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Good game design usually comes from viewing the game in as many perspectives as possible. The books calls these perspective “lenses”. There is no one-size-fits-all lens, so it is up to me to figure out what type of game I am making, and view it using the appropriate lenses. Before reading, some lenses I can think of are:

Hyper Casual- People who hardly even consider themselves gamers.

Casual- Someone who may not have the time or dedication to play on a deeper level for extended periods of time, but still enjoys the game.

Completionist: Someone who likes to do everything possible in a game, such as getting all achievements or collectables.

Competitive: Someone who is focused on getting good at a game and mastering the mechanics. Ranked Players and speedrunners fall into this.

It is completely ok to not master all of the components pf game design, what is necessary is being comfortable working in them and having the confidence to try

Truly listening beyond the surface level- The book says this is what the most important skill a game designer has is. The designer should listen to the: Team, Audience, Game, Client, and Self.

A “minor gift” is a natural talent for something, while a “major gift” is a love or enthusiasm for something. Major gifts are better, because someone with a major gift for game design will design games regardless of skill, and overtime, will inevitably be better than the person with the minor gift through sheer experience. This is important for me to remember. I don’t have a minor gift, but I need to maintain and further cultivate my major gift.

Other forms of design can be incorporated into game design. Whether that be music, movies, drawings, rides etc.. Learning from these other forms is not only okay, but encouraged.

An important skill for a designer to have is being able to dissect their own experiences. You should be able to explain why you feel a certain way about a mechanic. For example, I’ll dissect my feelings on some a few experiences I have in games:

1. I think searching for armor trims in Minecraft is rewarding because they encourage me to explore structures that I wouldn't need to visit otherwise, and I feel rewarded for finding one since they are so rare.
2. I like Pokemon Refresh because it makes me feel like I have an actual connection with my Pokemon, and I feel like they are real companions and not just pawns.
3. I don't like Sea Showdown (my game) because the game lacks content due to a lack of enemies, and I feel no need to replay the game because there is no variety or progression.

A good way to analyze gameplay- Just play the game with the intention of analyzing the memory. Don't think much about analysis *while* playing the game. Play it as you would any other game. Then, once you're done, analyze the memory itself. The reason for this is because your experience of a game will be different if you intention is for analysis, as the player usually won't be analyzing your game. An alternative is to play the game twice, not analyzing at all on the first try and then analyzing extensively on the next.

When you want to capture the essence of an experience, you don't need to copy every last detail. For example, if I want to capture the essence of a Pokemon game, I would take note of things like:

- Variety of different team compositions
- Sense of development and progress with your team
- Forming emotional attachments to your team

But not things such as:

- Enemies found by random encounters in tall grass
- 6 on a team
- 4 moves per team member
- 8 Bosses

Usually, if you want to capture the essence of an experience, don't bother adding the things that didn't really define it. If you can remove a certain aspect of an experience without your view of it changing, odds are that it isn't essential.

Lens #1: The Lens of Essential Experience

To use this lens, you stop thinking about your game and start thinking about the experience of the player. Ask yourself these questions:

- What experience do I want the player to have?
- What is essential to that experience?
- How can my game capture that essence?

If there is a big difference between the experience you want to create and the one you are actually creating, your game needs to change: You need to clearly state the essential experience you desire, and find as many ways as possible to instill this essence into your game.

Lens #2: The Lens of Surprise

Surprise is so basic that we can easily forget about it. Use this lens to remind

yourself to fill your game with interesting surprises. Ask yourself these questions:
● What will surprise players when they play my game?
● Does the story in my game have surprises? Do the game rules? Does the artwork? The technology?
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● Do your rules give players ways to surprise each other?
● Do your rules give players ways to surprise themselves?
Surprise is a crucial part of all entertainment — it is at the root of humor, strategy, and problem solving. Our brains are hardwired to enjoy surprises. In an experiment where participants received sprays of sugar water or plain water into their mouths, the participants who received random sprays considered the experience much more pleasurable than participants who received the sprays according to a fixed pattern, even though the same amount of sugar was delivered. In other experiments, brain scans revealed that even during unpleasant surprises, the pleasure centers of the brain are triggered

Lens #3: The Lens of Fun
Fun is desirable in nearly every game, although sometimes fun defies analysis. To maximize your game's fun, ask yourself these questions:
● What parts of my game are fun? Why?
● What parts need to be more fun?

Lens #4: The Lens of Curiosity
To use this lens, think about the player's true motivations — not just the goals your game has set forth, but the reason the player wants to achieve those goals. Ask yourself these questions:
● What questions does my game put into the player's mind?
● What am I doing to make them care about these questions?
● What can I do to make them invent even more questions?
For example, a maze-finding videogame might have a time-limit goal such that at each level, players are trying to answer the question: "Can I find my way through this maze in 30 seconds?" A way to make them care more would be to play interesting animations when they solve each maze, so players might also ask the question: "I wonder what the next animation will be?
-One example of this in games: No Man's Sky storyline is very vague at first and not much is explained, encouraging the player to play through the story more.

Four Basic Elements of a Game:
1. Mechanics- The ways you can and cannot go about achieving the game's goal, and the after effects of your actions
2. Story- Pretty self-explanatory, most games have a story
3. Aesthetics- Not just visuals, but anything sensory that your game has. These should be used to amplify the tone of the game
4. Technology- The way the game is made

As on overall game designer, these are all **equally important**
I'm not sure how I feel about that thought…of course, I am a mechanics designer mostly, but I've played plenty of games that aren't striking story or art wise and enjoyed them. I'll still put effort into those though, I guess.

Lens #7: The Lens of the Elemental Tetrad
To use this lens, take stock of what your game is truly made of. Consider each element separately, and then all of them together as a whole.
Ask yourself these questions:
● Is my game design using elements of all four types?
● Could my design be improved by enhancing elements in one or more of the categories?
● Are the four elements in harmony, reinforcing each other, and working together toward a common theme?

Lens #8: The Lens of Holographic Design
To use this lens, you must see everything in your game at once: the four elements and the player experience, as well as how they interrelate. It is acceptable to shift your focus from skin to skeleton and back again, but it is far better to view your game and experience holographically.
Ask yourself these questions:
● What elements of the game make the experience enjoyable?
● What elements of the game detract from the experience?
● How can I change game elements to improve the experience?

Lens #9: The Lens of Unification
To use this lens, consider the reason behind it all. Ask yourself these questions:
● What is my theme?
● Am I using every means possible to reinforce that theme?
The Lens of Unification works very well with the Lens of the Elemental Tetrad. Use the tetrad to separate out the elements of your game, so you can more easily study them from the perspective of a unified theme.
-This is something I'm going to have to think about. I don't think my games have much of a theme.

Lens #10: The Lens of Resonance
To use the Lens of Resonance, you must look for hidden power.
Ask yourself these questions:
● What is it about my game that feels powerful and special?
● When I describe my game to people, what ideas get them really excited?
● If I had no constraints of any kind, what would this game be like?
● I have certain instincts about how this game should be. What is driving

those instincts?
The Lens of Resonance is a quiet, delicate instrument. It is a tool for listening to yourself and listening to others. We bury important things deep inside ourselves, and when something causes them to resonate, it shakes us to our very core. The fact that these things are hidden gives them power, but also makes them hard for us to find.
IT's important to take inspiration for games not just from other games, but anything you can observe. Nature, people, movies, music, anything can act as inspiration, really.

Lens #11: The Lens of Infinite Inspiration
When you know how to listen, everybody is the guru.
– Ram Dass
To you use this lens, stop looking at your game, and stop looking at games like it. Instead, look everywhere else.
Ask yourself these questions:
● What is an experience I have had in my life that I would want to share with others?
● In what small way can I capture the essence of that experience and put it into my game?
Using this lens requires an open mind and a big imagination. You need to search you feelings and observe everything around you. You must be willing to try the impossible — for surely it is impossible for a roll of the dice to capture the excitement of a swordfight, or for a videogame to make a player feel afraid of the dark — isn't it? Use this lens to find the non-game experiences that will inspire your game. Your choices in the different quadrants of the tetrad (technology, mechanics, story, and aesthetics) can each be united by a single inspiration, or each can build on different inspirations, blending them together to create something entirely new. When you have concrete visions based on real life that guide your decision making, your experience will acquire an undeniable power, strength, and uniqueness.
This lens works hand in hand with Lens #1: Essential Experience. Use the Lens of Infinite Inspiration to seek and find beautiful experiences, and the Lens of Essential Experience to bring them into your game.

You should always listen to your subconscious for ideas. The best ideas can pop up randomly, out of nowhere. In order to organize good ideas, write them down somewhere likes the Notes App.

There are 8 filters that a game idea should go through before you use it.

1. Artistic Impulse: This relies on if you, the designer, think that the game fits. Key Question: "Does this game feel right?"
2. Demographics- This relies on if your target demographic will enjoy this idea. Key Question: "Will the intended audience like this game enough?"

3. Experience Design: This relies on seeing if a game is well balanced, a good experience, interesting, or overall well designed. Key Question: “Is this a well-designed game?”
4. Innovation- This relies on how innovative and unique the game is. Key Question: “Is this game novel enough?”
5. Business and Marketing- This relies on if a game’s contents are appealing to consumers. Key Question: “Will this game sell?”
6. Engineering- This relies on if a game is practical to make from a technological and labor standpoint. For example, an endlessly detailed space sim beyond No Man’s Sky wouldn’t pass through this filter. Key Question: “Is it technically possible to build this game?”
7. Social/Community- This relies on if the game is engaging enough to form a community and social aspect. This would be very important in multiplayer games. Key Question: “ Does this game meet our social and community goals? ”
8. Playtesting- This relies on if the game is just fun to play to playtesters. It’s important to get a playable build of games out for playtesters to critique. Their advice is especially useful early on. Key Question: “Do the playtesters enjoy the game enough?

Risk Mitigation: This is a very important part of game design and development. As the name implies, it is recognizing the risks and flaws in a design, and working to get rid of them. For example, let's say that one of your risks is that the combat of your game may not be fun. You can mitigate this risk by creating a small, completely bare-bones prototype of the combat, and then play it. If it is fun, great! If it’s not, modify it until it is.
To apply this to myself: AvA (my game) has the following risks

1. The abilities and weapons might not synergize that well, leading to the potential builds being boring
    a. Try out different combos. If one doesn’t work well with others, change its mechanics to make it more compatible.
2. The enemies might not be interesting
    a. Design prototypes for various enemies that work very differently, and see if fighting them is fun
3. The aesthetics may not be charming enough
    a. Throw together some concept art, and post it to people who will genuinely give their opinion.
4. The game might not be funny
    a. This is a little hard to do without a mostly complete game, but once the humorous parts are implemented, find some playtesters to see if they find it funny. I also heard that if you feel embarrassed reading dialogue out loud, odds are it isn’t that good (or in this case funny).

