GDC 2004 Lecture

The Interesting Thing About Bishops
Simulation Boundaries in Splinter Cell

Document Created by: Clint Hocking

Contact: chocking@ubisoft.qc.ca

Document Created: 02/05/2004

Introduction

My name is Clint Hocking and I'm here to talk to you today about what I think is the interesting thing about Bishops

First, I'd like to start with some introductions

Ubisoft

Ubisoft was rated the 12th largest publisher in the world by Game Developer Magazine in September 2003. We were also counted in as the seventh largest internal developer with 1,260 staff.

As of 2003 about 500 of those developers were at Ubi Montreal. Currently there are about 650 of us, and our target for mid 2004 is about 800 developers just at Ubi Montreal, so we've been growing pretty quickly and its an exciting time.

Some recent Ubisoft titles you might have heard of from Ubi Montreal are Splinter Cell (PC, Xbox), Raven Shield, Rainbow Six 3: Xbox and Prince of Persia: Sand of Time.

At Ubisoft worldwide, we've also done XIII, Beyond Good and Evil, and Splinter Cell 2 PS2, which was done in Shanghai, and Splinter Cell: Pandora Tomorrow which is also coming out of Shanghai, with the multiplayer component being built in Annecy, France.

Clint Hocking

As for me, well, I'm Clint Hocking.

I work at Ubi Montreal. My first game industry job was as a Level Designer on Splinter Cell. At the Alpha deadline, with the departure of our Lead Game Designer who went on to other things, I took over that role as well. And at the Beta deadline the Script Writer departed and I also took up that position, which mostly consisted of handling script changes as a result of cut or altered content, adding some stuff to clarify parts of the game and help manage difficulty, and help with localisation issues.

My current project in unannounced. But I'm working as the Lead Level Designer and the Script Writer, so I'm keeping plenty busy. And to set the record straight…I'm not working on Pandora Tomorrow.

This Lecture

That's me done…so what's this lecture about.

Well, I'll start with what it's not about, so if anyone is in the wrong room, they can go to see the talk they meant to go see.

This lecture is not about Pandora Tomorrow. It's about the first Splinter Cell title.

It's also not about chess, despite the deceptive title of the lecture. I'm far from informed enough to actually speak about chess, but I will talk about some components of it as relates to my topic.

I'm also not here to talk about simulators. I won't talk about flight sims, tanks sims, rollercoaster sims, The Sims, or any other type of sim except generally where they relate to my topic.

So what is the lecture about?

Well, it's about Splinter Cell.

It's about Splinter Cell. It's about the game's design metaphor and how that relates to the concepts for what we included or excluded from our simulation. It's not so much about physical boundaries…it's more about conceptual boundaries and about the players actual and implied interaction with game world on different levels.

But most importantly, this talk is about games in general, using Splinter Cell as a frequent example.

Terminology

Before I get too deep into this, there are a few terms I think I'll need to define. Obviously, I'll start with the somewhat obtuse on from the title of the lecture: Simulation Boundary.

Simulation, firstly, is defined as "the imitative representation of the functioning of one system or process by means of the functioning of another."

A boundary is simply, the edge of something

So a Simulation Boundary is defined as "The line beyond which the imitative representation of a system is discontinued"

OR – to keep it really simple: *The parts of the game that they player can't play with...*

Because the term is important, here are a couple of examples of simulations boundaries that you're familiar with, both from cinema.

Backdrop paintings define a simulation boundary. Anything that is in the foreground is either actors, props, wardrobe, or set. But those rolling mountains out the window are a backdrop painting, and no action in the world of the film is ever going to touch the elements in the painting.

Similarly, character back-story defines a simulation boundary. The stuff that is implied or even directly reported to us about what happened to a character outside of the time frame of the film is immutable within the action of the film itself.

A couple other terms I'll need to mention are Agency and Intentionality. By now, I'm sure everyone has heard these terms, and I know I'm kind of revelaing my colors here, but these two concepts really help guide my approach to making games and they inform a lot of the things I'm going to say. So…

Agency is the satisfying power to take meaningful action and see the results of our decisions and choices.

And intentionality:

Player Intention is the ability of the player to devise his own meaningful goals through his understanding of the game dynamics and to formulate meaningful plans to achieve them using the information and resources provided by the game.

Another thing I'm going to mention a few times is a term I picked up when working in web design, that I think really applies generally to software and usability design as well as to design as a whole. The term is Design Metaphor, and I define it as:

The unifying thematic framework that, by analogy to some existing thing or set of things, informs all design decisions, and by its expression in the game, facilitates player learning and understanding of how the game will respond to his actions.

Its important to quickly note that the term has two ends to its definition: one that applies to designers (as something that informs our design decisions) and one that applies to our audience (as something that helps them understand our designs).

So, all that said, let's get to why we're here.

We're here because there is something interesting about Bishops. What is…

The Interesting Thing About Bishops?

Monolith's Craig Hubbard said:

"In real life, bishops can go anywhere they want. In chess, they can only move diagonally."

I think this is a powerfully simple statement about something really important. Basically it says that the greatest, best designed, and probably most profitable game in human history wasn't designed to mimic reality….

