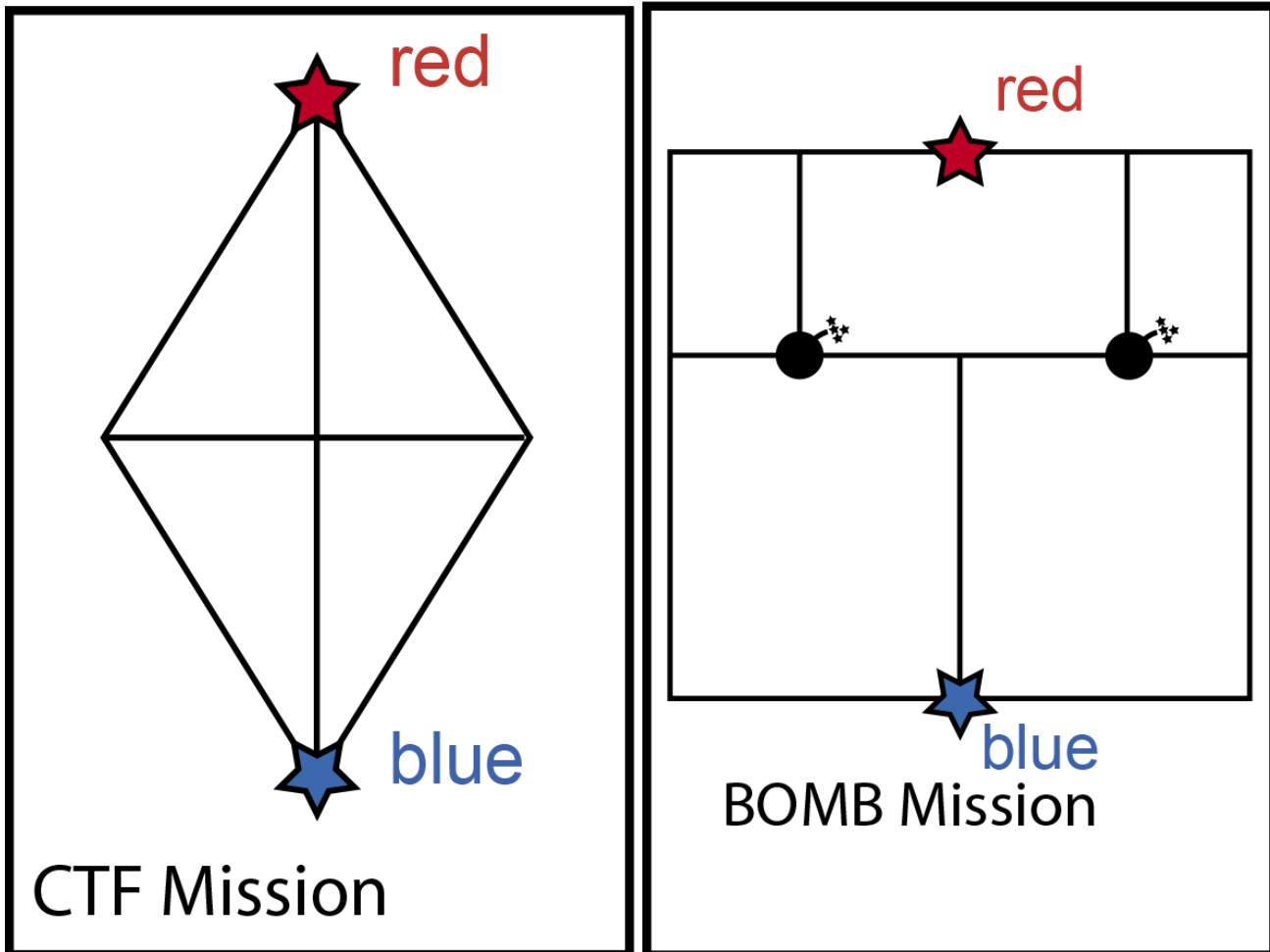


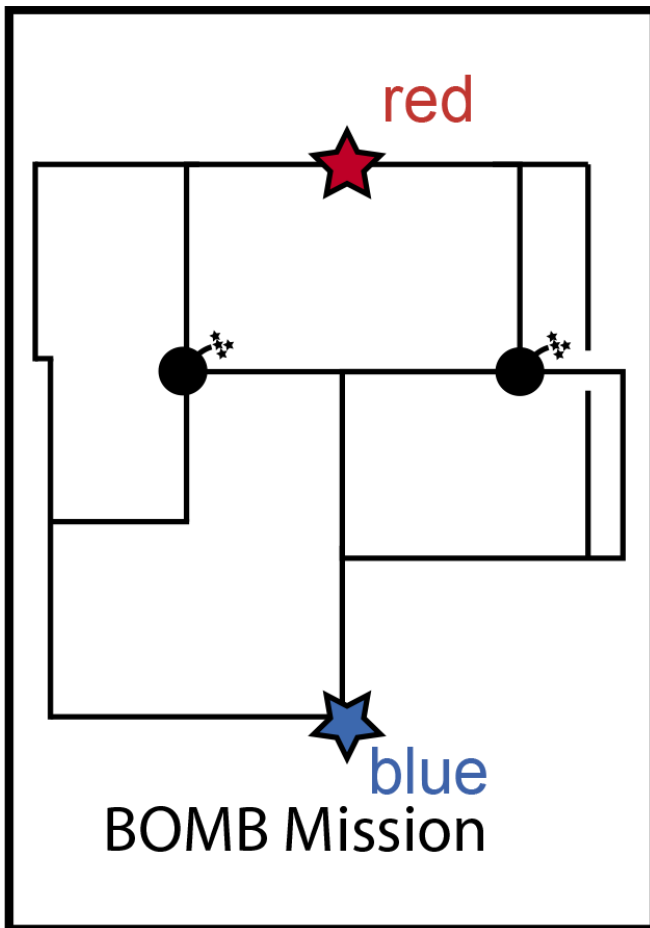
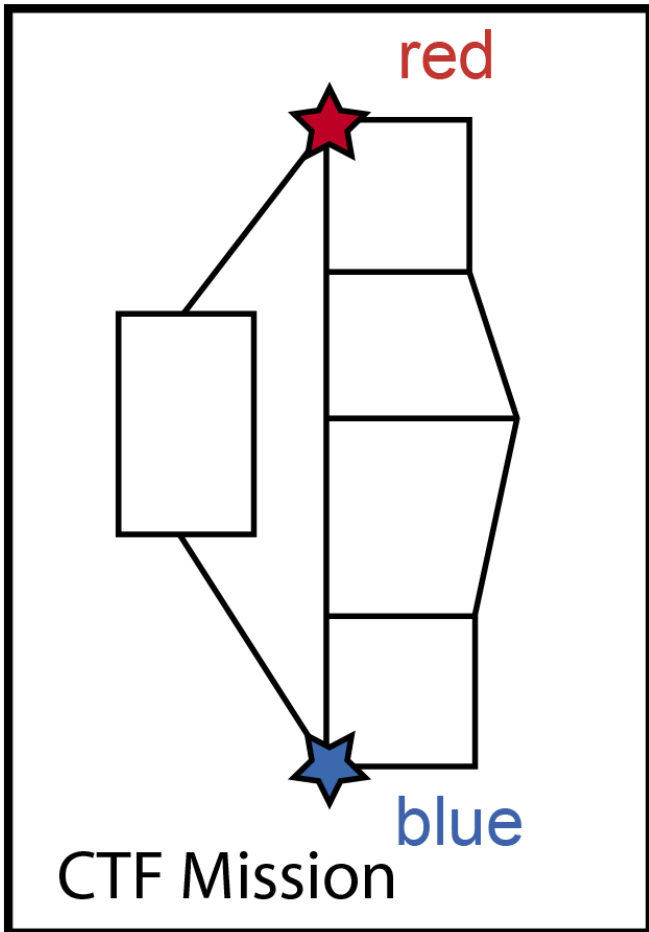
# Ben's small bible of realistic multiplayer level design

