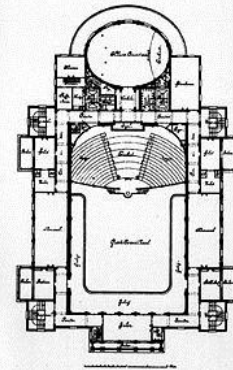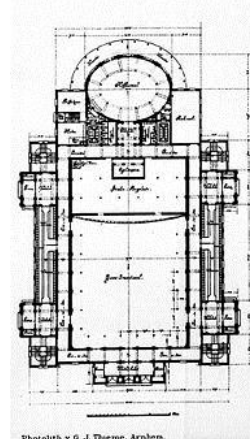# Planning To Win

Sketching Your Level

By Will2k

I-Introduction

"Most people don't plan to fail; they fail to plan" - John L. Beckley

If you take a minute to ask people around you what they think about planning, you will probably get a near unanimous reply that planning is the essence of every action. If you ask some professionals, they will tell you that planning is the quintessential ingredient to winning.

It's a good thing that many people grasp the importance of planning in every action they undertake, yet, many level designers fail to acknowledge the concept of planning in their projects.

I have said it before and I will say it again: Game design, despite being part of the entertainment industry, still requires planning just like any other "serious" discipline. Can anyone imagine a game developer running a multi-million dollars project without proper planning? Of course not, and the same principle applies even if it is a free small-scale project. Running without a clear plan will ultimately lead to the project's failure and scraping, or, if the final work ever sees the light, it will most probably be a mess and a source of embarrassment rather than pride.

I have heard many excuses about why designers, especially beginners, refrain from planning their levels. Aside from utter laziness, many rookies will use the easiest leeway of "*I'm just doing this for fun; why would I need to plan and do the serious stuff*?" Another popular excuse is "*I can't draw; I'm not an architect/art student/draftsman…*". There are probably more lame/weird/lazy excuses that I will not bother listing here but you get the general idea about how people bypass the planning phase and jump straight to the actual level building.

I believe the best way to teach and motivate beginners to do things the correct way is to show them clear and easy examples. In this short paper, I'll try to depict my way of planning and sketching my levels with actual images of hand-drawn sketches and in-game screenshots. Keep in mind that this approach is not the only one valid; it is just my way of doing things, and hopefully, it will shed some light on the "mysterious" planning phase in level design, in a way to get through and inspire aspiring level designers. Although not a prerequisite, I do recommend reading my previous paper (http://www.gamebanana.com/source/tuts/10747) covering a systematic approach to level design where planning is the first phase of this approach.

II-Planning Sequence

If you are one of the designers who immediately jump in the level editor and start building and clipping right away, then planning will be a tedious thing to do at first but once you get used to it, it becomes second nature and you won't look back.

Without proper planning, your project will stall after a rush start and either it will slowly die because of the lack of interest and ideas from your side, or it will be finished after prolonged phases and cycles of development and the end result will be incoherent on many levels (gameplay, design…).

The planning sequence needs to be planned itself ☺: I usually start with brainstorming ideas and actively looking for sources of inspiration, then I move on to drawing and sketching the level on paper, and finally end up gathering the reference photos for the actual level building.

II.1-Brainstorming / Ideas

First thing you need to do is to brainstorm ideas: Gather as much ideas for maps as you can from different sources (movies, TV shows, books, trips you took, city you live in, current news, historical events…). Anything that sparks in your brain is good; at this stage nothing is silly and everything is allowed. Write every idea down and try to include a brief explanation with each idea: a couple of lines explaining the idea and how you visualize it are usually enough.

Now you may be asking why I need to add some explanation to my ideas; well, keep in mind that you might brainstorm for some days and by the time you finish the process, and unless you have a super memory, you will find it difficult to remember what each idea was all about. Let me give you an example below:

One of your ideas involves a garage/car park; you write it down and you keep searching for inspiration/other ideas over the course of several days. You finish your brainstorming and you decide to explore the garage idea. You read your paper and it only says "Garage". Well, that's not very helpful, is it? You pretty much forgot what your original idea involved.