That's strange considering that considerable time and effort is invested daily in a multi-billion dollar industry to try and do exactly what chess never need to do….

Hm.

Let's take a closer look at Bishops, but first…let's figure out chess.

The design metaphor of chess, if you'll allow me to take a shot at it, could be stated as:

strategic warfare between equivalent hierarchical feudal states

Let me quickly analyze that. It's strategic because its focused on position, not on the details of not attack and defense. The sides are equivalent because, once you take the skill of the players out of the equation, the sides are numerically and strategically equal at the outset. There are no advantages (except to white for moving first). It's hierarchical because the individual pieces are NOT equivalent, as in checkers. Some pieces are more powerful and more important than others. And it reflect a feudal hierarchy in a number of different ways.

So that's what the metaphor, but what supports it? Well, a number of things:

The names and the roles of the units. The way the units move, the comparative power of the units and their numbers, and even the interaction of units. Knights behave as cavalry in their ability to rush past lines of infantry, rooks behave as artillery in the sense that a significant advantage is gained by getting rooks into good positions at the right time….

Now onto the Bishop.

At first glance, the Bishop seems orthogonal to similar pieces like the queen, knight and rook.

In fact, a common early assumption is that the Bishops is roughly equal to a Rook. Both can move completely across board, one develops early in the game, one late in the game, both, it seems, can 'go anywhere'.

Both when we look a little closer at the Bishop we realize that the Bishop's differentiation is grossly limiting. If you accept the ability of pawns to be promoted to queens, then the Bishop is actually the most territorially limited piece on board. The Bishops isn't just locked out of a few squares. The Bishop is locked out of fully half of the board…but at the same time, the Bishops really feels like he can go anywhere. Also, because the Bishops each have a different color, the loss of one Bishop cannot be compensated for by other Bishop.

So in the final analysis, a Bishop is not equal to a rook. It's more equal to a knight. Still a respectable piece, and not to be thrown away, but not as powerful as we first thought.

So what does this have to do with Simulation Boundaries?

Well, it appears the 'designer' of chess…someone who certainly never got profit sharing from his publisher…made some decisions.

He decided, most importantly, that Bishops simply can't just go anywhere as they can in reality. In other words, in the game of Chess, real-world Bishop movement is not simulated.

Now why would he make that decision? Well, simply put, it improves the game and it serves the design metaphor of the game.

How?…well…I'll extend the metaphor a bit here. We could say that the Bishops are bound by religious oaths to saty on their color. That makes sense. We could describe their movement as being 'through the secret corridors of power' wielded by important religious figures in feudal states. We could say that their starting point is at the 'ear of the king'. We could observe that, as with many churches, their color-bound-ness is a representation of the idea that there are internal factions. We could even claim that the metaphor of Bishop movement is reflect in the attacking movement of pawns who require a religious conviction to 'move diagonally' for the kill.

Now, I admit that these arguments are way over-extended, but I will rebut that by saying that one of the reasons that chess is such a great game is that its

metaphor is very deep and very well communicated. The depth of this metaphor allows for it to be extended easily.

What's important is that we recognize that the designed limitation on Bishop movement establishes a simulation boundary. It serves the design metaphor, and it's not subservient to the arbitrary rules of reality.

Sam Fisher

Let's use the same approach to take a look at Splinter Cell.

I'm not going to pretend we had this design metaphor written down somewhere, but here's one we could sue:

information warfare among the low-level events at the tipping point of geopolitical crisis

To analyze it, information warfare means that it's not focused on physical battle. Low-level means that the game is concerned with individuals directly, not the nations and political structures that are the game's backdrop, but…that those individuals live at a 'tipping point'…a place in the world where small events can have a large impact. So the idea of Splinter Cell is that the small actions the player performs can have international repercussions.

What supports this metaphor?

Well, the obvious high-level elements like story, character, setting, etc. Plus, Sam's equipment, moves, gadgets, tools. You'll note that the design metaphor is better served by lockpicks for opening door than by C4 for opening doors. Again…it goes back to the small actions…like picking a lock.

It's also supported by observational gameplay in and around the enemy. The game is voyeuristic, which reinforces the intelligence and information warfare aspects of the metaphor.

Also, he action/reaction model. Drastic input leads to drastic output which encourages intentional deliberate play from the player (which admittedly does not work well) and analogue interaction which is sensitive and precarious at the lowest, mechanical level of the game's controller, and the reflected in then highest levels of script and character.

I think the point of seeking the design metaphor is that, because it helps is make decisions.

We should attempt to simulate everything that supports this metaphor and disregard things that do not.

Now, just as we did with the Bishop, let's take a closer look at Sam.

Sam performs human actions. He fights, he hides, and he interacts with world.

Sam is a simulated man!
He can be killed. He can escape, evade and outsmart his enemies, he can even use objects in the world in meaningful ways. Sam expresses a physicality in the world.

But let's take a closer look:

Sam is actually severely restricted in his choices, but at the same time, all of his choices are meaningful in terms of the design metaphor.

Basically, Sam can do 'anything' except exit the metaphor. So in actuality, Sam is much more like Mario than a real man: his actions reflect the game, not 'reality'.

So why can't Sam do anything.