an article by [Benjamin Bauer](#) 2004

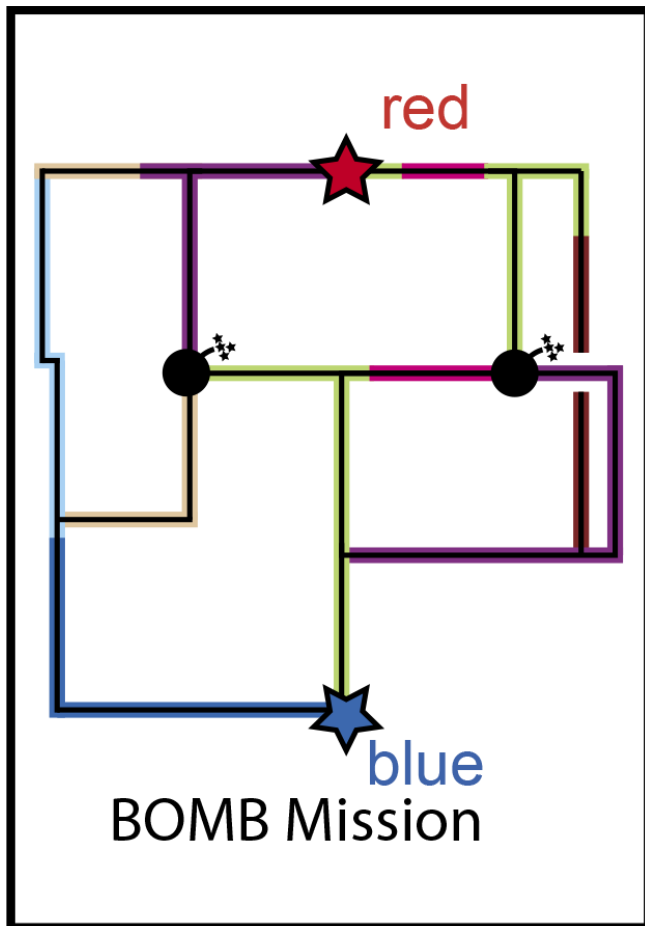
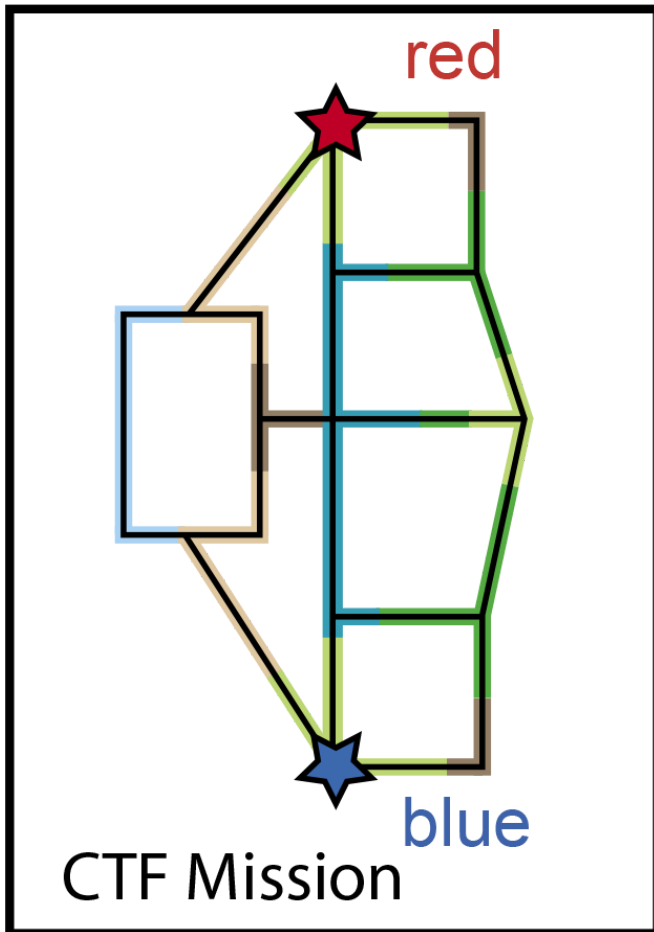
## Basic Strategy Balance



- “Just picture all the possible paths of the player as simple lines and you will begin see a basic geometric layout.”
- “e.g. for CTF there should be three ways to every flag and the layout is usually symmetrical and balanced for both teams.”
- Don't draw geometry--draw player paths



