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PROFESSOR: OK, so a couple really quick announcements-- on Monday, I mentioned a number of other classes that are offered in the spring if you're interested in game development here at MIT. But I forgot this one. This is 11.127.

It's also cross-listed as CMS.590. It's taught by Eric Klopfer and Scott Osterweil. Scott should be in our class next Monday, I believe, to talk to us about learning games. But if you end up being interested in games for learning, games for education, this is a great class to take. And it's offered in the spring.

We also have a class, CMS.615, Games for Social Change, that's being taught this fall. So if the topics of the games that we're working on for Project 4 are something that you just find yourself really interested in in the next couple years, those are two classes you can take to explore that further.

PHILIP TAN: All right, so I guess for me, it's talking for an hour, and then after that, teamwork, right?

PROFESSOR: Absolutely.

PHILIP TAN: OK, so today, what we're going to do is talk a little bit about aesthetics, about what we mean when we say we want your game to have a cohesive aesthetic. We do realize that the games that we're asking you to make are extremely time constrained. We've been asking you not to go terribly much beyond the scope of what you've done before. But what we want to see in your game is a really, really cohesive aesthetic.

We used to tell students that we wanted them to put out polished games. But there was a really unclear definition when we used to do this about what a polished game would be. And we also realized that for some students, for a lot of you, you've seen games that are really, really, really polished. When I say a polished game, can you come up with some examples of things that immediately come to mind?

STUDENT: *Limbo.*

PHILIP TAN: *Limbo*? Yeah, that's the black and white side scrolling platform, really, really spooky, gorgeous visuals and sound design. What else? Yeah.

STUDENT: All of the *Final Fantasy* games have really polished UIs.

PHILIP TAN: Pretty much, yeah. Every single *Final Fantasy* game for its era is probably like the high watermark for production values-- not just the UI. But you're right in saying the UI is alive. Whenever you even switch to a different menu option, it does this little animation.

STUDENT: It's one of the only [INAUDIBLE] that has a really good UI design. And I've looked at a bunch of them. And it's like, *Final Fantasy* is just way better than all that stuff. And of course, the graphics, too.

PHILIP TAN: Which is amazing, because they change it so much every game. Unlike a lot of other franchises, they change the formula a lot, but also of course other things, like the animation quality and the music and the voice act-- maybe not the voice acting. Yeah.

STUDENT: *Meat Boy*.

PHILIP TAN: *Super Meat Boy*?

STUDENT: Yeah. [INAUDIBLE] physics.

PHILIP TAN: Yeah, for folks who haven't played this game, it's a really punishing game. But it makes it super easy for you to try again. In fact, there's like a single frame between you dying and you starting the game again. And it goes right off.

A game built by two people, by the way-- it's an indie game. You can see it in documentaries like *Indie Game-- The Movie*. And you can see even though they're working on their own-- and they do spend a considerable amount of time on an extremely visually polished and musically amazing game as well.

STUDENT: *Monument Valley*

PHILIP TAN: *Monument Valley* for the iOS? Yeah, I can't remember, has it come out for Android yet? But it's definitely iOS right now. But what strikes you as polished?

STUDENT: The graphics and the gameplay is just very smooth.

PHILIP TAN: Mhm, and the game's kind of like a flat shaded isometric game, if you're familiar with that 3D concept. It means that things that are far away are the same size as things that are close to you-- isometric orthogonal projection. The camera is kind of looking at the world at a 45 degree angle up and sideways.

Everything's flat shaded, but it's got incredible art design. It's got art direction, I would say, just how all of the characters, even though they basically all have one color, maybe black and white, move with a lot of expressiveness. They have iconic characters, and you immediately sort of recognize what each character is supposed to be, even though the game is pretty much made out of geometric shapes.

I call out *Hearthstone*. Anyone playing that? Anyone else? Yeah, it's like just every little bit of movement that the screen does as soon as your finger touches that screen is amazing. Even little silly things, like when you are looking for a match, and you see all the other people who you could have been matched against.

And it of course always selects the perfect match for you. It's a ridiculous little UI thing. But it sort of gets you in the mood. And of course, that's like music and stuff for what's really a card game, a collectible card game, right?

So what I'd like to do right now is play through a game that I feel has a coherent aesthetic. But maybe you wouldn't necessarily call it polished. But it gets you a little bit closer to what we're looking at. Because it might be a little bit more feasible for this class. So who hasn't played *Sissy's Magical Ponymicorn Adventure* yet? Who would like to, actually? All the hands went up. Come on down, yeah, you, yeah. OK.

SISSY: *Sissy's Magical Ponymicorn Adventure*.

PHILIP TAN: Is that too loud? Is that OK?

SISSY: Hi, my name is Sissy. And I simply love ponymicorns. It is the best thing in the world, because it's a pony and unicorn. It's a ponymicorn. I don't have any ponymicorns right now, so I'm going to go get some. Come with me on my magical ponymicorn adventure. I can go through rainbows to visit new places. That's not a ponymicorn. it's a goat on a pole. [INAUDIBLE]. Hi, Orange Boy, my name is Sissy.

ORANGE BOY: [GIBBERISH]

SISSY: Do you like ponycorns?

ORANGE BOY: [GIBBERISH]

SISSY: Me too. Got any jars?

ORANGE BOY: [GIBBERISH]

SISSY: Thanks. If I find any ponycorns, I'll put them in these jars. This is an empty jar for holding ponycorns. I see a new rainbow.

EVIL LEMON: [CACKLING] I'm an evil lemon.

SISSY: [INAUDIBLE]

EVIL LEMON: I will squirt lemon juice in your eyes, and that stings.

SISSY: Oh no, what will I do?

EVIL LEMON: Stay away.

SISSY: [SCREAMS]

EVIL LEMON: Stay away.