Simulation Boundaries

Let's take a look at something I like to call The Hotdog Stand Dilemma:

At some point the Designer of Splinter Cell decided that Sam does not get tired or hungry. That Sam cannot quit his job or abort his mission, that Sam cannot open a hot dog stand on Coney Island, and Sam cannot instigate WWIII. These options are not supported in the game.

Why? Well, just like with Bishops only being able to move diagonally, it improves the game by giving it a clearer focus and more importantly, it serves the design metaphor.

How?
Simply by constraining action to a meaningful set, all action becomes meaningful.

To put it another way, we can look at it from the point of view of necessity. Do we NEED boundaries to our simulations?

Technology continues to improve everyday, and we get closer and closer to simulating reality all the time. Surely this path is proving profitable…and hey…anyway…who are *we* to decide if a players intended action is meaningful??

Let's take a look at a hypothetical new game call Hypothetical Quake 6:
Quake 6 is a turn based game where you are only allowed to move diagonally. Some enemies…well…you won't be allowed to kill them…but the good news is, you won't ever *die…* you'll just lose when someone is in *position* to kill you.

Of course we need simulation boundaries!
Games should not arbitrarily mimic reality, just as they should not arbitrarily mimic chess.

Of course, deciding that we need boundaries raises its own problems. The question becomes now, what do we do when the player crosses, or reaches the boundary either physically or conceptually. What do we do when the player is confronted by a decision that isn't really a decision because one of his perceived possible actions is not allowed in the simulation? The game can't continue past a boundary we designed and the design metaphor is not infinitely extensible (otherwise it isn't a metaphor for a thing, it *is* the thing)

Well, the designer has a few options. He can extend the design to encompass the new scenario. He can support the failure that reveals the boundary and lead player back on track, or, simply, he can end the game.

There is one thing you can't do…and that is continue to simulate (safely) beyond the simulation boundary. I'll explain why later.

Simulation Boundaries in Splinter Cell

The next thing I'd like to do is take a look at a few examples from Splinter Cell that occur 'close to the simulation boundary. I'll talk about the options we had to deal with the problems, the solutions available, and the decisions we take. Some were good, some were bad.

A great example is the fan outside the CIA. To get into the CIA Building, Sam needs to sneak in through a ventilation fan that has been stopped. He has a time limit, and the question is, what if he doesn't make it in time?

Our options were to end the game, extend the design to encompass new a scenario, or support the failure and lead player back on track.

Ending the Game with a big Mission Failed screen sixty seconds after starting the mission seemed like a bad idea. Admittedly, it would have been clear to the

player, and very easy to implement for us, but the negative perception would have been pretty bad, it promoted a 'learn by dying' approach to the problem, and it didn't really suit the design metaphor of the game.

Another option would have been to extend the design; give Sam a new piece of equipment or a new ability, which would have been cool, and empowered the player, but ultimately was just feature creep, and would have caused systemic problems throughout the game with all fans, or even all mechanical objects.

Another option. The one we ended up going with, was to support the failure by providing an alternate, but slightly more difficult path. The gave more opportunity for intentional play, and better suited the design metaphor. Of course, we had to consider the costs of actually building the path, but in the end, they weren't that high, so this was a really good solution.

Another example, this time of a place where we really dropped the ball in my opinion, was with the Embassy door codes. The player needed to wait for an enemy to use a keypad locked door, then sneak up to the door and use his thermal vision to detect which keys had been pressed, deduce the code, ad enter it.

Supporting the failure would have meant adding another path which was unacceptable because the difficulty of the gameplay meant almost zero player would use the path that we were putting all the work into.

Ending the game, which was the decision we took, was frustrating, didn't support the design metaphor at all, and even more ridiculously, the player typically looked the codes up online or got them from a friend and didn't mess around with our crazy difficult gameplay anyway. The whole thing was just a big bad decision on our part. Live and learn.

The way we probably should have handled it was simply by having more guards, throughout the game, patrolling through keypad locked doors, and giving the player an opportunity to sue this gameplay intentionally instead of in a forced way. We'll get that one right next time.

Another one was the Chinese Diplomats being held captive in the Abattoir. Here, our decision was that it would be game over if they were killed. I think it worked here because firstly, there was a low probability of it happening. Typically the player would die trying to prevent the enemy from getting to the hostages.

But we didn't really have another good choice because one of the characters needed to appear in later cinematics, so it was forbidden that he could die, and even aside from that, the design metaphor of the game really wasn't extensible to the point where allied diplomats could be considered disposable.

Another weird one: and this is totally my fault…was the 'stay off the streets' objective in the T'bilisi map…the first map.

The idea was that if the player was seen on the streets, that the US would get nervous about Third Echelon's capabilities and simply shut down the organization. The problem is that, while logical, it isn't a very easy threat to communicate to the player. It's not very immediate or clear.

In the end, some people felt it was acceptable, some didn't, and even though I am the one who actually built it, I still can't say either way whether this was the right solution.

Solutions to Boundary Problems

I think that the examples make it clear that there are a number of possible solutions to boundary problems. The point is, though, that none of these is really better or worse. I think that what matters is how well a given solution works within the design metaphor for the game.

