

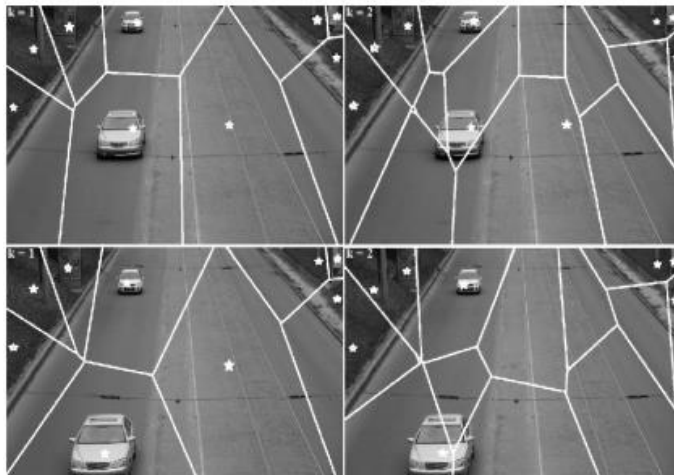
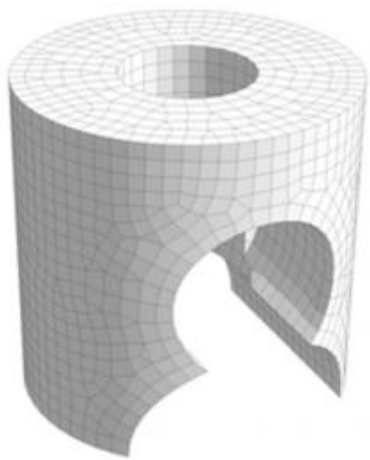
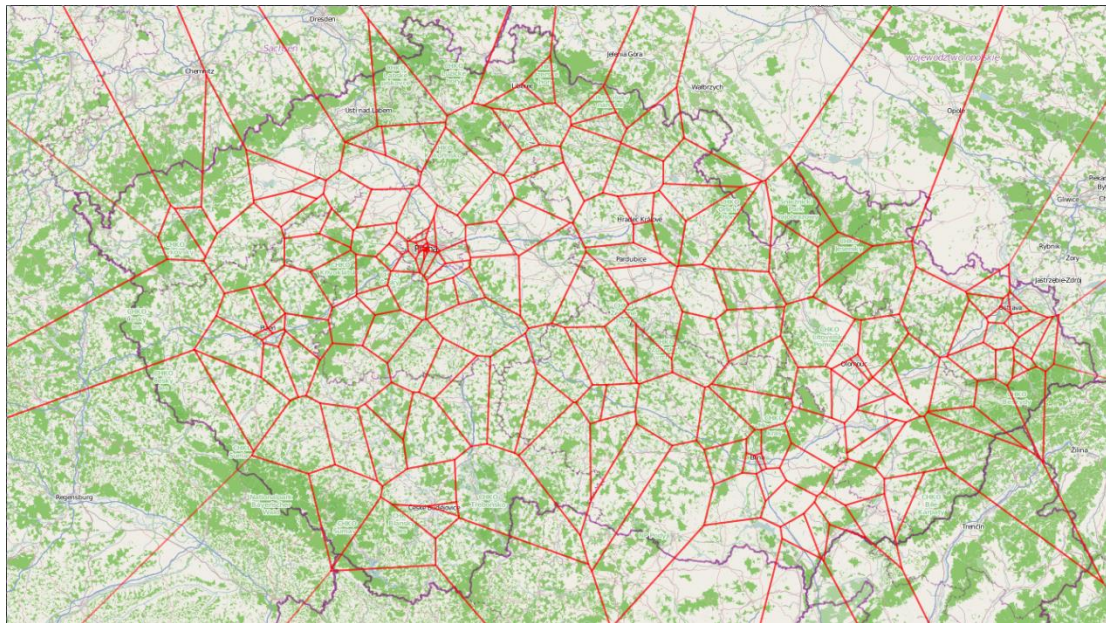
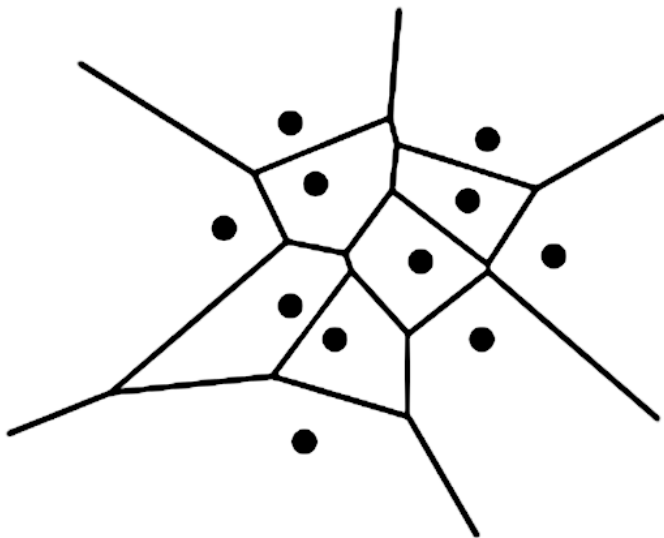
**Использование диаграммы Вороного на плоскости
в трехмерных моделях
для последующего разбиения на фрагменты**