SISSY: [SCREAMS] I found a key. Hmm, this [INAUDIBLE].

TIGER: Hi, I am a tiger, and I'm going to eat you.

SISSY: No you're not.

TIGER: Yes I am.

SISSY: No you're not.

TIGER: Yes I am.

SISSY: [SCREAMS]

TIGER: I'm going to eat that ponycorn.

SISSY: I got a coconut. It's a coconut. I'm going to throw this coconut at you, lemon.

EVIL LEMON: Oh no. Ow, my face.

SISSY: That's what you get for being evil and a lemon.

EVIL LEMON: Stay away.

SISSY: [SCREAMS]

PHILIP TAN: Oh, I think you might have broken the game, but that's cool.

STUDENT: What about a jar?

PHILIP TAN: Oh, jar, yeah, try.

SISSY: This is an empty jar. I got the green ponycorn. I put it in the jar.

PHILIP TAN: OK, all right, so I think everyone gets the idea of the game. Thank you so much. Yay, thank you.

[APPLAUSE]

So let me actually switch to my presentation. There we go. I'm going to talk a little bit about aesthetics. Now, what about that game seemed off? Let's start with, what in the game seems out of place?

STUDENT: The artwork, I guess?

PHILIP TAN: The artwork seems out of place? Out of place compared to the-- it is a bit of a trick question. I have trouble figuring out what's out of place. I think maybe the cursor hand actually looks like this default kind of browser cursor hand, is the one thing that I feel is not really cohesive of everything else.

The artwork kind of sets the tone, is pretty much the first thing that you see. Even before you start playing the game, you see the artwork and the website. And then of course, when the music comes on, you actually hear pretty much the girl's voice for most of the game. You get to about halfway through the game before you hear a dad's voice playing the lemon and Orange Boy, I guess-- wah, wah, wah, wah. Did anyone notice the user interface?

STUDENT: It's not obvious at first what's clickable and what isn't. An outline could maybe help or something when you hover over something that you can actually click.

PHILIP TAN: What are any visual cues that you were working off to figure out what to click on?

STUDENT: Things would be drawn on different pieces of paper. That wasn't clear. But in general, clicking on everything is just what I do normally in point and click games.

PHILIP TAN: It is a click everything in the game kind of game. So that makes sense. There is actually a slight little bit of drop shadow behind everything that you can click. And some things that you can click but don't do anything, like the goat on the stick, for instance. I thought I saw another hand over here about the user interface. Anyone?

STUDENT: I was going to say the drop shadows.

PHILIP TAN: Yeah, OK, the drop shadows, yeah. Yeah.

STUDENT: I don't think there's always a drop shadow between everything you can click on. Because I'm pretty sure you can click on the cactus, and the cactus has no drop shadow.

PHILIP TAN: Oh, OK.

STUDENT: She's like, ow, cactus. And I was like, oh, that's weird. That didn't give me any indication that collecting it would give some sort of feedback.

PHILIP TAN: I forget, does the cactus do anything?

STUDENT: Uh-uh.

PHILIP TAN: Ah, so I think there is a big difference, then.

STUDENT: [INAUDIBLE] cactus.

PHILIP TAN: Yeah, everything that's like crucial to advance in the game I notice has a drop shadow. But yeah, if you click everywhere in the world-- if it looks like something that might stand out from the blank sheet of paper, it should respond, right? So even though the cactus is not sort of a crucial piece of the plot, such as it is, it is something that a player might reasonably expect to be able to click on and do something.

And yeah, you get pricked by it. She says, ow. There's some voice. And there's a little bit of payoff on that.

Every time he clicks, there's a little blue crayon circle that sort of emanates from where you're

clicking. So there's another little typical UI feedback of, all right, you clicked on this thing, and we're acknowledging your mouse click, but we're going to do it in a way that sort of works with the rest of the art style.

I think something else that also stands out a little bit is-- let me see. If I go back to the game-- oh, I closed it, didn't I? OK, all right, does anyone remember if the border between the game space and the inventory, was that like a straight line, or was that kind of a raggedy thing? I think it's pure straight line, right? Yeah, so that's another weird thing. It's like, this is a game that's made out of like ripped sheets of paper. Then all of a sudden, there's this hard white line right across.

What works in this game? Why would someone want to play this to the end-- which just takes about five minutes. It's not terribly long.

STUDENT: It's sort of all whimsical. And you kind of want to find out what this girl came up with, and what they worked together to create, basically. The story behind the creation of the game is also interesting.

PHILIP TAN: Yeah, it's father/daughter, but the daughter led the project, basically determined how everything was going to work. The dad just did the coding and some voices, of course scanning, and things like that. But very quickly, you're introduced things like the goat on the stick. Very, very quickly, it just establishes that you're just playing in five-year-old logic right now, and this whole world is going to work that way.

The fact that it's narrated largely by this character-- who has an opening cut scene, actually. It's just like, I'm Sissy, and I fricking love ponycorns, and then explains what a ponycorn is. And then you don't actually get to see one until pretty far into the game.

But as soon as you're told, yes, that lump of green is a ponycorn, is a pony with a unicorn horn, you then say, OK, all right, that's a ponycorn. That's something I want. And at that point in time, you already know you're supposed to put them in jars.

So that starts to talk about something that we've already been exploring a lot in this class. It's kind of like the systemic aesthetic, how a person feels when they're playing through a set of rules. And *Sissy's Magical Ponycorn Adventure*, it's the set of rules as devised by a five-year-old. But they're actually all internally consistent.

When you play through the whole game, you start to figure out, yeah, clicking everywhere is actually a perfectly reasonable strategy. Because nothing's really going to hurt you in this game. You may get scared. You may get pricked by a cactus. But nothing's really going to hurt you. So it's OK to click on everything.