Lens #14: The Lens of Risk Mitigation
To use this lens, stop thinking positively, and start seriously considering the things that could go horribly wrong with your game.
Ask yourself these questions:
● What could keep this game from being great?

● How can we stop that from happening?
Risk management is hard. It means you have to face up to the problems you would most like to avoid, and solve them immediately. But if you discipline yourself to do it, you'll loop more times, and more usefully, and get a better game as a result. It is tempting to ignore potential problems and just work on the parts of your game you feel most confident about. You must resist this temptation and focus on the parts of your game that are in danger.
Don't prototype just for the sake of it. Make each prototype with the intent to answer a question, such as "Is this gameplay loop fun?", or "Do the aesthetics match the gameplay?". All that matters is that the prototype answers the question. Don't worry if it looks ugly or isn't intelligible to outsiders. The only exception I could possibly see to that part is coding. If you plan to use the code of a prototype as a framework for your real game, try not to make it *too* messy. Of course, it doesn't have to be perfect thought

Lens #15: The Lens of the Toy
To use this lens, stop thinking about whether your game is fun to play, and start thinking about whether it is fun to play with.Ask yourself these questions:
● If my game had no goal, would it be fun at all? If not, how can I change that?
● When people see my game, do they want to start interacting with it, even before they know what to do? If not, how can I change that?
There are two ways to use the Lens of the Toy. One way is to use it on an existing game, to figure out how to add more toy-like qualities to it — that is, how to make it more approachable, and more fun to manipulate. But the second way, the braver way, is to use it to invent and create new toys before you even have any idea what games will be played with them. This is risky if you
are on a schedule — but if you are not, it can be a great "divining rod" to help you find wonderful games you might not have discovered otherwise.
-Minecraft is a great example of this. Proof of this is that only 10% of players have even beat the game itself! Just messing around is fun enough on its own.

Lens #16: The Lens of the Player
To use this lens, stop thinking about your game, and start thinking about your player.
Ask yourself these questions about the people who will play your game:
● In general, what do they like?
● What don't they like? Why?
● What do they expect to see in a game?
● If I were in their place, what would I want to see in a game?
● What would they like or dislike about my game in particular?
A good game designer should always be thinking of the player, and should be an advocate for the player. Skilled designers hold The Lens of the Player and the Lens of Holographic Design in the same hand, thinking about the player, the experience of the game, and the mechanics of the game all at the

same time. Thinking about the player is useful, but even more useful is watching them play your game. The more you observe them playing, the more easily you'll be able to predict what they are going to enjoy.

- Examples of this are both Thrive and Elysian Eclipse. Although different in their approaches, they capitalized off of what Spore was missing, knowing that the players of Spore sorely wanted the missing features.

The 8 Game Pleasures are the types of pleasure people seek from games. They are:

1. Sensation- Good looking art, beautiful music, or anything sensory. This can't completely save a bad game, but it can certainly elevate it
2. Fantasy- I think this is popular since people play games as a source of escapism. I personally love games where I can pretend to be something I like, even if it isn't real.
3. Narrative- This is about the unfolding of events, not necessarily a storyline (although storylines count too).
4. Challenge- It's simple, people enjoy accomplishing difficult tasks.
5. Fellowship- Teamwork, cooperation, and friendship. Deep Rock Galactic is a good example (at least from what I've heard, I never played it)
6. Discovery- Finding new things and partaking in new experiences. No Man's Sky and Minecraft do a great job at this.
7. Expression- Expressing yourself is a big part of many games. It is a big part of Minecraft and other sandbox games, and games like Fortnite make their money off of this.
8. Submission- This is how immersed you are in a game. Worldbuilding and ambience can help accomplish this.

Player Types:
1. ♦ Achievers want to achieve the goals of the game. Their primary pleasure is Challenge.
2. ♠ Explorers want to get to know the breadth of the game. Their primary pleasure is Discovery.
3. ♥ Socializers are interested in relationships with other people. They primarily seek the pleasures of Fellowship.
4. ♣ Killers are interested in competing with and defeating others. This category does not map well to LeBlanc's taxonomy. For the most part, it seems killers enjoy a mix of the pleasures of competition and destruction. Interestingly, Bartle characterizes them as primarily interested in "imposing themselves on others," and includes in this category people who are primarily interested in helping others

Lens #17: The Lens of Pleasure
To use this lens, think about the kinds of pleasure your game does and does not provide.
Ask yourself these questions:
● What pleasures does your game give to players? Can these be improved?
● What pleasures are missing from your experience? Why? Can they be added?

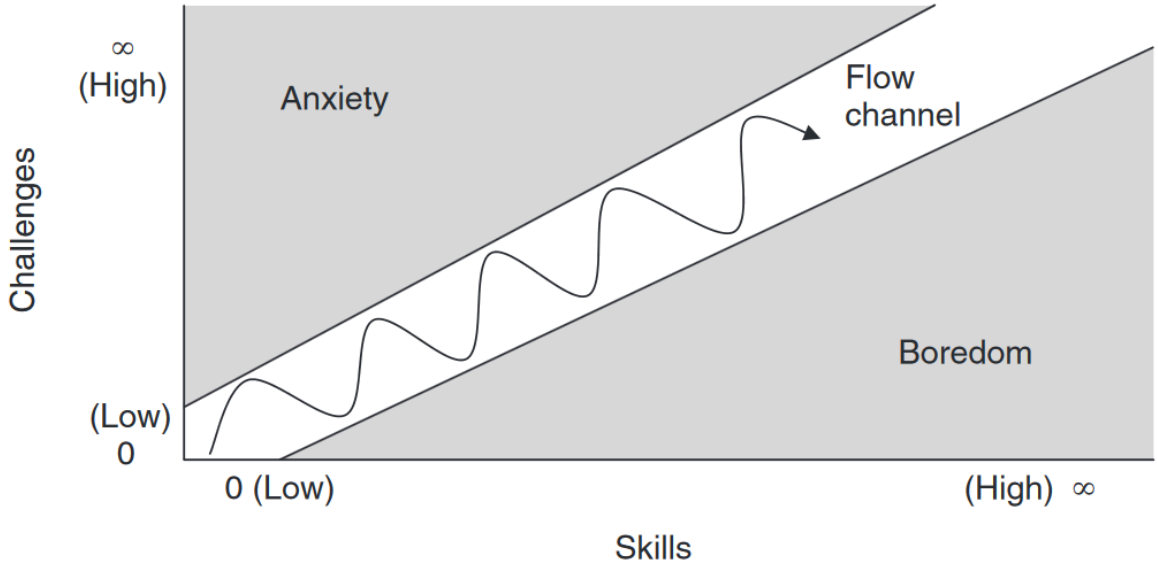
Ultimately, the job of a game is to give pleasure. By going through lists of known pleasures, and considering how well your game delivers each one, you may be inspired to make changes to your game that will increase your players' enjoyment. Always be on the lookout, though, for unique, unclassified pleasures not found in most games — for one of these might be what gives your game the unique quality it needs.

4 Parts of the Human Mind that make Gameplay Possible:

1. Modeling
2. Focus
3. Imagination
4. Empathy

Flow state is defined as "a feeling of complete and energized focus in an activity, with a high level of enjoyment and fulfillment.". As game designers, we must figure out how to induce this state into the player. A few methods are:

- Clear goals. When our goals are clear, we are able to more easily stay focused on our task. When goals are unclear, we are not "into" our task, for we aren't at all certain whether our current actions are useful.
- No distractions. Distractions steal focus from our task. No focus, no flow.
- Direct feedback. If every time we take an action, we have to wait before we know what effect the action caused, we will quickly become distracted and lose focus on our task. When feedback is immediate, we can easily stay focused.
- Continuously challenging. Human beings love a challenge. But it must be a challenge we think we can achieve. If we start to think we can't achieve it, we feel frustrated, and our minds start seeking an activity more likely to be rewarding. On the other hand, if the challenge is too easy, we feel bored, and again, our minds start seeking more rewarding activities.



Flow State Diagram

There are generally two types of actions in games:

1. Operative Actions
   Operative Actions are base actions that can be taken by the player. Examples:
   - Place/break a block in Minecraft
   - Place a plant in PvZ
   - Move around (in any game)
   - Use an ability in AvA (my game)
2. Resultant Actions
   Resultant actions are how the player uses operative actions to achieve a larger goal. They aren't part of the rules themselves, but emerge over time. A well designed game can have many resultant actions from even a few operative actions.
   Examples:
   - Player-made team compositions in Overwatch
   - Redstone machines in Minecraft
   - Any sort of farm in games

Some tips for "growing" resultant actions:

- Add more operative actions. More specifically, ones that compliment one another and interact nicely with the other components of the game. Adding too many unnecessary operative actions will make the game overcomplicated. Making operative actions multipurpose also helps a lot. For example, back when HM's were a thing, you could catch Pokemon for battle, but you could also catch them so they could learn a specific HM that helps you outside of fighting.
- Add alternate ways to achieve goals. A good example is Undertale's various runs. You can either do genocide, killing every monster you see, Pacifist, where you befriend everyone, or neutral, which is in the middle.

- Add side effects. One example is restraining the player from doing certain things if they make a specific choice. For example, using a Z-Mech in PvZ. One side effect is that you are most likely going to be the driving force of the battle, and far stronger than any individual enemy. The downside is that you will become a high-priority target, making enemies more likely to team up and try their hardest to strike you down.

Lens #23: The Lens of Emergence
To make sure your game has interesting qualities of emergence, ask yourself these questions:
● How many verbs do my players have?
● How many objects can each verb act on?
● How many ways can players achieve their goals?
● How many subjects do the players control?
● How do side effects change constraints?