Воронежский государственный университет

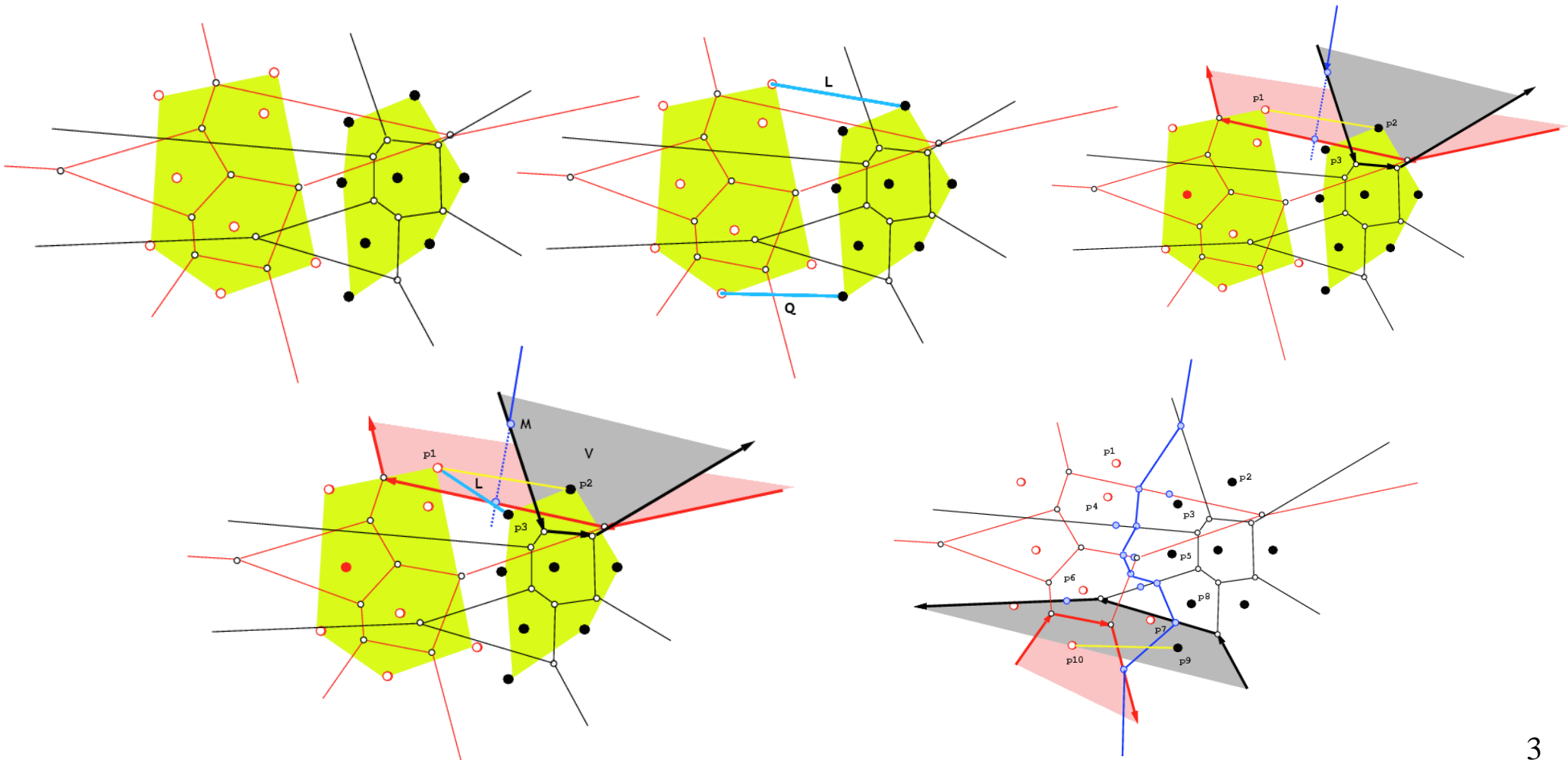
Ольга Владимировна Авсева, email: olga-avseeva@mail.ru