And the kinds of decisions that you get to make are more like, is now the right time to use to jar on a ponycorn? Do I need to do something first to get past the lemon or the other bad folks who get in your way? And the kinds of rules and strategies that you have to devise to be able to navigate through your space gives you a certain kind of systemic aesthetic.

And you've been working with that since the beginning of the semester. Prototyping-- some of you have made games that make you feel very tense. Some of the games are more zen-like. Some games are more strategic. And you have to really think carefully about your next decision. And some of them are kind of frantic.

And those have all come out from the rules that you devised first on your prototypes. And then you moved them over to your digital versions. And that's one form of aesthetic.

But then there's also the other kind of aesthetic that we've been talking a little bit when we talked about polish-- the art direction, the music, how a 3D object is rendered, or even how a 2D graphic is represented. Is it drawn in crayon, or is it high quality line art, or is it something running in the Crytek engine, and you've got mobile mapping and specular lighting and things look like fire and glass and concrete?

Do the sound effects sound like they're coming from a place in the world? Do they sound like the thing they're supposed to sound like? Do they sound other worldly or little MIDI notes, the sort of thing that you would expect from a Nintendo game, from an old school Nintendo game?

And then there's the things that we would normally refer to as sort of the story of the game. There's the plot of what happens to characters as they navigate through the world, and who are these characters, who are they really, and what sort of emotional development they're going to go through. What's the theme of the game?

Is it a game about being isolated from everybody else? Is it a game about US military strength? I think the theme of *Call of Duty* is actually, America starts wars, England finishes them, which is kind of weird if you look at history. And where is this game set? When is this game set?

Hopefully that's clear enough. And I think one of the things that can help is just a little bit of vocabulary so that when you're talking in your team about what's working in your aesthetic, it helps to be able to put words to it so that people can understand what part of the aesthetic that you're talking about. Are you talking about the things that have to do with a game system, your rules and the logic of your game? And how is that going to make someone feel while they're playing your game?

Are you talking about the style, the musical and the visual style of your game and how things move, how things animate, and how things [INAUDIBLE] the things you hear? Or are you talking more about the fictional elements-- what's going on in the sort of storyline?

All these three things are going to work together to create the aesthetic of your game. And all these things need to work together for your final project. So I want you to be thinking very, very hard about what's the fiction of the games that you're creating. Is it being set in a real world actual city, an actual named city? Is it kind of like an abstraction of a city in a certain part of the world?

Is it not a city at all? Maybe you're playing as the whole world? Maybe you're playing as a completely different planet, and you're trying to get through your learning that way. Is it about a family? Is it about an individual? Is it about an entire town council or something like that?

Style is something that you have to leverage in order to take advantage of whatever strengths you happen to have in your team. If you have really good artists or a really good musician, you're going to take advantage of that. But you don't want to do anything that's going to sort of show the assets that you don't have a lot of control over as being poor. You want everything to be kind of a matching even standard.

So for instance, if you did a game that has mostly pixelated 8-bit style graphics, and all of a sudden, this vector art shape comes in, you better have a really good reason for that thing to be there, or a photograph shows up in your game or something like that. You better have a really good reason why you're throwing in two very, very different visual styles in there. You can make it work. But you need to be able to think very, very hard about how you're going to make that work-- even things like what your cursor is going to be.

And of course, how's that going to work with your system, right? If your game is about a dire situation-- floods are coming in or something, there's an epidemic-- and you put everything in

kind of nice, sunny, tropical, everyone's at a beach kind of a setting, well, you can sort of do this like weird subversive thing. But then you have to be very, very conscious. It might be a little bit easier for you to just use a visual that actually supports the kind of game play that your game actually has. If the game is about feeling tense, use visuals that also communicate this sense of feeling tense.

There are games like-- how many of you have played *Tropical*? A couple of hands out there. How about *SimCity*? Who's played *SimCity*? OK, a few more hands. So what's the difference between *Tropical* and *SimCity* from someone who's played *Tropical*? Yeah.

STUDENT: The flavor is completely different.

PHILIP TAN: The what?

STUDENT: The flavor. *Tropical* is overall kind of various Caribbean [INAUDIBLE].

PHILIP TAN: There's a tropical sort of equatorial setting, as opposed to *SimCity*, which is this very, very urban probably temperate climate. In one game, you're the mayor. In another game, you're set up as a dictator.

And the kinds of things that you do in *Tropical* are supposedly things that are very similar to *SimCity*, like building and zoning and constructing up your little island. But at the same time, you also have to do sort of dictatorial quashing your resistance kind of things, which you don't usually do in *SimCity*. But it's set in this kind of very idyllic tropical sunny environment.

And developers of that game are usually trying to play that for laughs. It's like, yeah, you're a dictator. But you're not really that evil compared to some of the real atrocities that you've seen in tropical dictatorships in the real world. And so they're trying to use the visuals to get across that you're kind of this comic dictator.

I can certainly imagine a game that's a lot more about real dictators of small island nations. And that will probably be a lot more-- the visuals will probably not be quite so cheery. Even though it might be sunny, it will probably show a little bit more of the grit of what it's like to live in a very humid and very muggy and rainy place, and try to play that up so that that aesthetic works with how the game play actually is going to work.

So I should expand on that. So we talked a little bit about how these things work on their own-- fiction, system, and style. But in between, there are sort of these domains of game

development, which are going to draw from both of them. How a player interacts with the system and the visual feedback they're going to get from that in the user interface is going to also affect how they feel about your game. And it's going to affect that aesthetic.

The way a certain character has a theme song, for instance-- this one character who's been lurking in the background, and you've always heard the theme kind of in the background. Then they show up in front. And then suddenly it has a full orchestration of their song. Things like that are how style and fiction work together, this particular character's theme, whether it's Gollum, or the theme of one of the big cities in *Lord of the Rings*, or something like that.