Lens #24: The Lens of Action
To use this lens, think about what your players can do and what they can't, and why.
Ask yourself these questions:
● What are the operational actions in my game?
● What are the resultant actions?
● What resultant actions would I like to see? How can I change my game in order to make those possible?
● Am I happy with the ratio of resultant to operational actions?
● What actions do players wish they could do in my game that they cannot? Can I somehow enable these, either as operational or resultant actions?
A game without actions is like a sentence without verbs — nothing happens. Deciding the actions in your game will be the most fundamental decision you can make as a game designer. Tiny changes to these actions will have tremendous ripple effects with the possibility of either creating marvelous emergent gameplay or making a game that is predictable and tedious. Choose your actions carefully, and learn to listen to your game and your players to learn what is made possible by your choices

Games Have 8 Types of Rules-

1. Operational Rules. The fundamentals of the game, essentially what you're supposed to be going.

2. Foundational rules- I honestly am not sure what these really are, but from what I understand they're the numbers that change the game. Health bars and stats could count.
3. Behavioral Rules- These are basically just etiquette and good sportsmanship
4. Written Rules- I'm not fully sure how this differs from the operational rules too much, but it is essentially the main rules of your game. These are often taught through tutorials
5. Laws- Think of these as competitive rules, often not made by the default game itself. An example would be banning certain characters in a tournament
6. Official Rules- Rules that players make which become dominant, even though they aren't part of the original rules. Saying "check" in chess is an example
7. Advisory Rules- These are less rules, and more so advice. An example would be, place sunflowers down first in PvZ
8. House Rules- Rules that the players make for themselves to have more fun

Modes are an important part of games that can help make them less stale. There are some tips for adding modes:

- Make it obvious when the mode changes. Changing modes without letting the player know can confuse them.
- The player should usually spend more time in the game's main mode than the others

Lens #27: The Lens of Skill
To use this lens, stop looking at your game, and start looking at the skills you are asking of your players.
Ask yourself these questions:
● What skills does my game require from the player?
● Are there categories of skill that this game is missing?
● Which skills are dominant?
● Are these skills creating the experience I want?
● Are some players much better at these skills than others? Does this make the game feel unfair?
● Can players improve their skills with practice?
● Does this game demand the right level of skill?
Exercising skills can be a joyful thing — it is one of the reasons that people love games. Of course, it is only joyful if the skills are interesting and rewarding, and if the challenge level strikes that ideal balance between "too easy" and "too hard." Even dull skills (such as pushing buttons) can be made more interesting by dressing them up as virtual skills and providing the right level of challenge. Use this lens as a window into the experience the player is having. Because skills do so much to define experience, the Lens of Skill works quite well in conjunction with Lens #1: The Lens of Essential Experience.
-Right now, AvA (my game) requires a bit of timing and positioning skill for dodging attacks. I plan to have the game change the enemies that attack the player, so that it requires skills that the player doesn't currently have.

When balancing two forces in a game that have different goals/abilities/advantages, you can make sure the conflict is balanced by assigning a value to each attribute the sides have, and seeing if the sums are equal. I can't explain it well through words, so here is a graph.

Unbalanced:

Plane	Speed	Maneuverability	Firepower	Totals
Piranha	Medium (2)	Medium (2)	Medium (2)	6
Revenger	High (3)	High (3)	Low (1)	7
Sopwith Camel	Low (1)	Low (1)	Medium (2)	4

Balanced:

Plane	Speed	Maneuverability	Firepower	Totals
Piranha	Medium (2)	Medium (2)	Medium (4)	8
Revenger	High (3)	High (3)	Low (2)	8
Sopwith Camel	Low (1)	Low (1)	High (6)	8

Certain attributes can also be worth more than others, based on the game. For example, in the book, the author says that firepower is usually the determining factor in the game, hence why each firepower point is worth twice as much as a point in the other categories.
This will definitely be useful for designing Megamonsters. Since that game has a huge variety of different characters, and PvP, I need to balance it well. I've seen what poor balance can do to a game (Overwatch)...

Lens #30: The Lens of Fairness
To use the Lens of Fairness, think carefully about the game from each player's point of view. Taking into account each player's skill level, find a way to give each player a chance of winning that each will consider to be fair.
Ask yourself these questions:
● Should my game be symmetrical? Why?
● Should my game be asymmetrical? Why?
● Which is more important: that my game is a reliable measure of who has the most skill, or that it provide an interesting challenge to all players?
● If I want players of different skill levels to play together, what means will I use to make the game interesting and challenging for everyone?
Fairness can be a slippery subject. There are some cases where one side has an advantage over the other, and the game still seems fair. Sometimes this is so that players of unequal skill can play together, but there can be other reasons

A good tip for balancing games in the playtesting phase is to have playtesters of all different types. Get people who like all different genres, or who play games casually or competitively.

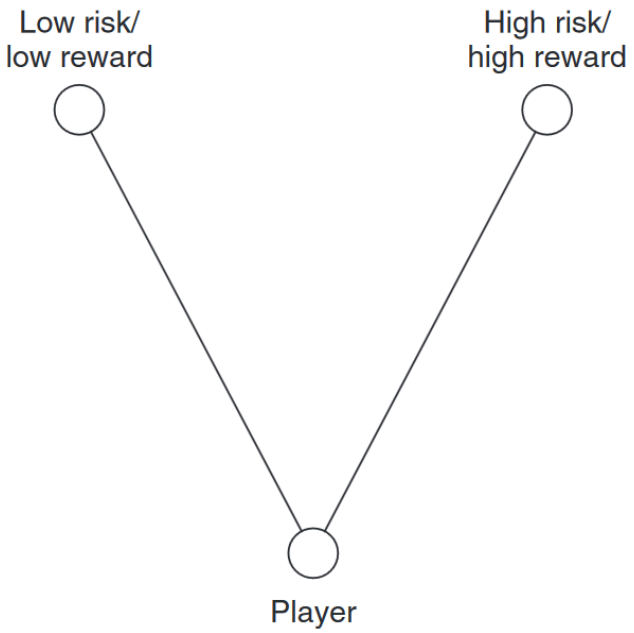
Build the player's confidence in the game very early on. Especially nowadays, where people have the worst attention spans in human history and there are billions of things to distract them, if they feel confident in their ability to play your game, they'll be less likely to do something else

Lens #31: The Lens of Challenge
Challenge is at the core of almost all gameplay. You could even say that a game is defined by its goals and its challenges. When examining the challenges in your game, ask yourself these questions:
● What are the challenges in my game?
● Are they too easy, too hard, or just right?
● Can my challenges accommodate a wide variety of skill levels?
● How does the level of challenge increase as the player succeeds?
● Is there enough variety in the challenges?
● What is the maximum level of challenge in my game?

Good games have meaningful choices that **really** impact how the game goes from that point on. A great example is choosing which Pokemon to put on your team, because you only get 6 out of 100+. I've had many times where I have thought long and hard about how to assemble my team. However, one thing that kills meaningful choices is this:
Dominant Strategies- As the name implies, this is when one choice or strategy in a game is one of multiple, but is so much better than the other ones to the point that there essentially is no reason to pick the others. An example of this is legendary Pokemon. This is why in showdown, most legendaries are banned to a tier of their own, separate from standard ones. Why would you ever pick a normal pokemon which has strengths and weaknesses, when there is a flawless and super strong one right there?

Lens #32: The Lens of Meaningful Choices
When we make meaningful choices, it lets us feel like the things we do matter.
To use this lens, ask yourself these questions:
● What choices am I asking the player to make? - I am asking them to pick from different weapons and abilities
● Are they meaningful? How?-I believe so, since each weapon/ability has its own function, but you get a limited selection of each.
● Am I giving the player the right number of choices? Would more make them feel more powerful? Would less make the game clearer?-I think I have a good amount of weapons and abilities. There are around 20 of each, and I'm honestly having trouble thinking of more.

● Are there any dominant strategies in my game?-I actually just fixed this recently. Since the player is faster than the enemies, and there is no damage dropoff, the player could just fire at the enemy from as far away as possible without any risk. But with the addition of the Megamolar, the player is forced to get up close and personal, putting themselves in the way of a very dangerous attack. They now have to rely on their movement, but in a more skilled-based way (outmaneuvering the Megamolar).



A diagram of Triangularity- a method of balancing game choices

Lens #33: The Lens of Triangularity
Giving a player the choice to play it safe for a low reward, or to take a risk for a big reward is a great way to make your game interesting and exciting. To usethe Lens of Triangularity, ask yourself these questions:
● Do I have triangularity now? If not, how can I get it?
● Is my attempt at triangularity balanced? That is, are the rewards commen-
surate with the risks?
Once you start looking for triangularity in games, you will see it everywhere.
A dull, monotonous game can quickly become exciting and rewarding when
you add a dash of triangularity.

One **failed** example of triangularity is the Ancient City of Minecraft. The Ancient City is home to the Warden, the strongest mob in the entire game. No matter where you are in the game's progression, you probably won't be able to get close to beating it. One would expect such a big risk (going to an Ancient City) to have a great reward, but the only exclusive reward is the recovery compass. This is ridiculous, as the recovery compass is meant to tell the player the place where they died, but any player skilled enough to reach an Ancient City will rarely die,

therefore making the reward redundant. It is a big risk, with a very low reward. Granted, the Ancient Cities have other great loot, but that loot can be found elsewhere.

Lens #34: The Lens of Skill vs. Chance
To help determine how to balance skill and chance in your game, ask yourself these questions:
● Are my players here to be judged (skill), or to take risks (chance)?
● Skill tends to be more serious than chance: Is my game serious or casual?
● Are parts of my game tedious? If so, will adding elements of chance enliven them?
● Do parts of my game feel too random? If so, will replacing elements of chance with elements of skill or strategy make the players feel more in Control?
-Although I'm not done, I'd say AvA (my game) is much more skill based. There isn't really any chance involved, other than the enemies you might get. I guess I could add some chance-based aspects, since the game's tone isn't very serious.

Lens #35: The Lens of Head and Hands
Yogi Berra once said "Baseball is 90% mental. The other half is physical." To make sure your game has a more realistic balance of mental and physical elements, use the Lens of Head and Hands. Ask yourself these questions:
● Are my players looking for mindless action, or an intellectual challenge?
-AvA (my game) definitely leans more towards action, but I wouldn't call it completely mindless. It still takes some thinking to figure out which abilities and weapons go with which. I also think that the Shaman Fly, Flutesnipe, and Megamolar and enemies that force the player to think at least a little bit.
● Would adding more places that involve puzzle-solving in my game make it more interesting?
-I'm not sure how that could fit into this game, but I'll keep it in mind along the way.
● Are there places where the player can relax their brain, and just play the game without thinking?
-In the early game I guess they could. The enemies are very simple.
● Can I give the player a choice — either succeed by exercising a high level of dexterity, or by finding a clever strategy that works with a minimum of physical skill?
-I would say that due to the wide variety of abilities and weapons that cover both categories, yes. For example, while the energy rifle, shell splitter, and RPG aren't as strategic as the Stalker Rifle.
● If "1" means all physical, and "10" means all mental, what number would my game get?
-I would say a 3 or 4.
● This lens works particularly well when used in conjunction with Lens #16: Lens of the Player

Lens #36: The Lens of Competition
Determining who is most skilled at something is a basic human urge. Games

of competition can satisfy that urge. Use this lens to be sure your competitive game makes people want to win it. Ask yourself these questions:
● Does my game give a fair measurement of player skill?
● Do people want to win my game? Why?
● Is winning this game something people can be proud of? Why?
● Can novices meaningfully compete at my game?
● Can experts meaningfully compete at my game?
● Can experts generally be sure they will defeat novices?