Extending the design can be good choice because it empowers the player, but it has a couple of big costs in terms of feature creep and difficulty issues, plus it adds the risk that you'll start simulating outside the boundaries…which is always bad…

I've got an example of this. It's a hypothetical game called 'The Good Samaritan'.

The Design Metaphor of this hypothetical game is:

societal improvement through selfless acts performed using vehicles

it's a great game because you can do so much. For example, you can:
take sick people to hospital in ambulance
arrest criminals in police car
drive people places in taxi
put out fires in fire truck
even deliver pizza!!

With all these moving vehicles, however, we run into a little design problem that I call the police problem. Stated simply, it asks

What happens when the player runs over x civilians?

So if we decide to solve this problem by extending the design, we can say that a policeman will come and try and arrest the player and if the player is arrested (or if some accident should befall him during his reckless misadventure) then he'll simply be taken to the police station or the hospital, the world will be reset, and the simulation will continue from the beginning.

Unfortunately, this solution leads us to a recursion of the first problem, called the *extended police problem.*

Stated simply

What happens when the player runs over x police?

Well, first the SWAT team comes. Then the FBI, then god forbid, the Army. But in the end, well, the Army can take care of the problem. Right?

As I'm sure you've guessed, The Good Samaritan is really just 'Bizarro GTA 3'.

The Good Samaritan has a police response system. The player is naturally drawn to the edge of the simulation bundary. He wants to know where the interaction model ends. The system fails totally to stop the player, the design metaphor fails because now you've got 1,500 dead cops and civilians and zero people dropped off in a taxi.

The Police response system is more complex than the primary systems of the game.

The more complex a system is, the more attractive it is to the player. The player active seeks the edge of the game space by chasing systems to their ends.

So to put it simply don't simulate things beyond the boundary. Or don't try and simulate your way out of a design problem. Because what we simulate guides player interaction. Players are drawn to systems just like the eye is drawn to movement and light in cinema.

Systems at the boundary draw attention to the boundary.

Another way to handle boundary problems is to support the failure that revealed the problem in the first place. This solution gives the player more freedom, it increases intentional play, and makes the game easier, but the big risk with this is that we can actually reduce feelings of agency – especially as relates to high level agency where the player only has the illusion that his actions are effecting the world.

if threat of WWIII cannot be fulfilled, player may not feel his actions are relevant to threat…high-level agency is reduced.

Another option for dealing with boundary problems is simply to end the game outright. This, of course, opens the Great Game Over / Mission Failed Debate.

Is game over really a problem. Well, we could do a hundred lectures on this and not get a definite answer.

Personally, I used to think 'no'. But after much deliberation and much debate with people much smarter and more experienced than myself, and after getting a considerable amount of flack for some of the Game Over situations in Splinter Cell, well, I am not entirely sure anymore.

One thing I do know, though, is that there are a number of excellent games that use Game Over or Mission Failed scenarios well like Tie Fighter and GTA 3. Admittedly, whether Game Over or Mission Failed is a good or bad thing, it's clear to me that in most cases, it was not handled deftly in Splinter Cell.

When it does work in Splinter Cell, it seems to obey a few simple rules:

It tends to work when the rule is very clear – Don't kill anyone. It tends also to work if the consequences are clear – Killing person X will cause nuclear war.

It also tends to be acceptable when the avoidance of the Game Over leads to exceptionally strong feelings of agency. In other words, when the stakes are very high. If the player believes that WWIII is a reasonable repercussion of a given failure, then he feels like he actually prevented WWIII when he does not fail.

However, he can only confirm the validity of these feelings, and the reality of the threat by failing…which leaves us in a Catch-22.

The Best Approach

There is a technique that we unknowingly used in Splinter Cell which is informing some of my current approaches to this problem that, in my opinion, is a very good way of dealing with boundary problems.

I call this approach, 'Uninviting the Player'.

Uninviting the player is basically the game version of the concept 'suspension of disbelief', and I define it as

The art of informing the player of where the simulation boundary lies in a way that discourages the player from testing that boundary.

Note: Uninviting the player does not prevent you from having to solve Boundary problems, but it does prevent you from having to solve them all elegantly.

There are actually no fewer than two successful applications in of this approach in Splinter Cell

The first one is at the sequence in Defense Ministry where you need to laser mic the glass elevator to overhear the conversation taking place inside it.

There is a simulation boundary here. If either of the people in the elevator detects you, or if you attack them, it's Game Over. This is an inelegant solution, for sure, but what's interesting is that it works, because something in the dynamic of the situation 'uninvites the player' from running into that boundary. He is mesmerized into the scene. He's engaged by the mechanic…the use of the laser mic, and the operation of the controller. He is engaged by the drama of the event and interested in the conversation, and he knows that he is safe because he's far from the enemy and he's safely hidden in shadow.

The result is that the player co-operated. By spending out time and energy crafting the scene carefully so that the player was distracted away from the simulation boundary, we were able to use a fairly clumsy Game Over on the few common approaches to thwarting the boundary and not have to worry about the vast majority of player running into the problem.

The other successful application is the Nikoladze hostage reversal in Presidential Palace. Again, the situation is intense, the boundary is right there…if the player moves *at all* during the sequence he is automatically and instantly killed. But he is mesmerized. He is engaged by the mechanic, by the drama, and he knows that he is safe. Because Lambert has informed him that they are about to cause a blackout…he knows his cue and never questions it.

