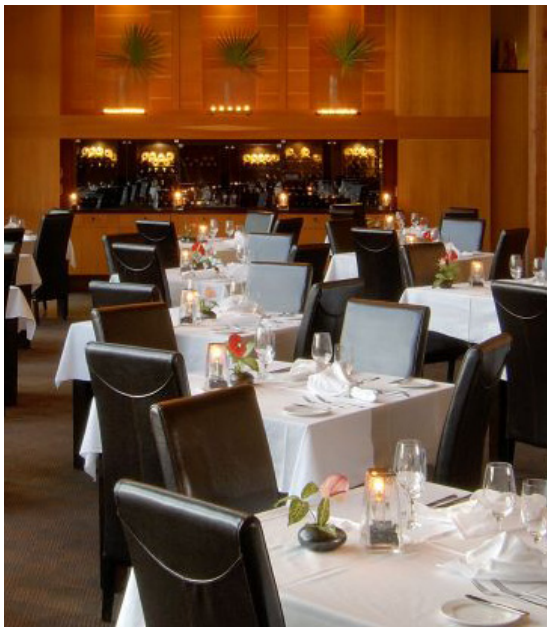
Creating Logical Environments

Introduction

We will be dealing with the creation of logical environments when designing levels for Action, Quest, Adventure and Shooter games. This method of building logical environments allows maps to be created with dimensions and Movement Paths that will appear more realistic to the Player. Creating logical environments means building levels where the architecture and structure of the level resemble reality. Here, applied architecture meets level design.

This method offers many advantages.

By using real-life settings, it allows the Designer to create rooms with a more logical structure. As the resulting environments tend to be compact, this allows Players to navigate the level more instinctively. Finally, it simplifies the Graphic Designer's work by giving him real-world references to work with.



For Example:

in creating a restaurant, a Level Designer should be careful to position the bathrooms in a proper location.
Even in a fantasy game, every location should have a logical design.

SUMMARY

We'll be exploring the various stages of designing a logical environment, in chronological order. It begins with the Research phase, followed by the elaboration of objectives. The Designer must then create a Global Plan of the level that allows the exploration of each room in detail during the conception phase of the Gameplay settings. Finally, once all these steps have been executed and approved, comes the 3-D modeling.

Research

Before starting, the Level Designer should gather as much information as possible on the environment he wishes to create.This includes consulting in-house documents, such as the Game Design document, the Map Brief, the RLD, and the script itself, as well as technical documents about the Level Editor. The Level Designer should also remember to consider the graphic approach proposed by the Artistic Director.

Researching Information

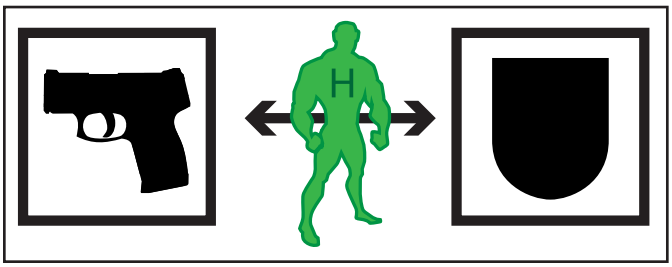
The second part of the Research phase consists in gathering information about real-world locations resembling those that will be used for the level.The Internet allows access to numerous architectural plans that can serve as reference points to help the Level Designer build a logical and coherent environment. This facilitates Gameplay and allows for a more aesthetic presentation.

Portfolio

The Level Designer must then make a note of each find and file them in a portfolio that will serve as a reference tool for all participants during production.

Defining Objectives

Once Research if finished, the Level Designer must then tackle the objectives of both the Hero and the Enemies, and justify their presence in the environment logically. This allows him to establish actions and reactions that will make the characters come to life.



Hero Objectives

Let's begin with the Player himself. When designing a level, it is vital to keep the Player's motivations and objectives in mind. The two most common objectives for a Player are attack, and defense. In the first case, the player invades an enemy territory, while in the latter, the player must defend his own territory against adversaries.

NPC Objectives

Unless they're a British Guard, most people rarely stay immobile. Even at rest, they still have tasks to accomplish and inner preoccupations. If the Player is the one in charge of the Hero's actions, it is the Level Designer's job to make the environment come to life, and to assign short-term and long-term goals to the NPC's.

Each type of environment should dictate an NPC's appropriate behavior pattern and help establish his long-term objectives.