Николай Максимович Чернышов, email: nik.m.chernyшов@gmail.com

Диаграмма Вороного



Построение диаграммы Вороного на плоскости методом декомпозиции



Результат построения диаграммы Вороного

The image displays the Unity 2019.3.12f1 interface with a Voronoi diagram rendered in a scene. The diagram is composed of green lines forming irregular polygons around blue seed points. The Hierarchy panel on the left shows the following structure:

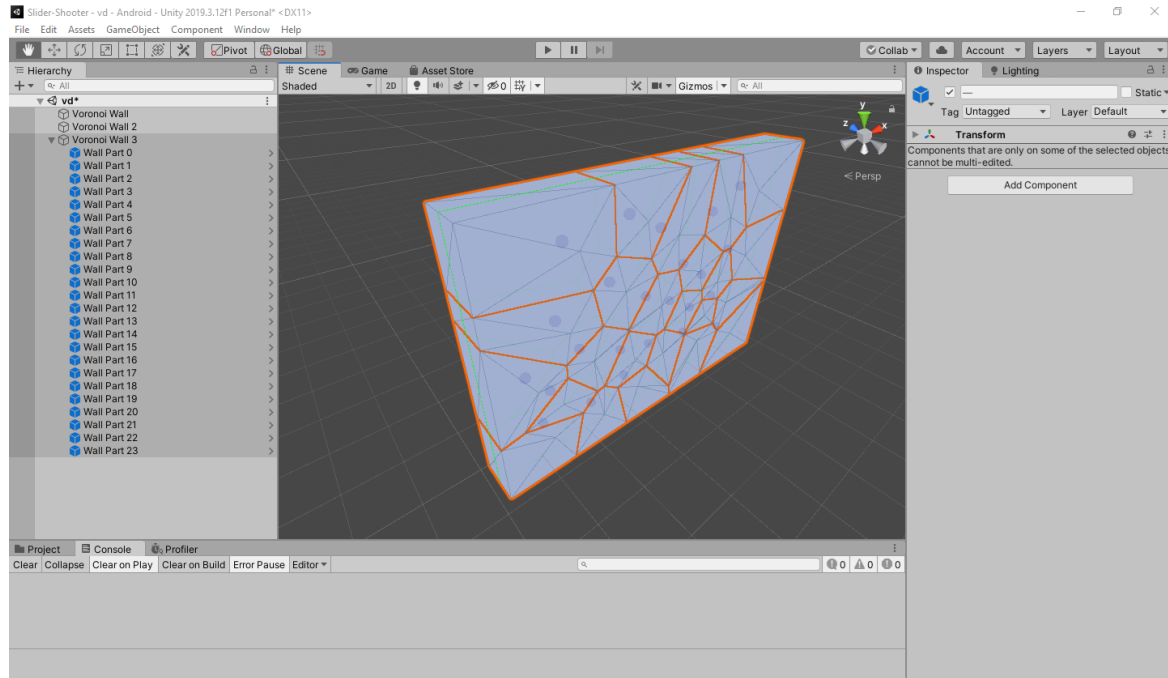
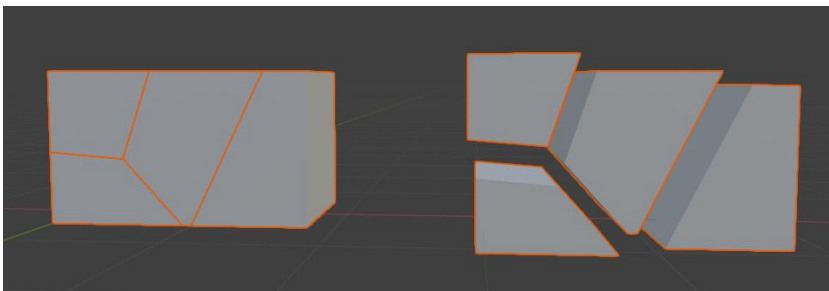
- Voronoi Wall
- Voronoi Wall 2
- Voronoi Wall 3
 - Wall Part 0
 - Wall Part 1
 - Wall Part 2
 - Wall Part 3
 - Wall Part 4
 - Wall Part 5
 - Wall Part 6
 - Wall Part 7
 - Wall Part 8
 - Wall Part 9
 - Wall Part 10
 - Wall Part 11
 - Wall Part 12
 - Wall Part 13
 - Wall Part 14
 - Wall Part 15
 - Wall Part 16
 - Wall Part 17
 - Wall Part 18
 - Wall Part 19
 - Wall Part 20
 - Wall Part 21
 - Wall Part 22
 - Wall Part 23