Now, I thought long and hard to come up with an illustrative counter example, but it was hard to find a game that *tried* to uninvite me but failed…the only one I cold think of was Mara Jade, Kyle Katarn fight at the end of Mysteries of the Sith, the expansion to the original Jedi Knight.

The game was trying to uninvite me from fighting Kyle Katarn. The simulation boundary was right there again…he could not be killed. The problem was it was a puzzle that could only be solved by a mechanic that I didn't even know existed. The only way to win was to drop my lightsaber and refuse to fight. In fact, I did not know until the last button press of the entire game that dropping my lightsaber was even possible.

The result was that I wanted to co-operate, but I couldn't. I was frustrated, and I encountered the clumsy boundary of the simulation (Kyle's invulnerability) for hours.

Conclusion

In conclusion, simulation boundaries exist in every simulation.

Your boundaries need to suit your design metaphor. Clear boundaries and clear delineation of boundaries will make your world more consistent, help the player believe in your world and generally increase his feelings of agency in the world.

There are several different tools and approaches to help define the boundaries of your game design, and there are tools that will help you solve problems with these boundaries, but I think that, the most interesting and innovative approach might not actually be a clever solution to the boundary problem itself, but way of guide the player on the path that is the most compelling.

As with other things…the best way to fix problems with the player challenging your simulation boundaries, might be to prevent the problems in the first place by giving the player what he wants: something meaningful and engaging to experience.

The Interesting Thing About Bishops

Simulation Boundaries
in Splinter Cell

by
Clint Hocking

Intro - Ubisoft

Twelfth largest publisher*
Seventh largest developer* w/ 1,260 devs in 2003

2002:
~500 developers at Ubisoft Montreal

Current:
~650 developers at Ubisoft Montreal

Target, mid 2004
~800 developers at Ubisoft Montreal

Game Developer Magazine (Sept 2003)

Intro - Ubisoft

Recent Ubisoft Games

Ubisoft Montreal
- Splinter Cell - Xbox, PC
- Rainbow Six 3: Raven Shield - PC
- Rainbow Six 3 - Xbox
- Prince of Persia: Sands of Time - Xbox, GC, PS2

At Ubisoft worldwide
- XIII
- Beyond Good & Evil
- Splinter Cell PS2 (Shanghai)
- Splinter Cell: Pandora Tomorrow (Shanghai, Annecy, France)

Intro - Clint Hocking

Splinter Cell
- Level Designer - first industry job
- Game Designer - Alpha
- Script Writer - Beta

Current project: *unannounced*
- Script Writer
- Lead Level Designer

Not working on Splinter Cell: Pandora Tomorrow.

Intro - This Lecture

This lecture is NOT about:

- Splinter Cell: Pandora Tomorrow
- Chess
- Simulators

Intro - This Lecture

This lecture is about:

Splinter Cell
- the design metaphor
- concepts of inclusion and exclusion
- not so much about physical boundaries (fences)
- more about conceptual boundaries
- player's actual and implied interaction with game world on different levels

a talk about games in general, using Splinter Cell as a frequent example

Terminology

Simulation Boundary

Simulation:
the imitative representation of the functioning of one system or process by means of the functioning of another*

Boundary:
simply, the edge of something

Simulation Boundary:
The line beyond which the imitative representation of a system is discontinued

OR:
The parts of the game that they player can't play with...

*Merriam-Webster Online Dictionary

Terminology

Simulation Boundary

Examples from film

- Backdrop paintings
- Character back-story

Terminology

Agency and Intentionality

Agency:

Agency is the satisfying power to take meaningful action and see the results of our decisions and choices.*

*Janet H. Murray - Hamlet on the Holodeck

Terminology

Agency and Intentionality

Intentionality:

Player Intention is the ability of the player to devise his own meaningful goals through his understanding of the game dynamics and to formulate meaningful plans to achieve them using the information and resources provided by the game.

...some biases revealed…

*Harvey Smith: 'terminology bonus materials' GDC 2003 ppt.Orthogonal Unit Differentiation

Terminology

Design Metaphor

The unifying thematic framework that, by analogy to some existing thing or set of things, informs all design decisions, and by its expression in the game, facilitates player learning and understanding of how the game will respond to his actions.
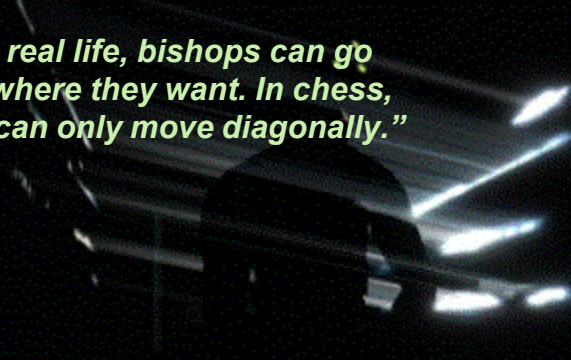
High Concept

The Interesting Thing About Bishops?

Monolith's Craig Hubbard said:

"In real life, bishops can go anywhere they want. In chess, they can only move diagonally."