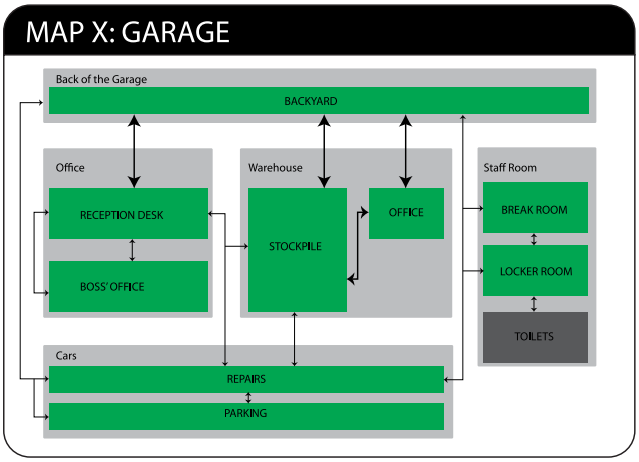
At an airfield, for example, some employees might be responsible for transporting cargo to the warehouse, while others might be busy with the maintenance of the airplanes. NPC actions are therefore dependant on the generic function of any given locale. For any given situation, the Level Designer must also give the enemies present a precise, short-term goal.

For example : the airfield might be the setting for a gun transaction that has to leave within the hour, a situation that would, of course, be offset by the timely arrival of the Hero. This gives the Player the impression that his presence has a tangible effect on the scene, and adds realism to the actions and reactions of the enemies.

Global Plan
Now that the Player and Non-Player objectives have been defined and approved, the Level Designer must go back to his research, identify the most interesting rooms, and organize them into a global overview of his level.

Interesting Rooms
To do this, the Level Designer must first make a list of all the different rooms that will constitute the environment of his level.

For Example:
A restaurant could be composed of an entrance, a kitchen, a dining room, a meat locker, a pantry, an administrative office, a backstore for deliveries, bathrooms, etc.
The Level Designer must choose which rooms offer a rich and exciting Gameplay setting, while also respecting his pre-established objectives.

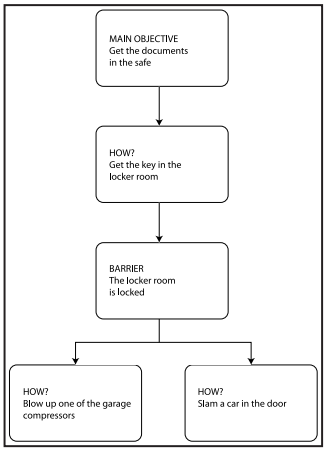


Movement Path Diagram
The chosen rooms must then be presented as a logical diagram that easily explains the number of sets necessary for the creation of the level, as well as the Movement Paths that allow the Player to go from one room to another.