Now let's see the same case with explanation written next to your idea: A 3-story multileveled car park out looking an urban park with dense canopy. A sewer system also connects the garage basement to the park.

You have to agree that this added description is much better than simply stating "car park" as an idea. With this explanation, you literally have the level built in your head already, and this will help you decide on which idea to adopt once you have lots of ideas to choose from.

Once you have enough ideas, start the screening process and eliminate ideas that are pointless or vague. You have to keep in mind the technical limitations of the engine you are working with; that's why you need to also eliminate ideas that don't translate well into a map: for example, you might want to recreate your neighborhood or a river that flows near your town; these maps might be visually appealing but they won't fare well in gameplay due to several reasons (boring gameplay, open-ended area, complex layout, too much detail, ridiculous amount of textures and models to be implemented….).

Once you narrow it down to 2-3 viable ideas, it's up to you to choose one for the upcoming map. The chosen idea will define the overall theme of your level.

II.2-Layout Sketching

Now that you have the idea and theme of the map, and before starting the layout sketching, you need to decide the layout shape itself.

The layout will depend on the game you are working with: a deathmatch map for Half-Life or Unreal Tournament will not have the same layout as a capture point map for Day of Defeat, and a bomb/defuse map for Counter-Strike will be different from a cooperative level for Left 4 Dead.

Being intimate with different layouts is key here. This can be achieved through a long experience in level design or by being a long time gamer with a critical/analytical eye. Every time you play a game, try to learn something new from it: aside from the fun and entertainment you get from a game, it is also beneficial to every level designer to learn and see what the developer did with the game levels.

Every level designer should know, or strive to learn, the different theories behind a successful layout: linear vs. open world layout, theories of peaks and bottlenecks, pacing and cool down periods, choke points, branching, etc…

I really can't go into details for these as it will take more than 50 pages to cover the basics, which is beyond the scope of this tutorial. You can always search for these theories on different online sources if you really want to go deep in your level design endeavor.

Now if you don't have the time or will to learn these theories but still want to have a sound and working layout, then your best bet would be to study and analyze the layouts of official maps or successful/popular custom maps to see what works and what doesn't.

For example, if you are designing a bomb/defuse map for Counter-Strike, it would be very helpful to carefully study the layout of dust/dust2, which stood the test of time and remained popular for all these years.

You do not need to exactly replicate the layout but rather get inspired by it: multilevel, chokepoints, distances, line of sight, buildings location, strategic points…

Once your layout is decided and chosen, you can start drawing a sketch of your level. Some designers use digital pens and touch screens while others use editors such as Maya, Google SketchUp or even Photoshop to draw their sketch. However, nothing beats the old tried-and-tested paper and pencil, which I personally use to outline my layouts.

Now is the part where I bust the myth of "I can't draw" mentioned earlier in the introduction, as a popular excuse for designers to avoid drawing their layouts.

You do not need to draw your level in 3D or do any concept art. You don't need to put every detail on the paper, rather just put the building blocks that define the routes and write down every design note that comes to your mind on this same paper (width of road, height of building, tree type, lighting intensity and color, time of day, textures and building shapes…).

Please note that this layout might become final or might be heavily modified at later stages, but it is a very important tool to keep you on the right track during your project life cycle. It is also extremely important not to start with a flawed or unplayable layout as it will be very difficult to adjust later on once the building phase has started.