- RE CTF: “The basic intentions are still the same but the left and the right way have changed. The left side became more complex in the center. This should avoid strong concentrations of enemies in the middle defense positions. Even if it is easier to come through the middle part it is still hard to get directly to the opposite base. You can come with a large amount of fast and good players very close to the enemy’s base but the ‘last few meters’ can be very hard. The right side is still unchanged in the middle area which might raise the danger in that area but as soon as you come close to the enemy’s base you get more possibilities to react to the enemies defending strategies or to bluff the enemy on one side and switch quickly to another entrance.”
- RE Bomb: “On the left side team blue has a chance to take a longer and less flexible way but coming in from behind.”
  - Flanks should be longer and less flexible whereas direct routes should have some options available



- “For the CTF mission I chose a jungle setting and thought of some different environments which I can use for the different ways and areas. The light blue is for a beach (ocean, river or lake), the bright brown is for a stony mountain area with few plants but with bigger rocks as hard cover, the dark brown are caves or tunnels. Dark blue green is for deep jungle with several big trees and a lot of sight cover. The dark green is for normal jungle and the bright one for grass. The environment layout is symmetrical but the combinations are always different especially in the middle area and the way to the base.”
  - “These areas should have a lot of landmarks because the player should always know where he is and where he is going, it helps for orientation and is very important to the immediate feel of the map.”
  - “The left will be long range, the middle way is close combat with a dangerous way over the grass to the base and the right way is middle range and stealth in the tunnel. Be sure that you implement different areas for the different kind of players like normal roamer, stealth players, rusher, sniper and CQB freaks.”
- **“It doesn’t really matter how you make your sketches at this point, it is more important that you really think about the strategic game mechanic and the flow of your level before you start with more detailed ideas.”**

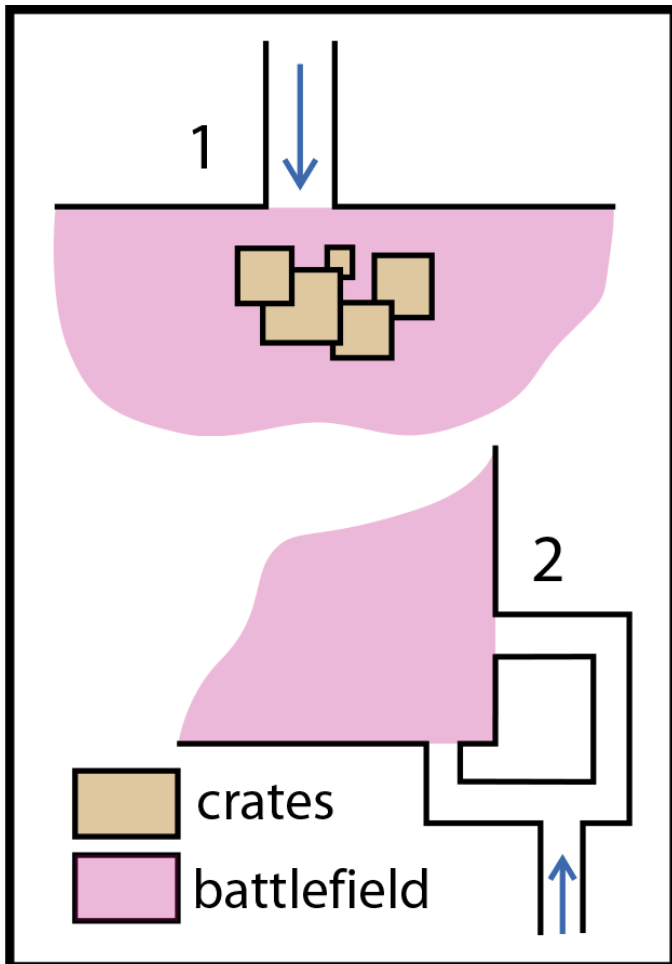
## Improvements With Tactic Elements

- “Battle areas are the places where the two teams meet if they start running from their spawn points with the same speed.”

# Basic Rules of Battle Areas

## 1. There should be always more than one entrance to a battle area for each team

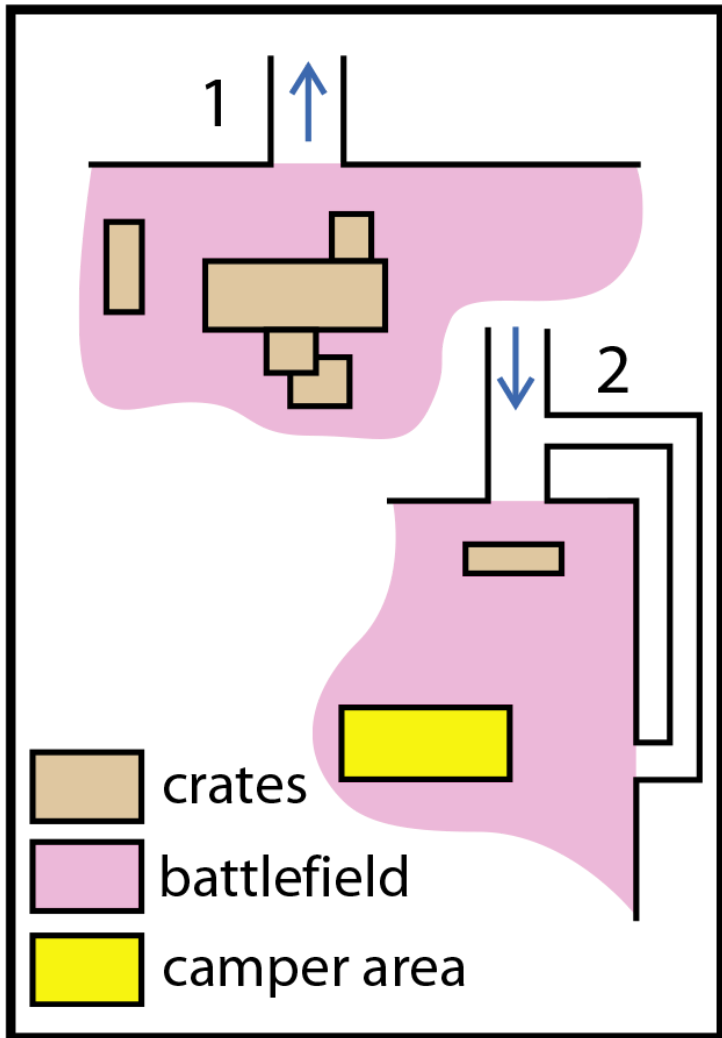
- (or the only entrance should have enough cover in front so there are at least two possibilities to appear in the area).
- “There is nothing more stupid than when the player knows that in 12,3sec the opponent player will come through that specific door. If the level design makes player movements too predictable, then it is a bad level design!”