And of course, the level design of your game itself both have gameplay implications and sort of fictional implications. A post-apocalyptic racing game looks very, very different from, say, a Formula One modern-day racing game, or a horse racing game. And that's going to not only change the way how the game looks. It's also going to change the way how the game plays. Is there debris on the track? Is everything very dusty? Is everything highly polished and very clinical, for instance?

And of course what your characters can do in an environment-- if you say someone's a ninja, then I expect this character has ninja-like abilities. Is this, oh, you're a ninja, and you kind of punch people in the face in sort of one on one fisticuffs? And it's like, that's not a ninja. You're thinking of something else there. Maybe you shouldn't call that person a ninja.

So we've looked a little bit at *Sissy's*. I want to show a couple of other games that I feel do really, really nail a cohesive aesthetic on a very low budget. And just for the sake of time, I think I'm just going to bring them up without asking people to come down and play. But how many people have played *Thomas Was Alone*? Just about five people, OK. Oh, there we go-- OK, it was just loading up, cool.

So this is a game that's mostly about rectangles. There we go.

NARRATOR: [INAUDIBLE]

I'm glad I'm not making you play this. Because this is really giving me a crick in my neck.

NARRATOR: [INAUDIBLE]

PHILIP TAN: OK, I'd like to show you a little bit more. But I find the contrast on that screen is a little bit too

low to actually see what the level is like. But it's pretty much all geometric objects. They're not all at right angles. Not everything in the game is a rectangle.

And you saw some of the water kind of had some texture to it. But it's pretty much all flat shaded polygons. The majority of the game is all flat shaded polygons. What in that very brief clip that you saw sort of gives you a sense of what the developer of the game wanted you to feel about the game? What were some of the elements? What were some things that were working in that game?

STUDENT: There's a lot of empty space. And it sort of adds to the environment of being alone.

PHILIP TAN: Yeah, you're very, very small in the screen compared to the rest of the screen.

STUDENT: The music also gives that same impression. But it's not too depressing. Because you've got this sort of story quality, like [INAUDIBLE] 0.8. So presumably you're going to get to the part where he's not alone, or whatever.

PHILIP TAN: Mhm, yeah, it's *Thomas Was Alone*, not *Thomas Is Alone*.

STUDENT: Also, I haven't played it.

PHILIP TAN: No, you are making some very logical assumptions about this game, which are actually entirely true about this game. Eventually, you find other cubes, rectangles actually. All right, and so that's the way how the music works to sort of set the tone of, yeah, it's kind of melancholy, but not completely depressing. You've got a bit of a beat.

What else? I can't remember if you mentioned the voice acting. But what's that doing to the game? First of all, who's speaking? Is it the cube?

STUDENT: Some external narrator.

PHILIP TAN: Some external narrator, yeah. So that's this. And what does that imply? What does that tell you about what this game is trying to get you to feel? What comes to mind? Hmm?

STUDENT: [INAUDIBLE]

PHILIP TAN: Say what?

STUDENT: It's a story.

PHILIP TAN: That it is a story. This is actually more of a narrative based game.

STUDENT: It makes you feel sort of isolated, like you're being spoken to by something far away, almost nonexistent, and you're sort of by yourself.

PHILIP TAN: Mhm, so I think there's a little bit of the game that you're kind of being observed by this third party that's not actually part of the story, but is narrating the story of this rectangle. So you're alone, but not exactly, right? There is this third party there, which is there to tell your story.

And somehow, this story is going to go places, as suggested by the music, but also as suggested by some of the things that he says. He makes mental notes for the future, even though the mental notes are kind of a silly one. That implies there is a future, right? Yep?

STUDENT: It makes you feel empathy for the character, even though he's just a rectangle.

PHILIP TAN: Mhm, yeah. Actually, let's talk about that rectangle. What does the rectangle do when it jumps?

STUDENT: [INAUDIBLE]

PHILIP TAN: Hm?

STUDENT: It gets thinner.

PHILIP TAN: Yeah, it gets a little squash and stretch animation there. For something that's really just four right angles, it's actually remarkably expressive when it actually does a single job. It gives you the sense that this thing is not an inanimate geometric object. This thing is alive. This is an organic square, or rectangle.

OK, so we've gone through a couple of ways how this game achieves its sort of aesthetic quality. Let me see what my next slide was going to be. All right-- oops, darn it. There we go. I'm hitting the space bar. Whenever you see a big circle radiate, that's me hitting the space bar. What does that even say? Oh jeez, OK. OK. OK, so I'm going to quit that game. So let's talk a little bit about that. First impressions?

STUDENT: [INAUDIBLE] panel. You have the whole fish-eye thing through the tube thing, kind of like weird pixels. And you also have this guy going down the screen.

PHILIP TAN: Mhm, so there's sort of a vertical hold jittering going on. And actually, it kind of doesn't look like

it's a flat screen, right? It looks kind of--

STUDENT: Yeah, I kind of said the old school kind of screen with the fish-eye kind of thing.

PHILIP TAN: Yeah, a little tube shape to it. Yep, that's a good one. What else? That's developed by one guy, by the way.

STUDENT: You hear him breathing the whole time. So it kind of makes you feel claustrophobic, like you're in a small space looking at this monitor.

PHILIP TAN: Mhm, yep, so the fact that you can hear your own breath sort of gives you an impression of the space around you, which is simultaneously really, really small and really, really large at the same time. You're in this tiny little thing, but there's this huge world outside of there. What else? Is there any music?

STUDENT: I didn't get what the objective was. But it kind of sounded [INAUDIBLE] kind of space ship or something. You're an astronaut in some kind of spaceship or something, and you're trying to search for air.

PHILIP TAN: Yep. So let's say, OK, air is important. And there's a lot of things that remind you of that, right? You have the breathing sounds. You have the things in the world that are sort of [INAUDIBLE] that you can pick up. There's a little oxygen meter.