Lens #37: The Lens of Cooperation
Collaborating and succeeding as a team is a special pleasure that can create lasting social bonds. Use this lens to study the cooperative aspects of your game. Ask these questions:
● Cooperation requires communication. Do my players have enough opportunity to communicate? How could communication be enhanced?
● Are my players friends already, or are they strangers? If they are strangers, can I help them break the ice?
● Is there synergy (2 2 5) or antergy (2 2 3) when the players work together? Why?
● Do all the players have the same role, or do they have special jobs?
● Cooperation is greatly enhanced when there is no way an individual can do a task alone. Does my game have tasks like that?
● Tasks that force communication inspire cooperation. Do any of my tasks force communication?

Lens #38: The Lens of Competition vs. Cooperation
Balancing competition and cooperation can be done in many interesting ways. Use this lens to decide whether they are balanced properly in your game. Ask these questions:
● If “1” is Competition and “10” is Cooperation, what number should my game get?
● Can I give players a choice whether to play cooperatively or competitively?
● Does my audience prefer competition, cooperation, or a mix?
● Is team competition something that makes sense for my game? Is my game more fun with team competition, or with solo competition?

Lens #39: The Lens of Time
It is said that “timing is everything.” Our goal as designers is to create experiences, and experiences are easily spoiled when they are too short or too long.
Ask these questions to make yours just the right length:
● What is it that determines the length of my gameplay activities?
● Are my players frustrated because the game ends too early? How can I change that?
● Are my players bored because the game goes on for too long? How can I

change that?
● Setting a time limit can make gameplay more exciting. Is it a good idea for my game?
● Would a hierarchy of time structures help my game? That is, several short rounds that together comprise a larger round?
Timing can be very difficult to get right, but it can make or break a game. Often, it makes sense to follow the old vaudevillian adage of “Leave ’em wanting more.”

Lens #40: The Lens of Reward
Everyone likes to be told they are doing a good job. Ask these questions to determine if your game is giving out the right rewards in the right amounts at the right times:
● What rewards is my game giving out now? Can it give out others as well?
● Are players excited when they get rewards in my game, or are they bored by them? Why?
● Getting a reward you don’t understand is like getting no reward at all. Do my players understand the rewards they are getting?
● Are the rewards my game gives out too regular? Can they be given out in a more variable way?
● How are my rewards related to one another? Is there a way that they could be better connected?
● How are my rewards building? Too fast, too slow, or just right?
Balancing rewards is different for every game. Not only does a designer have to worry about giving out the right ones, but giving them at the right times in the right amounts. This can only be determined through trial and error — even then, it probably won’t be right for everyone. When trying to balance rewards, it is hard to be perfect — you often have to settle for “good enough.”

Lens #44: The Lens of Character
Elegance and character are opposites. They are like miniature versions of simplicity and complexity, and must be kept in balance. To make sure your game has lovable, defining quirks, ask yourself these questions:
● Is there anything strange in my game that players talk about excitedly?
● Does my game have funny qualities that make it unique?
● Does my game have flaws that players like?

If there is some aspect of a game that you can’t do all that well, leave it to the players imagination. For example, giving character dialogue subtitles and no voice is better than giving them no subtitles with bad voice acting. The imagination of the player can give them one. This only seems to apply to little details though.

Lens #45: The Lens of Imagination
All games have some element of imagination and some element of connection

to reality. Use this lens to help find the balance between detail and imagination. Ask yourself these questions:
● What must the player understand to play my game?
-They must understand the mechanics of the combat. So weapons, abilities, movement, and enemies.
● Can some element of imagination help them understand that better?
-I mean, they could use their imagination to come up with weapon/ability combos
● What high-quality, realistic details can we provide in this game?
● What details would be low quality if we provided them? Can imagination fill the gap instead?
● Can I give details that the imagination will be able to reuse again and again?
● What details I provide inspire imagination?
● What details I provide stifle imagination?

Take notes/documentation of how the things you are balancing interact with eachother. For example, when I balance AvA (my game), I could write down how the amount of points the average wave gives you relates to weapon/ability costs.

While you're designing your game, remember that you are going to have to balance your game

Lens #46: The Lens of Economy
Giving a game an economy can give it surprising depth and a life all its own. But like all living things, it can be difficult to control. Use this lens to keep your economy in balance:
● How can my players earn money? Should there be other ways?
-They earn money from simply killing aliens. Maybe I could add certain challenges to levels to earn more. For example, "Complete each wave in under 60 seconds for 50% more points"
● What can my players buy? Why?
-They can buy weapons and abilities to become more powerful
● Is money too easy to get? Too hard? How can I change this?
-I'm going to be honest, I completely forgot to make most of the enemies gives points. I haven't even made weapon/ability prices yet, so
● Are choices about earning and spending meaningful ones?
● Is a universal currency a good idea in my game, or should there be specialized currencies?

10 Rules of Puzzles in Games:

1. Make the goal easily understandable. You shouldn't spend more time figuring out what to do than actually doing it
2. Make it easy to start. The entire puzzle doesn't have to be hard, but the first step should be easy
3. Give a sense of progress. Let the player know that they are getting closer to solving the puzzle.
4. Make it clear that it can be solved. This can be done by visual progress, or just saying it has an answer

5. Make the puzzle get harder as it goes on
6. Add parallelism. In game design, this means something else to do if you're having trouble with what you're doing at the moment. Be sure to make these alternatives different, so they aren't redundant.

Lens #48: The Lens of Accessibility
When you present a puzzle to players (or a game of any kind), they should be able to clearly visualize what their first few steps would be. Ask yourself these questions:
● How will players know how to begin solving my puzzle, or playing my game? Do I need to explain it, or is it self-evident?
I plan to have a quick, non-intrusive tutorial that is woven into the gameplay, so I think it is pretty easy to understand.
● Does my puzzle or game act like something they have seen before? If it does, how can I draw attention to that similarity. If it does not, how can I make them understand how it does behave?
The game has a very similar gameplay style to most shoot em up games, so yes.
● Does my puzzle or game draw people in, and make them want to touch it and manipulate it? If not, how I can I change it so that it does?
I don't really know yet. Maybe by adding "game juice" I can make it more rewarding

Lens #49: The Lens of Visible Progress
Players need to see that they are making progress when solving a difficult problem. To make sure they are getting this feedback, ask yourself these questions:
● What does it mean to make progress in my game or puzzle?
To clear waves/days
● Is there enough progress in my game? Is there a way I can add more interim steps of progressive success?
Maybe I can add challenges to certain waves, so there can be more objectives
● What progress is visible, and what progress is hidden? Can I find a way to reveal what is hidden
I haven't started UI at all, but I want there to be a meter that shows how close you are to finishing the 30 days.

Lens #50: The Lens of Parallelism
Parallelism in your puzzle brings parallel benefits to the player's experience.

To use this lens, ask yourself these questions:
● Are there bottlenecks in my design where players are unable to proceed if they cannot solve a particular challenge? If so, can I add parallel challenges for a player to work on when this challenge stumps them?
● If parallel challenges are too similar, the parallelism offers little benefit. Are my parallel challenges different enough from each other to give players the benefit of variety?
● Can my parallel challenges be connected somehow? Is there a way that making progress on one can make it easier to solve the others?

Lens #51: The Lens of the Pyramid

Pyramids fascinate us because they have a singular highest point. To give your puzzle the allure of the ancient pyramids, ask yourself these questions:
● Is there a way all the pieces of my puzzle can feed into a singular challenge at the end?
● Big pyramids are often made of little pyramids — can I have a hierarchy of ever more challenging puzzle elements, gradually leading to a final challenge?
● Is the challenge at the top of my pyramid interesting, compelling, and clear? Does it make people want to work in order to get to it?

Lens #52: The Lens of the Puzzle

Puzzles make the player stop and think. To ensure your puzzles are doing everything you want to shape the player experience, ask yourself these questions:
● What are the puzzles in my game?
● Should I have more puzzles, or less? Why?
● Which of the ten puzzle principles apply to each of my puzzles?
● Do I have any incongruous puzzles? How can I better integrate them into the game? (Use Lens #43: The Lens of Elegance to help do this).

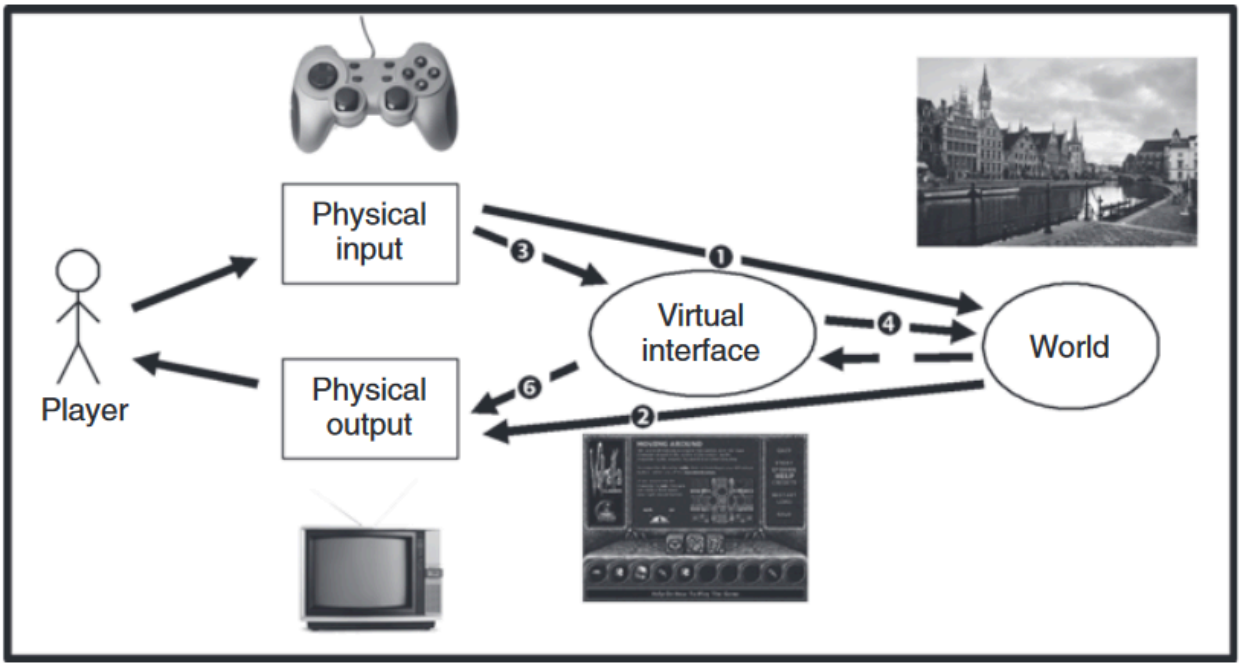
In the last few chapters, we have focused on game internals — it is now time to consider an external element — the interface of the game.?