“In the first situation I placed some crates in front of the entrance. Now the other player can either come around the right or the left side of the boxes, or perhaps he can even jump on the top of them and perform a surprise action. Of course, there is a mass of different possibilities to enhance it, not just two or three ways but especially with nice architecture. The second possibility is similar but a little bit more confusing for the player. At the beginning he might think there are two completely different ways. Soon he will notice that both ways lead to the same result. Of course, this depends on the distance between the two entrances and the distance to the lurking enemy. For a sniper who is 150m away, it’s quite a lot easier to protect these two entrances than for a rifleman who can only be 20m away. If you really only have two ways for each team to enter the battle area, it is always good if one of the enemies can never see both entrances clearly from an advanced position.”

## 2. Campers should never have an easy life!

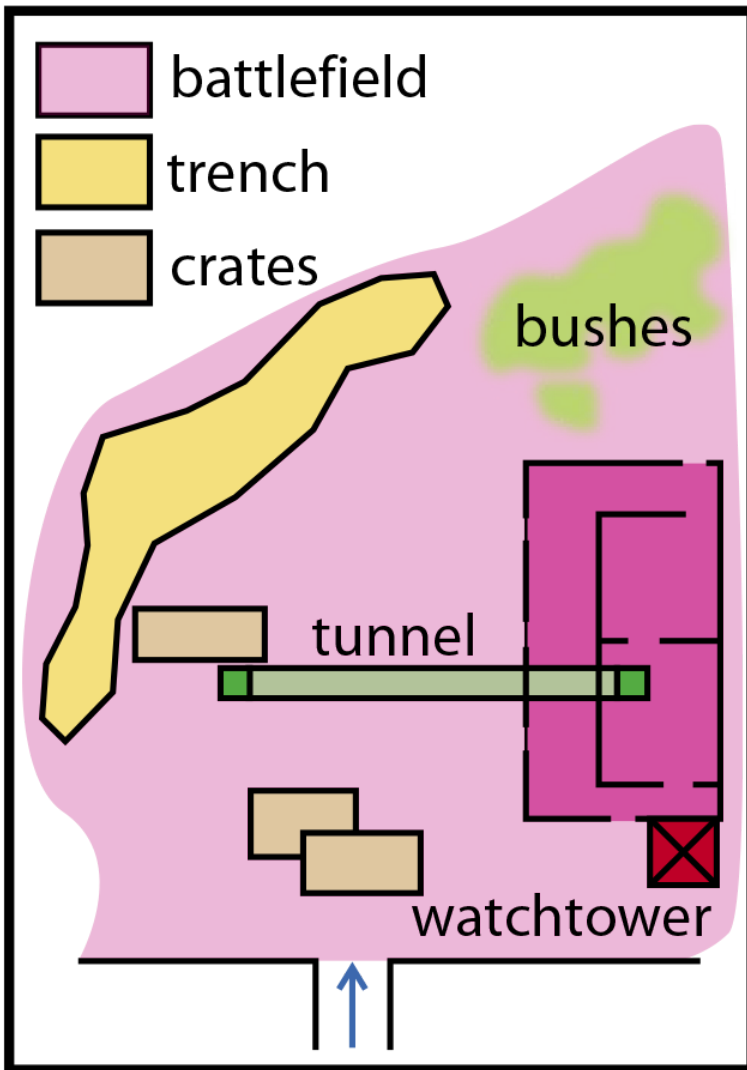
- “When you place your tactical elements, always take a look at where there might be typical camper positions. If you have such a situation, be sure that he can never see all entrances to the battle area, and that the opponent always has a fair chance to move around him and shoot him from behind.”



“The first example is typical. The player wants to run out of the battle area but there is a nasty camper behind the crates. In this situation he might have some problems. The player is able to jump on the big crate in the middle or he can go around the big crate from the left and the right side. The left side has an additional way to appear from another situation. It is impossible for a camper to hide next to the crates and protect himself from all areas of attack. For the second situation I chose another well known problem. A camper might be able to hide very well in the yellow field (bushes/ rocks/etc.) and protect the north entrance. Even the small crate in front won’t change a lot, but a simple walk around reduces the advantage of this camper area drastically, especially if the east entrance is on a higher level than the north one.”

### 3. Give the player enough tactical possibility, make him unpredictable.

- “If there is only one big cover in the middle of your area it’s quite easy to know where your enemy might be. If you see a grenade falling next to your foot, it would be cool if the enemy doesn’t always know that you have to come around a certain corner to find him. The player should be able to move less predictably through the field. It is quite boring to know that in every round/match, very similar situations will happen. If your area is just flat without any higher levels, it doesn’t just look boring, it is also bad for cool tactics and the enemies normally always know at which height is/are your head/nuts. A good terrain and architecture with different floors is really a blessing! You can prevent a lot of complex cover placement with some hills and valleys.”