I'm not so sure if all of you saw that. There's a little oxygen meter that's constantly running down. And the sound of your breathing changes depending on how much oxygen you've got, or if you pick up an air pocket. Then you can breathe.

What else? OK, so you said space ship. And a few people said space ship. What else gives you the impression this might be a space ship? Because the game never tells you that you're in a space ship.

STUDENT: [INAUDIBLE]

PHILIP TAN: Hm?

STUDENT: I actually thought it was underwater instead of a space ship.

PHILIP TAN: It could be underwater. So what's the evidence for each? Yeah?

STUDENT: So for underwater, whenever you press space bar, it kind of looked like a radar sort of pulse.

PHILIP TAN: Mhm, It's kind of like a sonar ping, which is something you'd expect to do underwater. What are things that remind you of space in this game? I would argue that-- oh, yeah.

STUDENT: Some of the objects on the screen look like they could be stars [INAUDIBLE].

PHILIP TAN: Mhm, they look like constellations, right?

STUDENT: There's that issue when you're trying to turn around you had to kind of stop. And it almost seemed like [INAUDIBLE] thruster or some kind of [INAUDIBLE].

PHILIP TAN: Mhm, yeah, there's a lot of inertia in changing your direction, yeah. Apparently there is an answer on whether it's space or underwater. I don't actually know the answer to that one. But they're both plausible conclusions from actually nothing that the game explicitly tells you. All of that you derive from hints, from the aesthetic.

But because the game kind of works together really, really well on the game mechanics of running out of air and the visual representation of having this old school monitor, as well as the sound of you breathing and everything that you kind of know about what it's like to be in a situation where air is important, which implies certainly not walking around on the ground somewhere. Or if you are, you might be on a different planet, or something.

And what you know about inertia gives you this impression, this very, very deep kind of world that you can sort of make theories about and imagine where you might be without the game actually having to tell you any of that. So that's a game where I feel it's really, really successful in getting that across.

This next one I'm just going to play a demo. This is *Defcon*. It's kind of like a real-time strategy game, only on a sort of global thermonuclear war kind of scale. Oops. Screen-- here we go. Is this 1,280 by 800? I think my screen resolution changed on me.

Yeah, when I tried to fix that problem earlier, the screen resolution changed on me. That doesn't matter. I'll switch it to something else. Mostly, this is fine.

So I'm just going to play a demo. This is just a game that you see. This is as if the game is just playing against itself-- AI versus AI. If anyone has seen-- how many of you have seen *War Games*? OK, wow, OK. It's Matthew Broderick, is that right? And this is very much inspired by that.

And the idea, of course-- actually, I'm not going to tell you beyond what I just said. I want you to start calling out things that you sort of think work aesthetically about this game.

[CLASSICAL MUSIC PLAYING]

I'm going to move the camera around, too. This is an actual game that you're watching right now being played with the AI playing against itself. Just call out stuff that strikes you about this game.

STUDENT: The type face is very nicely apocalyptic, like all angles and-- I don't really know how to explain it, but it feels good.

PHILIP TAN: It's stark, if nothing else. There's a certain amount of brutishness about it, but also very technological. It's not just like hewn out of rock. It's not that kind of brutishness.

STUDENT: It's technological, but it looks very old school. It's very much like a radar screen.

PHILIP TAN: Yeah, not necessarily even year 2000, right? This seems like a much older aesthetic, something from the '80s maybe, Cold War. Scroll over to something a little bit closer. No one's in America. This is continental war. What else? What song is this? Does anyone recognize the music?

STUDENT: Does anybody hear anything other than music?

STUDENT: [INAUDIBLE]

PHILIP TAN: Thunder?

STUDENT: Is it thunder?

STUDENT: It's this explosion.

PHILIP TAN: Where do you think--

STUDENT: [INAUDIBLE]

PHILIP TAN: It's a little [INAUDIBLE], really soft. Where are you? Where are you supposed to be while you're playing this game?

STUDENT: War room.

PHILIP TAN:

In a war room underground, several miles underground, maybe. It's a disturbing game. The music-- I believe it's all classical music. But it's heavily filtered through a lot of audio filters, giving it a sort of a reverb effect in the sort of sense that you might be hearing this inside a small enclosed space. There's a little cassette player inside your bunker somewhere.

So besides the font, what about the UI? What about the UI seems to be-- in the way how the units are represented? Like those ships-- are those ships life-size? They're not, right? They're not the size of several cities put together.

These are some abstract representations. These are sort of army pieces that you're moving on a board, only it's a digital board, that represent armies that are out there in the water or flying through the air, squadrons that are flying through the air somehow. So I'm going to quit now.

So *Defcon* is, again, a very small team, I think less than five people. At least they were less than five people when they made *Defcon*. Now they're making other games. It was one of the first successful games by Introversion, which is the name of the indie developer that did this.

And yeah, they explicitly stated that this is very much inspired by *War Games* the movie. It's about global thermonuclear war. It's about specifically the movie that was done in the '80s. So it's very much about what global thermonuclear war would have made sense in the '80s.

Obviously, the graphic representation of what you see in that game is a little bit higher end than what you would normally have had in the '80s. But they're trying to sort of not necessarily represent things realistically, but sort of how things as Hollywood might have seen it. And even the marketing of the game says-- I believe it's, "Everybody dies," or something like that. And you can't really win that game, right?

This is what the packaging of this game looks like. I think if you go to [INAUDIBLE], this is what it looks like now. *Uplink* is another game by them. It's worth checking out. It's a game about hacking. And if you look at that, you'll see all the same sort of '80s influences. But it's not about launching missiles at each other. It's about breaking into bank accounts and changing your school grades and things like that.

Finally, this is a game I actually do want people to play. So who hasn't played *Aaaaa!*? All right, I want a volunteer to come down and play this game. Come on down.