Bishops

A Closer Look at Bishops:

First…what is Chess?

Design metaphor:

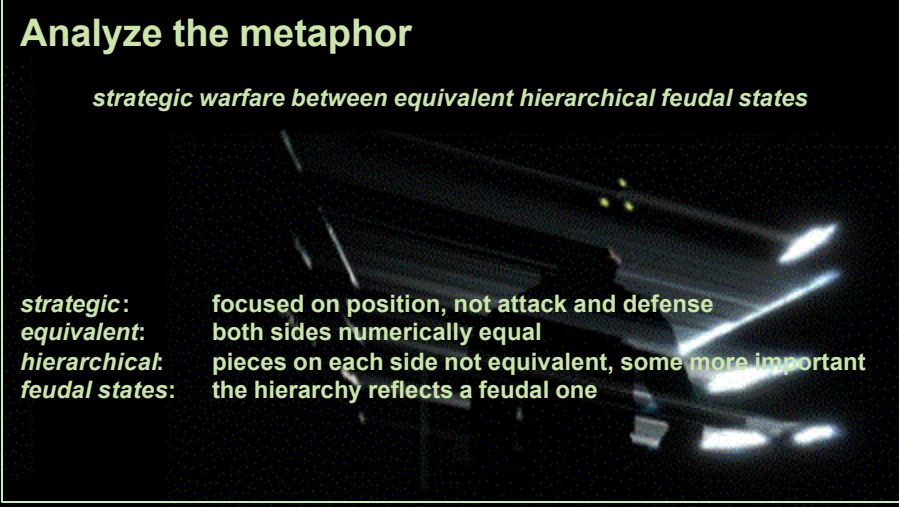*strategic warfare between equivalent hierarchical feudal states*

Bishops

Analyze the metaphor

strategic warfare between equivalent hierarchical feudal states

strategic: focused on position, not attack and defense
equivalent: both sides numerically equal
hierarchical: pieces on each side not equivalent, some more important
feudal states: the hierarchy reflects a feudal one

Bishops

What supports this metaphor?

- names and roles of units
- unit movement
- comparative unit power and their numbers
- interaction of units: cavalry -vs- infantry -vs- artillery

Bishops

The Bishop as a Unit: First Glance

Seems orthogonal to similar pieces:
- Queen
- Rook
- Knight

Bishops is ~equal to a Rook
- both can move completely across board
- one develops early, one late
- both can 'go anywhere'

Bishops

The Bishop as a Unit: Closer Examination

Differentiation is grossly limiting
- Bishop is most territorially limited piece on board
- Loss of one Bishop cannot be compensated for by other Bishop

Actually: Bishops is equal to a Knight*
- though they have very little in common

Chess values: Queen =9, Rook =5, Bishop =3, Knight =3, Pawn =1

Bishops

What does this have to do with Simulation Boundaries?

'Chess Designer' decisions:
- Bishops can't go anywhere as in reality
- Real Bishop movement not simulated

Why?
- improves the game
- Serves design metaphor

How?
- Bishops bound by odd oaths (color-bound)
- Move in 'secret corridors of power' (the diagonals)
- Have the ear of the King (starting point)
- Factional 'church' (two colors within 'church' who never connect)
- Metaphor even reflected in pawn attack

Bishops

The designed limitation on Bishop movement:

- establishes a simulation boundary
- serves the design metaphor
- is not subservient to 'rules' of 'reality'

Admission:
Arguments are *greatly* extended

Rebuttal:
argument highly extended *because* metaphor is deep and design is sound

---

Sam Fisher

A Closer Look at Splinter Cell:

First…what is Splinter Cell?

Design metaphor:

information warfare among the low-level events at the tipping point of geopolitical crisis

Sam Fisher

Analyze the metaphor

information warfare among the low-level events at the tipping point of a geopolitical crisis

information: not concerned with physical battle
low-level: concerned with individuals, not nations or armies
tipping point: place where small events can have large impact

Sam Fisher

What supports this metaphor?

- Obvious high-level elements (story, character, setting, etc)
- Equipment, moves, gadgets, tools (lockpicks -vs- C4)
- Observational gameplay, enemy behavior (voyeuristic)
- The action/reaction model (drastic input = drastic output)
- intentional deliberate gameplay (when it works…)
- analogue interactions (sensitive, precarious) (when it works…)

We should attempt to simulate everything that supports this metaphor and disregard things that do not.

Sam Fisher

Sam Fisher as a Unit: First Glance

Performs human actions
- fights
- hides
- interacts with world

Sam is a simulated man!
- he can be killed
- he can escape/evade/outsmart enemies
- he can use objects in the world in meaningful ways
- expresses a physicality in the world...

Sam Fisher

Sam Fisher as a Unit: Closer Examination

Sam is severely restricted in his choices
- but all of his choices are meaningful in the design metaphor
- Sam can do 'anything' except exit the metaphor

Actually: more like Mario than a real man
- his actions reflect the game, not 'reality'

Simulation Boundaries

The Hotdog Stand Dilemma:

Splinter Cell Designer decisions:
- Sam is never tired or hungry
- Sam cannot quit his job or abort his mission
- Sam cannot open a hot dog stand on Coney Island
- Sam cannot instigate WWIII

Why?
- improves the game (focus)
- Serves design metaphor

How?
- by constraining action to a meaningful set, all action becomes meaningful

---

Simulation Boundaries

Do we NEED boundaries?
- Technology continues to improve
- Closer and closer to simulating reality
- who are *we* to decide if a players intended action is meaningful??