The best way to visualize these issues is by providing examples of my work. I will use my latest released maps to showcase this technique (maps download links can be found at the end of this tutorial)

Case 1: cs_east_borough

Hostage rescue map for Counter-Strike Source

- Sketch (Drawn in January 2012, scanned directly from the paper; excuse the quality)
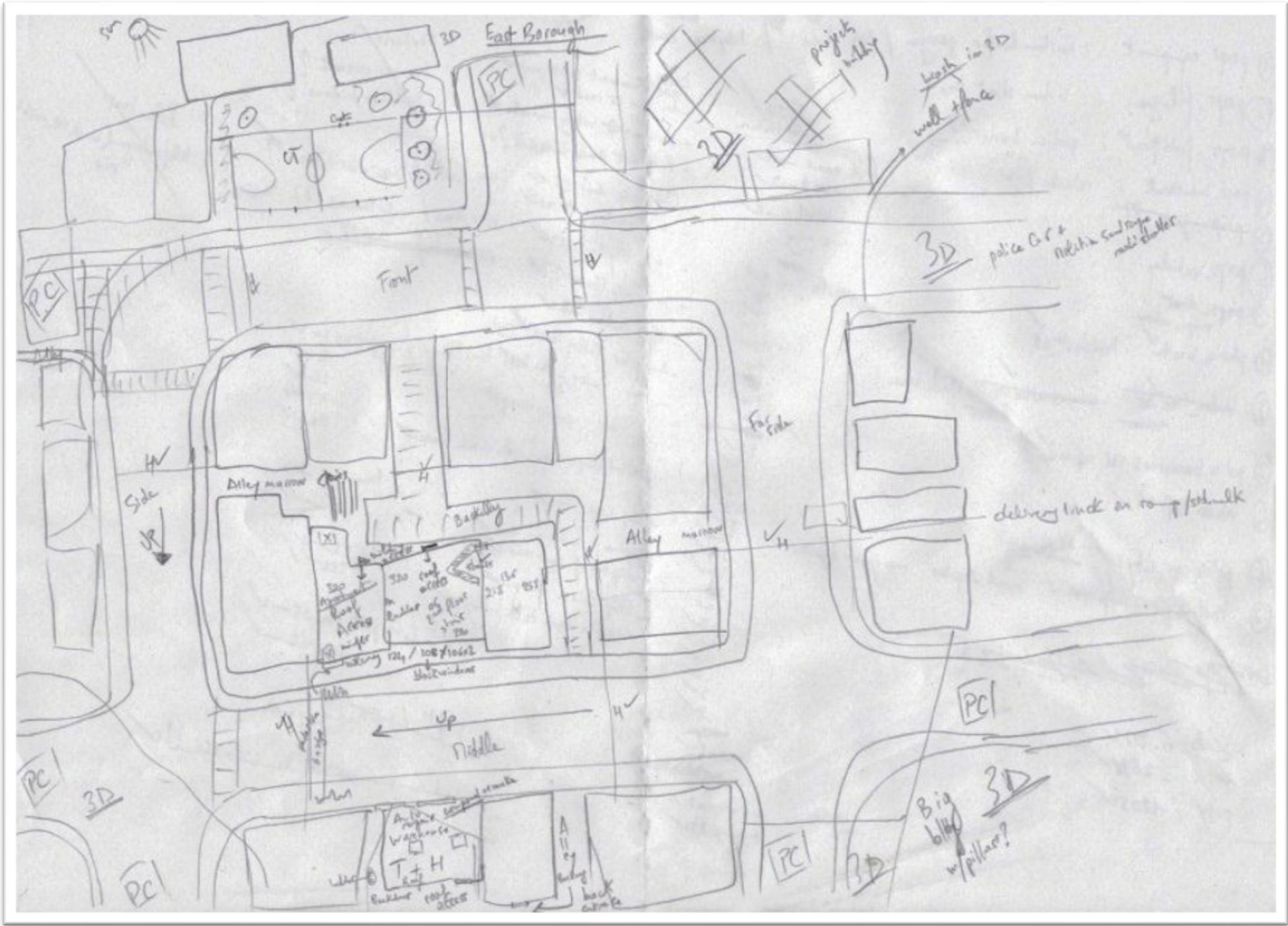
I will quickly go through some of the notes I have written (some of them are blurred in the scan and not easily legible).