NARRATOR: Dejobaan Games and Owlchemy Labs, two lovers entwined in an awkward embrace.

PHILIP TAN: This is from Boston, by the way.

[ROBOTIC VOICE]

STUDENT: Jump?

PHILIP TAN: Go for it. What can you--

STUDENT: Stage-- I don't know, [INAUDIBLE].

PHILIP TAN: Hit Unlock. Oh.

STUDENT: Oh, bye.

PHILIP TAN: Just try-- OK. That one? Try it. Yeah, OK, then hit Play. OK, so the basic idea of this game is it's a base jumping simulator. So use WASD to jump off the side of a building, and then just fall.

NARRATOR: Checkpoint.

PHILIP TAN: Try not to hit anything.

STUDENT: Shit.

PHILIP TAN: But try to get as close to things as possible, because that's how you get points. Oh, something [INAUDIBLE]. Ouch. Is this in Endless mode?

STUDENT: Ah, I don't know.

PHILIP TAN: This seems like it is.

STUDENT: No.

NARRATOR: Checkpoint.

STUDENT: Sorry, controls are really light.

PHILIP TAN: OK, try hitting space bar. Oh, no, no, no, not yet.

STUDENT: Oh wait, oh no.

PHILIP TAN: It's cool. It's fine. All right, now try to land in that little circle, little red circle behind that building.
Yep.

STUDENT: Come on.

PHILIP TAN: Yeah, try landing there. You did it. OK, thank you.

[APPLAUSE]

PHILIP TAN: OK, I'm going to turn the volume down. What's working for this game's aesthetic? Did I see a hand back there? Yeah, right there.

STUDENT: We're all really used to games with cylindrical coordinates through a camera. And this game appeared to have it be the case that as you look down, one can then rotate your camera. It really felt like you're looking straight down. And so we're very used to having cylindrical coordinates.

PHILIP TAN: Mhm, yeah. This is a game that uses sort of WASD first person controls. Only first of all, you're not carrying a gun and looking around like that. You're pretty much doing this for the entire game. So you're always kind of rotating around your center. So that's a systemic-- essentially how the controls work.

STUDENT: Checkpoint restart happened really, really fast when you screwed up.

PHILIP TAN: Yeah, yeah, so it's like, survive to this point, get to the next checkpoint. And things are actually flying past you at a pretty high rate as well. What else? Music? Art? Storyline?

STUDENT: [INAUDIBLE]

PHILIP TAN: I think the music-- does it start the moment your foot leaves the first building? I think there are some levels where it does that, where the music only starts the moment you jump off the building. It's like, you can stay on top of the building as long as you want. But nothing happens.

And then as soon as you jump off, the music starts. So it's like, all right, now you're doing something that you should feel excited about. So we're going to play this exciting music at you.

STUDENT: You can hear the air while you're falling.

PHILIP TAN: Yeah, there's a very strong sort of rushing sound. And you're getting other UI sounds as well. Those are the things that are actually giving you points, getting close to other buildings. And so there's some visual feedback.

STUDENT: The game menu before it starts is really confusing. There was just way too much. I don't think that was working at all.

PHILIP TAN: Yeah, the thing is I've played a bit of this game. So it normally directs you to the first thing that you can click really clearly. And then at some point of time, it stops leading you to a linear path. So you've got this whole grid of different things that you can do to choose one.

So admittedly, the game UI may not achieve what it's trying to do. But what do you think it's trying to do, even if it fails at it? It's sort of like, here's this ridiculous grid of all of these different things that you can do. But maybe some of them are unlocked, or some of them are still locked and some things are still locked out. What's the point of showing you all these things that you can't do?

STUDENT: Try and motivate you to unlock them so that you can do them.

PHILIP TAN: Right, this whole idea is that-- it's the same idea in *Zelda*. Sometimes you see this heart in a location which you know that you can't actually get to yet. But the whole point of that is to make you want to get there.

And that's what the unlock system in this game, I believe, is trying to do. It wants to give you an incentive to keep playing. Because there's all this other content that you haven't seen yet. But you kind of have a clue that it's out there.

At the beginning of the game, there's a little narration actually that you may not have caught. It says, the city of Boston has outlawed base jumping, so this whole idea that what you're doing isn't actually sanctioned by the authorities. And eventually, you get these commands later where you can flip off people while you jump off, unless they happen to be your fans. And then you give them a thumbs up.

So there's a sense that what you're doing isn't advisable. This is not supposed to be just how the future looks like. Even in this weird future where you have these mega skyscrapers that go all the way into space, this is still not a good idea. But you're going to do it anyway. That's what this game is about.

So it's a 3D game. This one was done in Unity, actually, although it was on port from a game that wasn't originally developed in Unity. So you think of the very first version, which is just called *AaaaaAAaaaAAAaaAAAAaAAAAA!!!- A Reckless Disregard for Gravity*. Is that right? Yeah. That game only runs on Windows. And all the versions that have come since then have all run on multiple platforms. Because they were developed on Unity.

STUDENT: Including Oculus Rift.

PHILIP TAN: Including Oculus Rift, an Oculus Rift version of that game. You can imagine how that would work. Anyway, so something that I want to end on today-- there's a second presentation very quickly. Actually, you know what? I've been talking for an hour. Let's take a quick break. And we'll come back in 2:15, 10 minutes.

All right, let me see, am I on mute? OK, so what I'm going to do now is I'm going to have your groups actually have a discussion about what you want your game mechanics to do. And the reason for this is because I feel that a lot of you probably are decently equipped to talk about what you want your story lines and your characters or your art style or your sound design to achieve in your game.

And the reason for that is we've seen a lot of movies. We know how we react to music. We realize what visuals have on sort of human emotion. But I'm not sure if you've had this discussion yet in your team about what you want your mechanics to do aesthetically.