Lens #53: The Lens of Control

This lens has uses beyond just examining your interface, since meaningful control is essential for immersive interactivity. To use this lens, ask yourself these questions:
● When players use the interface, does it do what is expected? If not, whynot?
● Intuitive interfaces give a feeling of control. Is your interface easy to master, or hard to master?
● Do your players feel they have a strong influence over the outcome of the game? If not, how can you change that?
● Feeling powerful = feeling in control. Do your players feel powerful? Can you make them feel more powerful somehow?

Interface is the way that the players can interact with the game. An easy to use interface is important because it helps immerse the player and allows them to play the game easily. A bad example would be ARK, as not only is the interface complicated, it's very, very ugly.

One layer of interface is virtual interface. It is made of a physical input (buttons or mouse clicks), and physical output (menus, scoreboards). A better definition to differentiate the virtual interface from other parts of the interface, is that the virtual interface isn't usually part of the game world. Menus and UI generally don't physically exist, they're just there for you to see.



1. Physical Input → World: If pushing a thumbstick makes my avatar run, the mapping tells how fast it will run, and how quickly it will slow down if I let go. If I push the thumbstick harder, does my character run faster? Will my character accelerate over time? Will "double tapping" the thumbstick make my character dash?

2. World → Physical Output: If you cannot see the entire world at once, what parts of it can you see? How will it be shown?

3. Physical Input → Virtual Interface: In a mouse-based menu interface, what does clicking do? What does double clicking do? Can I drag parts of the interface around?

4. Virtual Interface → World: When the player manipulates the virtual interface, what effect does this have on the world? If they select an item in the world, and use a pop-up menu to take an action on it, does that action take effect immediately, or after some delay?

5. World → Virtual Interface: How are changes in the world manifested in the virtual interface? When do scores and energy bars change? Do events in the world lead to special pop-up windows or menus, or mode changes in the interface? When players enter a battle, will special battle menus appear?

6. Virtual Interface → Physical Output: What data is shown to the player, and where does it go on the screen? What colors will it be? What fonts? Will hit
points pulse or make a sound when they are very low?

Lens #54: The Lens of Physical Interface
Somehow, the player has a physical interaction with your game. Copying existing physical interfaces is an easy trap to fall into. Use this lens to be sure that your physical interface is well-suited to your game by asking these questions:
● What does the player pick up and touch? Can this be made more pleasing?
● How does this map to the actions in the game world? Can the mapping be more direct?
● If you can't create a custom physical interface, what metaphor are you using when you map the inputs to the game world?
● How does the physical interface look under the Lens of the Toy?
● How does the player see, hear, and touch the world of the game? Is there a way to include a physical output device that will make the world become more real in the player's imagination?
The world of videogames occasionally goes through dry spells where designers feel it is not feasible to create custom physical interfaces. But the marketplace thrives on experimentation and novelty, and suddenly specially crafted physical interfaces, like the Dance Dance Revolution mat, the Guitar Hero guitar, and the Wiimote appear, bringing new life to old gameplay by giving players a new way to interact with old game mechanics

Lens #57: The Lens of Feedback
The feedback a player gets from the game is many things: judgment, reward, instruction, encouragement, and challenge. Use this lens to be sure your feedback loop is creating the experience you want by asking these questions at
every moment in your game:
● What do players need to know at this moment?
● What do players want to know at this moment?
● What do you want players to feel at this moment? How can you give feedback that creates that feeling?
● What do the players want to feel at this moment? Is there an opportunity for them to create a situation where they will feel that?
● What is the player's goal at this moment? What feedback will help them

toward that goal?
Using this lens takes some effort, since feedback in a game is continuous, but needs to be different in different situations. It takes a lot of mental effort to use this lens in every moment of your game, but it is time well spent, because it will help guarantee that the game is clear, challenging, and rewarding.

If your interface doesn't give the player feedback (a sign that they did something) within a tenth of a second, they will feel like something is wrong. An example of this can be found in animation. If you press the jump button, but the character squats down and doesn't jump until half a second later, the player may feel frustrated.

Lens #58: The Lens of Juiciness
To call an interface "juicy" might seem kind of silly — although it is very common to hear an interface with very little feedback described as "dry." Juicy interfaces are fun the moment you pick them up. To maximize juiciness, ask yourself these questions:
● Is my interface giving the player continuous feedback for their actions? If not, why not?
● Is second-order motion created by the actions of the player? Is this motion powerful and interesting?
● Juicy systems reward the player many ways at once. When I give the player a reward, how many ways am I simultaneously rewarding them? Can I find more ways?
I was surprised to see the term 'game juice' in here, since I thought it was recent. But one example of this can be found in Garden Warfare. It plays a 'ding' sound, and displays a quick skull icon. Not only does this make getting kills satisfying, it also serves the dual purpose of confirming a kill, as the game can be quite hectic and keeping track of things can be hard.

Lens #59: The Lens of Channels and Dimensions
Choosing how to map game information to channels and dimensions is the heart of designing your game interface. Use this lens to make sure you do it thoughtfully and well. Ask yourself these questions:
● What data need to travel to and from the player?
● Which data are most important?
● What channels do I have available to transmit this data?
● Which channels are most appropriate for which data? Why?
● Which dimensions are available on the different channels?
● How should I use those dimensions?
*From what I understand, dimensions are ways information is presented. For a word, the dimensions could be the color, font, size, etc. A great example that the book uses is a number that pops out of characters to signify damage. The number changes colors to show information. If an ally deals damage, the color will be white, but red if an enemy does the damage. Then, the

size of the number's font will increase based on how close the enemy is to death (small when the enemy is healthy, and big when the enemy is one-shot).

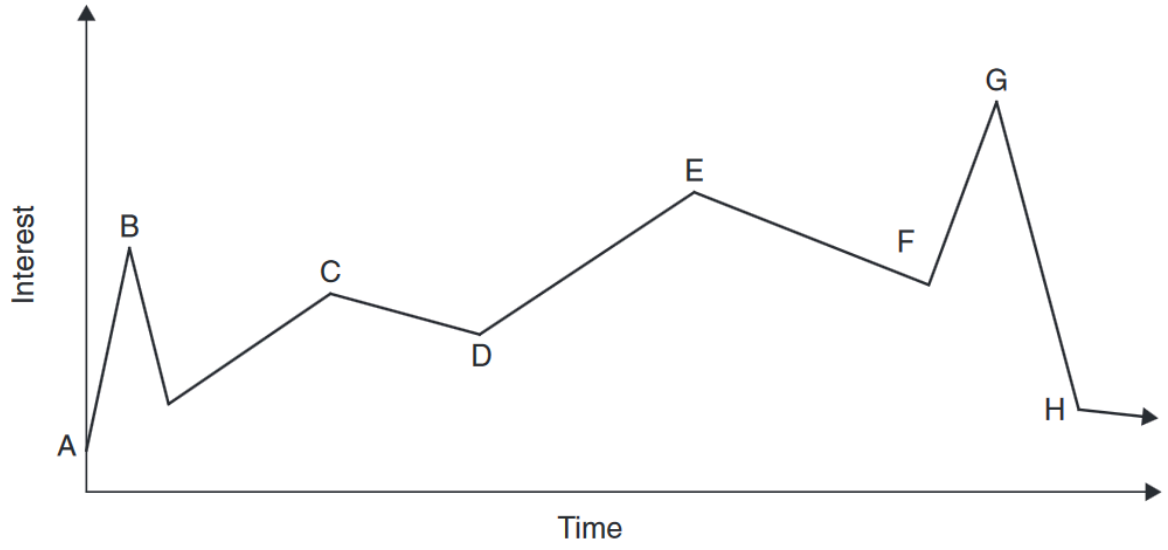
Lens #60: The Lens of Modes
An interface of any complexity is going to require modes. To make sure your modes make the player feel powerful and in control and do not confuse or overwhelm, ask yourself these questions:
● What modes do I need in my game? Why?
● Can any modes be collapsed, or combined?
● Are any of the modes overlapping? If so, can I put them on different input channels?
● When the game changes modes, how does the player know that? Can the game communicate the mode change in more than one way?

One example of modes being done well is in No Man's Sky. When you switch from a weapon to the terrain modifier, your crosshair changes, and it says you're using the terrain modifier in the upper right corner. In addition, the terrain modifier being a sub-mode of the multi-tool is an example of elegance.

Tips for making a good interface:

1. Steal. You can mimic the interface from other games in your genre, then tweak it to match the unique qualities that your game has.
2. Invent. This is the opposite of tip 1, although both are useful. This tip is about making a custom interface for your game. A good way to start is to list the information that the player will need, and how important each channel of information is. Then design your interface from there.
3. Theming. Make your interface unify with the theme of the game. Plants VS Zombies does this well, as in the tower defense games, the select button for each of your plants are seed packets, and in the shooter games the UI matches the cartoon aesthetic.
4. Sound. Adding sound to interfaces is very useful, as the human brain naturally associates the sound of something with the action of touching it. The book says to think about what your interface would sound like if it were real. Spore does this well, as pressing the futuristic-styled buttons on the menu plays a futuristic-sounding synth noise.

5. Balance simplicity and complexity. An example of this is Minecraft. Normally, the interface is just your hotbar, health, and hunger, which is super simple. But when you open your inventory, suddenly the interface becomes expansive and complicated (relatively speaking).
6. Test. It's pretty simple, by testing your interface (and using the problem statement lens), you can figure out how to improve it.



This is a diagram of a successful interest curve.

Point A- This isn't really part of the game, but the expectations the player has going in, usually formed from cover art, trailers, or word of mouth.

Point B- This is similar to a hook in writing. Usually this is in the form of a cutscene, but it can really be anything at the start of a game to get the player's attention. I think it should leave the player curious as to what the rest of the game holds through some form of mystery or intrigue (while still adequately informing them).

Points C and E- These are the moments that spike the player's interest. In AvA (my game), this could be from traversing the world and encountering a new environment with new enemies and mechanics.

Points D and F- These are dips in interest, however the player should anticipate a rise soon.

Point G- This is the climax, in most games this is a final boss fight.

Point H- The plot or game is resolved, and the player is hopefully satisfied.