The first thing you notice is that the sketch is rough, made out of basic shapes and far from being fancy. I believe everyone can come up with something similar, and now there are no more excuses of the inability to draw; a 5-years old kid can sketch basic shapes such as rectangles, squares, triangles, circles…

You can see the basketball court on the top labeled CT (for CT spawn), surrounded by trees. The buildings are all square here for the sake of simplicity. In the sketch, we are only interested by the location; the shape can be modified in the level editor. I also outlined the road network with sidewalks, pedestrians' passage, police cars (PC). The 3D label means that this part should be in the 3D skybox.

In the middle area (the back alley), some of the notes include stairs, narrow alley, apartment, roof access, sniper spot… I also included some building measurements to guide me when I reach the level editor brushwork building phase.

On the right side of the sketch, notes show big building with pillars, delivery truck on sidewalk, police car with radio chatter, projects building with wall/fence…

On the lower side, you can see a building labeled (T+H) to outline the T spawn and the hostages' location. I also wrote roof access, back entrance and put a reference to de_nuke/cs_compound maps for warehouse inspiration.

Notice that I even included the sun location/angle (top left corner) since I was after a specific light effect/time of day.

All this work was done during the course of a week **before** even opening/touching Hammer editor.

- Final layout (Map released in March 2012)

You can see that the layout stayed true to the sketch but with some modifications:

- The upper left corner is now an intersection instead of a curve
- The back alley has a second floor sniper spot instead of roof access
- Reduced number of police cars for the sake of frame rate
- The T spawn is now a car repair shop instead of a warehouse

Case 2: de_cortona

Bomb/Defuse map for Counter-Strike Source

- Sketch (Drawn in May 2012, scanned directly from the paper; excuse the quality)

de_cortoma

A: cisterna/piazza della repubblica   CT-A   1024-1280   6-9s
B: Chiesa   CT-B   "   8-9s
                                      CT-T   2800   15-16s
CT: inferno

wall
3D

Pack inferno clushes new
     vant to final BSP

3D   hills

cortona
Montersiggioni
San Gimignana
Montalcino
Montepulciano
Pistoia
Siena

Montersiggioni Wall   Widen

torre
grossa

Room
sniper   Stairs

A

Pz Cisterna
or popolo

lattice

cortona
piazza
repubblica
clock tower

128

tuscany
borgo

toc-osPGappo

stairs ACR 1406061

ACR 1405454

UP 128 Back
displacement

CT

San
Gimignana
Via
San
Giovanni

Foto SG
Cathedral
torre

Montecigono
over   stairs
        2 Fort

overpass

front   Flat

N cortono
    lucca

Foto
SG Italy

ramp+stairs
752   ramp

Chiesa
Montersiggioni

B   Duono

256   512

Cortona 1 (2)
        (3)
montersiggioni

Arch +
house
Tuscan_village
Tuscany 238

?   aportet   podere
              la
              vecchia
              cortona

1250

Immersquare
Sideyard

256

128

Middle

128

Front yard   tree+bush
             ACR 14064669

Montersiggioni
Gate Wall

tuscany
borgo   128

courtyard
liberta   tree+bush
          o
          800 x 800

128 high
+top

128

100

128

Montepulciano -1
ACR
14041670

ACR 1411317

Gate

3D

128

Loghill

2000

house
+Arch

Alley

Chiusare

768
Outhouse

768

1400

3D

hills

cortona (1)
bramasole

dirt road

Gate

San gimignano
street

512

256-384   side

cistrano?

tuscan
house

128

opera

1250

Gate

900?   Rear

512
ramp   Italy
       medieval

384

01 exterior   Fields ??

sun

Similar to the previous sketch but with more details and extra references listed on the various parts of the sketch.

In the top right corner, I listed the towns that I shall use for reference, and on the top left corner, I wrote the bomb sites and the relative timing/distances that I want to achieve between the critical locations of the map (CT spawn, T spawn, bomb sites).