What kind of experience do you want to generate for the player? So really, it's what you want everything in your game to do. But right now, I'm asking you to do a discussion about what you specifically want your games to do.

I'm going to throw some words at you to help you be able to frame these ideas inside your team. First is that, is this a game? How many of you feel like you're making a game that's kind of about strategically outwitting the game system, being smarter than the computer, basically, or being smarter than the game designer, that's how you win the game?

How many of you feel like your game is really about some random thing happens, and now you have to deal with it? OK I see a couple, a few, hands out there, maybe. And some of you don't know where your game falls in that spectrum. Of course, it could be a bit of both, right?

A French writer named Roger Caillois came up with a categorization of what these different kinds of game play could be termed. And he came up with Agon and Alea. Alea, some of you,

if you've ever studied Latin or Roman history or anything, might recognize it from *alea lacta est*, which is, the die is cast. So that word comes from dice. And it sort of represents games of chance.

And *Agon* is a little bit more about conflict. It's about usually person versus person conflict. But in case of games, it's just kind of like competitive contests of skill. Basically how well can you deal with this challenge that's put in front of you?

Caillois goes on and describes this as, this is sort of *ludus*. This is the ludic kind of play where you're sort of playing-- it's very specific to what games are all about. There are other forms of play out there in the world that don't necessarily have anything to do with games. A game isn't required to have one of these things. But for the most part, what Caillois claims is that these kinds of actions are the things that really, really sort of set games apart from other kinds of play, this *Agon* and *Alea*.

But then there's-- what else is there in play? There's *paidia* and *ilinx*, which are, again, words that I don't necessarily expect you to remember. But here are words that might be a little bit easier to recollect, the sense of being someone that you are not, mimicking something that you might fantasize in being, or that you're being asked to perform.

Are you a person on the run from zombies? Are you a military soldier? Are you a detective? Are you an assassin, a scoundrel, that sort of thing? You're being asked to play that part. Are you a town hall mayor?

Whereas *vertigo*, it's about the sort of physical sensation of playing the game. And when it comes to digital games, usually that's one of the things that digital games have the biggest problem. Unless you're doing something like *Dance Dance Revolution*, where you're actually having to play the game as a full body or a Kinect thing. But even games like *Aaaaa!*, we were describing a game that's very much trying to give you this sense of physical motion.

So they're trying to sort of conjure up this sort of bodily freedom, even if that freedom necessarily means a loss of control, to sort of give you a pleasurable experience. And you get that in other kinds of play. How many of you played that game where you go around a baseball bat with your head down, and then you have to walk? No one does this? That's my favorite game.

STUDENT: [INAUDIBLE]

PHILIP TAN:

Yeah, you get yourself as dizzy as you can. Sometimes you look up and you spin. Sometimes you look down and you spin. And then you try to make your way across to the other side of the finish line. And that's like literal vertigo, right?

So we've got these different kinds of sensations that this one series has already described, and probably not everything that games can possibly do. But they're kind of, in one way of describing it, kinds of fun. There is the sort of competitive test of skill.

There is the, does fortune favor you today? Are you feeling lucky right now? Do you want to press your luck? Do you get to be somebody else and live through that experience? Or do you just get to be in a sort of physical situation that you haven't been? These are all different things that your game mechanics can achieve.

What I'd like to describe is like the stuff on the right is the stuff that sort of puts you into the moment. This is where you're being asked to spontaneously react. Can you think like a mayor of a city, or president, or monarch? Can you react in a way as if buildings were flying towards you at 200 miles per hour?

Whereas everything on the right is what we typically described as the structure of the games. You've been experimenting with this in your prototypes since day one. But there's also kind of the differences between the decisions that you get to make and the things that kind of just happen to you, and you get to react.

So I like to describe the stuff at the bottom as kind of fate. This is the fate that you have. Buildings are going to fly into your face. And you kind of need to be able to then make decisions to be able to just deal with that reality.

Or fate being, well, the dice is going to show what it is. But the test of skill is the part where you get to decide what you're going to do given that you know the odds and that you know what kind of actions that you can take.

So right now, in your teams, what I'd like you to do is actually have a discussion about given your prototypes that you've developed so far-- I don't think we're doing a test today. We're doing tests on Monday, right? So what do you want your prototype on Monday to try to achieve? It could be any combination of this. It could be all of it.

But I would like you to have that discussion in your team, just maybe 15 minutes? Yeah, that's

plenty of time. And then what we're going to do is just do a very quick report back about where you think your team-- just one person from each team will come down and tell us, what are the things that you think you want your game mechanics to achieve in your prototype on Monday, OK? 15 minutes. That will get us to basically about 2:40. All right, so go right ahead. I'll just leave that up.

[BACKGROUND CHATTER]

STUDENT: So our game, as it is right now, you're basically playing like a child or an animal. We haven't decided. And you're basically going to go around town figuring out this mystery. So you're kind of playing like a detective type story.

So based on the slide, ours is more like structure and decision. So it's going to be sort of a competition against the computer where you're trying to figure out this mystery of what's causing cholera, or what's causing people to be sick, actually. You won't know that it's cholera. So yeah, that's basically where our game stands.

PHILIP TAN: OK, all right, cool. Thank you. A very analytical detective game that you're working towards-- that's for the prototype and tests on Monday. Who's next? Come on up.

STUDENT: Hi, we're *Snap*. So we're planning on making a very competition heavy game. Because you're going to be playing with a bunch of other people. So for Monday, we want to have that competition structure in place so that we can see how it works.

We're also adding a little bit more fiction to *Snap*, which is very abstract. And so we're going to later on test how that works out. But for now, it's just really going to be the basic competition of the game that you've played.

PHILIP TAN: OK, all right, thank you.