Lens #61: The Lens of the Interest Curve
Exactly what captivates the human mind often seems different for every person, but the most pleasurable patterns of that captivation are remarkably similar for everyone. To see how a player's interest in your experience changes
over time, ask yourself these questions:
● If I draw an interest curve of my experience, how is it generally shaped?
● Does it have a hook?
● Does it have gradually rising interest, punctuated by periods of rest?
● Is there a grand finale, more interesting than everything else?
● What changes would give me a better interest curve?
● Is there a fractal structure to my interest curve? Should there be?
● Do my intuitions about the interest curve match the observed interest of
the players? If I ask playtesters to draw an interest curve, what does it
look like?
Since all players are different, you may find it quite useful to use the Lens
of the Interest Curve and Lens #16: The Lens of the Player at the same time,
creating a unique interest curve for each of the types of players your game is
trying to reach.

Factors of Interest:

1. Inherent interest. This is just about how some things are more interesting than others. AN example from the book: a man wrestling an alligator will be more interesting than a man eating a cheese sandwich.
   Lens #62: The Lens of Inherent Interest
   Some things are just interesting. Use this lens to be sure your game has inherently interesting qualities by asking these questions:
   ● What aspects of my game will capture the interest of a player immediately?
   Probably the title and premise. They're very unique and absurd.
   ● Does my game let the player see or do something they have never seen or
   done before?
   Sort of. I honestly don't know much about shoot em up games, but one unique feature of AvA (my game) is how customizable it is.
   ● What base instincts does my game appeal to? Can it appeal to more of
   them?
   I'm not sure.
   ● What higher instincts does my game appeal to? Can it appeal to more of
   those?
   The desire to be powerful, probably.

● Does dramatic change and anticipation of dramatic change happen in my game? How can it be more dramatic?
I'll have to see once the game is done.

2. Poetry of Presentation. This is basically the game's aesthetics. Things that look or sound nice tend to be more interesting to people.
   Lens #63: The Lens of Beauty
   We love to experience things of great beauty. Use this lens to make your game a joy forever by asking yourself these questions:
   ● What elements make up my game? How can each one be more beautiful?
   ● Some things are not beautiful in themselves, but are beautiful in combination. How can the elements of my game be composed in a way that is poetic and beautiful?
   ● What does beauty mean within the context of my game?
3. Projection. This relates to empathy/imagination, and putting yourself in the place of the characters. I'm not sure I'll use this much in AvA (my game).
   Lens #64: The Lens of Projection
   One key indicator that someone is enjoying an experience is that they have projected their imaginations into it. When they do this, their enjoyment of the experience increases significantly, in a sort of virtuous circle. To examine whether your game is well-suited to induce projection from your players, ask yourself these questions:
   ● What is there in my game that players can relate to? What else can I add?
   ● What is there in my game that will capture a player's imagination? What else can I add?
   ● Are there places in the game that players have always wanted to visit?
   ● Does the player get to be a character they could imagine themselves to be?
   ● Are there other characters in the game that the players would be interested to meet (or to spy on)?
   ● Do the players get to do things that they would like to do in real life, but can't?
   ● Is there an activity in the game that once a player starts doing, it is hard to Stop?

   Lens #65: The Lens of the Story Machine
   A good game is a machine that generates stories when people play it. To make sure your story machine is as productive as possible, ask yourself these questions:
   ● When players have different choices about how to achieve goals, new and different stories can arise. How can I add more of these choices?
   ● Different conflicts lead to different stories. How can I allow more types of conflict to arise from my game?
   ● When players can personalize the characters and setting, they will care more about story outcomes, and similar stories can start to feel very different. How can I let players personalize the story?

● Good stories have good interest curves. Do my rules lead to stories with good interest curves?
● A story is only good if you can tell it. Who can your players tell the story to that will actually care?

Lens #66: The Lens of the Obstacle
A goal with no obstacles is not worth pursuing. Use this lens to make sure your obstacles are ones that your players will want to overcome.
● What is the relationship between the main character and the goal? Why does the character care about it?
● What are the obstacles between the character and the goal?
● Is there an antagonist who is behind the obstacles? What is the relationship between the protagonist and the antagonist?
● Do the obstacles gradually increase in difficulty?
● Some say “The bigger the obstacle, the better the story.” Are your obstacles big enough? Can they be bigger?
● Great stories often involve the protagonist transforming in order to overcome the obstacle. How does your protagonist transform?

Lens #69: The Lens of the Weirdest Thing
Having weird things in your story can help give meaning to unusual game mechanics — it can capture the interest of the player, and it can make your world seem special. Too many things that are too weird, though, will render your story puzzling and inaccessible. To make sure your story is the good kind of weird, ask yourself these questions:
● What’s the weirdest thing in my story?
-Probably the premise itself. People don’t typically associate alcoholics and aliens
● How can I make sure that the weirdest thing doesn’t confuse or alienate the player?
-Although some may find the premise plain strange, I wanted the premise to be somewhat funny because of its absurdity. So maybe the humor could act as a way to make up for how strange it is.
● If there are multiple weird things, should I may be get rid of, or coalesce, some of them?
-As of now, the premise, the belching baby, and the phlegmthrower are the weirdest parts of the game. But that could change as development goes on.

● If there is nothing weird in my story, is the story still interesting?

Many great games (or any pieces of art for that matter), are successful because they combine something cliche with something new/novel. Fortnite took the battle royale idea, and added building, Chainsaw Man took the vague premise of a standard shonen but made everything off, etc.

Lens #70: The Lens of Story
Ask yourself these questions:
● Does my game really need a story? Why?
● Why will players be interested in this story?
● How does the story support the other parts of the tetrad (aesthetics, technology, gameplay)? Can it do a better job?
● How do the other parts of the tetrad support the story? Can they do a better job?
● How can my story be better?

Lens #71: The Lens of Freedom
A feeling of freedom is one of the things that separates games from other forms of entertainment. To make sure your players feel as free as possible, ask yourself these questions:
● When do my players have freedom of action? Do they feel free at these times?
● When are they constrained? Do they feel constrained at these times?
● Are there any places I can let them feel more free than they do now?
● Are there any places where they are overwhelmed by too much freedom?

Freedom itself isn't always what makes a game enjoyable, but instead the **feeling** of freedom. This is because the player feels like they get an input, and the designer is able to properly implement an interest curve.

There are multiple ways to express indirect control over a game, so the player feels free but the designer is still in control:

1. Constraints
   An example from the book, you can either say,
   "Pick a color."
   Or,

"Pick a color from red, blue, or green."
They're both similar questions, but the way it is framed lowers the amount of possible answers that have to be considered from millions, to three.
This is done in Pokemon Scarlet, where although you can go to whichever gym you want at any time, they aren't scaled to your power level, effectively constraining you from actually fighting them.

2. Goals
   It's pretty simple, if you give your player a goal, you only really have to make things that would help them accomplish that goal, since that's most likely the only thing they would choose anyway. An example from the book: if you make a racing game that takes place in a big city, and tell the player to reach a certain location, and clearly show the player how to get there, you won't need to model the entire city, just the road the player will take.
3. Interface
   When this book says interface, it means the way that the game is interacted with, so controller, what shows up on the screen etc. By excluding unwanted actions on the interface, you can keep the player from thinking about them. For example, the book says that for a rockstar game about playing guitar, if you make the controller a guitar instead of a standard controller, the player won't try to do anything except play the guitar.
4. Art
   By making the player's objectives visually appealing or striking, they are more likely to become curious, and as a result interact with the objective.
5. Characters
   By making the players care about the characters, they're more likely to act for them, or against them. For example, if a monster kills someone right in front of the player and then chases them down, they'll be more likely to fight back, even though you never told them to.
6. Music
   To use music to control the player, you can have the tone of the music match what you want them to do. For example, fast and intense music would compliment a chase scene.

Lens #72: The Lens of Indirect Control
Every designer has a vision of what they would like the players to do to have an ideal play experience. To help ensure the players do these things of their own free will, ask yourself these questions:
● Ideally, what would I like the players to do?
● Can I set constraints to get players to do it?
● Can I set goals to get players to do it?
● Can I design my interface to get players to do it?
● Can I use visual design to get players to do it?
-I actually did this with various enemies in AvA (my game), such as the Megamolar, Flutesnipe, and Octobese

● Can I use in-game characters to get players to do it?
● Can I use music or sound to get players to do it?
● Is there some other method I can use to coerce players toward ideal behavior without impinging on their feeling of freedom?

Lens #73: The Lens of Collusion
Characters should fulfill their roles in the game world, but when possible, also serve as the many minions of the game designer, working toward the designer's ultimate aim, which is to ensure an engaging experience for the player.
To make sure your characters are living up to this responsibility, ask yourself these questions:
● What do I want the player to experience?
● How can the characters help fulfill this experience, without compromising their goals in the game world?

A well designed level isn't just meant to look nice, but be functional. If it creates the type of experience it is meant to (from a gameplay standpoint), then it is good.
An example of this is in Call of Duty. Maps for modes such as team deathmatch are much smaller and more compact than a warzone map. This is because team deathmatch is meant to be a lot more fast-paced, and warzone is meant to be more vast and open.

4 ways to organize game space:
1. Linear. This is when the player can only move forward/backward on a line. Examples are monopoly, Mario, Smash Bros.
2. Grid- This is simply when each cell of a grid is a certain location in a space. Examples are chess, Plants vs Zombies
3. Web- This is when different major areas are connected or can be traveled to from each other in some way. Examples are TemTem, Pokemon, and most open world games.
4. Divided- This is most similar to a real map, where a space is irregularly carved into sections. An example is Spore

It is possible to mix these space plans together,

Landmarks are important to games because they both help the player know where they are, plus they just usually look nice.

Lens #82: The Lens of Inner Contradiction

A good game cannot contain properties that defeat the game's very purpose. To remove those contradictory qualities, ask yourself these questions:

- What is the purpose of my game?
- What are the purposes of each subsystem in my game?
- Is there anything at all in my game that contradicts these purposes?
- If so, how can I change that?

