached out and found interest at the Økolariet (Ecology Museum) in Vejle Denmark. A site was found, but now the display had to be built.

The municipality provided some initial funding to help develop the exhibition and offset the purchase of bricks. They have received an additional grant from Ole Kirk's Foundation to support the delivery of educational work-shops for children on the theme of ecological design, with help from the LEGO Community Engagement team.

Constructing the model was the hardest part of the project for Christy, as she wasn't experienced in building. She wanted to have areas in her layout that would be points of discussion. She wanted a land that wasn't flat but have a variety of features: forests, hills, valleys, rivers and cliffs. The landscape would also extend underground and have rock layers and water systems.

These different terrains would be a place to observe and consider city building solutions. She also wanted a layout

Building in progress. The rock layers are placed. Bricks are added to build a frame for plates.
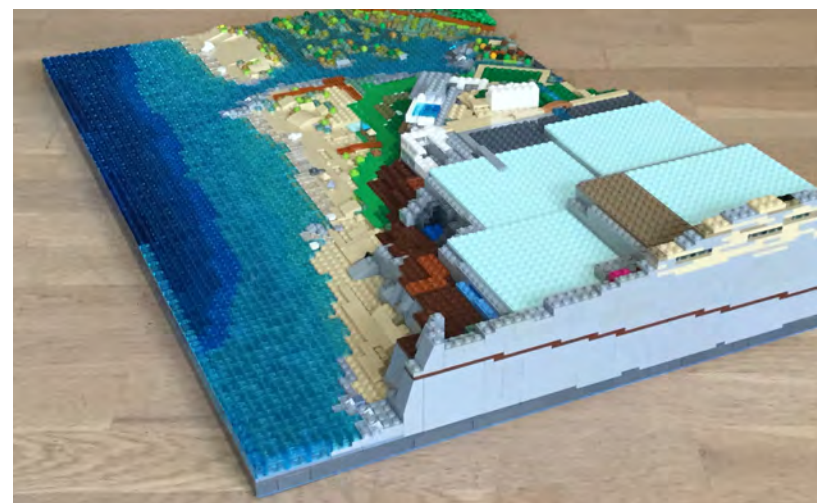
The lower terrain is built, and plates for elevation are added. Plates with a framework of bricks below are done to reduce the number of bricks needed and lighten the module.

where a person could explain why people don't trample sand dunes and why marshes are good for filtering water.

With all of the things that were to be included in the display, size became another challenge to tackle. Christy knew that the display would have some height to show the area's geography, and she knew the museum had a display case onsite. With a glass top, it turned out that the case was ideal for the layout. It took an area of four by six baseplates, so the case also gave Christy an idea of the scope of the layout.

It took a few watercolor sketches to get started, and Christy contacted a local builder to start planning the build. At first she wanted to know if the layout could be done, and after some discussion, the builder determined that the layout could be built. It was also decided here that the layout would be done in microscale, and questions came up about building in scale. How does one build a tree in that scale? What parts could make a building? Christy did some research at the LEGO House library, which had a lot of magazines and books, including *BrickJournals*. She began to learn about part types, and was inspired by clever designs of cliffs, trees and forests in microscale. She wasn't

Here's a look at the eastern side of the layout. More diagonal elements can be seen, such as the bridges and building along the coastline.

A dense city development area, with office buildings and apartments.

A waterfront area for recreation.

Touring Eco-City

Here are some landmarks of Eco-City and where they are on the layout.

going to draw something that couldn't be built, so she did her drawings and watercolors to the scale and dimensions of the LEGO bricks. Christy's previous experience in architecture and illustration helped her produce the renderings in the display, and also guided the layout. Going from a two-dimensional rendering to a three-dimensional build in LEGO bricks was a complete change in artistic medium.

Christy found economical ways to get parts through Bricklink, with many visits to the Pick-a-brick wall, donations from friends, or buying used LEGO in bulk for the substructure.

Christy also discovered the difference between the older gray bricks that were produced before the early 2000s, and the newer grays - the newer parts have a bluer hue which matches with the overall LEGO palette better than

Here are some areas left to grow as urban farms and markets.

While there are a few roads and a light rail track, Eco-City is designed for walking and exploring. Paths and walkways replace the streets and with parks and greenways, people are invited to walk through Eco-City.

When first opened, Eco-City inspired.

the older gray. She bought a lot of the old light and dark gray to add subtle variation in the built rock. The variation isn't seen unless a person takes a closer look, but it's in the walls and cliffs.

In building with the gray, Christy knew there was very light gray plate that once was available, but was last produced over a decade ago. Because of the rarity, prices on that color were high, compared to the other grays, even the old dark gray parts. She found 40 1 x 1 plates in the Very Light Stone Gray, but the price was going to around $10! She did not buy the tiny plates….so it was quite a surprise weeks later when her husband Ralph found some in his cupboard in their apartment. It turns out that Ralph did a mosaic project as part of an MRI fundraising campaign at a local hospital in Canada more than 15 years ago. LEGO provided them with 1 x 1 plates in different gray shades ßand there were a few leftover. These very light stone gray plates are now incorporated into Christy's layout.

The display took six months to complete and is now on display. The display is a 360-degree layout, so all sides can be seen and examined. Within the landscape resides a city built with nature as a part of its design.

Because of the covid-19 virus outbreak, workshops and planned educational materials for Design with Nature, Design with LEGO were put on hold. The display stands as an impressive first step toward teaching the relationship between the environment and the city. 🔋