STUDENT: So for *Heatwave*, we're mainly going to focus on originally decision, deciding who you're going to help and how long you're going to try and convince them to drink some water or go inside. And there's also going to be a small aspect of fate. Because you can spend 10 turns trying to convince a person to go inside. And at the end of the 10 turns, they say, no, I don't want to talk to you anyone. I'm not going inside. So decision and fate.

PHILIP TAN: OK, cool, thank you.

STUDENT: Our team is working on forecast based financing. So because we're about planning for disasters, our game is pretty heavy on chance. But what we want to teach the players to do is to use planning and forecasting in order to reduce the effects of that chance and sort of gain valuable skills in mitigating that.

PHILIP TAN: All right. So it's very much on the right side of this screen. OK.

STUDENT: Hi, so we're the other cholera group. And we decided to create a simulation based game where there are many villages, and they have their own water source. And we have cholera as some sort of entity that can sort of spread from village to water to other villages.

And pretty much every village has their own population. They have their own infection rate. And what you are, you are pretty much some sort of person who really has a lot of power and wants to fix this cholera outbreak. So this game focuses a lot on decision making, because you have many different ways to try to fix this problem-- either short term using simple purification systems to launch for waste management.

But this game also has a lot of chance. Because obviously, these things aren't 100% efficient. There's going to be some failures, going to be some breakdowns. What we want to focus on right now is to make sure that we can get our villages to have their own sort of parameters, make sure that the cholera-- we have some way of representing cholera and how they spread to all the other villages.

PHILIP TAN: Cool, thank you. Is that all the teams, or was there one more? That's pretty much it. OK, just a quick thing, so a couple of thoughts-- one thing that you should be trying to figure out as you work on your prototypes is to what extent the decision making, which came up with a lot of the different groups, going to be reacting to things that you hadn't anticipated, versus crafting a long term plan.

The stuff that you deal with on the short term is going to go very heavy on this side. And it's going to play a very big part in making someone feel like the kind of person that you want to feel, whether you're a big decision maker or an individual on the ground.

The long term plan part of it is really more game-y. You're really thinking more as someone who's playing the game, rather than someone who's actually living the game. And you can also decide that's more what you want people to be going for, especially games that have to deal a lot with planning for chance.

Now, just because you have random numbers in your game, and probability rates and everything, doesn't necessarily mean that your game is all about chance, even though you have these things in your system. Because if what chance in your game really means is that there is a certain rate at which certain things are going to happen, then really that's just a rate. That's something that you can plan for.

You can just expect every 10 turns, you're going to get three outbreaks. That's how the numbers are going to break down, even though you don't know exactly when those rates are going to be. And if your game is where every single one of those times where chance hits is really catastrophically or really, really beneficial, then you've got to get more of a game of chance.

If it's the sort of thing like a certain number of these things are going to happen at a given rate, and you just have to plan for that rate, that is, to me, not really chance anymore. It's more about that skill based test of whether you can plan well. So again, always keep in mind, what do you want your game to feel like, while you're trying to figure out whether your simulation is right, whether your facts are right, whether this is actually what happens with the diseases or the catastrophes that you're dealing with.

Also keep in mind this is what you want your game to feel like. Make sure that's also informing how you're designing your game mechanics and your art style and your story line and your characters and so forth. That's what I've got to say.

PROFESSOR:

So administratively for Monday, we have a lecture in the morning about games for learning. Then we're going to do play tests. And then at the end of play test, we're going to do the two minute presentations, so that when you're play testing, even though we heard a little bit about what your games are, we're not completely-- we'll still be a little naive when you're playing your games. We'll know exactly what's going on within the games.

In that two minute presentation, we want to know a lot about process. So let us know how you got to the point where you are now and where you think you're going. I believe product backlogs are due at that point, too. So use your product backlog as part of your telling us what you're planning on doing on your projects.

I know a few of you have come to me and asked me about certain aspects of your projects that might not be answered by the resource materials that we've given you. So hopefully

you've read through the resources, and you're finding some of your answers there. If there are any questions you have that are not being answered by your research, email that to videogame-bosses, and we'll forward that along to the clients.

I'm working to get them to allow me to just give you their email address so you can contact them directly. I'm still figuring out who exactly for each of those projects that's going to be. But that should be solidified by Monday.

But yeah, things to look out for that might not be answered in your resources are cultural sensitivity, particularly because of who your target audience might be. So if you're doing anything graphical, if you're doing anything representational, really think hard about who it is playing the game, what kind of cultural background they have, and how are you representing it to them. Are you doing it both authentically and also not patronizing them?

It's going to be a really hard challenge for you. We don't expect you to actually solve it this semester. We expect you to come up with some ways to figure out how you might solve it in the future. And that's kind of what we want to hear about in some of these presentations. Or how are you solving those kind of problems? Any questions before we let you go and let you work in your teams?

STUDENT: Can you give us an idea of how much time we'll have in class to work with our teams so we can better plan?

PROFESSOR: Hour and a half. We went a little bit long today, about 20 minutes long.

PHILIP TAN: That's all my fault. I'm sorry about that.

PROFESSOR: Blame him, but hour and a half basically. If there's a guest lecture, those tend to be an hour long. And then that would be two hours long. If it's not a guest lecture, we tend to ramble, so hour and a half. Also part of that is because we start class at 1:10. That kills some of the time. So if you want to come into class at 1:00 and be in your teams and work in your teams, and then we yell at you to shut up, that's fine. That's actually good. You're using your time well.

PHILIP TAN: Yeah, you come in at 1:00, and then do a daily scrub, and then you are ready to start class.

PROFESSOR: Any other questions? All right, so I'm putting these materials up here. And also a reminder, the play test, if we weren't really specific about it, we are expecting low fidelity prototypes. But it could be digital or paper. It's really whatever is useful for you, that's what we want to see

tested.

[BACKGROUND CHATTER]