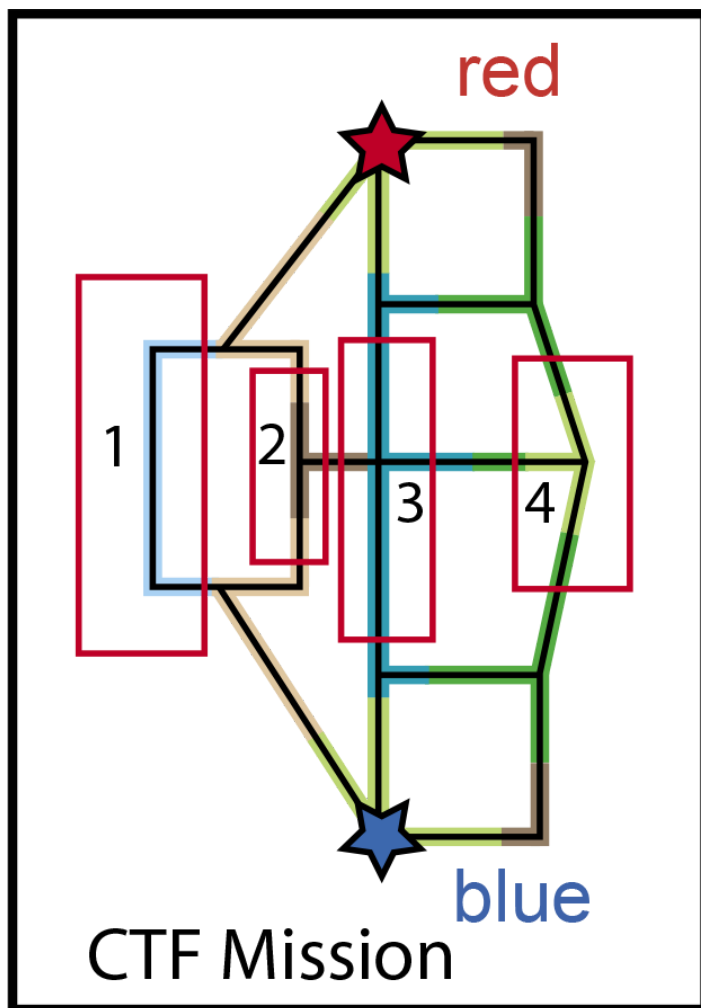


“This is just a simple example of tactical variations. The player is coming out of the south entrance. He can choose between the left and the right way around the crates (full cover), to reach the other boxes. Behind this crate he has four different possibilities: the two different sides of the box (normal), the tunnel which leads into the house (surprise change, higher level) or jumping into the trench to sneak forward (stealth way and higher level). If he chooses the right way at the beginning he can go into the house (CQB and windows are half covers), in the watchtower (sniper point) or he can climb on the roof of the house (high level) with a few air-conditioning ducts (half cover). At the end of the house he has some bushes (soft cover) which might help him to sneak forward but won’t help him if he is on the roof.”

#### 4. Include special ways for special players

- “No, I don’t want to tell you again that you should include stealth and rush ways. Real special ways should support people who like to take extreme risks or absurd ways to really surpass the enemy.”
- “I wouldn’t say that this is a must to have in every battle area, but a few in your level would really increase the fun factor.”
- “I’m thinking about hard jump combinations (e.g. to reach another floor which you can use to walk around your enemy, or to reach the upper part of a tree to hide inside). Other special ways would be secret and hard to find; climbing tracts or areas which you can only reach together with a teammate (i.e. a ladder). I don’t think I have to make a special sketch for this last rule, just don’t forget the pro and hard-core players might really thank you for such small ideas.”
- “For example, the short way is fast but more dangerous and the longer/more difficult one could make it easier to avoid campers.”
- **“If you don’t want the players to cross the square very quickly, just place the only good cover at the border (in the middle there is some kind of ‘death zone’ every smart player will avoid).”**

## Battle Areas



“Okay let’s start talking about the main battle areas of your CTF example map. The following explanations about the areas are just examples to help you get the right idea about how to make it in your own map. The size of the areas have nothing to do with the sight/fight range inside, they just mark them.”

### **#1: Beach, long range, bright area, less cover**

At the beginning the player can appear at a lot of different spots behind some rocks and bushes. The large part in the middle beach has much less cover and you need some backup support and cover from behind to reach the other side. If you take the high risk option, you can swim to a bigger rock on the left side in the middle. There, you can climb up and you have a greater advantage against the opposing forces. Imagine some fast-moving scouts and the player will have some real thrilling sniper battles here. It is a high risk to choose that way if you want to flee with the enemy’s flag, but this can be your advantage because nobody would expect it. “No risk no fun”

### **#2: Cave & rocks, short range & CQB, dark light, a lot of hard cover**

This is completely the opposite of #1. The dark light, the short range & CQB drastically reduce the

advantage of a scoped weapon. There are so many rocks and bushes that two really lucky teams can pass without even seeing each other. At the beginning of the area there is less cover so these places are more dangerous. But you can start running over these ‘dead zones’ from a minimum of two positions to avoid too powerful camper positions. The middle part is a little bit higher than the entrances to that area. This is to avoid sniping possibilities for too long a distance between the rocks/bushes. This is a very good route to choose if you have the opposing flag because the enemy might lose you inside.

### **#3: Deep jungle & ruins, medium range & short range, medium light, some sight cover**

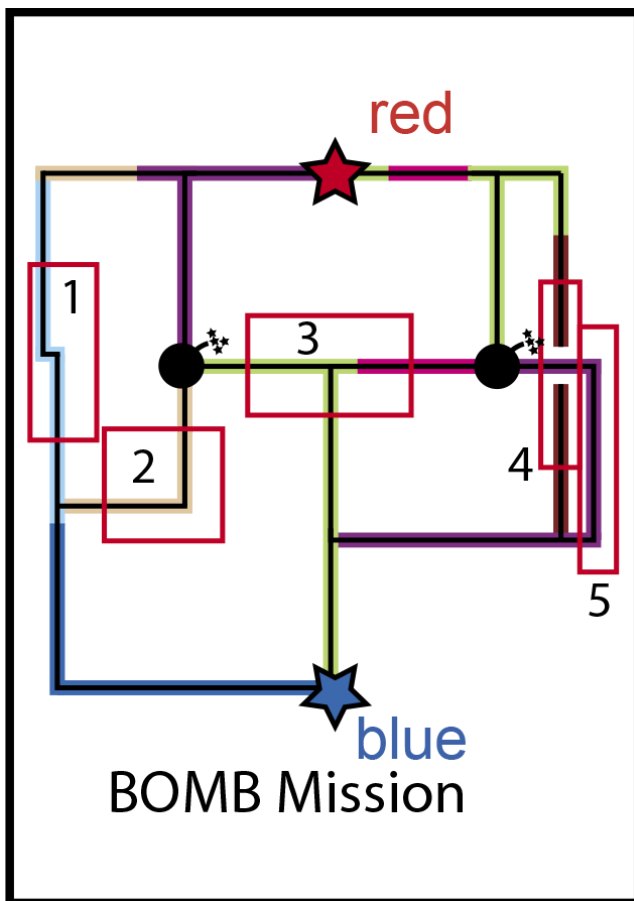
Because this will be the main battle area, the number of tactical possibilities in this large, long field should be very high. I chose to add ruins because it increases the tactical variations, and because urban elements and nature dominate the environment which helps the orientation. Tall trees and ruins provide the hard and full cover here. A tunnel and a small creek around the decayed buildings increase the number of tactical variations and make the area more interesting for stealth players. Even if you have some sight cover, there should always be some small fields without a lot of cover. It would be bad if, in the main battle zone, two teams could pass each other while running into the enemy’s base without seeing each other. In the main battle zone, the players should really have a fair chance to find each other and have a lot of exciting firefights. The sight cover and the medium light should increase the thrill factor but it shouldn’t become too dominating.