Alexander's Fifteen Properties of Living Structures

1. Levels of Scale. We see levels of scale in "telescoping goals," where a player has to satisfy short-term goals to reach mid-term ones and to eventually reach long-term goals. We see it in fractal interest curves. We also see it in nested game world structures. Spore is a symphony of levels of scale.
2. Strong Centers. We see this in visual layout, certainly, but also in our story structure. The avatar is at the center of our game universe — and generally we prefer strong avatars over weak ones. Also, we prefer strong centers when it comes to our purpose in the game — our goal.
3. Boundaries. Many games are primarily about boundaries! Certainly any game about territory is an exploration of boundaries. But rules are another kind of boundary, and a game with no rules is no game at all.
4. Alternating Repetition. We see this on the pleasing shape of the chessboard, and we see it too in the cycle of level/boss/level/boss that comes up in so many games. Even tense/release/tense/release is an example of pleasing alternating repetition.
5. Positive Space. What Alexander means here is that the foreground and background elements both have beautiful, complementary shapes, like Yin and Yang. In a sense a well-balanced game has this quality — allowing multiple alternate strategies to have an interlocked beauty.
6. Good Shape. This is as simple as it sounds — a shape that is pleasing. We certainly look for this in the visual elements of our games. But we can see and feel it, too, in level design. A good level feels "solid" and has a "good curve."
7. Local Symmetries. This is different from an overall symmetry, like a mirror image; instead referring to multiple small, internal symmetries in a design.
Zelda: The Wind Waker has this feeling throughout its architecture — when you are within a room or area, it seems to have a symmetry, but it is connected to other places in a way that feels organic. Rule systems and game balance can have this property as well.
8. Deep Interlock and Ambiguity. This is when two things are so tightly intertwined that they define each other — if you took one away, the other wouldn't be itself any longer. We see this in many board games, such as Go. The position of the pieces on the board is only meaningful relative to the opponent's pieces
9. Contrast. In games we have many kinds of contrast. The contrast between opponents, between what is controllable and what is not, and between reward and punishment. When opposites in our game are strongly contrasted, the game feels more meaningful and more powerful.

10. Gradients. This refers to qualities that change gradually. The gradually increasing challenge curve is an example of this, but so are appropriately designed probability curves.
11. Roughness. When a game is too perfect, it has no character. The handmade feeling of “house rules” often makes a game seem more alive.
12. Echoes. Echoes are a kind of pleasing, unifying repetition. When the boss monster has something in common with his minions, we are experiencing echoes. Good interest curves have this property, especially fractal ones.
13. The Void. As Alexander says, “In the most profound centers which have perfect wholeness, there is at the heart a void which is like water, infinite in depth, surrounded by and contrasted with the clutter of the stuff and fabric all around it.” Think of a church, or the human heart. When boss monsters tend to be in large, hollow spaces, we are experiencing the void.
14. Simplicity and Inner Calm. Designers talk endlessly about how important it is for a game to be simple — usually with a small number of rules that have emergent properties. Of course, these rules must be well-balanced, which gives them the inner calm that Alexander describes.
15. Not-Separateness. This refers to something being well-connected to its surroundings — as if it was part of them. Each rule of our game should have this property, but so should every element of our game. If everything in our game has this quality, a certain wholeness results that makes the game feel very alive indeed.

Lens #83: The Lens of The Nameless Quality
Certain things feel special and wonderful because of their natural, organic design. To ensure your game has these properties, ask yourself these questions:
● Does my design have a special feeling of life, or do parts of my design feel dead? What would make my design feel more alive?
● Which of Alexander’s fifteen qualities does my design have?
● Could it have more of them, somehow?
● Where does my design feel like myself ?

Though this may seem obvious, it is important to keep things to scale in your level design. For example, if objects are too big compared to other, supposedly smaller ones, it could break immersion.

4 ways to make the scale correct:

1. Make the “units” of measurement in your game something you are similar with, such as feet or meters. This isn’t too applicable in Gamemaker though, at least from what I know.
2. Eye Level- In the case of a first person game(or third person game where you are roughly eye level with the avatar), make the eye level roughly match that of the player.
3. People and Doorways- Players will often use the size of doorways and people to estimate their own size. Unless there is a reason for it in your game, the player shouldn’t be too big or small compared to other people and doorways

4. Texture scaling- An example of bad texture scaling could be if the bricks on a wall's texture look too big or small. Textures should be similar in size to their real world counterpart.

5 Reason People Play Multiplayer Games:

1. Competition
2. Collaboration
3. Meeting Up (Giving a Reason to Hang Out)
4. Explore others
5. Explore themselves

Community is a very important part of games. It is a huge reason that games like Minecraft, Fortnite, Roblox, (and arguably Spore) are still alive. As such, designers should try their best to encourage a sense of community to grow. The four traits that come with a sense of community are:

1. Membership- A distinct trait or label to show that you are a part of the group
2. Influence- Being part of the group gives you some sort of power
3. Fulfillment of Needs- Being part of the group does something for you
4. Shared Emotion- You are likely to feel the same way over events as the rest of the group

The 3 Main Reasons that Games Need Communities:

1. Fulfills the basic human need to be part of something larger than yourself
2. It allows the game to spread easier. As a game becomes a deeper part of someone's life, they are more likely to tell others about it, increasing the amount of players
3. More hours of play- People will be more likely to forgive a flawed game if it gives them a sense of belonging with others. Also, in the modern day where content creation is a big deal, having a community with content creators can single handedly make a game a wild success

8 Tips to Create Community:

1. Foster Friendships. Communities are a group of people who feel connected under a similar goal, purpose or cause, and friendships work similarly. Online friendships need the following:
   a. The ability to talk freely, through text or voice chat.
   b. Someone worth talking to. Players need a reason to interact. Many games have item trading as a way to form a community, which works especially well in games like Pokemon
   Lens #84: The Lens of Friendship
   People love to play games with friends. To make sure your game has the right qualities to let people make and keep friendships, ask yourself these Questions:
   ● What kind of friendships are my players looking for?
   ● How do my players break the ice?

● Do my players have enough chance to talk to each other? Do they have enough to talk about?
● When is the moment they become friends?
● What tools do I give the players to maintain their friendships?

2. Put Conflict at the Heart- This refers to how a sense of companionship is felt when people overcome a challenge or conflict together. Examples are working together to beat a tough boss, such as the Liars in Temtem.
3. Structure Your Game to Support Interaction- This is usually done through things such as lobbies. Have a specific place in your game that is frequently visited, where players can interact. Giddy Park from BFN is a good example.
4. Create Community Property- When people have shared ownership over something, they're more likely to feel connected to one another. This doesn't have to be direct. The ranking of a guild based off of the performance of all its players could make a sense of community (although if a few bad players drag the average down, it could do the opposite)
5. Allow players to express themselves. By seeing the expressions of others that they like, players are more likely to interact
   Lens #85: The Lens of Expression
   When players get a chance to express themselves, it makes them feel alive, proud, important, and connected. To use this lens, ask yourself these questions:
   ● How am I letting players express themselves?
   ● What ways am I forgetting?
   ● Are players proud of their identity? Why or why not?
   ● This lens is important and overdue. It works very well in combination with other lenses, such as Lens #63: The Lens of Beauty and Lens #80: The Lens of Status.
6. Support the 3 Levels:
   1. Noob- At this stage. The challenge isn't the game itself, but learning how to play it. Make the learning process as rewarding as possible, and if possible, allow more experienced players to help them. A game called Battletech did this by allowing experienced players to recruit new ones.
   2. The Player- Most of game design is centered around this group. This is the average player of the game, and the most populous.
   3. The Wizard- These are the most skilled players who have done almost everything there is to do in a game. Most of the time they get bored and leave, but there are some tips to keep them interesting. First, add post-game content that lasts a while. Things such as Night 6 and 7 in FNAF are an example. You can also allow the players to create their own things within the game. This is the biggest reason Minecraft is still relevant, and this is also what keeps the Spore community alive.
7. Force Players to Work Together- This can be done in a variety of ways. First, you can simply make a challenge too overwhelming or hard to do alone. Liars in Temtem are an example of this. Or, you can lock content away from some players, forcing them to give it to others. Pokemon does this with version exclusives.

8. Manage the Community- This can be done by things such as events. Community challenges in GW2 were an example.

   Lens #86: The Lens of Community
   To make sure your game fosters strong community, ask yourself these questions:
   ● What conflict is at the heart of my community?
   ● How does architecture shape my community?
   ● Does my game support three levels of experience?
   ● Are there community events?
   ● Why do players need each other?

Lens #88: The Lens of Love
To use this lens, ask yourself these questions:
● Do I love my project? If not, how can I change that?
● Does everyone on the team love the project? If not, how can that be changed?

“If you can set your ego aside, you will quickly realize that most of the people on the team with design ideas don’t want to hijack the game design — they just want their ideas to be heard, because they, too, want the game to be great!”

Involving other people in the design process has many benefits:
- You can view the design from many perspectives
- Weed out flawed ideas early
- Get more ideas to choose from
- Make the design feel shared by everyone

Sometimes it can be helpful not to make your designs too specific. If you leave room for interpretation, that allows your team members to implement things in the way that they see fit

A typical process looks something like:
1. Initial Brainstorming: Involves as much of the team as possible.
2. Independent Design: Core design team members think about ideas independently.
3. Design Discussion: Core design members bring their independent ideas together to discuss and try to come to consensus on ideas.
4. Design Presentation: The core design team presents their progress to the whole team, allowing time for comments and criticism. This often turns into brain-storming, kicking off the next round of the iterative cycle.

7 Keys to Team Communication-
1. Objectivity- Instead of complaining about “bad” ideas, use the problem statement to be more precise, and objective. This also tends to lower the amount of unneeded talking.

2. Clarity- It is near impossible for meaningful communication to occur if even one of the people talking doesn't understand the subject matter completely. Under no circumstances should you pretend you don't understand what someone means, no matter how embarrassed you are. It can save you lots of time and energy.
3. Persistence- Record things either by writing them, audio, or video. Verbal speech can be more easily forgotten. Keep things on design documents, wikis, emails, etc.
4. Comfort- It's quite simple, when people feel comfortable, they are more likely to communicate freely and clearly. Hence why talking to tired people usually isn't very productive. This comfort applies in all ways, physically, mentally, and emotionally.
5. Respect- This is similar to the last one. People who have mutual respect tend to have better communication.
6. Trust- Trust is usually built up better through physically being there with someone. This may not be possible for me though.
7. Unity- Although throughout the design process, conflicting opinions will arise (which is good), there comes a point where everyone needs to agree on something. If someone is being especially stubborn, try to compromise with them, asking "What can I do to get you on board?" or something along those lines

Lens #89: The Lens of the Team
To make sure your team is operating like a well-oiled machine, ask yourself
these questions:
● Is this the right team for this project? Why?
● Is the team communicating objectively?
● Is the team communicating clearly?
● Is the team comfortable with each other?
● Is there an air of trust and respect among the team?
● Is the team ultimately able to unify around decisions?