The Inspector panel on the right shows the 'Lighting' component with the following data:

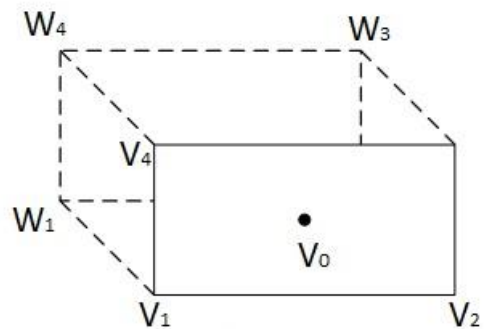
Element	X	Y
Element 10	-2.22	3.62
Element 11	-2.12	0.06
Element 12	-1.66	1.86
Element 13	-1.44	0.59
Element 14	-1.43	3.2
Element 15	-0.9	1.46
Element 16	-0.63	2.24
Element 17	-0.28	0.36
Element 18	-0.18	1.01
Element 19	0.06	1.76
Element 20	0.06	3.17
Element 21	0.59	1.04
Element 22	0.86	3.53
Element 23	0.93	2.12
Element 23	1.11	-0.08

The bottom of the interface shows the Project, Console, and Profiler panels. The Project panel has 'Clear', 'Collapse', 'Clear on Play', 'Clear on Build', 'Error Pause', and 'Editor' buttons. The Console and Profiler panels are currently empty.

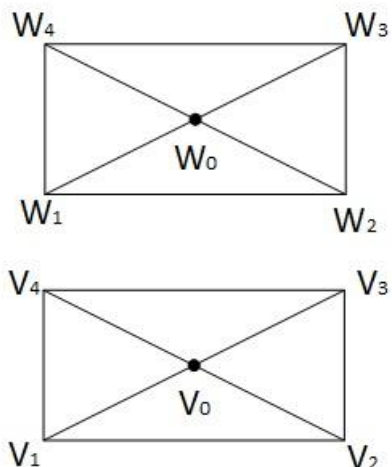
Построение трехмерной модели стены с использованием диаграммы Вороного



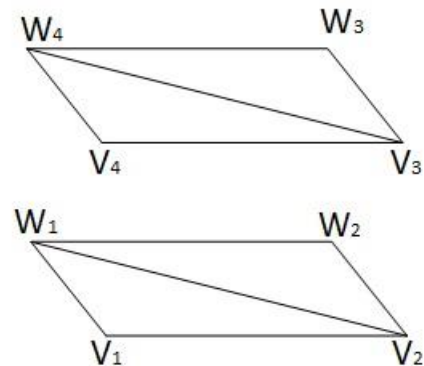
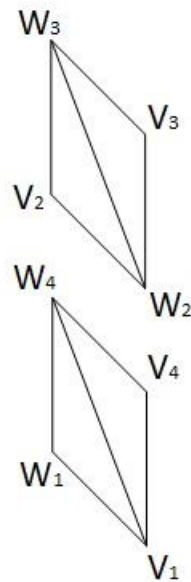
Построение объекта для корректного затенения при освещении



a)