#### #4: Medium hill, medium range, good light, mainly hard cover with a few sight cover

The whole battle zone is on the top of a small hill, so the opposing players can't see each other until they come closer. Due to the mountain setting there are a lot of rocks and just a few bushes. The gameplay will be very basic: to run from stone to stone while fighting with the enemy. The area is medium-dangerous or easy and not for the special kind of player. A few more bushes on the right side or a small ruin exactly in the middle would make the area more tactically interesting. Then the fastest team can gain control of the ruin and have a good position to fight against its enemies. Of course the slower team should have a fair chance to blow out the snipers/campers in the ruin e.g. with several spots where they appear, more sight cover at the beginning, or some really good countersniper positions."

"The bomb mission has one more battle zone but in general they are much smaller than the battlezones of the CTF example. If the strategic possibilities are higher then the battle zones are getting smaller. This is a very simple rule and if you don't believe it just imagine a BOMB mission with 10 battlezone where everyone is as big as the beach zone in the CTF example. I guess a majority of people would say: "Whoo damn big map but I thought the intention of the designer was to create some cool fights/matches instead of a sightseeing tour through North America". Of course this depends on the expected number of players for your map. I'll explain this in more depth later so let's continue talking about the battlezones of the BOMB mission example."



#### #1: Harbor next to the sea, medium/short range, good light with some dark spots, mainly hard cover

- "The battle zone shouldn't be linear. The player should have a lot of merged/linked routes that he can take e.g. jump into the water (slow but very stealthy) move between the crates (fast but might be risky because the enemy appears at a very short range) or through some nearby warehouses (darkness is stealthy but risky). To avoid a "liaison" with the enemies should be almost impossible but as soon as the fight starts the game-flow shouldn't slow down due to the many small tactical possibilities."

#### #2: Warehouse, short/CQB range, dark/medium light, mainly hard cover

- "In big storages you can easily add different high levels which might cause really cool fights between the metal walkways and the wooden boxes. Be sure that there is a real advantage to use a higher floor because normally it's difficult to find a safe way down again. Light can be a really powerful game-play factor in these areas. Fast and easy routes are illuminated by moonlight through big windows in the ceiling or artificial light in the lower levels."

#### #3: Street/indoor, long/medium/short/CQB range, good/medium light, mainly hard cover with a few soft cover

- "Make sure that the attackers have a fair chance to reach their mission areas. Shortcuts or stealthy ways through indoor areas are a good solution to this problem."

- “The defenders shouldn’t have a mass of cover at the end of the street. It is better if the defenders have to move around a lot and choose different cover objects further away to be a real danger to the attacking troops.”

#### **#4: Sewer, medium/short range, dark/medium light, a few hard cover**

- “don’t make the tunnels too narrow, the background of the corner for the attackers should be darker, the corners where the defenders might wait should have a bright background, try to make more than one tunnel (or other alternative ways e.g. through cellars or let the players go up and down through a backyard), avoid really long tunnels and think about the special equipment in your game, especially all kinds of grenades!”

#### **#5: Backyard, medium/short range, medium light, mainly hardcover**

- You need a lot of up and down in combination with fences and a lot of small cover like garbage bags/boxes.
- Just follow the basic rules, make some cool positions and always add another counterposition so the enemies can force the opponent to keep moving.

## Mission Areas

“Mission areas are similar to battle areas except for two things: they are more critical/important and normally one team don’t just walk/run/’bunny hop’ through it, they are actually doing something there. The mission area is the zone around the flag in CTF, the place of the hostages in HOSTAGE RESCUE, the bomb spots in the BOMB mode, etc.”

“In general, you might say: “It doesn’t matter what happens in the whole match as long as the two teams come together in the mission areas”. I wouldn’t agree with this because the map needs a high fun factor across the whole map. On the other hand, **it is true that in the end the two teams should at least meet in the mission areas.**”

“If you compare the walk of an attacker through a map with the escalation of a classic drama, then the mission area is the climax. The adrenaline of the player has to pump through his veins if he is 10m away from the flag, he has to sweat like a pig while he is placing the bomb or has to collapse after he brought the VIP to the rescue point with 1% health. **Mission areas have to be exciting and risky but never unfair! ‘No risk no fun!’**”

## Basic Rules

“These rules can be very different and are strongly affected by the game mode you use.”

1. **The difficulty of the mission area depends on the time the attacking team has to stay there**
  - a. “In the standard CTF mode you just have to grab the flag and continue running to your home base. Normally you only have to stay in the mission zone for a few seconds but, during the last time mission, objectives become increasingly difficult and more tactical. This means the designers have to change their old design opinions. If you lose 90% of your teammates & ammo

just to reach the DOMINATION point, and you have to hold it for the next 10 minutes against a superiority of 10:1 without any good defending positions, something is obviously wrong. “

2. **The difficulty of the mission area depends on the number of possible successful strikes from the attacking team**
  - a. “In a CTF map, for example, there should be a fair chance that a good run against the opponent’s base is a success. This doesn’t mean that every time you walk to the enemy’s flag you can grab it and move back. Normally, defending something is easier than attacking it. This is the reason why not every assault should be a success. **A good tactic and a little bit luck should be the key for a successful strike** and the level designer should give the teams a fair chance to do this. Remember: ‘The best team should always win!’”
3. **If the defender team has more than one mission area, they have to stay close together**
  - a. Normally, if the defenders have more than one point to protect they have to split the team. The attackers can stay together and, if the skills between all of the people on the server are about equal, the attackers can win against the outnumbered defenders.
4. **A defender should never see all of the entrances to the mission area from one good position; keep the hot spots free from campers**
  - a. “This automatically means that every mission spot has a minimum of two entrances.”
  - b. “Actually, there is no problem if the camper decides to keep all entrances in his field of view, as long as he stands in the middle of a big open space. This important rule is for the defenders and maybe for the attackers, too, which depends on the game mode. If the attackers have to stay in the zone for a few seconds/minutes, they quickly become campers too. This is absolutely normal but just don’t make it too easy for them.”
5. **More mission areas for the defending team automatically means higher difficulty for the attacking team**
  - a. “I guess that is very obvious, as soon as the defenders have to take care of more than one position they have a big disadvantage and need a small bonus (or the attackers a small disadvantage).”
6. **The mission goal has to be absolutely obvious in the area!**

## Movement Modifiers

### Small hills or stairs:

- “Here I mean smaller situations where a passable section blocks the view between two players (e.g. longer stairs inside a building or a small hill which is just a little bit higher than a player). They are quite common in levels and are a good solution if you need cover but it shouldn’t really slow down the game flow, and the action between different high levels is much cooler than just on a flat ground. Due to its small distance, there is no real disadvantage for the player who has the lower position unless the enemy can see his legs before he can shoot back.”