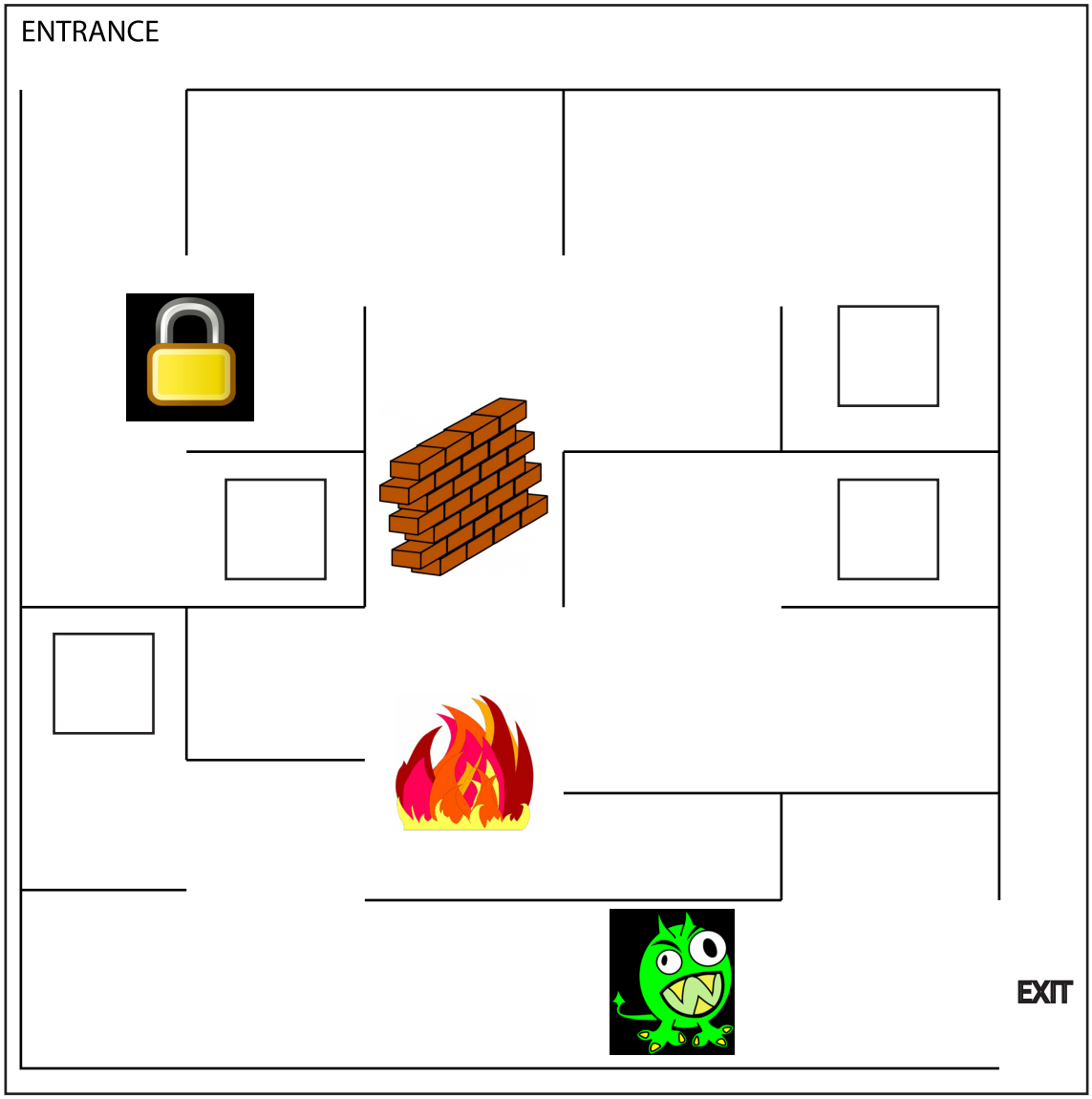
Quest Diagram
In order to ensure that the obstacles and their solutions follow a coherent order, the Level Designer must then build a diagram of the level's different Quests and indicate their sequential occurence on the Movement Paths Diagram.

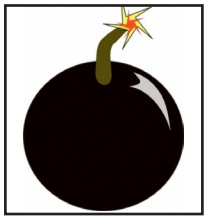
For example : in a garage-type level, the locker room and the employee breakroom might not be accessible until the Player has found a certain passkey from one of the employees. These events must therefore be identified by a particular color.

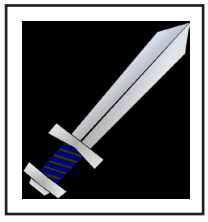
These two important steps are necessary in order to avoid placing the solution to an obstacle behind the obstacle itself, which would make completing the map impossible.



In the following maze, assign the Quest objects to their proper location so the player can solve all obstacles and complete the level

