

# Procedural Art

Mafia 3: New Bordeaux Research  
Creative Media & Gametechnologies

Chiel Pieters  
ECM2v.Ad



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# Architectural elements

I've searched on the internet for images about the Mafia 3 New Bordeaux city centre.

The shape of the buildings are like big blocks (*figure 1*). They are square and rectangular. They do have different heights and widths.

The sides of the buildings aren't completely flat.

The buildings have a lot of windows. Some of them are a rectangle but there are also windows which have an arc. There are protruding parts next to the windows (*figure 2*).

Between the bottom- and first floor some buildings have blinds at the outside of the building hanging on top of the sidewalk.

Also the flat edge of the roof protrudes a bit. On top of some roofs are billboards with advertisements on it. You also see them on the sides of the buildings.

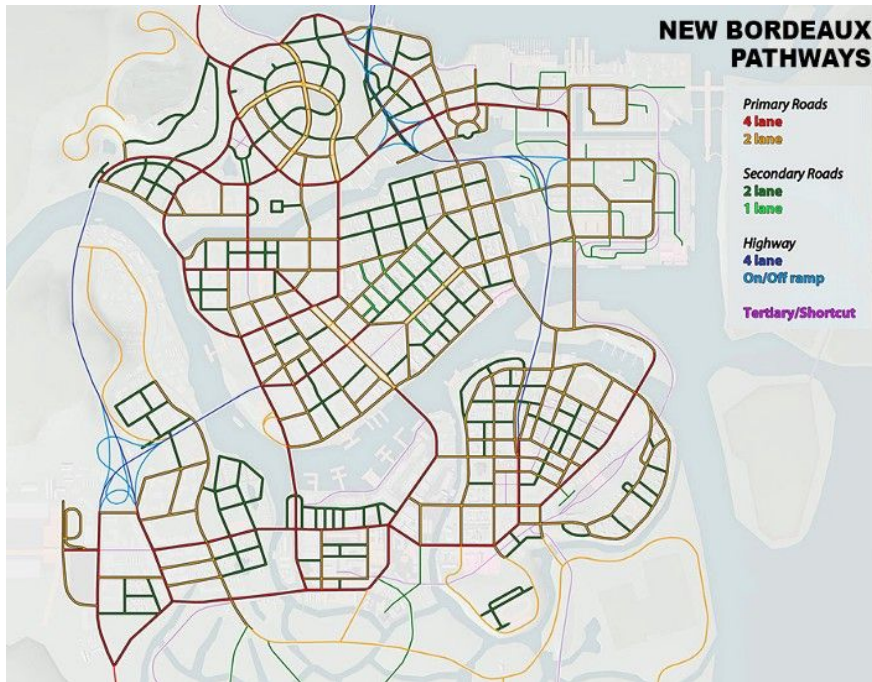


**Figure 1:**  
*Buildings look like big blocks*



**Figure 2:**  
*Buildings with a lot of (arc) windows and protruding rooftops.*

# City Shape



On the internet I found this map of the city:

This is the intersection I want to recreate. It's located in the middle of downtown.

The buildings are placed around an intersection. In the middle are palm trees (*figure 1*) and at the sides old fashioned street lights (*figure 2*). Between the two roads is a tramrail, in the center of the intersection they split to left and right. On the sidewalk are multiple different probs like a hotdog stall, electrical boxes and a fire hydrant (*figure 3*).



**Figure 1:**  
Palm trees

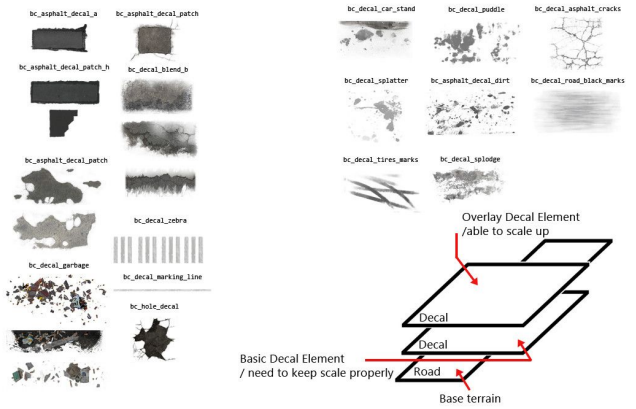
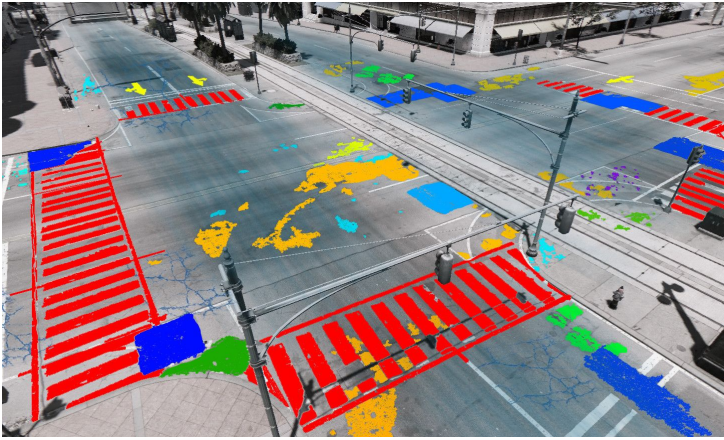