Documents are mostly meant to be used for memory and communication

Types of Design Documents

Game Design Overview
- This is usually only a page or two long, and it gives a somewhat broad summary of the game's content, mechanics, and content. It is meant to big people the big picture of the game

Detailed Design Document:
- I have one of these for Megamonsters.
- These go very in depth into the game's mechanics and inner workings.
- This is especially useful because the team may forget the smaller details

Story Overview:
- An overview of the games plot, setting, characters, and story

Technical Design Document-

- This is usually meant to document the system limitations.
- Examples: The number of models that can be on screen, number of message updates per second, etc

Art Bible:

- This gives concept art that is meant to encompass the overview aesthetic of the game.
- Artists should try matching the art in the art bible so everything feels consistent

Budget

- This just gives estimates of how much each part of the project will cost
- Usually a spreadsheet

Schedule

- Have a schedule that states what needs to be done, when it needs to be done, and who is doing it
- This should be flexible, as many unexpected things happen in game design

Tutorial and Manual

- This is a text-based tutorial of the game, that should be translated into an in-game one
- Update this frequently, as mechanics change all throughout the game cycle.

Benefits of Playtesting-

1. It allows the designer to know if their target audience is enjoying the game
2. It let's the designer know what issues the game has and how to fix them
3. It's a lot better to find problems early on in development than weeks before the game is released

Playtesting has 5 Questions: Why, who, where, what, how

Why-
Playtests are prototypes, and as such, they should be created to answer a question. Examples for questions I could ask while prototyping AvA (my game) are:

- Are the controls smooth enough?
- Are the menus understandable?
- Does the game maintain a good interest curve?
- Which enemies are the most fun to fight against?
- Which abilities/weapons work best with one another and why?

(Bonus Tip, use the lenses to form questions)

Who-
The type of people who playtest your game will change the feedback you receive. Different groups of people will have different pros and cons.

Developers/Designers:

Pros- Since they know more about game design and development, they can give very insightful feedback

Cons- They're too close to the game, much closer than any player will be. Although most designers are gamers themselves, their view is still slightly distorted from that of the casual player. Listen to the designers, but take everything with a grain of salt.

Friends/Family:

Pros- They're already quite comfortable talking to you (hopefully), and they're readily accessible, so if they think of something after the playtest ends, they can still tell you.

Cons- Similarly to the designers, your friends and family will also have their view distorted. Unlike the casual player, they'll be actively **trying** to like your game, without forming an opinion naturally. Also, even if they notice something wrong, they may not tell you to preserve your feelings.

Expert Players (People who are incredibly familiar with your genre):

Pros- They can give detailed insights and use terminology that relates to your game. They also can compare and contrast it to other games that are like it.

Cons- Hardcore players are not the majority. On top of that, if you cater towards the hardcore players too much, it could spoil the experience for more casual players.

Tissue Testers (People who have never seen or heard of your game)-

Pros- They have a fresh perspective, and can notice the parts of the game that you have gotten used to.

Cons- Using only tissue testers means that your game may have a strong appeal at first, but after playing it multiple times, they're insight won't really apply.

Where-

The location someone playtests your game can make a big difference (according to the book).

1. In the "Studio" (or wherever you make your games)
   Pros- Very convenient to you.
   Cons- The playtester could be uncomfortable playing in a work environment.

2. Playtesting Lab (I had no idea this existed)
   Pros- It's literally made for playtesting, and has everything you could ask for to collect data.
   Cons- Expensive.

3. Public Venues-
   Pros- Cheap, and many potential players if you find the right place
   Cons- Venues can be distracting, so players may not be fully immersed. Also, these are random people who very well may not match your demographic.

4. At the Playtester's Home
   Pros- This is the game's "natural habitat", and allows for social interactions if the player has friends over.
   Cons- Not many designers will be able to come see (which isn't a problem for me), and also there could be hardware limitations.

5. The Internet
   Pros- Gives you by far the widest audience, and you can find niche communities for specific demographics.
   Cons- You're not physically there with them, which could lead to you missing out on body language and facial expressions. Also, nowaday **everyone** is begging people to play their game on the internet, so you'll just be a drop in a sea of beggars.

What-

Things you know you're looking for:
You should be looking for the answers to the questions that you wrote in the "why" category. If your current game can't answer all the questions in a timely manner, consider making a special version that only includes the parts that pertain to your questions.

Things you don't know you're looking for:
Be ready for surprises. It is easy to only pick up on the things that you are thinking about learning, but you have to try and notice things that you didn't expect to happen. Does the player beat a certain enemy in an unexpected way? Does the player laugh at something meant to be intimidating? Once you notice something out of the ordinary, ask your player why they acted the way they did.

How-

Should You Be There?
This is only really applicable to situations where you could physically be with the playtester. Some playtesters might overlook flaws since the person who made it is right there. You wouldn't insult someone's hard work to their face.

What Do You Tell Them?
There are times when it is best to tell your player something before the test, and times when it is not. If you want to see how quickly the average player can figure out your game, you might not want to say much. If you do decide to speak, be careful as to what you say. If you just tell your player that, "Your goal is to do blah blah blah", they'll focus fully on that instead of playing the game organically.

Lens #91: The Lens of Playtesting
Playtesting is your chance to see your game in action. To ensure your playtests are as good as they can be, ask yourself these questions:

● Why are we doing a playtest?
● Who should be there?
● Where should we hold it?
● What will we look for?
● How will we get the information we need?

Lens of the Client:
If you are making a game for someone else, you should probably know what they want. Ask yourself these questions:

- What does the client say they want?
- What does the client think they want?
- What does the client really want, deep down in their heart?

Type of Idea	Description	Value
Idea	Just a plain old idea	$0.083 (dime a dozen)
Cool idea	An idea that captures the imagination	$5
Really cool idea	A cool idea, shouted	$5
Good idea	An idea that someone could actually use	$100
Good idea in the right place at the right time, sold convincingly	Just what it sounds like	$1,000,000+

Usually, when you pitch a game, it is judged based on how useful it is, not its merit (how good it is).

12 Tips to Pitch a Game:

1. Get in the Door- Just getting the opportunity to pitch can be difficult, especially with a big company. Using the “front door” is a simple email, phone call, or other traditional way of asking for an offer. Using the “back door” is a much better option. The back door is when you know somebody on the inside, who can help you get a pitch. Companies will ignore the email from random people, but not an associate. A good way to get these connections is from joining groups like the IGDA.
2. Show You Are Serious- When you are pitching an idea, be very prepared. Show that this idea is something you seriously care for and believe in. If you don’t care much about your idea, then why should people you are pitching to be?
3. Be Organized- Organization is very important, as it keeps you from scrambling around and seeming unprofessional. It ties into the last point of showing that you are serious.
4. Be Passionate- If you seem apathetic about your game, the people you are pitching to may think “If the creator of this game doesn’t care, then why should I?”. Don’t be fake

and phony however. You need to show real, authentic passion. If you don't feel any, then you probably shouldn't be making the game.

5. Assume Their Point of View- Nobody likes a pushy salesperson. When you pitch your game idea, try to understand the client. Understand what they want out of a game. Avoid using terminology that they may not understand. They're also busy people, so get straight to the point, focusing only on key aspects. Start off the pitch by telling them your platform, audience, and genre. Another way to do this is by giving your idea a "handle", or a short phrase to summarize it. Examples from the book are "It's Pokemon, but for grownups", "Nintendogs, but a whole zoo", or "It's a bowling RPG.". This can make your concept more clear. Remember to show, not tell. Nobody will care if you say, "my game has great character design and art", you need to show them these things. **Tell** them broad ideas, **show** them the details.
6. Design the Pitch- A pitch is an experience, and as such, it can be designed just like a game experience. Have an interest curve, elegance, and appeal to the senses. A good way to make a pitch interesting would be to do something to just stand out, while still fulfilling the purpose of a pitch.
7. Know the Details- Publishers are going to ask questions, and you should know the answers to whichever ones they will ask. There are three types of details you should know all about.
    a. Design Details- Things such as "How long is a level", "How does multiplayer work", "How is this unique from other games?"
    b. Schedule Details- Publishers will want to know how long you will take with your game. You'll want to know the dates of specific milestones (first prototype, first alpha, beta, full release). Be expected to be held to these dates. Be realistic with the time you give.
    c. Financial Details- Publishers are companies, and as such they care about money. You should know how many people will be working on the game, and how much it will cost. When asked how much money the game will make, based your answer off of similar games. Don't give just one number, but a decent range. Make **absolutely** sure that the minimal value is still profitable
    d. Risks- The publisher will want to know the risks of the game. Be ready to tell them what they are, and how you plan on dealing with them
8. Be Confident- Being passionate and organized helps with this. Have a clear, confident tone, without speaking too slow or fast. Make eye contact, and don't get shaken up over difficulties.
9. Be Flexible- Be ready to have a wrench thrown in your plans; have backup plans and be ready to make changes to your idea (as long as it doesn't compromise your vision to the point where you lose passion).
10. Rehearse- Practice your pitch to friends, family, or even just to yourself. This helps build confidence. You don't need to know your pitch word for word. Instead, you need to be able to explain the chain of ideas confidently.
11. Get Them To Own It- Listen to the little details that your clients say, and integrate it into the pitch. This can make them feel included.

12. Follow Up- Have some way to stay in contact with your client after the pitch. For example, let's say they asked about the combat in your game. You could occasionally give them updates via email, showing them a bit of progress or change.

Game Design Business Terms

- SKU- Pronounced “skew:, this stands for Stock Keeping Unit. This is a unique inventory item for a store. There may be many of these for each game, for example, Minecraft on the Nintendo Switch, in English
- COGS- “Cost of goods sold”, how much producing the game costs
- Burn Rate- How much it costs to keep development/the studio going
- Sold In VS Sold Through- Sold in means how many copies the retailer has bought, sold through means how many copies players have bought
- Units Sold- simple, how many times the game has been bought
- Breakeven- How many units the game has to sell until the developer makes back the money they used to make it. If you spend 100K to make a game, and the game costs $5, the breakeven is 20K
- Churn- The amount of players lost per month.
- Cost of Acquisition- The average of how much it costs to get someone to play the game
- DAU- Daily active users
- MAU- Monthly active users. How many (individual) people have played the game in the last month.
- ARPU- average revenue per user. To find this, divide the total money made by the MAU
- ARPPU- This is the average revenue per paying user. ARPU includes people who have never spent money, so this is different.
- K-factor- The average of how many people a new user generates. If a game is viral, and people tell their friends to play, the K-factor will be high. (I’m not sure how to get this information though?)
- Whale- Someone who spends lots of money on free to play games. Common on Roblox, and Fortnite (to a lesser extent).

http://www.eedar.com/ analyzes games, figuring out which features are most common in popular and profitable games

Lens of Profit

Profits keep the game industry alive. Ask these questions to help your game become profitable:

Where does the money go in my game’s business model? Why?

How much will it cost to produce, market, distribute, and maintain this game? Why?

How much money will this game make? Why do I think that?

What are the barriers to entry in the market for this game?