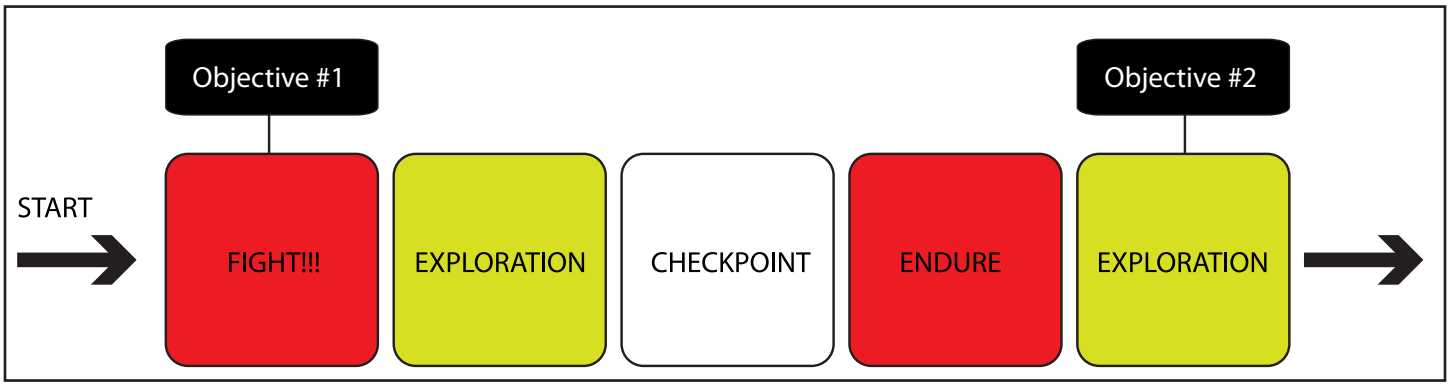






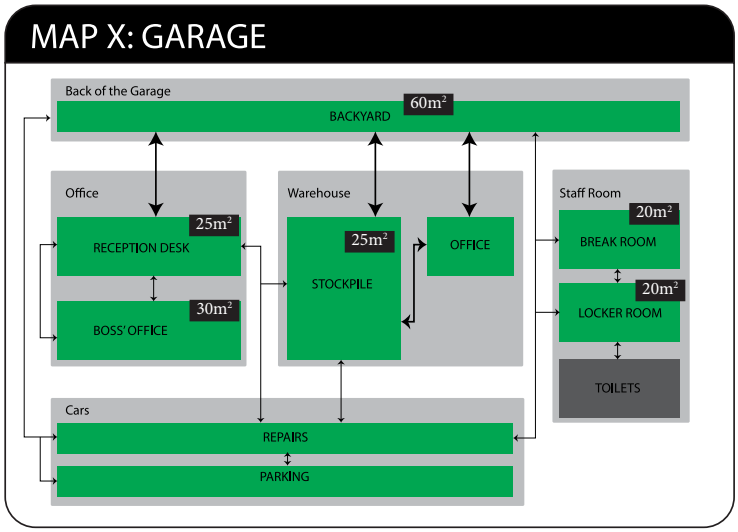
Timeline

The Level Designer must now regroup all the different elements that have been worked out in the elaboration of the Global Plan and present them as a visual Timeline of the Map. The Timeline allows one to visualize progression on the Map according to pacing, Gameplay settings, and the different challenges that await the Player. The Timeline ensures a gradual progression, and adds rhythm to the various Gameplay situations.



Approval

The Level Designer's documents must then be approved by the rest of the creative team. These documents should be presented in a logical manner, rather than chronologically. We start with the Timeline, which gives an overview of the 'emotional ride' of the Map. Then come the Quests, the Objectives, and the Movement Paths for the level.



Finalizing

Once the work has been approved, the Level Designer must now finalize his overview. First of all, when allocating room dimensions, the Designer should remember to offer a good range of room sizes. This allows the Player to work his way through the level more easily.

Once the Movement Paths for the level have been approved, the Map topography must then also be approved from a technical standpoint by the Technical Graphic Director. The overview is then amended and modified as needed according to graphic and game engine constraints. Many elements will figure in these notes: the cost in number of polygons for each room, sectorization, visibility systems, etc.

Finally, the Artistic Director will take over in order to establish a rough graphic representation of the level.
The objective is to create a sketched-out version of each room in order to give an impression of what the level will actually look like.

Creating Gameplay Settings
Up to now, the Level Designer has mostly tackled his level in a general way. Once the Global Plan has been approved and finalized, the Designer must now develop multiple Gameplay settings for his level and add the details essential to its creation once in production.

2-D Plan and Explanations
For each Gameplay setting, the Level Designer must indicate the size of the environment, and create a 2-D representation of it that shows the different elements essential for Gameplay.

Each room must then be detailed in a document that can be used as a reference tool by all participants during production. From there, the Artistic Director can start to render sketches that will be used as blueprints for the final look of the level.

3D Modelling
Once all Map elements have been documented and approved, it is time to begin production by modeling the environments in 3-D, using the level editor. Familiarizing yourself with the program Before undertaking the polygon modeling of each room, the Level Designer should take the time to familiarize himself with the limitations of the level editor, as well as with pre-existing material.

To begin with, the Designer should check to make sure all the different Gameplay elements are of compatible size, so that the Hero and NPC's can all interact with the objects in a logical manner.
For example : if a crouched character measures a meter in height, the objects meant to provide cover from enemy bullets should also be at least that high.

Building the topography
The level construction may now begin.
The topography of the environment is built by first placing the various background elements while making sure the spacing for Movement Paths and combat are respected.

This method allows room dimensions to be shaped around Gameplay settings, while respecting the Movement Paths and the constraints of the game design.

Testing and Improvement
Once the room is modeled, the Level Designer must then test the various puzzles, the Movement Paths for the Player's character and for the A.I. agents, the visibility of important elements, the impact of the settings, etc.
In short, all of the design elements.

At this stage of production, if one or more of these elements is not up to par, it is important to make adjustments and finalize the level as much as possible before handing it over to the artists who will then work to dress the rooms up.