Hypothetical Quake 6:
- Turn based
- Only diagonal movement allowed
- Some enemies you are not allowed to kill
- You die when the player is *in position* to kill you

Yes we need simulation boundaries!
Games should not arbitrarily mimic reality, just as they should not arbitrarily mimic chess.

Simulation Boundaries

Critical Problem: Crossing the Boundary

What do we do when the player reaches the boundary?
- Game cannot continue
- design metaphor is not infinitely extensible

Designer Options:
- extend design to encompass new scenario
- support failure and lead player back on track
- end game

Do not simulate *beyond* the simulation boundary…
...will explain why later on.

Simulation Boundaries

Specific examples from Splinter Cell

Specific events from the game
- events 'close' to the boundary
- what our solution was
- why we chose the solution
- whether solution worked or not
- why solution succeeded or failed

Example: CIA Fan

The fan outside the CIA
to enter CIA, Sam must climb past a paused ventilation fan

What if he doesn't make it in time?

Options
- end game
- extend design to encompass new scenario
- support failure and lead player back on track

Example: CIA Fan

End the Game:

How?
- Mission Failed or Game Over screen

Benefits
- clear and immediate repercussion
- easy to implement (zero feature creep)

Costs
- negative perception
- does not suit design metaphor
- promotes 'learn by dying' approach

Decision
- Would not solve the Fan problem by ending the game

15

Example: CIA Fan

Extend the Design:

How?
- New ability: Sam can dismantle the fan - he's a mechanic
- New equipment: San can destroy the fan - C4

Benefits
- Possible cool new actions
- Possible cool new equipment
- Sam is more powerful

Costs
- Systemic action required for all fans, maybe all mechanical objects
- feature creep…

Decision
- Would not solve Fan problem by extending metaphor

Example: CIA Fan

Support the Failure:

How?
- Provide an alternate path

Benefits
- more opportunity for intentional play
- suits design metaphor

Costs
- designing an alternate path
- possibility of player missing content
- possible permutation of script introduced *(discounted on investigation)*

Decision
- Best solution to Fan problem was to add another path

Example: Embassy Codes

Support the Failure
- mechanic was very complex
- alternate path led to unacceptably low usage of feature

End the Game
- this is the decision we took
- frustrated player
- player STILL didn't use feature (cheated instead)
- did not support design metaphor (unlike CIA Fan solution)

Extend the Design
- decision we *should have* taken
- extend design by making many systemic opportunities for feature use

Example: Chinese Diplomats

Support the Failure
- story (and budget) could not support death of cinematic character

Extend the Design
- design metaphor could not support 'disposable allied diplomats'

End the Game
- decision we took
- clear for player understanding
- very little frustration

Example: T'bilisi Streets

Support the Failure
- alternate path was costly
- failure was quite difficult

End the Game
- this is the decision we took
- reduced production time
- frustrated certain percentage of players
- suited the design metaphor *for some*

Extend the Design
- decision we *should have* taken
- not sure??

UBISOFT

Boundary Problems

Solutions to boundary problems:

At least three possible solutions:
- Extending the Design
- Supporting Failure
- Ending the Game

None of these solutions is better or worse…just different

UBISOFT

Extending Design

Benefits
- more player freedom and choices
- increased intentional play

Costs:
- scope / feature creep in design
- more for player to learn: increased game difficulty
- big risk: extending design *beyond the metaphor…*

Example of risk:
- The Good Samaritan

Extending Design

Hypothetical Game: The Good Samaritan

Design metaphor:

societal improvement through selfless acts performed using vehicles

Player can:
- take sick people to hospital in ambulance
- arrest criminals in police car
- drive people places in taxi
- put out fires in fire truck
- even deliver pizza!!

Extending Design

Hypothetical Game: The Good Samaritan

The police problem:
What happens when the player runs over x civilians?

Extending the design:
- police car comes…officer will arrest player
- player taken to hospital or police station…restart…

The *extended* police problem:
What happens when the player runs over x police?
- swat team comes
- FBI comes
- Army comes

Extending Design

The Good Samaritan = Bizarro GTA 3

Police Response System
- player wants to see where boundary is
- fails to stop player
- design metaphor fails
- more complex than the primary systems of the game

The more complex system is an attractor:
system required to keep player from breaking game is more sophisticated than system that player is intended to use

Extending Design

Don't simulate things beyond the boundary
- don't try and simulate your way out of a design problem
- What we simulate guides player interaction
- Players are drawn to systems
- like movement and light in cinema are visual attractors

In games: systems are attractors
- systems at the boundary draw attention to the boundary

Supporting Failure

Benefits
- more player freedom and choices
- increased intentional play
- game is easier, more forgiving

Costs:
- scope / feature creep in content
- big risk: reducing feelings of agency especially at high level

Example of risk:
- if threat of WWIII cannot be fulfilled, player may not feel his actions are relevant to threat…high-level agency is reduced

Ending the Game

The Great Game Over / Mission Failed Debate

Is Game Over really a problem?
- used to think, 'no'
- much debate from people smarter than me
- lots of flack from lots of informed people
- I don't know….