### Bigger uphill or downhill sections:

- “As soon as the height differences and distances become bigger, and the player really has to look up or down for a longer time, it can quickly become such a ‘D-day feeling’.”
- “I think that in general, it is harder to defend/assault from a low position against an elevated position. In this case, good cover and possibly alternative ways or specials are necessary.”

- “On the other hand, a lot of people forget the sight factor in such a situation. If you look downhill it is normally harder to spot a player than if the enemy is at the top of the hill with the sky in the background. Of course, taking into account the usual camouflage factor of your game. **If you have just red T-shirts versus blue T-shirts, the last point is less important.**”

## Jumping passages:

- “They can be used to spice up your level but please don’t use them too much because jumping in a FPS is always a mess.”
- “On the other hand, hard-core games really like such passages so it can be cool to have a few less obvious situations like these in your levels which make the good gamers happy.”
- “There are two things you should always remember if you are going to have the player jump somewhere.”
  - “The first point is that you normally only look in the direction where you want to jump.”
  - “The second point is sound. If the player wants to pass such a part in your level he is normally making specific jump sounds which can be located by better players very easily. Try to be sure that after the passage there is a little bit of cover regarding its danger level so it doesn’t become an absolute death zone all at once.”

## Hallways or what happened between the Areas

- “ In general, you should try to keep the passages between battle- mission areas very short because they can be bottlenecks and just walking isn’t as fun as fighting.”
- “There are three typical kinds of connections depending whether you want to slow down, speed up, or just want to keep the game flow neutral.”
  - “The first way is to slow down the game in hallways or canyons. If you want to achieve such a situation, do not create alternative ways, just a normal, more or less wide hallway or canyon. Then the cover elements like rocks or pillars should be placed at the sides without an opportunity to walk around. As soon as players from two teams meet each other here, they normally take cover behind your objects. They have to stop unless they go in the middle again and start fighting.”
    - “You shouldn’t use such a type in routes which are already very long because these ways are more often used by faster players and they don’t like it if they are suddenly in a slow gameplay section.”
  - “The second way is to keep the player moving and therefore speed up the gameflow. One possibility is to create small alternative ways or shortcuts very nearby and with several connections to the main route.”
    - The second possibility to increase the flow is **intelligent cover placement**. If the cover (e.g. trees, walls, pillars) is in the middle or **built so that you can continue walking in the original direction, then you can keep on moving if you see an enemy**. Just switch the side of the wall and for a few seconds the enemy can’t see you because you have changed your position. At the end, it doesn’t really matter exactly what you build as long as both sides have the opportunity to change their positions erratically as soon as they see each other. It makes the fights between them more interesting, and the areas more fun. If you build it well, the player won’t really notice the difference between the areas and the connections and this is the way it should be.

- “The last way is actually the worst one and should be used carefully. It is simply a hallway without any alternative routes or really good cover (e.g. a normal, boring hallway which goes around a corner). No team has cover and the fights are normally very quick. They are very simple, less interesting and not a lot of fun. You can use these for less important connections or just keep them very short.”

## Spawn Points

- “In general, the spawn points should have a minimum of 0.5m - 1m (differs from game to game) between each other and the people should spawn as a solid group, and shouldn't appear somewhere else (e.g. at the 2km long beach.)”
- “One possibility to avoid spawn campers is to split into several smaller groups with different positions. Another solution is placing a lot of spawn points so it is difficult for the camper to predict where the player will spawn.”
- “Also, keep the spawn point a little bit away from the mission objective, otherwise you die while defending it and respawn next to it again.”

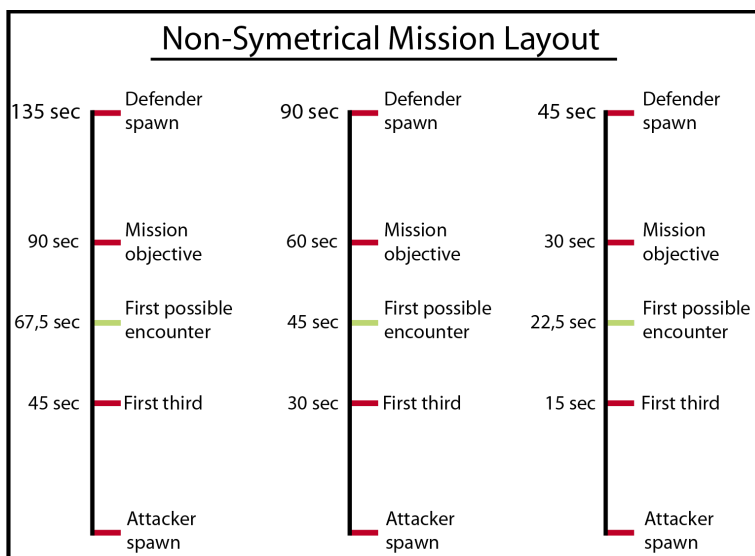
# Navigation & Orientation in the Levels

- “Not without a reason, small levels with very simple design are often the most successful ones. This is the reason why it is very important to give the player a lot of guidance and landmarks which helps them to orientate.”
- “ Never forget that, if the player gets lost in your map the first time, it doesn’t matter how great your gameplay ideas are because he will never experience it and will switch the map/server in frustration.”
- “...one of the best ways to help the player orientate in more complex levels are special eye-catchers or special areas which the player will remember.”
- “If the whole map looks very similar, it doesn’t really matter if the designers have placed a few more rockets here and a few more plants there.”
- “Other objects can show the direction: if the blue player runs out of the jungle on the beach and he sees a boat wreck he might remember that the nose of the sailboat leads to the red base and he had better use the other direction. ”
  - These objects don’t necessarily need to be in the gameplay. They can be objects in the distance.