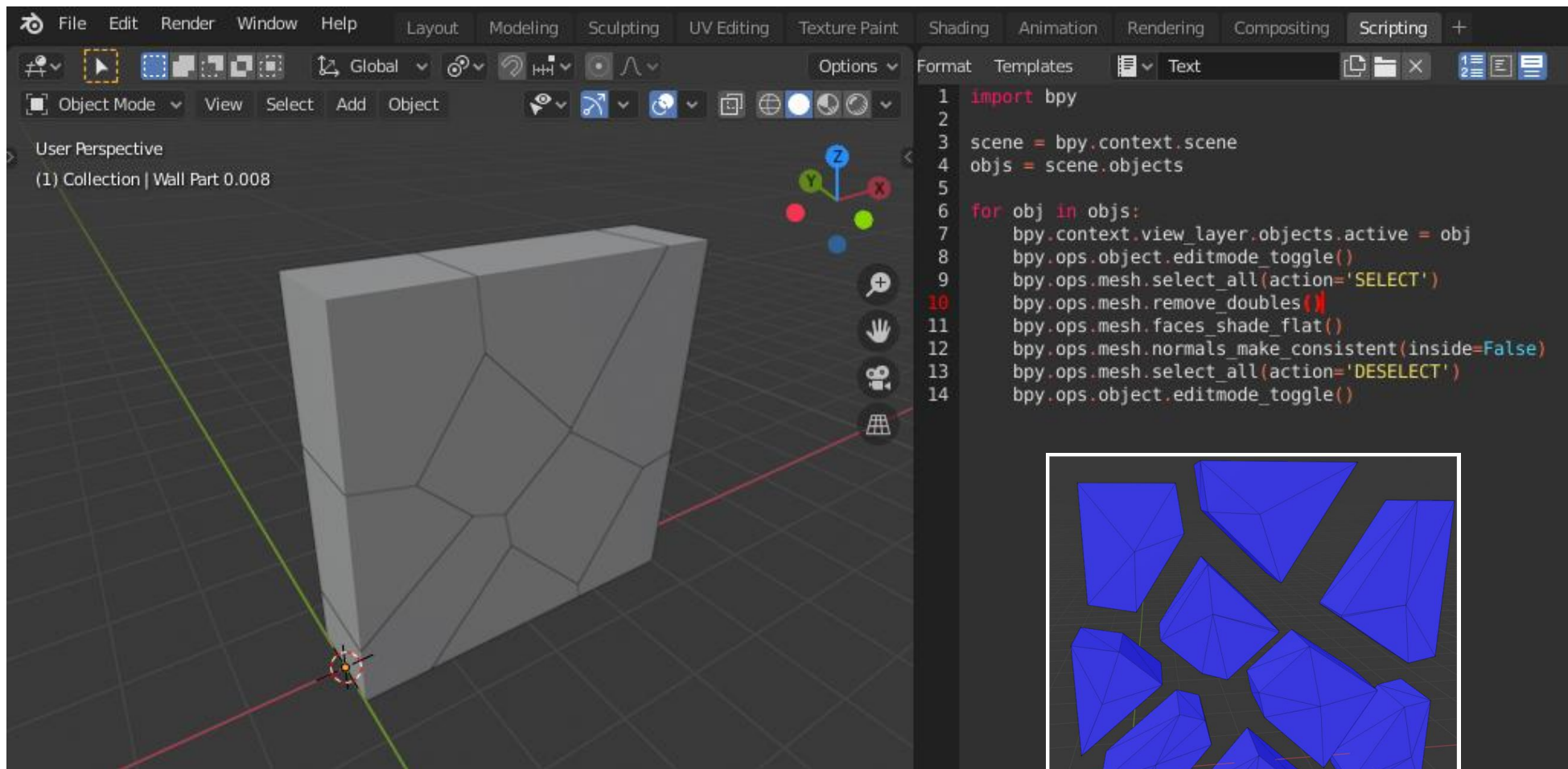


б)



в)

Трёхмерная модель стены в редакторе Blender и код скрипта



The image shows the Blender 2.79 interface. The main 3D viewport displays a grey, textured wall model with a grid pattern. The interface includes a top menu bar (File, Edit, Render, Window, Help, Layout, Modeling, Sculpting, UV Editing, Texture Paint, Shading, Animation, Rendering, Compositing, Scripting), a toolbar with various tools, and a right-hand panel with the Scripting editor. The Scripting editor contains the following Python code:

```
1 import bpy
2
3 scene = bpy.context.scene
4 objs = scene.objects
5
6 for obj in objs:
7     bpy.context.view_layer.objects.active = obj
8     bpy.ops.object.editmode_toggle()
9     bpy.ops.mesh.select_all(action='SELECT')
10    bpy.ops.mesh.remove_doubles()
11    bpy.ops.mesh.faces_shade_flat()
12    bpy.ops.mesh.normals_make_consistent(inside=False)
13    bpy.ops.mesh.select_all(action='DESELECT')
14    bpy.ops.object.editmode_toggle()
```

An inset image in the bottom right corner shows a close-up of the wall's mesh, where the faces are highlighted in blue, indicating they are selected.

Спасибо за внимание