One valid point, many successful games used it well:
- Tie Fighter
- GTA 3
- But in *most* cases…not Splinter Cell.

Ending the Game

The Great Game Over / Mission Failed Debate

works in a few places in Splinter Cell

Tends to work when:
- the rule is clear: Don't kill anyone
- the consequences are explained: killing people will cause WWIII
- the *avoidance* of the Game Over scenario creates exceptionally strong feelings of Agency.

The Best Approach?

Uninviting the Player

the game version of the concept 'suspension of disbelief'

The art of informing the player of where the simulation boundary lies in a way that discourages the player from testing that boundary.

Note: Uninviting the player does not prevent you from having to solve Boundary problems, but it does prevent you from having to solve them all elegantly.

Uninviting the Player

Two successful applications in Splinter Cell:

Glass Elevator in Defense Ministry:
- player engaged by game mechanic - laser mic
- player engaged by drama of event - conversation
- player knows he is safe - far from enemy in shadow

Result: player intentionally co-operates with game

Uninviting the Player

Two successful applications in Splinter Cell:

Nikoladze hostage reversal, Presidential Palace:
- player engaged by game mechanic - hands up
- player engaged by drama of event - major plot point
- player knows he is safe - the cavalry is coming...

Result: player intentionally co-operates with game

Uninviting the Player

An unsuccessful applications (for me):

Mara Jade vs Kyle Katarn fight…Mysteries of the Sith:
- not engaged by game mechanic - a fight I can't win
- not engaged by drama of event - I know it's a puzzle
- not even aware of that solution is possible - drop lightsaber

Result:
- player wants to co-operate
- does not know how (there is a button for 'Drop Lightsaber'?!)
- frustration

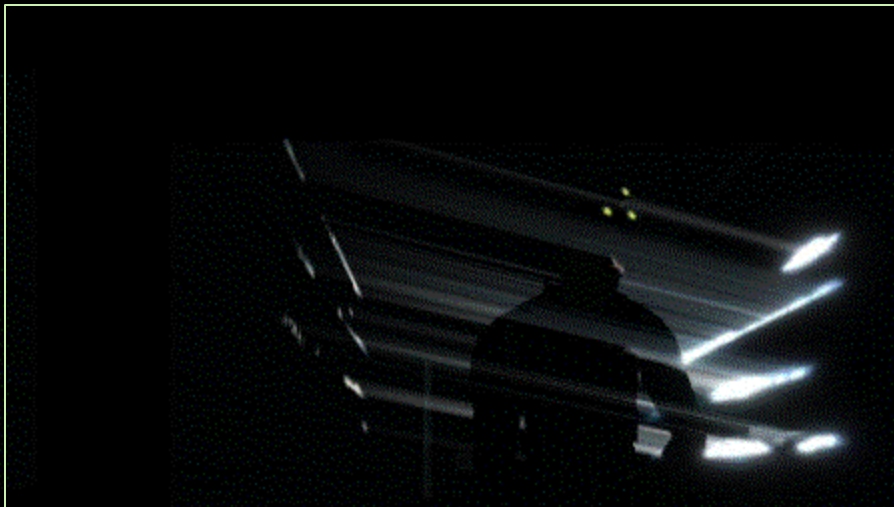*Not picking on MotS: only example I could think of of game that tried to 'uninvite' me and failed.*

Conclusions

Boundaries exist in every simulation

- •clear boundaries make world consistent
- •clear delineation helps player believe
- •different tools available to resolve challenges
- •most powerful tool *might be* prevention…
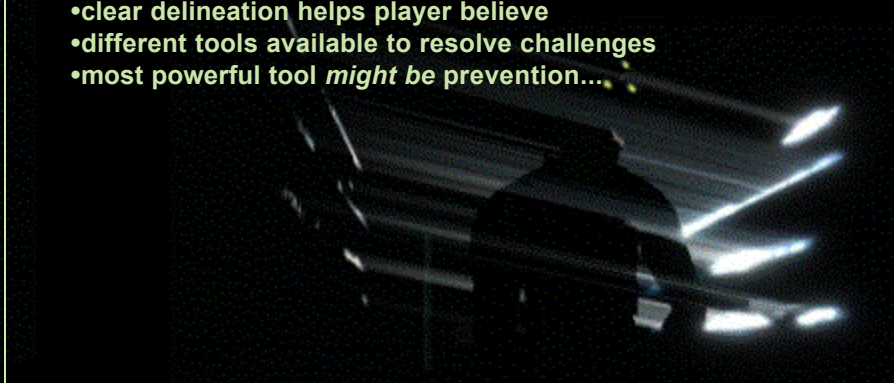
Questions

Thanks

Ubi Montreal
The Splinter Cell team
Anne-Marie Dion,
Patrick Redding,
Mathieu Berube,
Sebastien Galarneau,
Pierre Rivest

UBISOFT

GAME OVER

Slide Location:

by
Clint Hocking