You can also note that I scattered measurements everywhere in the sketch (wherever you see numbers such as 128, 800x800, 768, 2000…) to help me later with the actual building phase in Hammer. Of course, these measurements can be altered later but they will serve as a good guideline and will eliminate wasteful guess work.

It's very important to note and write down every detail that comes to your mind on the paper for future reference: you can see that I included small details also like tree+bush, ramp, overpass, tower, dirt road, long hall, gate, fountain, etc.

For details that I wasn't sure of, I added the question mark to remind myself that this aspect is not finalized (In the lower middle section, I wrote "fields??" since I wasn't sure that I wanted to include them, and eventually ended up not using them in the final map.

You definitely noticed lots of references written all across the sketch such as "Tuscan square", "foto SG cathedral", "foto monteriggioni 024", "Tuscany borgo", "corfino lucca", podere la vecchia", etc.; these are the names of the reference photos that I will discuss in the next paragraph.

- Final layout (Map released in October 2012)
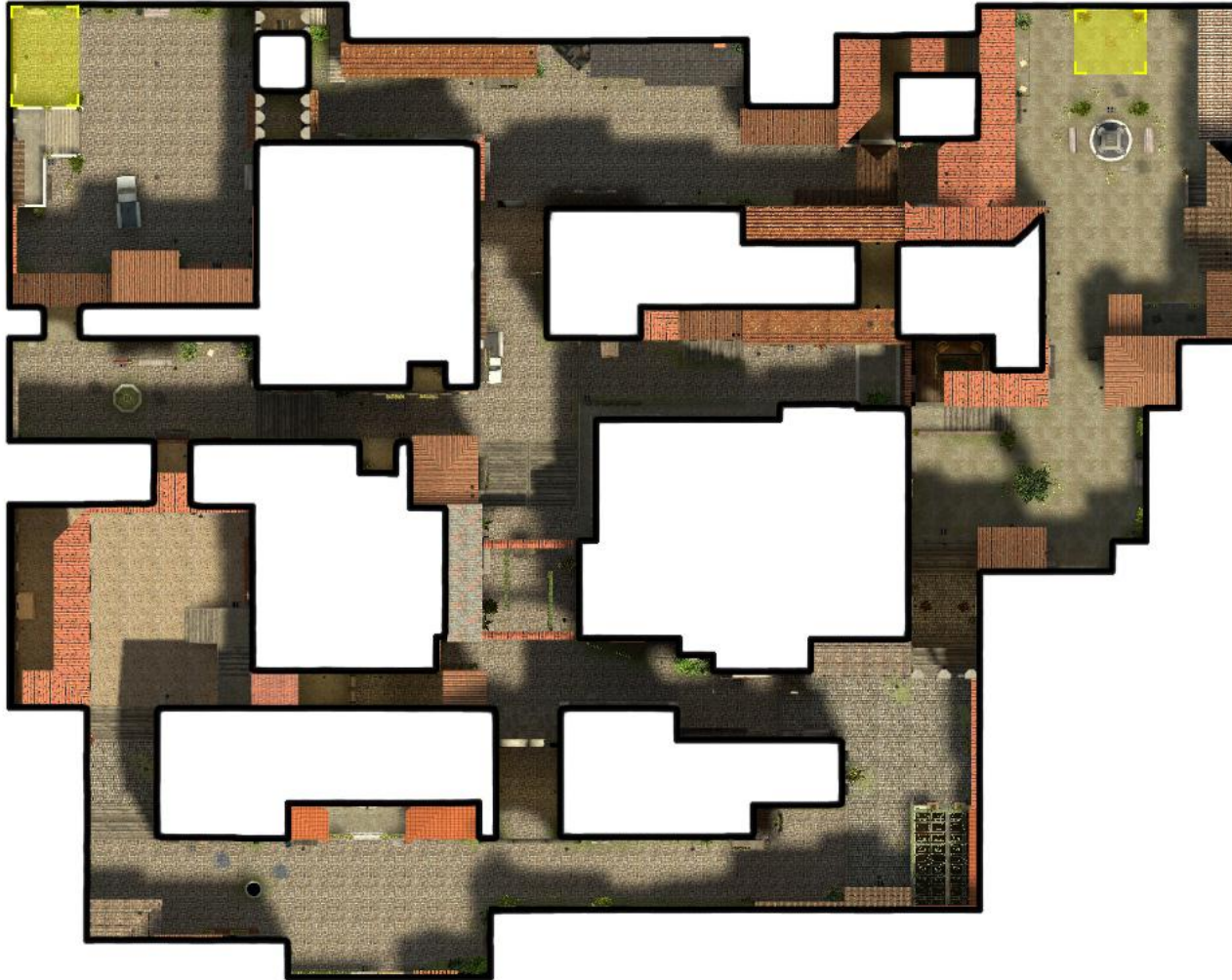
Again, the layout remained true to the sketch but with some modifications:

- Bomb site A sniper room is modified
- Small modification to Bomb site B south entrance
- CT spawn is pushed to the right
- The courtyard is further pushed towards T spawn
- Middle area does not have a gate (for faster gameplay)

Notice that the sketch did not show or define any specific shapes for buildings since this process will be handled by reference photos.

II.3-Reference Photos

As I mentioned in the previous paragraph, you do not need to draw your level in 3D or do any concept art. If you are an architect or art student and you have the ability and the ease to draw in 3D and do quick concept arts, then by all means do it for your layout.

For the rest of the designers (myself included ☺), 3D drawing is not a feasible option and that's where reference photos come in handy.

As soon as you decide on the idea and theme of your level, you need to start searching for photos to use as reference for your building process in the level editor. Google photos and your camera will be your best friends for this task.

In de_cortona's case, I searched for photos from the list of towns that I wrote in the upper right corner of the sketch. All you need to do is to assign and write down a reference photo to a specific area of the sketch that you think is best represented by this photo. As an example, bomb site A in cortona is about a town hall and bomb site B is about a church; obviously I used the monteriggioni's church photo for B and cortona's town hall photo for A.

When you reach the brush building phase in Hammer, all you have to do for a specific area on the sketch, is to open the referenced photo and follow the architecture of the building. Here you have a choice either to faithfully recreate the building in question (if it is a prominent feature of the map) or to use the photo as an inspiration to create something similar in the level editor.

I will list couple of photos comparing the real vs. in-game location, so you can see how I used the reference photos in de_cortona (recreation or inspiration).

Bomb site A – Cortona Town Hall

T spawn

Bomb site B monument

Courtyard

Well – Montepulciano

Bomb site B house

Bomb site B – Monteriggioni church

Front yard villa

Middle – San Gimignano gate

Bomb site B – San Gimignano tower

Courtyard – Pistoia monastery

CT spawn

Side yard tunnel

Outer edge – Monteriggioni wall & gate

As you could notice, some reference photos were more or less accurately recreated in-game while others served as a mere architectural inspiration. They are a great tool in your planning stage and will save you from the hassle of doing concept art and 3D sketching. Use them to your advantage but don't let them dictate your map; you, the level designer must have the final word on how to use the reference photos.

III-Conclusion

The planning phase can take from 1 day to 1 week. Keep in mind that it's more cost-effective to spend 1 week planning and changing ideas and layouts than to rush your project, run out of ideas, find it difficult to implement late changes then let the project die.

I can't stress enough the importance of the planning phase: It can actually make or break your project. And now that I have shed some light on this "mysterious" phase and how to approach it, I think no designers should ever resort again to the famous "I can't draw" excuse anymore.

I hope that by following this simple planning procedure, rookies will have something to build upon and will be able to finish their projects and improve the quality of their released levels.

It might seem like a lot of work to do, but trust me, once you do it for the first time, you become hooked and you will never look back.

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Download Links

http://www.gamebanana.com/css/maps/164363

Direct download link for my map cs_east_borough

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