**Figure 2:**  
Old fashioned street lights



**Figure 3:**  
Multiple different street probs

# Materials



This image shows you what is added on the standard texture of the roads. Besides the normal asphalt there are puddles, dirt, cracks, splatters, tire marks, splodges, holes, zebra trails and garbage.

Here you can see the base material of the road. On top there are two more layers to add the detail to the roads.

*Mafia 3: Meet the Districts of New Bordeaux*  
<https://youtu.be/rL8p5vyBmpU?t=147>



In the video above they tell that the buildings and props in Downtown New Bordeaux exist out of concrete and metal. Most of them are within the greyscale.

# New procedural techniques / tools

## Procedural Toolkit

There are a lot of different tools you can use for procedural art. If you search on Google 'unity procedural technologies' the first result is a toolkit you can download in the Unity Asset Store. This toolkit is focused on low poly models, terrain, cellular automation, used to create for example caves (figure 1), mazes and noise.

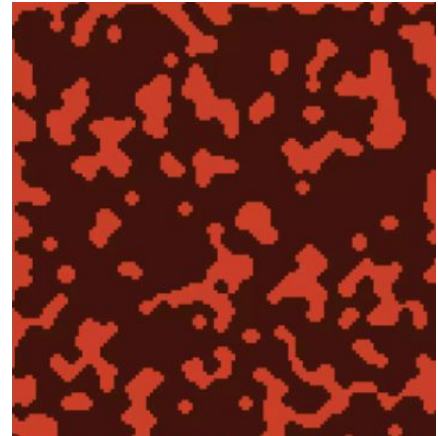


Figure 1: Cellular Automation



Figure 2: CityGen3D generated city

## CityGen3D

With CityGen3D you can generate a complete city with terrain, roads, street lights, railways, buildings, trees and other prefabs.

By choosing a specific latitude and longitude map data will be downloaded and put into CityGen3D within Unity for scene generation.

By using the interface you can add your own materials and prefabs.

## Procedural Worlds - Gaia

I am very enthusiastic about Procedural Worlds in general because they have so much useful software.

With Gaia you can generate scenes in a few minutes. By adjusting multiple settings you can generate a complete scene. Besides that you also can setup the lighting, wind and water.



# Sources

## Mafia 3 New Bordeaux Downtown Information

- [https://mafia-game.fandom.com/wiki/Downtown\\_\(Mafia\\_III\)](https://mafia-game.fandom.com/wiki/Downtown_(Mafia_III))
- <https://www.xgn.nl/artikel/mafia-3-districten-op-eeen-rij>
- <https://medium.com/@EightyLevel/the-art-of-game-world-maps-b41c18633bf7>
- <https://www.artstation.com/artwork/XQWrn>
- <https://www.theverge.com/2016/8/16/12500338/mafia-3-preview-pc-ps4-xbox>
- <https://youtu.be/rL8p5vyBmpU?t=147>

## Procedural Toolkit

- <https://assetstore.unity.com/packages/tools/utilities/procedural-toolkit-16508>

## CityGen3D

- <https://www.citygen3d.com/>
- [https://www.youtube.com/watch?v=g0Zww-OnNTw&feature=emb\\_title](https://www.youtube.com/watch?v=g0Zww-OnNTw&feature=emb_title)

## Procedural Worlds - Gaia

- <https://www.procedural-worlds.com/products/indie/gaia/>
- [https://www.youtube.com/watch?v=89.JaAKK\\_C\\_w](https://www.youtube.com/watch?v=89.JaAKK_C_w)

# Own contributions

I started this project by watching a tutorial video on youtube on how you can create a procedural city using your own coded script. I followed this along from scratch. I had to change, delete and add some code to make it work for my models.

**Max Leschenar** provided me with his code (typespawner.edited.cs) about procedurally stacking building blocks and roofs. Also in his code I had to change some things to make it work in my scene. But the biggest part of that file is from him.

All the 3d models and substances are created myself.