## Different Level Sizes

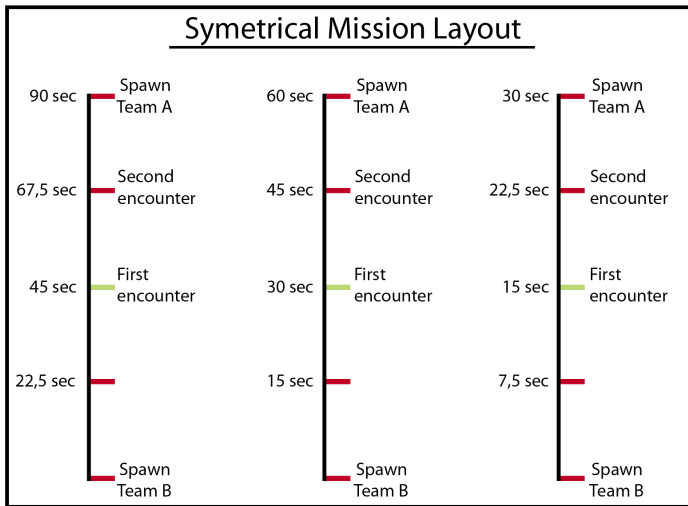
- “The size of your level has a huge impact on your gameplay and is heavily influenced by the game mode, whether you have vehicles, and the game you create the maps for.”
- “Short maps should be very compact but be careful that they don’t become too boring by limited possibilities. You have to find the perfect compromise between pliability, navigation, orientation and still guiding the player somehow.”

“Let’s first talk about non-symmetrical mission based game modes like BOMB and discuss how big you want to build your map. The times you can see here are just examples and in the real game they will never so exact.”



“In general, the attacker team should need two times longer to the mission goal than the defending team. So I’ve drawn three examples which you can see above. The first third of the attacker’s route is where tactical possibilities should really start at the latest. Here, the ways should start to split. The amount of cover increases and the player should start to take care instead of just blind rushing. In the first third there should be absolutely no possibility for base campers!”

“Now let’s look at how the same numerical example looks like with symmetrical maps and with no clear defenders and attackers like CTF.”



“The times are from a case where, when the match starts, a perfect player from team B makes an attack against team A, grabs the flag and runs back to score with it.”

“In the first example you would ideally need 90 sec to reach the mission goal. After around 45 sec you might meet your first enemy. **If the dead player respawns at once and starts running straight away, the attacker from team A can encounter him again after 67.5 sec if he hasn’t lost any time in the first fight!** After another 22.5 sec, he can finally reach the flag and might already kill another player and now has to run back for another 90 sec. All in all, these are three minutes of an absolutely perfect attack and, as we all

know, **a perfect run without any lost time in a normal CTF match is almost impossible.**”

“Now in the last example, 30 sec to the enemy’s base seems to be suddenly very short but they remind us more about the fast, thrilling CTF matches which we had with the Quake and Unreal games.”

“So the bigger you plan such a map, the more open the map should be, otherwise the action would be too rare. On the other hand, small maps should be more compact because then tactical gameplay is even less important than pure combat skills”

# Art for Gameplay

“It is more about how art elements like lighting (Visibility), textures (Orientation) and architecture (Movement) might affect your gameplay.”

## Lighting

- “The brightness of an area affects the general speed of action and movement.”
- “Just imagine a bright base which one team has to assault which is surrounded by pitch black night. The attackers can move around it almost unnoticed without losing sight of their goals. They will become big problems as soon as they come closer, but this offers them a completely different style of tactics than the normal “running-from-cover-to-cover”.”

## Mirrored vs. Uneven Map Layout

- “It is a well known fact that the arcade game modes like CTF must have a mirrored map layout. This is okay as long as the maps stayed small with no vehicles and the gameplay was very arcadey.”
- “Mirrored maps are generally easier to build and to balance. They should be used for open and arcade game modes where the realistic feeling of the level is less important than the pure gameplay itself.”
  - “The biggest problem now is to find a good solution to increase the orientation and navigation because you have two parts which are very similar. Of course you could make all the trees on one side red and the other side blue but I hope we all agree that this would look stupid even in fun maps.”
  - “Like I’ve already mentioned above, variation is quite important so why shouldn’t the bridge on one side be a couple of pipes and on the other side a few wooden planks. This can be used almost everywhere as long as the gameplay at both places stays the same, for balancing reasons.”
- “Unmirrored levels have the complete opposite problems than the mirrored ones. On one hand, if you do it a little bit smart and follow the basic rules in the previous chapters above, navigation and orientation won’t be a big problem. On the other hand, now balancing is your biggest issue. That is the reason why unmirrored levels are much harder to design than mirrored ones.”
  - “As soon as the terrain is really different and you have a lot of bigger objects, balancing starts to become difficult.”
  - “For example, if at one side you have a bigger hill in front of the regular base defence, the attackers might have an advantage but on the other side you have a valley. Now you need to think about what you have to change so that the attackers have more problems with the hill, or how much cover you have to place in the valley so it is balanced again. You have to think about almost every place in the map and how to balance it differently to the other side. This is very critical and because it is almost impossible to calculate all kinds of combat situations, it is actually impossible to balance it perfectly. The only real solution is a lot of experience and a mass of testing the map if you want to create an unmirrored level where both teams have the role of attackers and defenders.”



# Game design vs. Level design

“Normally there is a fine line between game design and level design but smart people are able to think in the right way and know where the problem might be. So my advice for the level designer with problematic areas in their maps is to consider that there is a fair chance that it can be his fault, too.”

“For example, the game designer decides that all thin wooden planks are destroyable. Now the level designer complains that he sometimes need undestroyable boards because otherwise the opponent can destroy the only cover in that area very quickly. He decides that some of the planks in his level can not be damaged. Okay, if something has special features it should be obvious that all similar objects have the same abilities. Continuity is an old school design rule and should never be changed.”

“Especially the problem of badly designed/balanced weapons shouldn't affect the level design. If a flashbang blinds everyone in a radius of 50m, the designer shouldn't make too many small areas in the level. Frag grenades which you can throw through the whole level and it remember more about artillery shouldn't produce levels where every wall is 30m height.”